DEPARTMENT OF THE NAVY
FY 1999 BUDGET ESTIMATES

JUSTIFICATION OF ESTIMATES

RESEARH, DEVELOPMENT, TEST & EVALUATION
BUDGET ACTIVITY 5: ENGINEERING & MANUFACTURING DEVELOPMENT

SEPTEMBER 1997

R-1 Line Number	Program Element Number	Item Nomenclature	Budget Activity	Millions of Dollars FY 1997	FY 1998	FY 1999	Security Classification
80	0603208N	Training System Aircraft	5	-	0.403	0.605	U
81	0603266N	AH-1T COMP ROTOR BLADE	5	68.026	-	-	U
		(Prior Year Only -- R2/R3 Not Required)					
82	0604212N	ASW & Other Helo Development	5	62.270	73.354	212.170	U
83	0604214N	AV8B Aircraft (Eng)	5	15.801	11.034	13.972	U
84	0604215N	Standards Development	5	24.920	36.297	41.740	U
85	0604217N	S-3 Wpn System Improvement	5	8.010	4.735	32.017	U
86	0604218N	Air/Ocean Equipment Engineering	5	5.278	6.129	6.287	U
87	0604221N	P-3 Modernization Program	5	7.525	3.191	3.075	U
88	0604231N	Tactical Command System	5	29.288	38.941	52.688	U
89	0604245N	USMC H-1 Upgrades	5	-	86.335	100.264	U
90	0604261N	Acoustic Search Sensors	5	13.657	16.947	30.155	U
91	0604262N	V-22	5	605.682	529.495	287.912	U
92	0604264N	Air Crew Systems Development	5	25.596	12.111	9.520	U
93	0604270N	EW Development	5	117.958	101.803	130.764	U
		(R2/R3 Materials provided in Classified Budget Book)					
94	0604307N	AEGIS Combat System Engineering	5	85.338	87.934	129.888	U
95	0604310N	Arsenal Ship	5	-	102.994	139.874	U
96	0604311N	LPD-17 Development	5	3.990	1.371	12.367	U
97	0604312N	Tri-Service Standoff Attack Missile	5	-	9.644	-	U
98	0604366N	Standard Missile Improvements	5	9.199	0.549	1.343	U
		(R2/R3 Materials included in Classified Budget Book)					
99	0604373N	Airborne MCM	5	30.435	16.503	25.392	U
100	0604503N	SSN-688 and Trident Modernization	5	57.353	42.294	51.143	U
101	0604504N	Air Control	5	12.513	9.298	4.240	U
102	0604507N	Enhanced Modular Signal Processor	5	20.733	3.462	2.651	U
103	0604512N	Shipboard Aviation Systems	5	9.265	9.225	8.578	U
104	0604516N	Ship Survivability	5	3.826	6.081	6.295	U
105	0604518N	CIC Conversion	5	9.562	11.325	4.783	U
106	0604524N	Submarine Combat System	5	17.543	23.701	11.883	U

107	0604558N	New Design SSN Development	5	363.428	307.073	222.187	U
108	0604561N	SSN-21 Development	5	84.647	53.541	27.809	U
109	0604562N	Submarine Tactical Warfare System	5	21.460	45.663	28.073	U
110	0604567N	Ship Contract Design/Live Fire T&E	5	2.703	75.713	135.832	U
111	0604574N	Navy Tactical Computer Resources	5	27.549	4.794	8.414	U
112	0604601N	Mine Development	5	2.371	2.365	-	U
113	0604603N	Unguided Conventional Air-launched Weapons	5	30.333	28.890	5.245	U
114	0604610N	Lightweight Torpedo Development	5	10.381	17.290	8.207	U
115	0604612M	MC Mine Countermeasures (Eng)	5	3.814	0.950	3.923	U
116	0604618N	Joint Direct Attack Munition	5	30.010	12.714	11.914	U
117	0604654N	Jt Serv Explosive Ordnance Dev	5	5.600	6.613	7.004	U
118	0604703N	Personnel, Trng, Simulation & Human Factors	5	0.754	1.022	1.257	U
119	0604710N	Navy Energy Program	5	1.901	2.961	2.572	U
121	0604721N	Battle Group Passive Horizon Extension System	5	5.243	4.531	5.868	U
122	0604727N	Joint Standoff Weapon Systems	5	82.271	71.526	74.118	U
123	0604755N	Ship Self Defense	5	134.825	132.270	158.266	U
124	0604771N	Medical Development (Engineering)	5	2.829	3.620	4.395	U
125	0604777N	Navigation/ID System	5	48.723	40.656	43.413	U
126	0604784N	Distributed Surveillance System	5	54.455	33.048	42.733	U
		Total Engineering and Manufacturing Development		2,157.065	2,090.396	2,110.836	

Department of the Navy
FY 1998/1999 RDT&E Program
Alphabetic Listing

Exhibit R-1

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

DATE: September 1997

R-1 Line Number	Program Element Number	Item Nomenclature	Budget Activity	Millions of Dollars FY 1997	FY 1998	FY 1999	Security Classification
90	0604261N	Acoustic Search Sensors	5	13.657	16.947	30.155	U
94	0604307N	AEGIS Combat System Engineering	5	85.338	87.934	129.888	U
81	0603266N	AH-1T COMP ROTOR BLADE	5	68.026	-	-	U
		(Prior Year Only -- R2/R3 Not Required)					
99	0604373N	Airborne MCM	5	30.435	16.503	25.392	U
101	0604504N	Air Control	5	12.513	9.298	4.240	U
92	0604264N	Air Crew Systems Development	5	25.596	12.111	9.520	U
86	0604218N	Air/Ocean Equipment Engineering	5	5.278	6.129	6.287	U
95	0604310N	Arsenal Ship	5	-	102.994	139.874	U
82	0604212N	ASW & Other Helo Development	5	62.270	73.354	212.170	U
83	0604214N	AV8B Aircraft (Eng)	5	15.801	11.034	13.972	U
121	0604721N	Battle Group Passive Horizon Extension System	5	5.243	4.531	5.868	U
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126	0604784N	Distributed Surveillance System	5	54.455	33.048	42.733	U
102	0604507N	Enhanced Modular Signal Processor	5	20.733	3.462	2.651	U
93	0604270N	EW Development	5	117.958	101.803	130.764	U
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116	0604618N	Joint Direct Attack Munition	5	30.010	12.714	11.914	U
122	0604727N	Joint Standoff Weapon Systems	5	82.271	71.526	74.118	U
117	0604654N	Jt Serv Explosive Ordnance Dev	5	5.600	6.613	7.004	U
114	0604610N	Lightweight Torpedo Development	5	10.381	17.290	8.207	U
96	0604311N	LPD-17 Development	5	3.990	1.371	12.367	U
120	0604719M	MC Command/Control/Communications Sys	5	-	-	-	U
		(Prior Year Only -- R2/R3 Not Required)					
115	0604612M	MC Mine Countermeasures (Eng)	5	3.814	0.950	3.923	U
124	0604771N	Medical Development (Engineering)	5	2.829	3.620	4.395	U
112	0604601N	Mine Development	5	2.371	2.365	-	U
125	0604777N	Navigation/ID System	5	48.723	40.656	43.413	U
119	0604710N	Navy Energy Program	5	1.901	2.961	2.572	U

111	0604574N	Navy Tactical Computer Resources	5	27.549	4.794	8.414	U
107	0604558N	New Design SSN Development	5	363.428	307.073	222.187	U
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123	0604755N	Ship Self Defense	5	134.825	132.270	158.266	U
104	0604516N	Ship Survivability	5	3.826	6.081	6.295	U
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113	0604603N	Unguided Conventional Air-launched Weapons	5	30.333	28.890	5.245	U
89	0604245N	USMC H-1 Upgrades	5	-	86.335	100.264	U
91	0604262N	V-22	5	605.682	529.495	287.912	U
		Total Engineering and Manufacturing Development		2,157.065	2,090.396	2,110.836	

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0603208N
PROGRAM ELEMENT TITLE: Training System Aircraft

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1150 Joint Primary Aircraft Trainer System									
	0	403	605	323	0	0	0	0	1,331

NOTE: JPATS FY97 funds are reflected in Budget Activity 4.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Primary Aircraft Training System (JPATS) is an ACAT 1C, non-developmental item (NDI), commercial off-the-shelf (COTS) pilot program initiated to provide a high degree of commonality between the flight training programs of the United States Navy (USN) and United States Air Force (USAF). The JPATS is to replace the T-34 and T-37 for the USN and USAF, respectively. JPATS shall employ a common primary training system, consisting of aircraft, aircrew training devices (simulators, computer-aided instruction terminals, etc.), syllabus, courseware, and logistics support. The JPATS mission will be to train entry-level USN/USAF student pilots and navigators. The U.S. Air Force is the executive service. This element funds Navy participation in the joint program and Navy unique requirements.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0603208N PROJECT NUMBER: H1150
PROGRAM ELEMENT TITLE: Training System Aircraft PROJECT TITLE: Joint Primary Aircraft Trainer

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS: NOT APPLICABLE

2. (U) FY 1998 PLAN:

- (U) ($403) Begin strike lead-in courseware development and courseware conversion.

3. (U) FY 1999 PLAN:

- (U) ($605) Continue strike lead-in courseware development and courseware conversion.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0603208N PROJECT NUMBER: H1150
PROGRAM ELEMENT TITLE: Training System Aircraft PROJECT TITLE: Joint Primary Aircraft Trainer

B. (U) PROGRAM CHANGE SUMMARY

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	0	403	613
(U) Appropriated Value:			
(U) Adjustments from Pres Budget:	0	0	-8
(U) FY 1999 OSD/OMB Budget Submit:	0	403	605

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY99 decrease reflects -$1 thousand for Resource Sponsor balancing and -$7 thousand for Navy Working Capital Fund adjustments.

(U) Schedule: No change

(U) Technical: Not Applicable

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM		
• (U) APN-3 JPATS	0	0	0	34,151	82,537	84,287	86,567	1,132,100	1,419,642		
• (U) APN-6 JPATS	0	0	0	0	0	0	21,642	98,442	120,084	0	0

(U) RELATED RDT&E:

(U) PE 0603208N (Joint Primary Aircraft Trainer-Budget Activity 4)

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	N/A			1Q/00 MS III 4Q/03 USN IOC
Engineering Milestones			4Q GBTS CDR	
T&E Milestones		3Q A/C OA	3Q A/C MOT&E	
Contract Milestones		2Q LOT 5 AWD*	2Q LOT 6 AWD*	2Q/00 LOT 7 AWD*

* US Air Force manufacturing development contract. US Navy begins aircraft buy in Lot 7.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0485, ALFS	13,702	0	0	0	0	0	0	0	166,924
H1109, CH/MH-53	1,102	1,235	2,936	2,971	780	2,774	3,459	cont	cont
H1707, LAMPS III IMP	40,556	72,119	209,234	122,816	32,304	8,033	6,686	0	709,761
H1709, CH-60 VERTREP	6,910	0	0	0	0	0	0	0	6,910
TOTAL	62,270	73,354	212,170	125,787	33,084	10,807	10,145	cont	cont
RDT&E Articles	(1)	(2)			(1)	(2)			

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

(U) H0485 - 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) H1109 - During FY 1995 this program initiated a Service Life Assessment Program (SLAP) to develop usage and fatigue life profile, and an Integrated Mechanical Diagnostic (IMD) system. FY 1998 Service Life Extension Program (SLEP) begins to correct deficiencies in aircraft dynamic components and mission systems. The effort will increase reliability, maintainability, and safety while reducing the cost of ownership.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION
(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) H1709 - The CH-60 Fleet Combat Support (HC) Helicopter provides the Navy’s combat logistics force with a Vertical Replenishment (VERTREP) at-sea capability which is vital to sustain the Navy’s power projection forces by a comprehensive and responsive combat logistics force support system. The HC helicopter will also serve as the primary Search and Rescue (SAR) aircraft for the Amphibious Task Force (ATF), providing essential support to amphibious operations. Within the context of “From the Sea” and in support of the national military strategy, the HC helicopter provides the Navy with a capability to conduct and sustain littoral power projection and peacekeeping/presence operations. The primary missions of the HC helicopter include day/night VERTREP operations, vertical onboard delivery, day/night amphibious SAR and airhead operations. Secondary missions include special warfare support; recovery of torpedoes, drones, unmanned aerial vehicles and unmanned undersea vehicles; noncombatant evacuation operations; aeromedical evacuation humanitarian assistance and disaster relief. Joint procurement and support strategies will be pursued to reduce costs and duplicative efforts. The CH-60 C4I equipment will be compatible with joint operations and NATO forces in support of multinational operations. Existing DoD and Navy support equipment is being used to the maximum extent possible.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0485 ALFS	13,702	0	0	0	0	0	0	0	166,924

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 1997 ACCOMPLISHMENTS:

- (U) ($7,522) Logistics Support Analysis-depot analysis, test program sets and provisioning. DT/OT Support - Completed DT/OT; analyzed test data and implemented fixes identified during DT-IIA and OT-IIA in preparation for system technical evaluation (TECHEVAL) and operational evaluation (OPEVAL). Conducted Program Readiness Review. (contractor effort)

- (U) ($2,038) Completed SH-60R/ALFS system integration development. Completed government logistics requirements. Analyzed test data and implemented fixes identified during DT-IIA and OT-IIA in preparation for system TECHEVAL and OPEVAL (government effort). Completed program support.

- (U) ($4,142) Began system integration studies and initial design efforts in preparation for helicopter flight demonstration of Parametric Airborne Dipping Sonar (PADS) in FY 98.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

3. (U) FY 1998 PLAN: NOT APPLICABLE.

4. (U) FY 1999 PLAN: NOT APPLICABLE.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	14,004	0	0
(U) Appropriated Value:	14,615		
(U) Adjustments from PRESBUDG:	-302		
(U) FY 1999 OSD/OMB Budget Submit:	13,702	0	0

(U) CHANGE SUMMARY EXPLANATION:

Funding: The net decrease of $-302 thousand in FY 97 reflects a SBIR adjustment ($-240 thousand), a minor reprogramming ($-38 thousand), revised economic indices ($-17 thousand) and a FFRDC adjustment ($-7 thousand).

(U) Schedule: Not Applicable.

(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)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones			2Q MS III	
Engineering Milestones				
T&E Milestones	OTIIA/ 3Q-4Q97	TECHEVAL/ 2Q-3Q98 OPEVAL/4Q98		
Contract Milestones				

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1109 CH/MH-53	1,102	1,235	2,936	2,971	780	2,774	3,459	Cont	Cont
RDT&E Articles	(1)								

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION In FY-95, the project initiated an H-53 Service Life Assessment Program (SLAP), a two year effort, to develop usage and fatigue life profiles, complete with analytical evaluations of airframe dynamic interfaces leading to design recommendations. The SLAP will serve to justify commencement of Phase I of the Service Life Extension Program (SLEP)(funded by APN-5). In FY 96 the program supports a White House requirement to competitively procure, install, test and evaluate an Integrated Mechanical Diagnostic (IMD) system on two Marine Corps CH-53E helicopters as an Early Operational Assessment (EOA). In FY-99 RDT&E Service Life Assessment Program (SLAP) a two year effort commence on the CH-53D. The Marine Corps Aviation Plan shows the CH-53D remaining in service through 2015. Therefore a Service Life Assessment Program (SLAP) must be conducted in order to ascertain what actions must be taken to safely operate the aircraft until it is replaced by the MV-22. The results of these efforts will be used to justify APN-5 funding of a SLEP for the CH-53D if warranted. FY-99 funding is also utilized for Phase II of the CH-53E SLEP. In FY-02 RDT&E SLEP Phase III efforts commence to develop corrective actions to address obsolete system components and incorporate supportability improvement modifications. The results of these efforts will be used to justify APN-5 funding of Phase III of the SLEP.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($ 346) IMD-EOA - Continued incremental contract payments and awarded option II IMD-EOA. Conducted first In-Process Review (IPR) and commenced EOA Flight Testing (EOAT).

- (U) ($ 756) In-house travel and field activities funded to support IMD program.

2. (U) FY 1998 PLAN:

- (U) ($ 372) IMD - Final incremental contract payment for completion of IMD-EOA. Initiate Open Architecture Study.
- U) ($ 863) Conduct In-house travel and field activity support funding of IMD program.

3. (U) FY 1999 PLAN:

- (U) ($ 398) SLEP - (Phase II) Commence redesign of aircraft dynamic components.
- (U) ($ 241) In-house travel and field activities funding to support SLEP program.
- (U) ($ 2,297)In-house travel and field activities funding to support “D” SLAP program.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	1,052	1,235	639
(U) Appropriated Value:	1,106		
(U) Adjustments from 1998 Pres Budget:	+50		+2,297
(U) FY 1999 OSD/OMB Budget Submit:	1,102	1,235	2,936

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net increase of $50 thousand in FY 1997 is due to SBIR assessment ($-26 thousand), a repogramming for Integrated Mechanical Diagnostic (IMD) technical support (+77 thousand) and a minor pricing adjustment ($-1 thousand). The net increase of $+2,297 thousand in FY 1999 reflects an adjustment to the CH-53D SLAP (+2,300 thousand) and a minor pricing adjustment ($-3 thousand).

(U) Schedule: MAT/Maint SLAP (1Q/97 - 4Q/97) was changed to perform unscheduled maintenance resulting from SLAP flight testing due to grounding of H-53s. SLAP contractor test flight commenced 3Q/97. The SLAP CH-53D study was added to assess the critical airframe and structural fatigue life limits for the aircraft and is scheduled for 1Q/99 - 4Q/99.

(U) Technical: Not applicable

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

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	2Q IMD-EOA IPR		1Q-4Q SLAP CH-53D Airframe/Structural Fatigue Life limits	
Engineering Milestones	1Q-4Q MAT/MAINT SLAP			
T&E Milestones	3Q-4Q SLAP CONTR TESTFLT	3Q-3Q98 IMD EOAT		
Contract Milestones	1Q-4Q98 IMD EOAII	1Q-4Q ARCH STY	1Q-4Q SLEP	

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: September 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: H1109
PROJECT TITLE: CH/MH-53

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Travel	109	130	147
b. Miscellaneous	0	0	0
c. Reliability, Maintainability and Availability	0	0	2,417
d. Tech Engineering Support	464	180	106
e. Program Management Support	57	95	148
f Engineering Development	346	372	0
g. Operational Flight Test Sup	126	458	118
Total	1,102	1,235	2,936

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
EER-Global Positioning Systems (GPS) Integration										
Vienna, VA										
N0001989C0166	SS-CPIF	8/90	22,764	22,764	22,764					22,764
SIKORSKY-Service Life Assessment Program (SLAP)										
Stratford, CT										
N0001992G0196	SS-CPFF	3/95	13,320	13,320	13,320					13,320
TBD-Service Life Extension Program (SLEP)										
TBD	SS-TBD	11/98	TBD	TBD				398	Con’t	Con’t
BF GOODRICH-Integrated Mechanical Diagnostics (IMD)										
N0001996C0097	C-FFP	4/96	2,242	2,242	1,524	346	372			2,242
NAVAVNDEPOT Cherry Point-Service Life Assessment										
Program H-53D (SLAP)			TBD	TBD				2,208	Con’t	Con’t
Miscellaneous (less than 1 million)										
		VARIOUS	VARIOUS	TBD	26,901	573	310	147	Con’t	Con’t
Support and Management										
Miscellaneous (less than 1 million)										
		VARIOUS	VARIOUS	TBD	3,829	57	95	65	Con’t	Con’t

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Test and Evaluation										
Miscellaneous (less than 1 million)										
	VARIOUS	VARIOUS		TBD	1,261	126	458	118	Con’t	Con’t

GOVERNMENT FURNISHED PROPERTY - Not Applicable

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	64,509	919	682	2,753	Con’t	Con’t
Subtotal Support and Management	3,829	57	95	65	Con’t	Con’t
Subtotal Test and Evaluation	1,261	126	458	118	Con’t	Con’t
Total Project	69,599	1,102	1,235	2,936	Con’t	Con’t

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1707 LAMPS III IMP	40,556	72,119	209,234	122,816	32,304	8,033	6,686	0	709,761
RDT&E Articles		(2)			(1)	(2)			

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 Electronic Surveillance/Support Measures (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 1997 ACCOMPLISHMENTS:

- (U) ($37,345) Conducted system Critical Design Review (CDR), continue system software coding and test, continue laboratory simulation/stimulation development and testing, commence system integration and test, continue air vehicle and radar development, commenced EMD II/LRIP planning effort.

- (U) ($2,244) Provided Navy system engineering support during CDR, limited Integrated Test Team planning, program management and travel.

- (U) ($967) Completed DT-IIA and continue plan for DTIIB.

2. (U) FY 1998 PLAN:

- (U) ($42,026) Continue systems integration and test, complete radar development, complete Phase I air vehicle development, complete system software development.
- (U) ($9,100) Begin Contractor non-recurring effort associated with LRIP Test Articles. Effort includes tooling, technical directive drawings, deconfiguration of aircraft, engineering for unique kit remanufacture.
- (U) ($10,500) Procurement of ALFS systems for LRIP Test Articles, and ALFS engineering support (contractor effort).
- (U) ($7,293) Provide Navy systems engineering support, logistics support analysis, plan for EMD Phase II, trainer specification preparation, program management and travel.
- (U) ($3,200) Test Team management and DT/OT test planning and support.

3. (U) FY 1999 PLAN:

- (U) ($81,900) EMD Phase I and II: Start ESM development, redesign mission processor, initiate design of operator/tactical assistance software programs and integrated self defense suite, support DT-IIB/OT-IIA. Conduct Test Readiness Review (TRR) and CDR #2. Conduct first flights of prototype aircraft.
- (U) ($58,076) Continue Contractor non-recurring engineering efforts including remanufacture kit design, Technical Drawings (TD)/tooling, and deconfiguration of LRIP test articles. Begin non-recurring engineering effort for Service Life Extension Program (SLEP) kits. Commence Non-recurring effort for avionics.
- (U) ($34,158) Procurement of Contractor Furnished Equipment (CFE) and labor required for remanufacture kit build and SLEP.

- (U) ($9,000) Procurement of government furnished equipment (GFE) for LRIP Test Articles.
- (U) ($12,600) Complete documentation and processing requirements for a LRIP review. Procurement of lab assets for EMD Phase II. Continue Navy logistics, systems engineering and test support, trainer design and development support, update Naval Training Plan documentation, program management and travel. Support requirements for LRIP test articles including trainer systems development, Integrated Logistics Support, and field activity support.
- (U) ($3,300) DT-IIB/OT-IIA testing for SH-60R and ALFS subsystem operational evaluation (OPEVAL). Conduct data reduction and analysis, and prepare test report.
- (U) ($10,200) ALFS deficiency corrections, engineering and testing.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	40,425	72,119	218,931
(U) Appropriated Value:	42,211		
(U) Adjustments from PRESBUDG:	+131		-9,697
(U) FY 1999 OSD/OMB Budget Submit:	40,556	72,119	209,234

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net increase of $+131 thousand in FY 97 reflects a SBIR adjustment ($-1,020 thousand), a FFRDC adjustment ($-17 thousand), various reprogramming actions ($-83 thousand), revised economic indices ($-49 thousand) and a reprogramming to provide funds for EMD Phase II/Low Rate Initial Production planning efforts (+1,300 thousand). The net decrease of $-9,697 thousand in FY 99 reflects several Navy Working Capital Fund (NWCF) adjustments ($+1,303 thousand) and a Department of the Navy FY 99 Program Review adjustment ($-11,000 thousand).

(U) Schedule: In accordance with the updated Acquisition Program Baseline, TECHEVAL changed from 3Q-4Q/01 to 2Q01-2Q02 and OPEVAL from 1Q-3Q02 to 2Q01-2Q02. In addition, Critical Design Review #2 has been added to the schedule as a result of a planned system rearchitecture.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) APN-1 Line 9	0	0	0	349,214	381,203	442,777	486,756	2,943,859	4,603,809
(U) APN-6 Line 46	0	0	0	22,140	18,732	23,949	28,755	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)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones				MS III 4Q/02 IOC 4Q/02
Engineering Milestones	CDR#1/3Q		TRR 1Q CDR#2/2Q-4Q	
T&E Milestones	DT-IIA 1Q-3Q		DT-IIB/ 2Q-3Q OT-IIA/ 3Q-4Q	TECHEVAL/ 2Q01-2Q02 OPEVAL/ 2Q01-2Q02
Contract Milestones				LRIP 1Q/00

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. EMD Hardware/Software Development	37,345	42,026	81,900
b. Program Management and Support	2,244	7,293	18,600
c. Development Test & Evaluation	967	3,200	3,300
d. ALFS System Procurement and Engineering		10,500	4,200
e. LRIP Non-recurring		9,100	58,076
f. Test Articles			34,158
g. GFE Procurement for LRIP Test Articles			9,000
Total	40,556	72,119	209,234

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Lockheed Martin Owego, NY	SS/CPFF	Aug 93	365,543	365,543	137,472	37,345	42,026	81,900	66,800	365,543
Hughes Fullerton, CA	C/CPIF	Dec 91	21,505	21,505	6,805	0	10,500	4,200	0	21,505
TBD	TBD	Oct 97	183,861	183,861	0	0	9,100	101,234	66,931	183,861
Support and Management										
NAWCADWARMINSTER			13,435	13,435	13,435	0	0	0	0	13,435
MISC In-house		Oct 98	59,214	59,214	10,929	1,809	6,742	17,261	28,595	59,214
MISC Contracts		Oct 98	4,518	4,518	1,166	435	551	1,339	1,505	4,518
Test and Evaluation										
NAWCADPAX (WX)		Oct 98	20,560	20,560	793	967	3,200	3,300	12,300	20,560

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development		Not Applicable							
Support and Management		Not Applicable							
Test and Evaluation		Not Applicable							

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	144,277	37,345	61,626	187,334	133,731	570,313
Subtotal Support and Management	25,530	2,244	7,293	18,600	30,100	77,767
Subtotal Test and Evaluation	793	967	3,200	3,300	12,300	20,560
Other FY93 and Prior Costs	47,413					47,413
Total Project	218,013	40,556	72,119	209,234	176,131	716,053

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1709 CH-60 Vertical Replenishment	6,910	0	0	0	0	0	0	0	6,910

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The CH-60 Fleet Combat Support (HC) Helicopter provides the Navy's combat logistics force with a Vertical Replenishment (VERTREP) at sea capability which is vital to sustain the Navy's power projection forces by a comprehensive and responsive combat logistics force support system. The HC helicopter will also serve as the primary Search and Rescue (SAR) aircraft for the Amphibious Task Force (ATF), providing essential support to amphibious operations. Within the context of "From the Sea" and in support of the national military strategy, the HC helicopter provides the Navy with a capability to conduct and sustain littoral power projection and peacekeeping/presence operations. The primary missions of the HC helicopter include day/night VERTREP operations, vertical onboard delivery, day/night amphibious SAR and airhead operations. Secondary missions include special warfare support; recovery of torpedoes, drones, unmanned aerial vehicles and unmanned undersea vehicles; noncombatant evacuation operations; aeromedical evacuation humanitarian assistance and disaster relief. Joint procurement and support strategies will be pursued to reduce costs and duplicative efforts. The CH-60 C4I equipment will be compatible with joint operations and NATO forces in support of multinational operations. Existing DoD and Navy support equipment is being used to the maximum extent possible.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($5,749) Initiated contract award to Sikorsky to design and assemble a prototype CH-60 helicopter to demonstrate VERTREP mission capability, Vertical Onboard Delivery (to include airhead operations), internal passenger and cargo capability, and SAR mission capability.

- (U) ($1,161) Commenced Navy systems engineering and test support, trainer specification preparation, program management and travel.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1709
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments PROJECT TITLE: Vertrep Rep

2. (U) FY 1998 PLAN: NOT APPLICABLE.

3. (U) FY 1999 PLAN: NOT APPLICABLE.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	7,193	0	0
(U) Appropriated Value:	7,500		
(U) Adjustments from PRESBUDG:	-283	0	0
(U) FY 1999 OSD/OMB Budget Submit:	6,610	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net decrease in FY97 reflects an SBIR adjustment ($-274 thousand) and adjustment for revised economic assumptions ($-9 thousand).

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1709
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments PROJECT TITLE: Vert Rep

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Line 12/13 APN-2	0	31,837	163,404	311,586	327,533	308,679	271,384	1,090,190	2,504,613
Line 48 APN-6	0	0	7,938	12,171	11,796	10,457	21,751	44,153	108,266

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		3Q-4Q PR			
Engineering Milestones		3Q SRR			
T&E Milestones		4Q DT/OP Assessment			
Contract Milestones		2Q Contract Award			

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: H0652
PROJECT TITLE: AV-8B

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0652 AV-8B	15,801	11,034	13,972	8,122	1,467	468	471	0	1,557,440

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The program provides AV-8B integration and testing of various aircraft weapons improvements including: incorporation of common integrated Night Attack/Radar software; redesigned Inlet Guide Vane Controller for the F402-RR-406A/406B/408A engines; airframe vulnerability, susceptibility and survivability improvements; Combined Missile Warning System (CMWS) integration; flight test modifications that improve aircraft flight performance; and limited evaluation of advance concepts and activities to coordinate with ongoing independent advance weapons development. The AN/APG-65 software and associated avionics will be upgraded to provide wiring, controllers and relays for advanced weapon interface. C1.0 software is a combined Operational Flight Program (OFP) for the Night Attack and Radar Aircraft which establishes the baseline OFP for future weapons. The title of the Operational Flight Program software development effort which integrates the Joint Direct Attack Munition (JDAM) and the Common Missile Warning System (CMWS) into the AV-8B was changed from C2.0 to OC1.2 to reflect that this effort was to be done in accordance with the ASN approved AV-8B Open System Core Avionics Requirements (OSACR) initiative. On 4 Oct 96 ASN (RDA) directed the Program Manger to proceed immediately with the OSCAR initiative. OSACAR utilizes commercial off-the-shelf hardware and modular high order language software. Advanced weapons coordination includes requirements and interface liaison with efforts such as Joint Stand-Off Weapon (JSOW), AIM-9X, Digital Multiple Carriage Bomb Rack (DMCBR), Advanced Expendables and Electronic Warfare suite upgrades.

(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.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($136) Continued engineering studies/advanced weapons to define AV8B capabilities and limitations of upgrades and interface requirements.
- (U) ($150) Completed engine inlet guide vane controller development.
- (U) ($780) Completed DT/OT testing and release of common integrated Night Attack/Radar Software (C1.0).
- (U) ($1,903) Continued software requirements development for common integrated Night Attack/Radar software (OC1.2).
- (U) ($1,592) Continued aircraft handling and performance investigations to improve safety and increase operational performance.
- (U) ($40) Terminated all Survivability & Vulnerability (S&V) studies.
- (U) ($11,200) Completed airframe installation/integration development of MIL-STD-1760B armament wiring.

2. (U) FY 1998 PLAN:

- (U) ($9,500) Continue development of common integrated Night Attack/Radar software (OC1.2) to include integration of the 1000 pound Joint Direct Attack Munition (JDAM) weapon.
- (U) ($1,431) Continue aircraft handling and performance investigations to improve safety and increase operational performance.

(U) ($103) Orderly termination of all engineering studies/advanced weapons requirements.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

3. (U) FY 1999 PLAN:

- (U) ($9,800) Continue integration of the 1000 pound JDAM weapon into the Night Attack/OC1.2 Radar software.
- (U) ($1,522) Continue aircraft handling and performance investigations to improve safety and increase operational performance.
- (U) ($650) Commence integration of closure algorythm to All Weather Landing System Signal (AN/SPN-41) into common operational flight program.
- (U) ($2,000) Commence integration and test of software to the ARC-210 HAVEQUICK and SINCGARS waveform full functionality.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	16,089	11,034	11,230
(U) Adjustments from Pres Budget:	-288	0	+2,742
(U) FY 1999/00 OSD/OMB Budget Submit:	15,801	11,034	13,972

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The reduction from PRESBUD in FY 1997 of reflects the Small Business Inovative Research assessment of $-266 thousand and a minor pricing adjustment of $-22 thousand. The net increase for FY99 of $+2,742 thousand reflects $+650 thousand for the AV-8B AN/SPN-41 project, $+2,000 thousand for the ARC-210 HAVEQUICK/SINCGARS project, and $+92 thousand for small minor pricing adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

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

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) APN-1/Line 1/2/AV-8B								
356,002	296,562	325,138	321,095	266,776	0	0		1,565,573
(U) QTY								
12	11	12	12	9	0	0		
(U) APN-5/Line 20/AV-8 Series								
22,163	32,647	46,276	60,540	49,677	49,817	45,093	CONT	CONT
(U) APN-6/Spares								
5,076	24,798	25,776	12,246	8,445	46	50		76,437

(U) RELATED RDT&E: Not Applicable

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones				
Engineering Milestones	1Q-2Q OC1.0 DT/OT Complete			2Q-3Q/00 OC1.2 DT/OT
T&E Milestones	3Q OC1.0 S/W RTF Complete			4Q/00 OC1.2 S/W RTF
Contract Milestones				

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. CONTRACTS	205	220	220
CS (NON-ADD)	205	220	220
b. TECHNICAL SUPPORT	12,656	7,449	11,752
c. TRAVEL	340	340	340
d. T&E	2,600	3,025	1,660
Total	15,801	11,034	13,972

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

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NAWC-WD, CHINA LAKE, CA	WX	10/98	44,368	44,368	27,321	2,891	2,288	4,574	7,294	44,368
NAWC-AD PATUXENT RIVER, MD	WX	10/98	4,416	4,416	3,306	300	260	315	235	4,416
MISC/CONTRACTS	Var	Var	12,034	12,034	5,818	1,258	2,400	2,219	339	12,034
CONTRACTS/MDA	Var	10/98	29,150	29,150	13,214	7,944	2,012	4,170	1,810	29,150
MISC/In-house	WX	Var	7,344	7,344	4,629	603	829	814	469	7,344
Support and Management	WX	N/A	43,538	43,538	43,538	0	0	0	0	43,538
MISC/Contracts	Var	Var	1,773	1,773	1,128	205	220	220	0	1,773
MISC/In-House	Var	Var	1,000	1,000	1,000	0	0	0	0	1,000
Test and Evaluation										
NAWC-WD CHINA LAKE,CA	WX	10/98	15,683	15,683	9,593	2,115	2,675	1,300	0	15,683
NAWC-AD,PATUXENT RIVER,MD	WX	10/98	4,557	4,557	3,391	200	225	360	381	4,557

GOVERNMENT FURNISHED PROPERTY

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development									
Support and Management									
Test and Evaluation									
Misc	WX	11/97	12/97	38,008	285	125	0	0	38,418

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: H0652
PROJECT TITLE: AV-8B

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	54,288	12,996	7,789	12,152	10,147	97,372
Subtotal Support and Management	45,666	205	220	220	0	46,311
Subtotal Test and Evaluation	50,992	2,600	3,025	1,600	381	58,598
Other FY-95 and Prior Costs	1,355,159	0	0	0	0	1,355,159
Total Project	1,506,105	15,801	11,034	13,972	10,528	1,557,440

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1857 Calibration Standards	1,936	1,962	1,823	1,668	1,649	1,735	1,789	CONT.	CONT.
W0572 Joint Services/Navy Standard Avionics Components and Subsystems	22,984	26,358	31,808	26,142	19,149	13,038	5,420	CONT.	CONT.
W2310 Flight Polynomials	0	298	298	297	0	0	0	0	893
W2311 Stores Planning and Weaponeering Module	0	7,679	7,350	7,639	7,965	8,645	523	0	40262
W2312 Common Helicopters	0	0	461	1,500	2,026	2,849	1,225	0	
TOTAL	24,920	36,297	41,740	37,246	30,789	26,267	8,957	CONT.	CONT.
RDT&E Articles		29	107	54					190

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: 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. 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) Project W0572, Joint Services/Navy Standard Avionics Components and Subsystems: This project provides for the identification, design, development, test, evaluation and qualification of standard avionics for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Such air combat electronics developments include communications, navigation, flight avionics, and flight mission information systems for both forward fit and retrofit aircraft. These efforts continue to maintain federated systems while encouraging transition of procurements to support a modular system for enhanced performance and affordability. Consideration is given up front to reduce acquisition costs through larger procurement quantities that satisfy multi-aircraft customer requirements and that reduce life cycle costs in the areas of reliability, maintainability, and training. Several examples of past successful tasks under this project include the Standard Central Air Data Computer, Solid State Barometric Altimeter, and Downed Aircraft Location System, jointly developed with the Air Force and Army and currently installed on numerous Navy, Air Force and Army aircraft. This project also funds Navy participation involving the Joint Services Review Committee (JSRC) for Avionics Standardization.

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

(U) Project W2310, Flight Polynomials: The Tactical Automated Mission Planning System (TAMPS) is the Naval standard unit level automated mission planning system. It automatically calculates fuel, time, distance, altitude, speed, and weight for each leg of a mission adjusted for wind and magnetic variation for all of the following aircraft: F/A-18, E-2C, F-14, A-6E, AH-1W, UH-1N, AV-8B, EA-6B, H-60, and S-3B. Full accuracy requires implementation of Government Furnished Information (GFI) performance polynomials (drop-in polynomials). The TAMPS CORE will perform operational loading and replacement of aircraft polynomials reflecting COMNAVAIRSYSCOM approved Naval Aviation Training and Operating Procedures Standardization (NATOPS) Manuals. TAMPS will use the drop-in polynomials developed as part of the Joint Services Program and distributed by Eglin Air Force Base. This project funds the development of the required drop-in polynomials.

(U) Project W2311, Stores Planning and Weaponeering Module: This project funds an incrementally developed software product that will provide a certified unit level weaponeering Tactical Decision Aid (TDA) in the Tactical Automated Mission Planning System (TAMPS) version 6.2.

(U) Project W2312, Common Helicopters: The Tactical Automated Mission Planning System (TAMPS) is the Naval standard unit level automated mission planning system. It loads data for several aviation platforms and subsystems, including the Amphibious Warfare community (MH-53, CH-53, UH-1, AH-1, HH-60, SH-60B/R, CH-46, AV-8B and V-22). As part of a migration plan, the Amphibious Warfare community has identified the Common Helicopter Mission Planning Functionality required on TAMPS to support Amphibious Assault mission planning.

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

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: S1857
PROJECT TITLE: Calibration Standards

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1857 Calibration Standards	1,936	1,962	1,823	1,668	1,649	1,735	1,789	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 1997 ACCOMPLISHMENTS:
   - (U) ($ 66) Began development (to 50% completion) of 1 calibration standard (hardware) in support of radars (2 GHz to millimeter-wave).
   - (U) ($ 115) Continued development (to 66% completion) of 1 calibration standard (hardware) in support of Joint Service Automation.
   - (U) ($1,755) Completed development of 11 calibration standards (hardware) in support of dynamic scene generators, polarization based target identifiers/trackers, fiber optic communications, infrared target illuminators, radar systems, mines and mine sweepers, ship temperature gage calibration, night vision goggles, and MILSTAR hazard probes.

2. (U) FY 1998 PLAN:
   - (U) ($ 580) Complete the development of 2 calibration standards (hardware) in support of Joint Service Automation and radars (2 Ghz to millimeter-wave).
   - (U) ($ 999) Begin and complete development of 4 calibration standards (hardware) in support of fiber optic communications systems (2 standards), shipboard sensors, and high current circuit breakers.
   - ($ 383) Begin development (to 50% completion) of 2 calibration standards (hardware) in support of laser tracker systems, and ship pressure and aircraft altitude systems.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: S1857
PROJECT TITLE: Calibration Standards

3. (U) FY 1999 PLAN:

- (U) ($ 210) Complete the development of 1 calibration standards (hardware) in support of ship pressure and aircraft altitude systems.
- (U) ($ 252) Continue development (to 66% completion) of 1 calibration standards (hardware) in support of laser tracker systems.
- (U) ($1,361) Begin development (to 50% completion) of 6 calibration standards (hardware) in support of aircraft and ship color display ssystems, underwater acoustic systems, electromagnetic vulnerability measurement systems, optical systems, radar cross section measurements, and multi-function electrical test equipment.

. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/FY 1999 President's Budget:	1,939	1,962	2,662
(U) FY 1997 Appropriated Value:	2,021		
(U) Adjustments from FY 1998/FY 1999 PRESBUD:	-3	0	-839
(U) FY 1999 OSD/OMB Budget Submit:	1,936	1,962	1,823

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: S1857
PROJECT TITLE: Calibration Standards

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 reduction of $85K is due to Congressional Undisbributed Reductions ($82K), Small Business Innovative Research (SBIR) adjustment ($1K) and FY 97 Supplemental - Revised Economic Assumptions ($2K). FY 1999 decrease of $839K based on changes in program requirements ($466K) and various NWCF adjustments.

(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 0604215N Joint Services/Navy Standard Avionics Components and Subsystems.

D. (U) SCHEDULE PROFILE: Not applicable.

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1997	FY 1998	FY 1999
a. Program Management Support	200	200	198
b. Government Engineering Support	205	235	223
c. Primary Hardware Development	1,360	1,353	1,250
d. Travel	24	26	20
e. Misc.	147	148	132
Total	1,936	1,962	1,823

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0572 Joint Services/Navy Standard Avionics Components and Subsystems									
	22,984	26,358	31,808	26,142	19,149	13,038	5,420	CONT.	CONT.
RDT&E Articles	33	109	58						

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION The Joint Services/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) CAT II and Helicopters CAT III; Low Probability of Intercept Altimeter (LPIA), Tactical Aircraft Moving Map Capability (TAMMAC), GPS Guidance Package (GGP), Flight Avionics Displays (FAD), and Human Factors Quality Management Board (HFQMB).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($2,155) Continued integration and testing of the GPWS CAT II into the AV-8B and F/A-18 A/B/C/D aircraft.
- (U) ($1,748) Completed integration and testing of GPWS CAT III into lead H-53 series aircraft and achieved a MS III decision.
- (U) ($2,025) Conducted Systems Requirements Review (SRR), conducted Preliminary Design Review (PDR), and began development/integration efforts for LPIA.
- (U) ($13,836) Achieved Milestone II and awarded Engineering and Manufacturing Development (EMD) contract for TAMMAC. Conducted PDR.
- (U) ($1,006) Began requirements definition, prepared the request for proposal (RFP), and developed the acquisition strategy for FAD.

- (U) ($1,594) Continued to support and participate in Joint Services Review Committee (JSRC) tri-service coordination to promote commonality and joint programs. Supported and participated in Avionics Operator's Advisory Group (OAG) panels.
- (U) ($ 610) Provided technical and test support to the Defense Advanced Research Projects Agency (DARPA) and released Request for Information (RFI) for GGP.
- (U) ($ 10) $-12 for FFRDC and +$2 reserved for revised economic rescission reduction.

2. (U) FY 1998 PLAN:

- (U) ($4,495) Continue with integration, testing, and deficiency correction for the GPWS CAT II installed in the AV-8B and F/A-18 C/D/E/F aircraft.
- (U) ($4,225) Continue development of the LPIA program. Conduct Critical Design Review (CDR), Test Analyze And Fix (TAAF) testing, and Design Approval Testing (DAT). Begin combined Developmental Testing/Operational Testing (DT)/(OT).
- (U) ($8,540) Conduct CDR and continue development effort. Receive first asset deliveries, continue F/A-18, AV-8B, and TAMPS integration efforts, begin qualification testing, and initiate combined DT/OT on the F-18 C/D for the TAMMAC program.
- (U) ($7,531) Develop acquisition documentation, achieve Milestone II decision, award EMD contract, and complete PDR for FAD.
- (U) ($1,567) Continue to support and participate in JSRC tri-service coordination to promote commonality and joint programs. Support and participate in Avionics OAG panels.

3. (U) FY 1999 PLAN:

- (U) ($2,129) Continue with deficiency correction of the GPWS CAT II in the F/A-18 C/D/E/F aircraft.
- (U) ($3,414) Complete combined DT/OT, and commence TECHEVAL for the LPIA program.
- (U) ($7,419) Complete qualification testing, continue F/A-18, AV-8B and TAMPS integration efforts, conduct operational assessments, complete combined DT/OT on the F-18 C/D, and conduct TECHEVAL on the TAMMAC program.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

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

- (U) ($14,389) Conduct CDR. Continue development and integration of FAD for F/A-18 E/F.
- (U) (1,652) Continue to support and participate in JSRC tri-service coordination to promote commonality and joint programs. Support and participate in Avionics OAG panels.
- (U) ($2,805) Begin HFQMB systems integration of the GPWS with the TAMMAC Digital Map on the F/A-18 to increase the GPWS operational envelope. Begin HFQMB system modification and integration of the Formation Collision Avoidance System (FCAS) into the CH-46E aircraft.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/1999 President's Budget:	23,428	26,358	30,183
(U) Appropriated Value	24,677		
(U) Adjustments from FY 1998/1999 President's Budget:	-444	0	+1,625
(U) FY 1999 OSD/OMB Budget Submit:	22,984	26,358	31,808

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 reflects a reduction of $394 thousand for the Small Business Innovative Research (SBIR) assessment, a reduction of $18 thousand for FFRDC, a reduction of $29 thousand for revised economic reduction and a reduction of $3 thousand for a program adjustment. FY 1999 reflects a reduction of $1,258 thousand based on reduced requirements, a reduction of $1,133 thousand due to the cancellation of GGP, a reduction of $40 thousand for minor pricing adjustments, an increase of $549 thousand for TAMMAC Validation , an increase of $3,300 thousand for HFQMB and an increase of $207 thousand due to the Navy Working Capital Fund (NWCF) rate increase.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

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

(U) Schedule: FY 1997 reflects a change in LPIA PDR from 2Q 97 to 3Q 97 as a result of a contractual protest. The TAMMAC PDR date changed from 2Q 97 to 3Q 97 as a result of acquisition reform and incremental PDRs held by the contractors. FY 1998 reflects a change in FAD PDR from 2Q 98 to 3Q 98 as a result of program definition. The TAMMAC CDR changed from 4Q 97 to 1Q 98 as a result of acquisition reform and incremental CDRs held by contractors. TAMMAC DT/OT added the test phase in 4Q 98 to support a Low Rate Initial Production (LRIP) decision. FY 1999 reflects a FAD CDR schedule change from 4Q 98 to 1Q 99 as a result of program definition. The LPIA CDR schedule changed from 4Q 97 to 1Q 98 as a result of a contractual protest. The LPIA program test schedule changed as a result of the contractual protest, starting TECHEVAL in 4Q 99.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: PE 0204161N GPWS CAT III

(U) RELATED RDT&E:

(U) PE 0204136N F-18 Squadrons

(U) PE 0604574N Standards Embedded Computer Resources

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

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

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	1Q MS II TAMMAC (12/96) 3Q MS III GPWS CAT III (6/97)	2Q MS II FAD (2/98)		
Engineering Milestones	3Q LPIA PDR (6/97) 3Q TAMMAC PDR (5/97)	3Q FAD PDR (5/98) 1Q LPIA CDR (10/97) 1Q TAMMAC CDR (12/97)	1Q FAD CDR (11/98)	
T&E Milestones	1Q GPWS CAT II OT (11C OFP) (10/96-3/97)	3Q LPIA DT/OT (6/98-6/99) 2Q GPWS CAT II DT (15C OFP) (2/98-9/98) 4Q TAMMAC DT/OT (8/98-3/99)	4Q GPWS CAT II OT (15C OFP) (7/99-9/99) 4Q LPIA TECHEVAL (7/99-9/99) 3Q TAMMAC TECHEVAL (5/99-9/99)	
Contract Milestones	1Q TAMMAC EMD AWD (12/96)	2Q FAD EMD AWD (2/98)		

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1997	FY 1998	FY 1999
a. Program Planning	803	971	1,393
b. Technical Program Mgmt Support	809	877	998
c. Prime Eqpmt/E&MD Prime Contract	12,566	15,188	18,245
d. System T&E/OT&E	1,258	3,773	4,264
e. System Engineering	4,286	2,494	3,335
f. Travel	353	320	392
g. Contract Services	2,899	2,735	3,181
h. Miscellaneous Reductions	10		
Total	22,984	26,358	31,808

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
McDonnell Douglas/Boeing		12-96	TBD	TBD	0	10,900	5,900	3,950	CONT.	CONT.
GEC Marconi		01-97	TBD	TBD	1320	661	2,000	1,380	CONT.	CONT.
Boeing		02-98	TBD	TBD		367	6,568	12,915	CONT.	CONT.
Miscellaneous		12-98	TBD	TBD	33,033	6,889	5,382	6,118	CONT.	CONT.
Support and Management										
Miscellaneous		12-98	TBD	TBD	7,444	2,899	2,735	3,181	CONT.	CONT.
Test and Evaluation										
Miscellaneous		12-98	TBD	TBD	8,718	1,258	3,773	4,264	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	34,353	18,817	19,850	24,363	CONT.	CONT
Subtotal Support and Management	7,444	2,899	2,735	3,181	CONT.	CONT.
Subtotal Test and Evaluation	8,718	1,258	3,773	4,264	CONT.	CONT.
Miscellaneous Reductions		10				
Total Project	50,515	22,984	26,358	31,808	CONT.	CONT.

*FY 96 & prior includes program information from FY 90 through FY 96 on programs still remaining in the FYDP years.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 | PROGRAM ELEMENT: 0604215N | PROJECT NUMBER: W2310

PROGRAM ELEMENT TITLE: Standards Development | PROJECT TITLE: Flight Polynomials

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W 2310 Flight Polynomials	0	298	298	297	0	0	0	0	893

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Tactical Automated Mission Planning System (TAMPS) is the Naval standard unit level automated mission planning system. It automatically calculates fuel, time, distance, altitude, speed, and weight for each leg of a mission adjusted for wind and magnetic variation for all the following aircraft: F/A-18, E-2C, F-14, A-6E, AH-1W, UH-1N, AV-8B, EA-6B, H-60, S-3B. Full accuracy requires implementation of Government Furnished Information (GFI) performance polynomials (drop-in polynomials). The TAMPS CORE will perform operational loading and replacement of aircraft polynomials reflecting COMNAVAIRSYSCOM approved NATOPS manuals. TAMPS will use the drop-in polynomials developed as part of the Joint Services Program and distributed by Eglin Air Force Base.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS: Not Applicable.

2. (U) FY 1998 PLAN:

- (U) ($298) The process for implementation of the GFI drop-in polynomials will commence in TAMPS version 6.3. This effort requires the migration of each aircraft to drop-in polynomials. FY 1998 will migrate the following aircraft: F/A-18 and EA-6B.

3. (U) FY 1999 PLAN:

- (U) ($298) The process for implementation of the GFI drop-in polynomials will continue in TAMPS version 6.4. This effort requires the migration of each aircraft to drop-in polynomials. FY-99 will migrate the following aircraft: F-14, UH-1, AH-1W, and E2-C.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W2310
PROJECT TITLE: Flight Polynomials

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/1999 President's Budget:	0	298	297
(U) Adjustments from President's Budget:	0	0	1
(U) FY 1999 OSD/OMB Budget Submit:	0	298	298

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 99 increase consists of $l thousand for Navy Working Capital Fund (NWCF) surcharge.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

(U) RELATED RDT&E:

(U) PE 0604231N Mission Planning (E2213)

D. (U) SCHEDULE PROFILE: Not Applicable.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W2311
PROJECT TITLE: Stores Planning and Weaponeering Module

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W 2311 Stores Planning and Weaponeering Module	0	7,679	7,350	7,639	7,965	8,645	523	0	39,801

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Stores Planning and Weaponeering Module (SPWM) is an incrementally developed software product that will provide a certified unit level weaponeering Tactical Decision Aid (TDA) in the Tactical Automated Mission Planning System (TAMPS) version 6.2. SPWM will provide planning results for specific aircraft type and model and will reflect program unique current store and weapon carriage authorizations, restrictions and limitations, store/weapon delivery restrictions and limitations (including safe-escape aspects of the planned delivery profile), and will provide mandatory weapons employment planning information including weapons optimization. Selected functions of the Automated Tactical Manual Supplement (ATACS) will be rehosted in a UNIX environment and integrated with Joint Munitions Effectiveness Manual (JMEM) software, TDA and mission planning functions to comprise SPWM. A total of 22 aircraft and weapon platforms will be incorporated. F/A-18A/B/C/D is the first platform to be introduced in SPWM, followed by F-14B/D.

1. (U) FY 1997 ACCOMPLISHMENTS: Not Applicable.

2. (U) FY 1998 PLAN:

- (U) ($7,679) Introduce SPWM in TAMPS version 6.2 as a TDA for F/A-18A/B/C/D aircraft. Begin software development of F-14B/D capability in SPWM. Continue analysis and design of integrated mission planning for subsequent releases of TAMPS. Begin analysis of helicopter stores loads and weapon delivery requirements. Conclude support of ATACS as a separate software product as SPWM is integrated into TAMPS.

3. (U) FY 1999 PLAN:

- (U) ($7,350) Complete F-14B/D SPWM software design. Begin development of AH-1 capability in SPWM. Begin analysis of AV-8B stores loads and weapon delivery requirements.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W2311
PROJECT TITLE: Stores Planning and Weaponeering Module

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/1999 President's Budget:	0	7,679	7,212
(U) Appropriated Value:	0		
(U) Adjustments from Fy 1998/1999 President's Budget:	0	0	138
(U) FY 1999 OSD/OMB Budget:	0	7,679	7,350

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 increase resulted from a $30 thousand Navy Working Capital Fund (NWCF) surcharge correction and an increase of $108 thousand for changes in program requirements.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

(U) RELATED RDT&E:

(U) PE 0604231N Mission Planning (E2213)

D. (U) SCHEDULE PROFILE: Not Applicable.

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W2311
PROJECT TITLE: Stores Planning and Weaponeering Module

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a .SOFTWARE DEVELOPMENT	0	7,679	7,350
Total	0	7,679	7,350

(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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NAWC Patuxent River	WX	11/97	40,262	40,262	0	0	7,679	7,350	24,772	39,801
Support and Management					0	0	0	0	0	0
Test and Evaluation					0	0	0	0	0	0

GOVERNMENT FURNISHED PROPERTY: Not Applicable

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	0	7,679	7,350	24,772	39,801
Subtotal Support and Management	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	0	0	7,679	7,350	24,772	39,801

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W2312
PROJECT TITLE: Common Helicopters

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W2312 Common Helicopters	0	0	461	1,500	2,026	2,849	1,225	0	8,061

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Tactical Automated Mission Planning System (TAMPS) is the Naval standard unit level automated mission planning system. It loads data for several aviation platforms and subsystems, including the Amphibious Warfare community (MH-53, CH-53, UH-1, AH-1, HH-60, SH-60B/R, CH-46, AV-8, V-22). 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 Station (MOMS), Common Helicopter Aviation Mission Planning System (CHAMPS), MOMS/AV-8B Maintenance Data Systems, ES-3 Mission Planning System, Tactical Electronic Reconnaissance Processing and Evaluation System (TERPES) are planned to migrate into TAMPS. As part of the migration plan, the Amphibious Warfare community has identified the common helicopter mission planning functionality required on TAMPS to support Amphibious Assault aircraft mission planning.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS: Not Applicable.

2. (U) FY 1998 PLAN: Not applicable.

3. (U) FY 1999 PLAN:

(U) ($461) To conduct a feasibility analysis of Common Helicopter Mission Planning requirements to be implemented as NPFPS and TAMPS 7.0 requirements and to commence commons airframe data loading.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W2312
PROJECT TITLE: Common Helicopters

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/1999 President's Budget:	0	0	4,941
(U) Adjustments from FY 1998/1999 President's Budget:	0	0	(4,480)
(U) FY 1999 OSD/OMB Budget:	0	0	461

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 net decrease consists of $4,480 thousand for changes in program requirements.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

(U) RELATED RDT&E:

(U) PE 0604231N Mission Planning (E2213)

D. (U) SCHEDULE PROFILE: Not Applicable.

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W2311
PROJECT TITLE: Stores Planning and Weaponeering Module

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. SOFTWARE DEVELOPMENT	0	0	461
Total	0	0	461

(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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NAWC Pt. Mugu	WX	11/99	8,061	8,061	0	0	0	461	7,600	8,061
Support and Management					0	0	0	0	0	0
Test and Evaluation					0	0	0	0	0	0

GOVERNMENT FURNISHED PROPERTY: Not Applicable

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	0	0	461	7,600	8,061
Subtotal Support and Management	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	0	0	0	461	7,600	8,061

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 05

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0489 S-3 WSIP	8,010	930	4,446	2,168	467	462	464	0	300,733
W2217 Common Support Aircraft (CSA) - (Proposed)	0	3,805	27,571	53,078	64,061	105,972	270,136	CONT	CONT
TOTAL	8,010	4,735	32,017	55,246	64,528	106,434	270,600	CONT	CONT

(U) MISSION DESCRIPTION AND BUDGET ITEM DESCRIPTION: 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 Requirement, 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) W2217 COMMON SUPPORT AIRCRAFT (CSA) - This project replaces the S-3B/ES-3A/E-2C/C-2 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/C-2 aircraft, the common support airframe will be a primary candidate for the organic tanker mission.

(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.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604217N
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0489 S-3 WSIP	8,010	930	4,446	2,168	467	462	464	0	303,733

A. (U) MISSION DESCRIPTION AND BUDGET ITEM DESCRIPTION: 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 Requirement, 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.

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($200) Continued Ada software development for the CPMU. (LMTDS)
- (U) ($1,217) Began Ada software evaluation and verification. (NAWC/AD, PAX)
- (U) ($ 800) Continued hardware and software development and integration.
- (U) ($ 503) Began Navy combined developmental and operational (DT/OT) testing of CPMU.
- (U) ($5,290) Identified for Synthetic Aperature Radar (SAR) demonstration.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

2. (U) FY 1998 PLAN

- (U) ($ 406) Continue Ada software development for the CPMU. (LMTDS)
- (U) ($ 524) Continue hardware and software development and integration (includes $411 AVDLR).

3. (U) FY 1999 PLAN:

- (U) ($3,646) Continue Ada software development for the CPMU. (LMTDS)
- (U) ($ 491) Continue hardware and software integration (includes $471 AVDLR).
- (U) ($ 309) Begin preliminary qualification testing of hardware and software.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	9,553	930	6,413
(U) Appropriation Value:	9,979		
(U) Adjustments from PRESBUDG:	-1,543	0	-1,967
(U) FY 1999 OSD/OMB Budget Submit:	8,010	930	4,446

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net decrease of $-1,543 thousand in FY97 reflects a SBIR adjustment ($-230 thousand), a reprogramming (out) to support Lamps III Improvements ($-1,300 thousand) and revised economic indices ($-13 thousand). The net decrease of $-1,967 thousand in FY99 reflects a Department of the Navy FY99 Program Review adjustment ($-2,000 thousand) and a Navy Working Capital Fund (NWCF) adjustment ($+33 thousand).

(U) Schedule: FY98 Milestone III decision changed from second to fourth quarter. FY97 development test milestone changed to first two quarters FY98 and FY98 operational test changed to second two quarters FY98.

(U) Technical: Not Applicable

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) APN S-3* (OSIP 04-96) Co-Processor Memory Unit	3,974	6,752	6,542	8,066	7,105	5,702	7,724	18,152	68,310

* Reflects dollar amounts for the Co-Processor Memory Unit only.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 05 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 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		4Q/CPMU MS III		3Q/00 CPMU FLEET INTRODUCTION
Engineering Milestones			3Q/CPMU ADA FQT	
T&E Milestones		1Q-2Q CPMU DT II 2Q-3Q CPMU OT II		
Contract Milestones				

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 05 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 1997	FY 1998	FY 1999
a. Developmental Testing	503	411	471
b. Travel	40	15	30
c. Technical Support (CS)	290	100	100
d. Software Development	7,177	404	3,845
Total	8,010	930	4,446

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 05 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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Canadian Commercial Corp.										
CPFF/Competition		7/91	14,500*	14,500*	2,183	0	0	0	0	2,183
*Includes NUNN Amendment funding (RDT&E), Defense Agencies, P.E. 0603700N) and Canadian funding (joint venture)										
LMTDS Egan,MN	CPFF/ Sole Source	1/95	24,916	24,916	18,860	116	404	3,646	1,890	24,916
TI Texas	SAR Sole Source	5/97	4,519	4,519	0	4,519	0	0	0	4,519
Other Contracts less than $1.0M		Var	6,321	6,321	6,321	0	0	0	0	6,321
Miscellaneous		Var	2,223	2,223	865	379	0	199	780	2,223
Support and Management										
Other Contracts less than $1.0M										
Miscellaneous		Var	1,693	1,693	1,118	330	115	130	0	1,693
Test and Evaluation										
NAWC/AD PAX		6/97	2,163	2,163	0	2,163	0	0	0	2,163
Other Contracts less than $1.0M										
Miscellaneous		Var	3,700	3,700	1,424	503	411	471	891	3,700

GOVERNMENT FURNISHED PROPERTY: Not Applicable

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	28,229	5,014	404	3,845	2,670	40,162
Subtotal Support and Management	1,118	330	115	130	0	1,693
Subtotal Test and Evaluation	1,424	2,666	411	471	891	5,863*
Other FY95 and Prior Costs	253,015					253,015
Total Project	283,786	8,010	930	4,446	3,561	300,733

* Includes AVDLR

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 05

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W2217 Common Support Aircraft (CSA) - Proposed)	0	3,805	27,571	53,078	64,061	105,972	270,136	CONT	CONT

A. (U) W2217 COMMON SUPPORT AIRCRAFT (CSA) - This project replaces the S-3B/ES-3A/E-2C/C-2 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/C-2 aircraft, the common support airframe will be a primary candidate for the organic tanker mission.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) Continued CSA study under PE #0605152N, Project Element W2092.

2. (U) FY 1998 PLAN:

- (U) ($ 1,710) Program Team Stand-Up; Initiate In-House Studies.
- (U) ($ 2,095) Initiate Concept/Analysis/Trade Studies.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: W2217
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: CSA

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

3. (U) FY 1999 PLAN:

- (U) ($ 4,181) Continue Program Team Stand-Up and In-House Studies.
- (U) ($23,390) Perform concept exploration studies.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: W2217
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: CSA

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	0	3,805	17,636
(U) Appropriation Value:			
(U) Adjustments from PRESBUDG:			+9,935
(U) FY 1999 OSD/OMB Budget Submit:	0	3,805	27,571

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net increase of $+9,935 thousand in FY99 reflects a Department of the Navy FY99 Program Review adjustment ($+9,862 thousand) and a Navy Working Capital Fund (NWCF) adjustment ($+73 thousand).

(U) Schedule: FY98 Milestone 0 decision changed from 2nd to 4th quarter. FY00 Milestone I decision advanced from 1st quarter FY00 to 4th quarter FY99 and FY03 Milestone II decision advanced from 1st quarter FY03 to 4th quarter FY02.

(U) Technical: Not Applicable

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

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: W2217
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: CSA

(U) RELATED RDT&E:

(U) PE 0605152N (Naval Aviation Studies)

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		3Q/MS 0	4Q/MS I	4Q/02 MS II
Engineering Milestones				
T&E Milestones				
Contract Milestones				

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: W2217
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: CSA

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Travel	0	28	44
b. Technical Support (CS)	0	473	700
c. Product Development	0	3,304	26,827
Total	0	3,805	27,571

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: W2217
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: CSA

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
TBD	TBD	TBD				0	3,304	26,827	CONT	CONT
Other Contracts less than $1.0M		TBD				0	473	700	CONT	CONT
Miscellaneous						0	0	0	CONT	CONT
Support and Management										
Other Contracts less than $1.0M		TBD				0	0	0	CONT	CONT
Miscellaneous						0	28	44	CONT	CONT
Test and Evaluation										
Other Contracts less than $1.0M						0	0	0	CONT	CONT

GOVERNMENT FURNISHED PROPERTY: Not Applicable

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604217N PROJECT NUMBER: W2217
PROGRAM ELEMENT TITLE: S-3 Weapon System Improvement PROJECT TITLE: CSA

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	0	3,777	27,527	CONT	CONT
Subtotal Support and Management	0	0	28	44	CONT	CONT
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	0	0	3,805	27,571	CONT	CONT

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & Title	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program
X0532 FLEET AIR OCEAN EQUIPMENT									
	1,568	2,063	0	0	0	0	0	0	12,558
R/X1740 AIR/OCEAN SURVEY ENGINEERING Sensors (Beginning in FY 1998 claimancy shifts from ONR to SPAWAR)									
	1,700	1,864	0	0	0	0	0	0	13,614
X1752 TACTICAL ENVIRONMENTAL SUPPORT SYSTEM - TESS (ENG)									
	2,011	2,202	0	0	0	0	0	0	16,396
X2345 Fleet METOC Equipment									
	0	0	4,401	4,533	4,668	4,808	4,953	CONT.	CONT.
X2346 METOC Sensor Engineering									
	0	0	1,886	1,688	1,619	1,603	1,633	CONT.	CONT.
TOTAL	5,279	6,129	6,287	6,221	6,287	6,411	6,586	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Air/Ocean Equipment Engineering (AOEE) Program Element provides for the engineering and manufacturing development of onboard and remote sensors, communication interfaces, and processing and display devices. This equipment is specifically designed to measure, ingest, store, process, distribute and display meteorological and oceanographic (METOC) parameters essential to the optimum employment of Naval warfare systems. AOEE also develops increased capabilities for shipboard and shore based tactical systems. In addition, AOEE provides for the engineering development of specialized equipment and measurement techniques to obtain METOC data in denied and remote areas.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2345
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet METOC Equipment

(U) COST (Dollars in thousands)

PROJECT NUMBER & Title	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program
X2345 Fleet METOC Equipment (Beginning in FY99 this is the consolidation of projects X0532 and X1752).									
	0	0	4,401	4,533	4,668	4,808	4,953	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for the engineering and manufacturing development of sensors, communication interfaces, and processing and display equipment. This equipment is designed to measure, ingest, store, process, distribute and display meteorological and oceanographic (METOC) parameters and derived products. Major emphasis areas include the Tactical Environmental Support System (TESS), the Navy Integrated Tactical Environmental Subsystem (NITES), the Marine Corps Meteorological Mobile Facility (METMF), the AN/SMQ-11 satellite receiver/recorder, 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). This project also exploits new GOTS/COTS technologies for the Navy's computer-based tactical shipboard and shore capability used to predict and assess the impact of the operating environment on the performance of platforms, weapons and sensor systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

From Project X0532:

- (U) ($446) Continued test, evaluation and adaptation of GOTS/COTS technology in support of data connectivity, interfaces and C2 systems.
- (U) ($215) Continued engineering development of the TAC-4 TESS/NITES workstation.
- (U) ($360) Continued system engineering of AN/SMQ-11.

- (U) ($500) Continued system engineering of METMF (Replacement).

- (U) ($47) Developed and updated Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Developed and updated Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architecture. Conduct associated C4ISR analyses and studies.

From Project X1752:

- (U) ($728) Continued NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.

- (U) ($695) Continue integration of TAC-4 TESS/NITES software build.

- (U) ($526) Continue convergence of TESS and NITES software.

- (U) ($62) Developed and updated Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Developed and updated Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architecture. Conduct associated C4ISR analyses and studies.

2. (U) FY 1998 PLAN:

From Project X0532:

- (U) ($275) Continue test, evaluation and adaptation of GOTS/COTS technology in support of data connectivity, interfaces and C2 systems.

- (U) ($265) Complete engineering development of the TAC-4 TESS/NITES workstation.

- (U) ($257) Begin engineering development of electro-optical profiler.

- (U) ($244) Begin engineering development of SMOOS(R).
- (U) ($504) Continue system engineering of AN/SMQ-11.
- (U) ($480) Continue systems engineering of METMF (Replacement).
- (U) ($38) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architecture. Conduct associated C4ISR analyses and studies.

From Project X1752:

- (U) ($738) Continue NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) ($250) Complete integration of TAC-4 TESS/NITES software build.
- (U) ($500) Begin integration of TAC-5 TESS/NITES software build.
- (U) ($496) Continue convergence of TESS and NITES software.
- (U) ($178) Begin integration of advanced data base and visualization tools.
- (U) ($40) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architecture. Conduct associated C4ISR analyses and studies.

3. (U) FY 1999 PLAN:

- (U) ($295) Continue test, evaluation and adaptation of GOTS/COTS technology in support of data connectivity, interfaces and C2 systems.
- (U) ($400) Continue engineering development of electro-optical profiler.
- (U) ($400) Continue engineering development of SMOOS(R).
- (U) ($550) Continue system engineering of AN/SMQ-11.
- (U) ($300) Continue systems engineering of METMF (Replacement).
- (U) ($755) Continue NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) ($314) Continue integration of TAC-5 TESS/NITES software build.
- (U) ($575) Complete convergence of TESS and NITES software.
- (U) ($467) Begin integration of converged TESS/NITES software.
- (U) ($251) Continue integration of advanced data base and visualization tools.
- (U) ($94) Develop and update overarching C4ISR mission requirements and conduct associated C4ISR analyses and studies.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2345
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet METOC Equipment

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/1999 President's Budget:	0	0	0
(U) Appropriated Value:	0	0	-
(U) Adjustments from FY 1998 PRESBUDG:	0	0	+4,401
(U) FY 1999 OSD/OMB Budget Submit:	0	0	4,401

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1999: (+$4,401) Zero sum restructuring of the Oceanographer of the Navy's program by consolidating all RDTE under a single Program Manager; reducing total number of projects and aligning them with the new Battlespace METOC Data Acquisition, Assimilation, and Applications (BMDA^3) Program Architecture. Project X2345 supports the METOC Data Acquisition portion of BMDA3 and merges the engineering and manufacturing development of installed equipment and sensors previously conducted under Projects X0532 and X1752. The funding profile also reflects the reprogramming of a portion of FY 1999 and out-year RDT&E funds to OPN.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2345
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Fleet METOC Equipment

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

	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program
(U) OPN line 4226	5,691	9,508	11,149	10,910	10,540	14,089	10,734	CONT.	CONT.

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

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Hardware Engineering	0	0	3,622
b. Software Engineering	0	0	729
c. Travel	0	0	50
Total	0	0	4,401

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NRL	WX	N/A	CONT.	CONT.	0	0	0	0	4,401	CONT.	CONT.
Support and Management											
Test and Evaluation											

GOVERNMENT FURNISHED PROPERTY: N/A

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										
Subtotal Product Development				0	0	0	0	4,401	CONT.	CONT.
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project				0	0	0	0	4,401	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

(U) COST (Dollars in Thousands)

PROJECT NUMBER & Title	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program
X2346 METOC Sensor Engineering (Beginning in FY98, project R1740 becomes X2346).									
	0	0	1,886	1,688	1,619	1,603	1,633	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for the engineering and manufacturing development of specialized, high resolution instrumentation systems and measurement techniques for obtaining near real-time in-situ meteorological and oceanographic (METOC) data in denied or remote areas. The objectives are to ruggedize and package systems, sensors and instruments to survive the harsh littoral environment and also to meet demanding requirements for timeliness and accuracy. Engineering is performed within this project to ensure that air and safety certification for deployment from fleet aircraft or ships is met and that the proper data formats are employed for integration into existing or planned communications and displays. The end products are sensors and systems that will provide the tactical commander with near real-time, in-situ METOC data for operational use. In addition, this difficult to obtain data will provide important inputs for predictive models in areas of potential interest.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

From Project R1740:

- (U) ($1,100) Continued sensor development/transition plans on AN/WSQ-6 buoys. Continued wind/wave buoy sensor development for AN/WSQ-6, XAN-5 and XAN-6 variants.

- (U) ($600) Tactical Air Vehicle METOC sensors; transition Tactical Dropsonde sensors from 6.4 Ocean Measurement Sensors (OMS) program to 6.5 development for Tactical Aircraft applications.

2. (U) FY 1998 PLAN:

From Project R1740:

- (U) ($978) Continue development/transition of wind/wave variants of AN/WSQ-6 (series) buoys for NAVOCEANO. Add Global Positioning System (GPS)/self mooring capability to wave variants.

- (U) ($886) Continue tactical air vehicle METOC Sensor 6.5 development. Institute transition of tactical dropsonde capability to NAVAIR PMA 222/299 (Program Offices for Air Expendable and SH60 community), coordinate joint requirements with U.S. Air Force/U.S. Marine Corp/U.S. Army.

3. (U) FY 1999 PLAN:

- (U) ($373) Complete AN/WSQ-6 buoy development/transition to NAVOCEANO.

- (U) ($789) Continue development transition of tactical dropsonde capability to NAVAIR PMA 264 for P-3 S-3 community, PMA 299 for SH60R transition and acquisition sponsorship by PMA 222.

- (U) ($294) Initiate 6.5 development of microsensor based miniature weather stations/buoys based on Defense Advanced Research Projects Agency/Office of Naval Research developed Micro Electro Mechanical (MEMS) technology.

- (U) ($400) Begin engineering development of METOC Air, Surface, Undersea Reconnaissance Equipment (MEASURE).

- (U) ($30) Develop and update overarching C4ISR mission requirements and conduct associated C4ISR analyses and studies.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/1999 President's Budget:	0	0	0
(U) Adjustments from FY 1998 PRESBUDG:	0	0	+1,886
(U) FY 1999 OSD/OMB Budget Submit:	0	0	1,886

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1999: (+$1,886) Zero sum restructuring of the Oceanographer of the Navy's program by consolidating all RDTE under a single Program Manager. Other than the number modification from R1740 to X2346, this project remains unchanged.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Hardware Engineering	0	0	1,509
b. Travel	0	0	28
c. Software Engineering	0	0	349
Total	0	0	1,886

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NRL	WX	N/A	CONT.	CONT.	0	0	0	0	1,886	CONT.	CONT.
Support and Management											
Test and Evaluation											

GOVERNMENT FURNISHED PROPERTY: N/A

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: X2346
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: METOC Sensor Engineering

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Support and Management										
Test and Evaluation										
Subtotal Product Development				0	0	0	0	1,886	CONT.	CONT.
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project				0	0	0	0	1,886	CONT.	CONT.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 05

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1152 P-3 Sensor Integration	7,525	3,191	3,075	3,157	3,203	3,247	3,313	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM DESCRIPTION: 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 1997 ACCOMPLISHMENTS:

- (U) ($3,825) Continued developmental testing of Tactical Mission Software (TMS)/Airborne Operational Program (AOP) supporting IEER integration.
- (U) ($2,000) Continued Antisurface Warfare Improvement Program (AIP) Pre-Planned Product Improvement (P^3I).
- (U) ($1,000) Began Programmable Entry Panel development (PEP).
- (U) ($700) Continued system engineering support for proper integration of new sensors.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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 1998 PLAN:

- (U) ($500) Continue system engineering support for proper integration of new sensors.
- (U) ($2,062) Complete developmental and operational testing of TMS/AOP supporting IEER integration and conduct SRR.
- (U) ($629) Aviation Depot Level Repairable (AVDLR).

3. (U) FY 1999 PLAN:

- (U) ($500) Continue system engineering support for proper integration of new sensors.
- (U) ($1,855) Continue IEER integration and conduct PDR and CDR.
- (U) ($720) Aviation Depot Level Repairable (AVDLR).

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	7,703	3,191	3,023
(U) Appropriation Value:	8,074	0	0
(U) Adjustments from PRESBUDG:	-178	0	+52
(U) FY 1999 OSD/OMB Budget Submit:	7,525	3,191	3,075

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net decrease of $-178 thousand in FY97 reflects a SBIR adjustment ($-168 thousand) and a minor pricing adjustment ($-10 thousand). The net increase of $+52 thousand in FY99 reflects an adjustment from the Navy Working Capital Fund (NWCF).

(U) Schedule: FY98 Test and Evaluation milestones are changed from 2nd quarter to 3rd quarter, and title changed to TMS/AOP. FY98 Engineering milestones adds 3rd quarter IEER Systems Requirements Review (SRR) and FY99 Engineering milestones adds 1st quarter IEER Preliminary Design Review (PDR) which were previously scheduled but erroneously not reported.

(U) Technical: Not Applicable

C. (U) OTHER PROGRAM FUNDING SUMMARY: None

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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

(U) RELATED RDT&E:
(U) PE 0606261N (Acoustic Search Sensors developing software and acoustic algorithms).

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones				
Engineering Milestones		3Q/IEER SRR	1Q/IEER PDR 3Q/IEER CDR	
T&E Milestones		3Q/TMS/AOP 4Q/DT III/OT III		2Q/01 IEER DT III 4Q/01 IEER OT III
Contract Milestones				

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1997	FY 1998	FY 1999
a. Systems Engineering Support	5,131	1,652	1,795
b. Technical Support (CS)	700	500	500
c. Travel	180	60	60
d. Test and Evaluation	1,514	979	720
Total	7,525	3,191	3,075

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
RBC (Arl, VA)	C/FFP	8/89	4,894	4,894	4,894	0	0	0	0	4,894
RBC (Arl, VA)	C/FFP	11/94	5,865	5,865	2,165	700	500	500	2,000	5,865
LMTDS (Egan, MN)	SS	3/96	9,860	9,860	7,860	2,000	0	0	0	9,860
LMFS (Manasas,VA)	SS	9/97	1,000	1,000	0	1,000	0	0	0	1,000
CDI(Bloomington,MN)	SS	6/97	3,000	3,000	3,000	0	0	0	0	3,000
Other contracts less than $1.0M		Var			6,388	0	0	0	0	6,388
NAWC/AD		10/98			11,638	2,131	1,652	1,795	CONT	CONT
Support and Management										
Miscellaneous > $1.0M		Var			259	180	60	60	CONT	CONT
Test and Evaluation										
NAWC/AD		N/A			0	1,514	0	0	CONT	CONT
Miscellaneous > $1.0M					200	0	979	720	CONT	CONT

GOVERNMENT FURNISHED PROPERTY: Not Applicable

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	35,945	5,831	2,152	2,295	CONT	CONT
Subtotal Support and Management	259	180	60	60	CONT	CONT
Subtotal Test and Evaluation	200	1,514	979*	720*	CONT	CONT
Total Project	36,404	7,525	3,191	3,075	CONT	CONT

* Includes AVDLR

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY:5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2213 Mission Planning	3,863	2,226	2,412	17,406	11,602	14,781	14,087	13,047	CONT.	CONT.
R2295 JDISS	0	2,442	0	0	0	0	0	0	0	2,442
X0486 JMCIS Tactical/Mobile	2,875	2,874	3,032	3,246	3,140	3,318	3,392	3,464	CONT.	CONT.
X0709 JMCIS Afloat	7,088	7,276	6,568	9,373	8,939	10,134	10,930	10,275	CONT.	CONT.
X2009 JMCIS OED	2,392	1,206	2,065	2,256	2,066	2,118	2,164	2,324	CONT.	CONT.
X2041 JMCIS Ashore	5,501	5,972	6,521	6,495	6,075	6,422	8,191	9,925	CONT.	CONT.
X0521 Shipboard Tactical Intelligence Processing (STIP)	2,475	6,274	5,069	6,955	7,192	6,870	6,472	6,621	CONT.	CONT.
X2215 Joint Interoperability	0	0	0	2,511	2,776	3,066	3,441	3,914	CONT.	CONT.
X2216 C4I for Joint Littoral Warfare (JLW)	0	0	0	3,656	3,923	4,162	4,314	4,849	CONT.	CONT.
X2305 Navy Common Operating Environment (COE)	0	0	1,984	1,995	2,047	2,101	2,153	2,209	CONT.	CONT.
X2306 Naval Simulation System	0	0	3,369	3,025	3,055	3,092	3,147	3,275	CONT.	CONT.
X2307 Shipboard LAN/WAN	0	0	498	487	489	979	978	979	CONT.	CONT.
TOTAL	24,194	28,270	31,518	57,405	51,304	57,043	59,269	60,882	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY:5

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

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Tactical Command System (TCS) upgrades the Navy's Command Control, Computer and Intelligence (C^3I) systems and processes C^3I information for all warfare mission areas including planning, direction and reconstruction of missions for peacetime, wartime and times of crises. A major component of the TCS is the Joint Maritime Command Information System (JMCIS). JMCIS is the Navy's fielded Command and Control system, a key component of the *Copernicus ... Forward* C4I strategy, and is the Navy's tactical implementation of the Global Command and Control System (GCCS). JMCIS has aggressively pursued an evolutionary acquisition strategy in rapidly developing and fielding new C4I capabilities for JMCIS Afloat, JMCIS Ashore, JMCIS Tactical /Mobile and JMCIS OED users. JMCIS latest phase includes migration to the Defense Information Infrastructure (DII), incorporation of Fleet requirements for merging tactical and non-tactical networks, and application of mature Web and Personal Computer (PC) technologies to provide required information/capabilities. This phase will provide, in the short term, deployment of a PC/COTS based Naval implementation of GCCS which will provide the warfighter with a cost-effective, user-friendly, comprehensive C4I solution and, in the long-term, a continuous, integrated command and control link from sensor to shooter, including full-range real-time or near-real-time information to weapon systems for decision makers.

JMCIS Afloat provides tactical commanders with an accurate, reliable, survivable and consistent tactical picture which includes complete all-source information management, display and dissemination, rapid access to organic/theater/national intelligence and databases, and multi-source data fusion and imagery exploitation. JMCIS Afloat development is provided in the JMCIS Afloat project and, additionally, in these projects: Shipboard Tactical Intelligence Processing (STIP) - an integrated tactical intelligence shipboard processing system which is the central database for the shipboard Tactical Flag Command Center, the Command and Control Warfare Commander (C2WC) and tactical mission planning systems; Joint Interoperability - a program which develops updates to JMCIS software applications to meet Joint interoperability requirements for sharing of C4I data and reuse; and Joint Littoral Warfare - a program to add and/or enhance JMCIS in such areas as mine warfare and countermeasures, Theater Air Traffic Defense, Theater Ballistic Missile Defense, and coastal ASW and amphibious assault. JMCIS Ashore develops systems which provide the Chief of Naval Operations (CNO), Fleet Commanders in Chief (FLTCINCs) and Unified Commanders a single, integrated command and control system to process the combat readiness, positional information, and employment scheduling of own and allied forces. JMCIS Tactical/Mobile develops systems which provide fixed-site and mobile command centers and provide support for Maritime patrol and surveillance missions. JMCIS Tactical/Mobile systems provide the current tactical picture, preflight mission planning, postflight data analysis, data management, safety of flight communications, and tactical data communications. JMCIS OED develops a shore-based intelligence system which provides on-line, automated, near-real time, multiple level secure command and control support to the Unified and Specified Commanders afloat and ashore. A peripheral JMCIS development, the Navy Common Operating Environment (COE) will design, develop, update, integrate, test and evolve a Navy COE for all Naval C4I systems based on the Joint DII COE. This program contains the fundamental building blocks for all fielded JMCIS C4I systems in the Navy, Marine Corps, and Coast Guard.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY:5

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

The Naval Simulation System (NSS) provides the capability to simulate warfare and operations other than war for Course of Action Assessment. This assessment will be used by acquisition planners for requirements analysis and cost effectiveness analysis determination for future naval systems. NSS will also support Command Level training for operational forces and will be integrated into JMCIS.

The Shipboard LAN/WAN, a component of the Naval Tactical Command Support System (NTCSS) (a support system for management of the information, personnel, material and funds required to maintain and operate ships, submarines and aircraft), develops and integrates multi-level security capabilities on unclassified networks used by/managed by NTCSS.

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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY:5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2213 Mission Planning	3,863	2,226	2,412	17,406	11,602	14,781	14,087	13,047	CONT.	CONT.
Cur. Act. PV		3,852								

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Tactical Automated 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, AH-1, SH-60, MH-53, HH-60, UH-1, VH-1, P-3C, High-speed Anti Radiation Missile (HARM), Joint Stand-Off Weapon (JSOW), Joint Directed Attack Munitions (JDAM), Stand-off Land Attack Missile (SLAM), Joint Tactical Information and Distribution System (JTIDS), Global Positioning System (GPS), ARC-210, and Forward Area Minefield Planner (FAMP). 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 Data Storage Unit (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 Tactical Aircraft Moving Map Capability (TAMMAC) are planning to use TAMPS for mission planning and data loads. In keeping with the Assistant Secretary of Defense (C^3I) 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 Station (MOMS), Common Helicopter Aviation Mission Planning System (CHAMPS), MOMS/AV-8B Maintenance Data System, ES-3 Mission Planning System, Tactical Electronic 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 96 is the first year of RDT&E funding for this project.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1.(U) FY 1996 ACCOMPLISHMENTS:

- (U) ($3,863) Initiated development and integration of TAMPS software upgrade version 6.1. Efforts included initiation of computer based training (CBT); implementation of training scenarios and weapon flight events; and development of requirements to integrate with platforms (ARC-210, F-14, E-2C improvements, H-1, TERPES, and COMPASS). Continued TAMPS 7.0 architecture studies to integrate TAMPS into the JMCIS and Global Command and Control System (GCCS) common operating environment.

  (U) TAMPS has a software release strategy which accommodates major and minor releases. A minor release (e.g. 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. The Navy plans to conduct annual minor TAMPS software releases.

  (U) 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 such as MPM communication, etc. Major software releases will occur approximately every three years.

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($2,226) Developed and integrated TAMPS version 6.2. Efforts included the integration of the following modules and functionalities: TAMMAC, H-1 mission planning module, Joint Service Imagery Processing System (JSIPS) interface, Tactical Strike Coordination Module (TSCM), and Tactical Operational Scene (TOPSCENE). This release also includes improvements to the following modules and functionalities: E-2C module and SLAM module. The inclusion of the following requirements are part of TAMPS version 6.2: full duplex security, Local Area Network (LAN), Commercial Off-the Shelf (COTS) and operating system upgrades, port to a new hardware suite, intelligence data base in standard extract format and update (MIDB 2.0). System Engineering studies were conducted to identify requirements for various platform specific aircraft mission planning systems (e.g. CHAMPS, MOMS, H-60, Anti Submarine Warfare (ASW)) to continue with the execution of the migration plan.

  (U) This submission does not reflect BTR 97-11 program increase of $1,626 thousand for development of HMI improvements.

3. (U) FY 1998 PLAN:

- (U) ($2,412) The TAMPS version 7.0 major release development will commence. The Navy mission planning system will transition to a PC based environment. TAMPS will no longer be a UNIX based system. The initial phase of the PC based system transition begins with development and deployment of the Navy PC Flight Planning System (PFPS). This effort is in conjunction with Air Force. Defense Information Infrastructure-Common Operating Environment (DII-COE) compliant architecture development will begin. System Engineering studies will be conducted to identify requirements for various platform specific aircraft mission planning systems. (Note: The previously planned TAMPS version 6.3 effort has been redefined as a maintenance release 6.2.1). Develop Force Level Decision Support Tools to fulfill the TAMPS ORD Integrated Strike Planning Support requirement.

4. (U) FY 1999 PLAN:

- (U) ($17,406). Continue TAMPS 7.0 development effort. Development and deployment of Navy PFPS will be completed. Defense Information Infrastructure-common Operating Environment (DII-COE) compliant architecture will continue development. This new architecture will culminate with TAMPS Mission Planning capabilities fully operational in the PC environment. (Note: Tamps version 6.4 has been redefined as continued maintenance of version 6.2) Continue maturity of Force Level Decision Support Tools by developing tools for weaponeering and threat suppression and weapons to targets allocation managers.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY:5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Mission Planning

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	3,863	2,226	2,412	9,061
(U) APPROPRIATED VALUE:		3,852		
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	0	0	8,345
(U) FY 1999 FMB BUDGET SUBMIT:	3,863	2,226	2,412	17,406

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 increase consists of $8,345 thousand OPNAV plus up for 7.0.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN	4,789	8,972	15,722	24,248	23,722	17,501	15,323	15,424	CONT	CONT
(U) O&MN	1,995	1,842	2,409	3,844	4,419	5,900	6,035	6,173	CONT	CONT

(U) RELATED RDT&E:

(U) PE 0204229N (TOMAHAWK)
(U) PE 0604231N (JMCIS Afloat (formerly NTCS-A))
(U) PE 0604215N (Standards Development)

D. (U) SCHEDULE PROFILE: Not Applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Mission Planning

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. SOFTWARE DEVELOPMENT	3,863	2,226	2,412	17,406
Total	3,863	2,226	2,412	17,406

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Mission Planning

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NAWC Pt Mugu	WX	10/97			0	3,186	1,792	1,719	16,661	Cont	Cont
Misc.	WX	10/97			0	249	76	206	212	Cont	Cont
Support and Management											
Misc	WX	10/97			0	351	358	412	424	Cont	Cont
Test and Evaluation											
NAWC Patuxent River	WX	10/97			0	77	0	75	109	Cont	Cont

GOVERNMENT FURNISHED PROPERTY: Not Applicable

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	3,435	1,868	1,925	16,873	Cont	Cont
Subtotal Support and Management	0	351	358	412	424	Cont	Cont
Subtotal Test and Evaluation	0	77	0	75	109	Cont	Cont
Total Project	0	3,863	2,226	2,412	17,406	Cont	Cont

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: E2213
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Mission Planning

C. (U) FUNDING PROFILE:
C. 1. (U) FISCAL YEAR OBLIGATION/EXPENDITURE ACTUALS AND PLANS (BY QUARTER) ($ in thousands):

Funds Profile	FY 1996 OBLIG	FY 1996 EXPEND	FY 1997 OBLIG	FY 1997 EXPEND	FY 1998 OBLIG	FY 1998 EXPEND	FY 1999 OBLIG	FY 1999 EXPEND
FY 1996 1Q Est	468	0						
2Q Est	1,563	223						
3Q Est	2,202	748						
4Q Est	3,172	1,805						
FY 1996 TOTAL	3,172	1,805						
FY 1997 1Q Est	3,647	2,602	1,837	453				
2Q Est	3,845	2,994	1,875	994				
3Q Est	3,863	3,494	2,226	1,000				
4Q Est	3,863	3,863	2,226	1,298				
FY 1997 TOTAL	3,863	3,863	2,226	1,298				
FY 1998 1Q Est				1,535	435	75		
2Q Est				1,820	1,471	386		
3Q Est				1,964	1,978	844		
4Q Est				2,226	2,412	1,327		
FY 1998 TOTAL				2,226	2,412	1,327		
FY 1999 1Q Est						1,567	6,806	522
2Q Est						1,760	11,610	2,785
3Q Est						2,017	14,830	6,092
4Q Est						2,412	17,406	9,573
FY 1999 TOTAL							17,406	9,573
TOTAL OF FISCAL YEAR FUNDS	3,863	3,863	2,226	2,226	2,412	2,412	17,406	17,406

C. 2. (U) FY 1996 OBLIGATIONS/EXPENDITURES ($ In thousands): Not Applicable

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
JMCIS Tactical/Mobile (JTM)										
X0486	2,875	2,874	3,032	3,246	3,140	3,318	3,392	3,464	CONT.	CONT.
Current Available Funding	2,875	2,771								

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The JMCIS Tactical/Mobile (JTM) Systems include both fixed sites (Tactical Support Centers (TSCs)) and mobile components (Mobile Operations Control Centers (MOCCs), Mobile Ashore Support Terminals (MASTs) and Mobile Integrated Command Facilities (MICFACs)). These centers provide the Navy Component Commander, the Maritime Sector Commander (Ashore), the Theater Commander (Ashore) or the Naval Liaison Element 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^4I systems (based on the Joint Maritime Command Information System (JMCIS) common architecture) which will evolve to the JMCIS architecture based upon NT personal computers, and in compliance with the implementation of the Defense Information Infrastructure (DII) Common Operating Environment (COE); 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^4I system which can be transported in two fleet-configured P-3 aircraft for contingency operations. For example, a MOCC has been deployed to Bosnia for support of P-3 operations and to provide an on-site C4I capability. MAST and MICFAC are miniaturized mobile facilities designed to support a theater commander or naval liaison element ashore. MAST provides a deployable (in a C-130 aircraft) basic C4I capability for rapid deployment to remote locations. Support of the Liberian contingency operations is an example. The MICFAC is a robust C4I system deployable (in a C-5 / C-17 class aircraft) that can support a numbered fleet commander’s staff ashore. MICFAC Bahrain has acted as the C4I command center when the hard site was undergoing upgrades. This program assures that existing TSC’s, MOCC’s, MAST’s and MICFAC’s remain interoperable with other JMCIS ‘98 platforms, Joint, NATO and allied forces. JTM systems leverage other JMCIS ‘98 systems while following the Copernicus Forward Architecture. TSC/MOCC’s will continue to support P-3C/S-3B updates to sensors and weapons systems, such as the Anti-Surface Warfare Improvement Program (AIP).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1.(U) FY 1996 ACCOMPLISHMENTS:

- (U) ($130) Updated common JMCIS software, in conjunction with other programs.
- (U) ($463) Continued to upgrade data server to operate on standard tactical computer workstations; included additional USMTF, Link 11 message data, and technical data (Electronic Warfare Support Measures (ESM), acoustic, NWTDB). Certified the TSC Link-11 JMCIS segment for transmit and receive for Navy and Joint operations.
- (U) ($167) Captured/integrated tactical decision aids updates for ASW and ASUW support in deep ocean and shallow water littoral regions.
- (U) ($22) Investigated industry progress in development and improvement of trusted software technology.
- (U) ($224) Updated TMS Local Area Network (LAN) interface to the Fast Time Analyzer System (FTAS) for improved post-mission data analysis and reconstruction to support shallow water ASW and low frequency active analysis.
- (U) ($134) Updated Sensor Analysis Workstation (ESM, ISAR, Imagery) functionality in TMS software.
- (U) ($101) Updated Tactical Environmental Support System (TESS)/NITES interface.
- (U) ($1,169) Continued 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) Began planning to migrate to DII COE communications from outmoded DTC-2-based communications. Consolidated MOCC/TSC software into common architecture. Integrated JMCIS AMHS source message pipeline into TSC/MOCC.
- (U) ($63) Captured and incorporated WAN capabilities into TSC MOCC for interface via SIPRNET and other media to other JMCIS/DII systems.
- (U) ($38) Supported security accreditation of Incremental Release 2.0.
- (U) ($310) Supported DT IIB and OT IIB leading to a Milestone IIIB decision (Q1FY97) for Fleet Release of TMS

2.0, which is a common TSC/MOCC release.

2.(U) FY 1997 ACCOMPLISHMENTS:

- (U) ($20) Supported Milestone IIIB decision (Q1) for Fleet Release of TMS 2.0.
- (U) ($174) Updated common JMCIS/DII software, in conjunction with other programs.
- (U) ($470) Continued to upgrade data server to operate on standard tactical computer workstations; include additional USMTF, Link 11 message data, technical data (ESM, acoustic, NIPS) and utilize the JMCIS/DII core software.
- (U) ($202) Captured/integrated tactical decision aids and imagery segment updates with maximum utilization of existing segments.
- (U) ($84) Continued to investigate and apply available trusted software technology.
- (U) ($283) Updated TMS LAN/WAN interface to the NCCS Ashore system and SIPRNET.
- (U) ($209) Updated tape operating system, imagery and ESM Analysis Workstation functionality in TMS software.
- (U) ($741) Conducted system integration, testing, documentation, training for Increment III (JMCIS 3.1) 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. Supported the P-3C Anti-Surface Warfare Improvement Program (AIP) interoperability requirements. Continued TSC migration to multi TADIL interfaces.
- (U) ($307) Developed measures for system achievement of major effectiveness parameters of the OR in areas of mission-supported and communications system performance for Increment III. Migrated to DII COE.
- (U) ($65) Continued security certification and support security accreditation for JMCIS 3.1.
- (U) ($130) Continued progress to DTIIC and plan to update one TSC site to an operational test configuration; supported OT IIC leading to a Milestone IIIC (FY98) decision for Fleet Release of JMCIS 3.1 which will be DII compliant. Captured and incorporated additional WAN capabilities into TSC/MOCC for interface to other JMCIS/DII systems.

- (U) ($103) Below Threshold Reprogrammings.

- (U) ($86) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

3. (U) FY 1998 PLAN:

- (U) ($1,584) Complete JMCIS 3.1 system integration with an objective of an Operational Test 1st Qtr 1998 and a Milestone IIIC review 2nd Qtr 1998. JMCIS 4.0 software will continue to implement DII compliant software, P-3C AIP support systems and the initial introduction of NT-PC servers and workstations to act as TSC workstations. The Tactical Mobile Variants (TMV) (MOCC, MAST, MICFAC), will also receive C4I upgrades and undergo a concurrent Operational Test with the TSC.

- (U) ($306) Support an OT IIC (Q1) leading to a Milestone IIIC decision (Q2) for fleet release and installation of TSC 3.0.

- (U) ($867) Provide support for new aircraft sensor capabilities associated with the P-3C AIP, and upgrades to support EER, high resolution Synthetic Aperture Radar (SAR), shallow water acoustic analysis and advanced ESM systems. Evaluate support for new acoustic sensors on P-3/S-3 aircraft such as Broadband and digital uplinks with the ADAR sonobuoy. Continue transition from TAC UNIX based to NT-PC workstations. Develop communications interfaces with required security features to take advantage of NCCS connectivity to SIPRNET and available WAN/WEB technology for insertion into fixed sites TSC and MOCC.

- (U) ($220) Upgrade the communications of TSC and mobile variants to improve compliance with Defense Message System (DMS) and with appropriate Joint Maritime Communications (JMCOMS) standards.

- (U) ($55) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

4. (U) FY 1999 PLAN:

- (U) ($1,506) Initiate system integration, testing, documentation and training for JMCIS 4.0 software. Continue DII compliance implementation and replacement of TAC UNIX workstations with NT-PCs. Continue replacing client workstations with NT's. Continue development of support of P-3C AIP and P-3C Counter Drug Upgrade (CDU) improvements in sensors and communication systems such as the P-3 Communications Improvement Program (CIP).

- (U) ($820) Support P-3C AIP and pre-planned product improvements in open system architecture and sensor integration. Provide improved PID for increased sensor effectiveness and automated post-flight analysis for rapid information dissemination via the SIPRNET.

- (U) ($290) Continue development of TSC/MOCC multi-TADIL interfaces to provide two-way TADIL support.

- (U) ($270) Continue development of communications interfaces with required security features to take advantage of higher capacity connectivity to SIPRNET and available WAN/WEB technology for insertion into fixed and mobile TSC variants.

- (U) ($360) Support an OT IID (Q3) leading to a Milestone IIID decision (Q4) for fleet release and installation of JMCIS 4.0.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	2,875	2,896	3,032	3,299
(U) Appropriated Value				
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	-22	0	-53
(U) FY 1999 FMB BUDGET SUBMIT:	2,875	2,874	3,032	3,246
(U) BTR Adjustments:	0	-103	0	0
(U) Current Allocation:	2,875	2,771	3,032	3,246

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X0486
PROJECT TITLE: JTM

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1997: -$22K reflects FY 1997 SBIR transfer; -$103K reflects funding change due to minor adjustments to finance other department requirements

FY 1999: -$53K redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Schedule (See Section D) has been adjusted to accommodate incorporation of the MAST/MICFAC into the TSC Program and to allow for the availability of DII COE software for the core of JMCIS 3.1.

(U) Technical: This program is driven by availability of DII core software and by development requirements arising from support of the P-3C AIP.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0486
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JTM

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

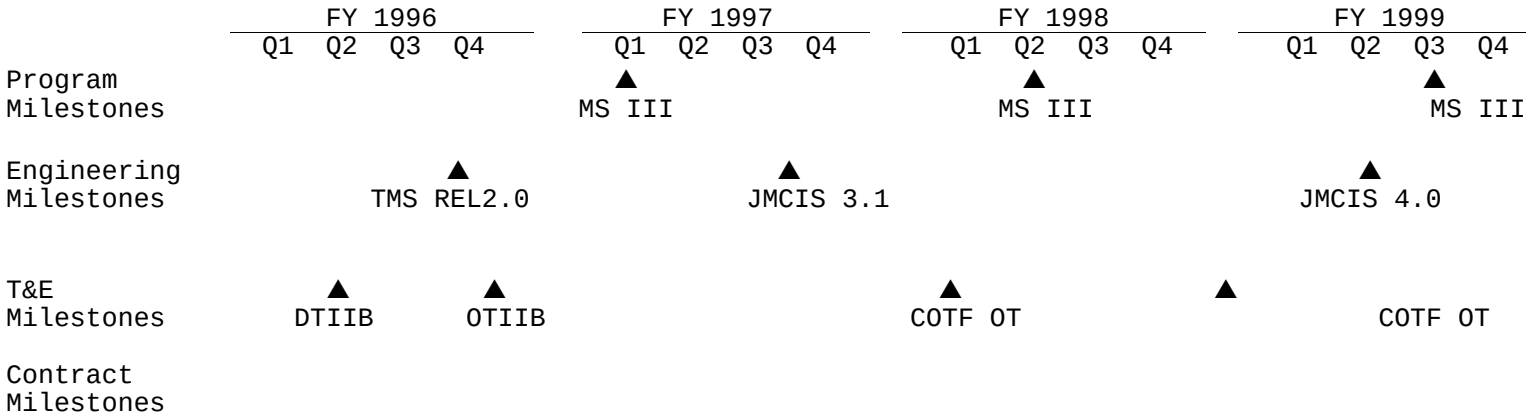
	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
· (U) OPN LI 2246	8,055	9,797	5,255	7,707	8,427	8,602	8,785	9,022	CONT.	CONT.
· (U) OPN LI 2906 (TSC and MAST/MICFAC)	3,246	2,125	2,888	4,967	4,943	5,724	6,171	6,874	CONT.	CONT.
· (U) OMN	10,157	12,928	12,530	11,587	11,380	11,859	12,255	12,547	CONT.	CONT.

(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 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0486
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JTM

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management	401	400	420	453
b. Software Development	1,590	1,402	1,578	1,654
c. Systems Engineering	295	295	324	360
d. Systems Integration	549	549	560	629
e. Test & Evaluation	40	125	150	150
CURRENT ALLOCATION:	2,875	2,771	3,032	3,246

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

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands)

	TOTAL FUNDS	First Year Obligations ($000)	First Year Obligations %	First Year Expenditures ($000)	First Year Expenditures %
FY 1997 ACTUAL:	2,771	2,408	87	918	33

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.). NOT APPLICABLE

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0709 JMCIS Afloat	7,088	7,276	6,568	9,373	8,939	10,134	10,930	10,275	CONT.	CONT.
Current Available Funding	7,088	7,035								

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Maritime Command Information System Afloat (JMCIS Afloat), formerly Navy Tactical Command System - Afloat (NTCS-A), AN/USQ-119(V), is the afloat component of the Joint Maritime Command Information System (JMCIS) architecture. JMCIS Afloat meets the requirements of the tactical commander for a near real-time, fused common tactical picture with integrated intelligence services and data bases. JMCIS Afloat supports the Command, Control, Communication, Computers and Intelligence (C4I) mission requirements of the Numbered Fleet Commanders (NFC), Officer in Tactical Command/Composite Warfare Commander (OTC/CWC), Commander Amphibious Task Force(CATF), Commander Landing Force (CLF), Ship’s Commanding Officer/Tactical Action Officer (CO/TAO), and Joint Task Force(JTF) Commanders, as well as other functional commanders such as the Command and Control Warfare Commander (C2WC). 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 integration of JMCIS Afloat baselines with weapons systems and Combat Direction Systems to provide the Battle Group/Force Commanders with the information needed to enhance their warfighting capabilities. JMCIS Afloat is also initiating a transition to Commercial Off The Shelf (COTS) hardware and software as part of the current JMCIS initiative to capitalize on the latest Web/PC industry/commercial technology.

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($818) Developed, integrated and tested FY 1996 software enhancements. Integrated and tested Fleet release to meet Increment II ORD requirements. Initiated development of Fleet release to meet Increment III ORD requirements.

- (U) ($726) Continued development of intelligence and tactical analysis tools; e.g., TDAs, TIAAs, etc., for incorporation into GENSER and SCI software for analyst workstations, EW Command Station and Supporting C2WC.

- (U) ($1,646) Implemented segment applications software to operate in an open systems architecture to include integration of joint C4I requirements working toward an interoperable common operational picture (COP) consistent with JCS mandated GCCS/DII standards.

- (U) ($500) Implemented Domain Name Server (DNS) which will allow JMCIS Afloat connection to the Joint Worldwide Intelligence Communications System (JWICS), Secret Internet Protocol Router Network (SIPRNET) and other intelligence networks.

- (U) ($454) Developed enhancements to maintain interoperability with the Joint Force Air Component Commander (JFACC)/Contingency Theater Automated Planning System (CTAPS) to interoperate with JMCIS Afloat.

- (U) ($898) Continued development, integration and testing of security capabilities in the JMCIS Afloat.

- (U) ($684) Continued development of Marine Corps, Coast Guard, USAF CTAPS and other Joint Command Control, Intelligence, Imagery and C2 Warfare systems interfaces with JMCIS Afloat to include 3-D visualization capability in support of situation awareness, mission/strike planning, terrain analysis and C2 support.

- (U) ($635) Procured development hardware and commercial-off-the-shelf (COTS) software to support hardware evaluation and software development.

- (U) ($727) Implemented JMCIS migration to Tactical Electronic Order of Battle (TEOB), Modernized Integrated Data Base (MIDB), Generic Area Limitation Environment (GALE), and Joint Deployable Intelligence Support Services (JDISS) to further support the SEWC and C2WC as well as other Electronic Warfare Support Measure (ESM) efforts.

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($854) Developed, integrated and tested FY 1997 software enhancements. Integrated and tested Fleet release to meet Increment III ORD requirements. Initiated latest phase of JMCIS evolutionary development to incorporate Fleet requirements for merging tactical and non-tactical networks and application of mature Web and PC technologies.

- (U) ($616) Continued development of intelligence and tactical analysis tools e.g., TDAs, TIAAs, etc. for incorporation into GENSER and SCI software for analyst workstations, EWCS and supporting the C2WC.

- (U) ($1,177) Continued development and implementation of segment applications software in a JMCIS mandated GCCS/DII standard compliant open system architecture to include integration of Joint C4I requirements working toward an interoperable COP.

- (U) ($350) Continued development of DNS which will allow JMCIS Afloat connection to the JWICS, SIPRNET and other intelligence networks.

- (U) ($309) Implemented and tested required Joint Mission Applications including hardware and software interfaces with JMCIS Afloat including incorporation of Asynchronous Transfer Mode (ATM) technology.

- (U) ($700) Continued integration and testing of implemented Internet related security capabilities in JMCIS Afloat.

- (U) ($783) Continued development of the architecture to support world wide data base access to all fleet users to fully support interoperability with the MIDB, GCCS/Defense Information Infrastructure (DII) Common Operating Environment (COE) and the Copernicus Architecture to operate with USMC, USCG, USAF and other Joint Command, Control, Intelligence, C2WC and Imagery systems to include the display, processing and exploitation of Unmanned Aerial Vehicle (UAV) video and digital imagery products.

- (U) ($437) Procured development hardware and COTS software to support hardware evaluation and software development.

- (U) ($509) Continued migration of the TEOB, MIDB, GALE, and JDISS.

- (U) ($300) Implemented technology upgrade to TAC-x computer including, porting and integration of application/segment software.

- (U) ($810) Continued to develop, procure and integrate two-way Link 16 efforts associated with JMCIS DII COE compliant software applications.

- (U) ($241) Below Threshold Reprogrammings.

- (U) ($190) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

3. (U) FY 1998 PLAN:

- (U) ($925) Develop, integrate and test FY 1998 software segment enhancements. Continue to integrate and test Fleet software releases to meet Increment III ORD requirements. Continue to incorporate Fleet requirements for merging tactical and non-tactical networks and application of Web and PC technologies.

- (U) ($650) Continue development of TDAs and COTS tactical analysis tools for incorporation into GENSER and SCI Software for analyst workstations, EWCS, and supporting the C2WC.

- (U) ($1,337) Continue development and testing of segment applications software in a GCCS/DII compliant open system architecture, including transition to COTS PC technology to provide a COP to the warfighter. Initiate development of the interfaces between JMCIS Afloat baselines and weapons systems, two way Link 16 and Combat Direction Systems.

- (U) ($349) Continue development of DNS which will allow JMCIS Afloat connection to the JWICS, SIPRNET and other information networks.

- (U) ($773) Implement and test required upgraded Joint mission application hardware and software interfaces (using the CDBS with the Joint Targeting Tools and Target Nomination modules) with JMCIS Afloat including 3-D visualization capability in support of situation awareness, mission/strike planning, terrain analysis and C2 support.

- (U) ($699) Continue integration and test of implemented Internet related security capabilities.

- (U) ($871) Continue to develop the architecture to support world wide data base access to all fleet users to fully support the GCCS/DII COE and the Copernicus Architecture to operate with USMC, USCG and other Joint Command, Control, Intelligence and Imagery systems interface with JMCIS Afloat.

- (U) ($336) Procure development hardware and COTS software to support hardware evaluation and software development.

- (U) ($508) Develop approaches to integrate JMCIS Afloat LANs, WANs and transition JMCIS Afloat legacy application segments to GCCS.

- (U) ($120) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

4. (U) FY 1999 PLAN:

- (U) ($826) Continue to develop, integrate and test FY 1998 software segment enhancements. Continue to integrate and test Fleet software releases to meet Increment III ORD requirements. Continue to incorporate Fleet requirements for merging tactical and non-tactical networks and application of Web and PC technologies..

- (U) ($900) Continue development of TDAs and COTS tactical analysis tools for incorporation into GENSER and SCI Software for analyst workstations, EWCS, and supporting the C2WC.

- (U) ($2,803) Continue development/implementation and begin integration/testing of segment applications software in a GCCS/DII compliant open system architecture to include continued transition to COTS PC technology, working toward a COP including interfaces for the JSIPS-N, JBS/GBS, two-way LINK 16, and IPL/IPA.

- (U) ($504) Continue development of DNS which will allow JMCIS Afloat connection to the JWICS, SIPRNET and other information networks.

- (U) ($445) Integrate and test upgraded JFACC/CTAPS hardware and software interfaces (using the CDBS with the RAAP and Target Nomination modules) with JMCIS Afloat including 3-D visualization capability in support of situation awareness, mission/strike planning, terrain analysis and C2 support.

- (U) ($830) Continue integration and test of Internet security capability in JMCIS Afloat. Investigate and evaluate COTS multi-level secure (MLS) software packages for possible inclusion in the JMCIS Afloat architecture.

- (U) ($700) Continue to develop the architecture to support world wide data base access to all fleet users to fully support the GCCS/DII COE and the Copernicus Architecture to operate with USMC, USCG and other Joint Command, Control, Intelligence and Imagery systems interface with JMCIS Afloat.

- (U) ($629) Procure development hardware and COTS software to support hardware evaluation and software development.
- (U) ($733) Continue to develop approaches to integrate JMCIS Afloat LANs, WANs and transition JMCIS Afloat legacy application segments to GCCS.
- (U) ($500) Initiate development and implementation of collaborative planning capability in JMCIS Afloat.
- (U) ($503) Implement technology upgrade to TAC-X computer including, porting and integration of application/segment software.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	7,088	7,365	6,568	9,525
(U) APPROPRIATED VALUE:				
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	0	-89	0	-152
(U) FY 1999 FMB BUDGET SUBMIT:	7,088	7,276	6,568	9,373
(U) Below Threshold Reprogrammings (BTRs):	0	-241	0	0
(U) Current Allocation	7,088	7,035	6,568	9,373

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY 1997: -$89K SBIR Transfer; -$241K reflects funding change due to minor adjustments to finance other department requirements.
FY 1999: -$152K redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

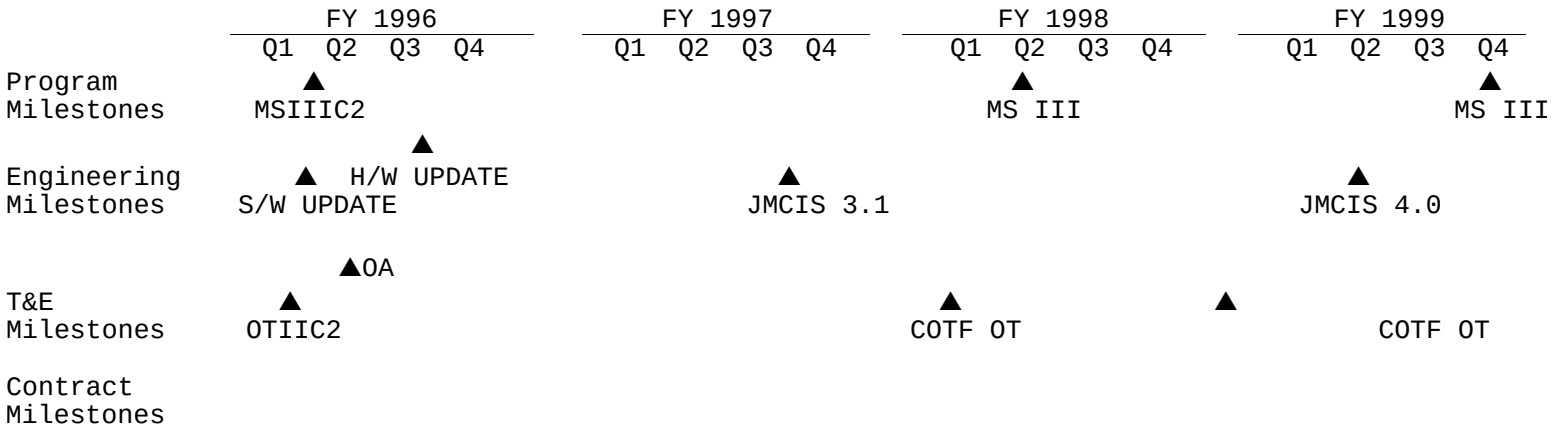
BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0709
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JMCIS Afloat

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

	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LI#2608	13,263	27,479	22,403	39,548	37,536	31,309	25,219	25,623	CONT.	CONT.
(U) OMN	9,771	10,002	10,140	18,274	18,673	16,911	14,237	13,569	CONT.	CONT.

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

D. (U) SCHEDULE PROFILE:



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X0709
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JMCIS Afloat

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. PROJECT MANAGEMENT	331	350	350	450
b. SYSTEMS ENGINEERING	1,823	880	704	1,200
c. SOFTWARE DEVELOPMENT	3,712	4,777	4,475	6,017
d. HARDWARE DEVELOPMENT	622	428	439	1,106
e. SYSTEM TEST & EVALUATION	600	600	600	600
CURRENT ALLOCATION:	7,088	7,035	6,568	9,373

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

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands)

	TOTAL FUNDS	First Year Obligations ($000)	First Year Obligations %	First Year Expenditures ($000)	First Year Expenditures %
FY 1997 ACTUAL:	7,035	5,977	85	3,507	50

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.) NOT APPLICABLE

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2009 JMCIS OBU Evolutionary Development	2,392	1,206	2,065	2,256	2,066	2,118	2,164	2,324	CONT.	CONT.
Current Available Funding	2,392	1,197								

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The JMCIS OBU Evolutionary Development (JMCIS OED), formerly Ocean Surveillance Information System (OSIS) Baseline Upgrade (OBU) development, is a subsystem of the Navy Command and Control System (NCCS) Ashore. It is a designated migration system. JMCIS OED 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 three Joint Intelligence Centers, and one Joint Intelligence Center Detachment, a software support activity, and a training site. JMCIS OED 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) JMCIS OED 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 JMCIS OED Phase III EA strategy will provide a mechanism for adding future capabilities including the incorporation of proven fleet initiated prototypes.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JMCIS OED

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($403) Performed TECHEVAL and assisted in successful OPEVAL of new JMCIS 2.2.0.5 Baseline software.
- (U) ($550) Developed, accredited and deployed new tactical 2.2.0.5 graphics software to three operational sites one training site.
- (U) ($200) Adapted JMCIS strike planning/force projection software (STRIKEPLOT) to operate system on all OED user workstations.
- (U) ($150) Integrated and deployed multi-service analytical tools (GALE/DVT) with a fully relational database version of DIA’s Integrated Intelligence Database (IDB) and with the joint service JMCIS 2.2.0.5 C4I software.
- (U) ($200) Developed and fielded prototype message labeling and high speed (>30 MB/sec) search software using MLS Compartmented Mode Workstation.
- (U) ($889) Continued software development work on approved migration/modernization strategy for multi-level secure OSIS Evolutionary Development (OED) replacement for currently accredited MLS OBU system.

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($350) Accredited multi-level record communications with SCI/Genser Newsdealer and CSP record message systems.
- (U) ($711) Completed software development, performed TECHEVAL and supported OPEVAL of MLS OED migration system.
- (U) ($100) Integrated and accredited NCSC B1-certified multi-level secure operating system (CMW) into OED software baseline, with mirrored system backup and restoration over a trusted network.
- (U) ($9) Below Threshold Reprogrammings.

- (U) ($36) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

3. (U) FY 1998 PLAN:

- (U) ($400) Integrate key JMCIS warfare components (EW segments) into OED MLS software baseline.
- (U) ($687) Improve/revise JMCIS/OED tactical decision aids and database architecture to work with large scale national level databases (>10,000 tracks); implement JMCIS 3.10 or later baseline into MLS baseline software.
- (U) ($270) Full implementation of user-selectable NATO and US symbology.
- (U) ($350) Implement classified NRTI interface (with MLS support) at all operational sites; ensure analyst display tools meet NRTI performance requirements.
- (U) ($320) Implement and deploy user/site-defined functional requirements within MLS environment.
- (U) ($38) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

4. (U) FY 1999 PLAN:

- (U) ($558) Implement, accredit and deploy MLS changes needed to support email-based and DMS record message traffic.
- (U) ($450) Develop and deploy wide area imagery and characteristics databases using an object-oriented MLS commercial database package.
- (U) ($769) Automated, real time Indications and Warning/Situation Assessment capability to detect and auto alert

users concerning movement patterns, complex threat conditions and other pre-defined spatial and data detection events.

- (U) ($129) Upgrade system capabilities for providing tailored MLS support.
- (U) ($350) Incorporate current state of art data correlation and data fusion software and hardware technology.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	2,392	1,226	2,065	2,414
(U) APPROPRIATED VALUE:				
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG	0	-20	0	-158
(U) FY 1999 FMB BUDGET SUBMIT:	2,392	1,206	2,065	2,256
(U) Below Threshold Reprogrammings (BTRs):	0	-9	0	0
(U) CURRENT ALLOCATION:	2,392	1,197	2,065	2,256

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY97 was reduced -$20K for SBIR Transfer; -$9K reflects funding change due to minor adjustments to finance other department requirements
FY99 was reduced -$121K for NTCSS; -$37K redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JMCIS OED

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

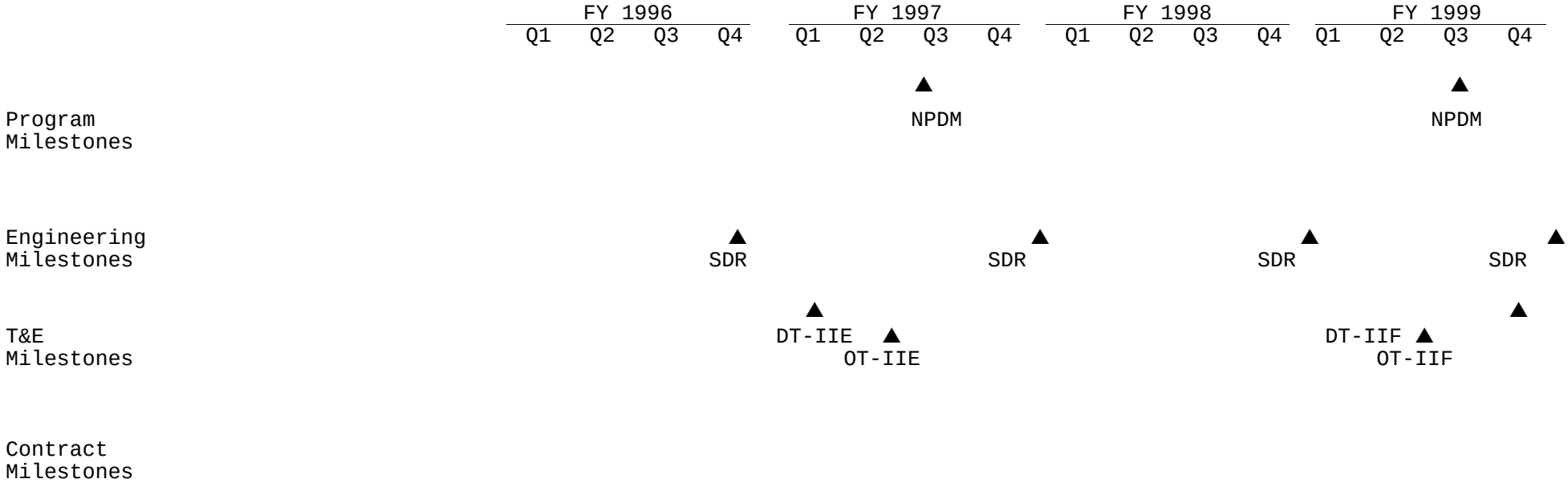
	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN LI#2906 (JMCIS OED only)	544	166	0	0	0	0	0	0	0	710
OPN LI#2805 (JMCIS OED)	0	0	343	398	490	541	553	566	CONT.	CONT.
OMN 1C1C/4B7N	2,517	2,233	2,028	1,513	1,232	1,216	1,282	1,312	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JMCIS OED

D. (U) SCHEDULE PROFILE:



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JMCIS OED

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. SYSTEMS ENGINEERING	650	530	530	600
b. SOFTWARE DEVELOPMENT	1,712	637	1,505	1,626
c. SYSTEM TEST AND EVALUATION	30	30	30	30
CURRENT ALLOCATION:	2,392	1,197	2,065	2,256

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NAVSUP	RADIUS	12/93			1,343					N/A	1,343
OTHER		OPTIONS			1,982	1,525	700	1,505	1,626	CONT.	CONT.
Support and Management											
OTHER	WX				2,574	837	467	530	600	CONT.	CONT.
Test and Evaluation											
OPTEVFOR	PD				450	30	30	30	30	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not Applicable

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2009
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: JMCIS OED

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development				3,325	1,525	700	1,505	1,626	CONT.	CONT.
Subtotal Support and Management				2,574	837	467	530	600	CONT.	CONT.
Subtotal Test and Evaluation				450	30	30	30	30	CONT.	CONT.
Total Project				6,349	2,392	1,197	2,065	2,256	CONT.	CONT.

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands)

	TOTAL FUNDS	First Year Obligations ($000)	First Year Obligations %	First Year Expenditures ($000)	First Year Expenditures %
FY 1997 ACTUAL THRU 28 Apr:	1,197	896	75	105	9

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.)
Vouchers have been received showing 50% expenditure rate. Based on the 60 to 90 day lead time, the posting in STARS of the end of year expenditures will be at 60% posted.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY:5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2041 JMCIS Ashore	5,501	5,972	6,521	6,495	6,075	6,422	8,191	9,925	CONT.	CONT.
Current Available Funding	5,498	5,865								

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 JMCIS Ashore 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 integrated 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 developed 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 incorporate Employment Scheduling System (ESS) and Information Presentation and Distribution System (IPDS) capabilities into JMCIS Ashore. Increment III will also provide initial interfaces to the GCCS architecture. Increment IV (FY 96-99) will port JMCIS Ashore software to PC’s and the DII COE. It will implement and field ESS functionality and incorporate TYCOM required databases and decision aids. 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 JMCIS Ashore at selected NATO and U.S. Navy sites and Unified Commands. JMCIS Ashore is being developed and implemented in conjunction with the open system C^4I for the Warrior (C^4IFTW), Global Command and Control System (GCCS) and Joint Maritime Command Information System (JMCIS) architectures.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($500) Conducted Developmental Testing, Beta Testing and Navy and Joint Interoperability Certification Tests on OSS software releases.
- (U) ($200) Developed integrated interface using a common architecture for OSS users to existing DOD Data bases.
- (U) ($550) Supported Joint, Allied (NATO and other), coalition efforts, Foreign (through FMS cases), collaborative planning and JMCIS Ashore Navy users to ensure interoperability among users. Continued execution of Cooperative Development with SACLANT.
- (U) ($100) Continued implementation of appropriate MLS features.
- (U) ($300) Continued 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).
- (U) ($785) Continued enhancing Unified Build (UB) software to satisfy OSS requirements; integrated successive OSS releases into JMCIS baseline.
- (U) ($1,109) Maintained OSS/JMCIS architectural compatibility with GCCS, C^4I For the Warrior (C^4IFTW) and JMCIS. Participated in GCCS prototyping efforts.
- (U) ($450) Began interfacing and integration with readiness data from other Navy sources. Studied USN message and data flow. Recommended changes as necessary.
- (U) ($600) Implemented detailed PC EMPSKD message capability to assist units to create error free CASREP, SORTS and MOVREP messages. Continued development of ESS prototype upgrades.
- (U) ($600) Planned, developed and began integration of Navy specific United States Message Text Format (USMTF) SORTS/MOVREP message set lines.

- (U) ($150) Continued efforts to incorporate super computer and/or parallel processor solutions into OSS to improve system performance.

- (U) ($154) Continued systems engineering and prototype development on AI/Expert System driven decision aids to provide real time decision making support to operational commanders.

- (U) ($3) Below Threshold Reprogrammings.

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($1,077) Conducted Developmental Testing, Beta Testing and Navy and Joint Interoperability Certification Tests on OSS software releases. Completed Increment III testing.

- (U) ($225) Completed development, testing and fielding of ESS prototype upgrades to reach full functional baseline.

- (U) ($550) Supported Joint, Allied (NATO and other), coalition efforts, Foreign (through FMS cases), collaborative planning and JMCIS Ashore Navy users to ensure interoperability among users. Continued execution of Cooperative Development with SACLANT.

- (U) ($450) Developed integrated interface using a common architecture for JMCIS Ashore users to existing DOD Data bases. Incorporated state-of-the-art technologies such as distributed data bases and WEB technology.

- (U) ($662) Continued implementation of appropriate MLS features.

- (U) ($300) Continued to integrate/analyze JMCIS Ashore 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).

- (U) ($520) Continued enhancing UB software to satisfy JMCIS Ashore requirements; integrated successive JMCIS Ashore releases into JMCIS Ashore/JMCIS baseline.

- (U) ($250) Maintained JMCIS Ashore architectural compatibility with GCCS, C^4IFTW and JMCIS.

- (U) ($300) Implemented Navy unique USMTF SORTS and MOVREP Messages.
- (U) ($300) Planned, developed and began implementation of USMTF CASREP and EMPSKD Messages.
- (U) ($400) Continued interfacing/integrating with readiness data from other Navy sources. Completed system integration and review of USN message and data flow.
- (U) ($350) Completed and fielded PC EMPSKD message capability to assist units to create error free CASREP, SORTS and MOVREP messages.
- (U) ($150) Continued efforts to incorporate super computer and/or parallel processor solutions into JMCIS Ashore to improve system performance.
- (U) ($150) Continued systems engineering and prototype development on AI/Expert System driven decision aids to provide real time decision making support to operational commanders.
- (U) ($107) Below Threshold Reprogrammings.
- (U) ($181) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

3. (U) FY 1998 PLAN:

- (U) ($410) Continue to integrate/analyze JMCIS Ashore 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).
- (U) ($180) Continue interfacing/integrating with readiness data from other Navy sources.
- (U) ($431) Plan, conduct systems engineering and prototype development of object oriented/design solution into JMCIS Ashore to improve system performance.

- (U) ($656) Develop database modules to support WAN access by JMCIS Ashore remote users, i.e., distributed databases and data standardization. Develop integrated interface using a common architecture. Continue to incorporate state-of-the-art technologies such as distributed data bases and WEB technology.

- (U) ($356) Update JMCIS Ashore software and databases to accommodate Navy unique and Joint message format changes.

- (U) ($520) Maintain architectural compatibility with DoD mandated standards (i.e., Defense Information Infrastructure (DII).

- (U) ($180) Plan, develop, and begin implementation of Human Computer Interface Standards for software development and data retrieval.

- (U) ($270) Incorporate unique decision aids, data elements, message text types and report formats required by Type Commanders (TYCOMs).

- (U) ($405) Conduct developmental testing and beta testing on JMCIS Ashore software.

- (U) ($135) Modify JMCIS Ashore system and configuration to accommodate TENCAP sanitization products and support evolutionary software upgrades. Implement commercially available MLS.

- (U) ($450) Begin extension of full JMCIS Ashore access and functionality into PC domain consistent with FLTCINC and TYCOM requirements. Evolve JMCIS Ashore LANs to take advantage of current networking technology (e.g., Asynchronous Transfer Mode (ATM) in conjunction with IPDS.

- (U) ($483) Port JMCIS Ashore software to run on current GCCS, Navy TAC-series computer platforms, and PC’s. Integrate JMCIS Ashore/GCCS LANs.

- (U) ($450) Complete migration of SORTS, CASREP, MOVREP, and EMPSKD to USMTF format.

- (U) ($405) Continue Cooperative Development of NACCIS with SACLANT, implement NATO message parsing and editing features, expand JMCIS Ashore database to reflect NATO/Allied units, and continue to support Joint, Allied (NATO and other), coalition efforts, collaborative planning, and Foreign (FMS) users to ensure interoperability among users.

- (U) ($425) Incorporate current FLTCINC, TYCOM and numbered Fleet Commander Logistics planning and support tools

in support of Fleet operations (Personnel, fuel, ammunition, supplies, medical, etc).

- (U) ($139) Maintain compatibility with Defense Messaging System (DMS)/Automated Message Handling System software requirements.
- (U) ($119) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.
- (U) ($327) Continue transition/integration of Shore Targeting functionality (near real-time weapons targeting data to submarines) to JMCIS Ashore.
- (U) ($180) Integrate and make interoperable JMCIS Ashore ASW capability with Joint ASW functionality.

4. (U) FY 1999 PLAN:

- (U) ($450) Continue to integrate/analyze JMCIS Ashore 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).
- (U) ($483) Continue to incorporate state-of-the-art technologies such as distributed data bases and WEB technology.
- (U) ($180) Continue interfacing/integrating with readiness data from other Navy sources.
- (U) ($300) Continue development of object oriented/design solution into JMCIS Ashore to improve system performance.
- (U) ($270) Continue development of database modules to support WAN access by JMCIS Ashore remote users, i.e., distributed databases and data standardization.
- (U) ($225) Update JMCIS Ashore software and databases to accommodate Navy unique and Joint message format changes.
- (U) ($520) Maintain architectural compatibility with DoD mandated standards (i.e., Defense Information Infrastructure (DII).

- (U) ($282) Continue implementation of appropriate security features and documentation. Continue security engineering efforts, Certification Test and Evaluation (CT&E), Security Test and Evaluation (ST&E), documents (e.g., Computer Security Accreditation Plan (CSAP), operating procedures, safeguards and site accreditation.

- (U) ($180) Continue development and implementation of Human Computer Interface Standards for software development and data retrieval.

- (U) ($405) Conduct developmental testing and beta testing on JMCIS Ashore software.

- (U) ($98) Modify JMCIS Ashore system and configuration to accommodate TENCAP sanitization products and support evolutionary software upgrades. Implement commercially available MLS.

- (U) ($475) Continue extension of full JMCIS Ashore access and functionality into PC domain consistent with FLTCINC and TYCOM requirements.

- (U) ($225) Port JMCIS Ashore software to run on current GCCS and Navy TAC and PC computer platforms.

- (U) ($585) Continue Cooperative Development of NACCIS with SACLANT, implement NATO message parsing and editing features, expand JMCIS Ashore database to reflect NATO/Allied units, and continue to support Joint, Allied (NATO and other) and Foreign (FMS) users to ensure interoperability among users.

- (U) ($360) Incorporate decision aids, data elements, and message formats and reports to support Navy blockage enforcements, choke point, port evacuation Navy Control of Shipping (NCS) operations, and other Navy missions associated with Operations other than War.

- (U) ($844) Incorporate decision aids, data elements, and message formats and reports to support Non-Combatant Evacuation Operations (NEO). Incorporate current FLTCINC, TYCOM and numbered Fleet Commander Logistics planning and support tools in support of Fleet operations (Personnel, fuel, ammunition, supplies, medical, etc).

- (U) ($208) Maintain compatibility with Defense Messaging System (DMS)/Automated Message Handling System software requirements.

- (U) ($225) Complete development, testing and fielding of Shore Targeting functionality (near real-time weapons targeting data to submarines) to JMCIS Ashore.
- (U) ($180) Continue to integrate and make interoperable JMCIS Ashore ASW capability with Joint ASW functionality.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	5,501	6,116	6,521	6,959
(U) APPROPRIATED VALUE:				
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	-144	0	-464
(U) FY 1999 FMB BUDGET SUBMIT:	5,501	5,972	6,521	6,495
(U) Below Threshold Reprogrammings (BTR):	-3	-107	0	0
(U) CURRENT ALLOCATION:	5,498	5,865	6,521	6,495

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996: -$3K reflects funding change due to minor adjustments to finance other department requirements

FY 1997: -$144K SBIR adjustment; -$107K reflects funding change due to minor adjustments to finance other department requirements

FY 1999: -358K offset for NTCSS; -$106 redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

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

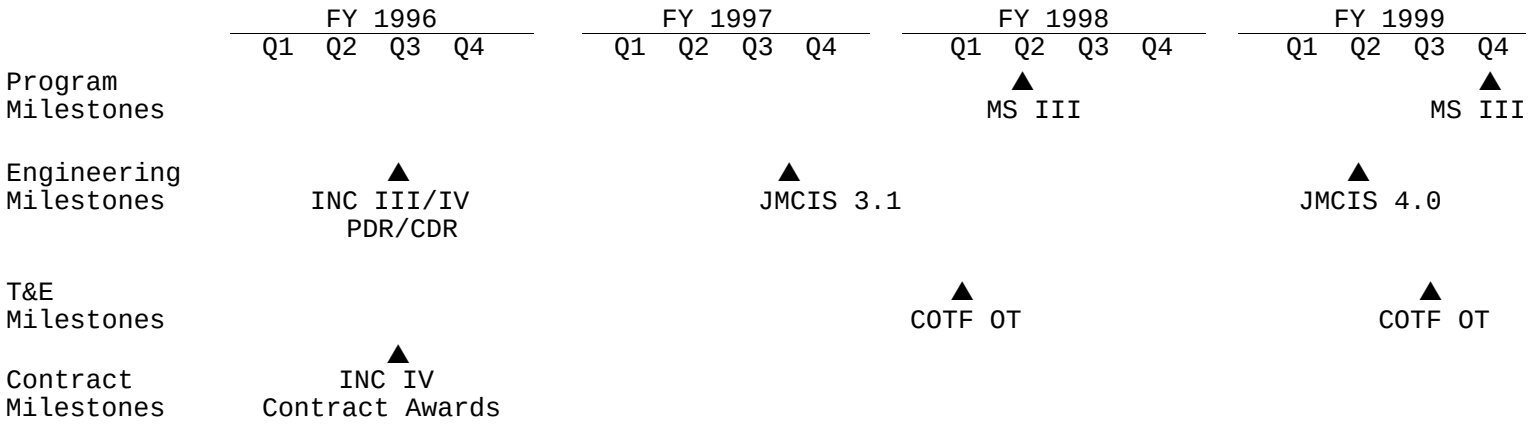
C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN 2906(OSS only)	5,539	3,537	0	0	0	0	0	0	0	9,076
(U) OPN 2804	0	0	3,393	4,652	7,462	7,523	7,837	9,054	CONT.	CONT.
(U) OMN	14,031	12,055	10,533	11,423	11,153	9,983	11,261	12,435	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0604231N: JMCIS OED, JMCIS Tactical/Mobile, JMCIS Afloat.

D. (U) SCHEDULE PROFILE:



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

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

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management	410	470	530	590
b. Software Development	4,049	4,199	4,686	4,547
c. Systems Engineering	939	1,126	1,205	1,248
d. Test and Evaluation	100	70	100	110
CURRENT ALLOCATION:	5,498	5,865	6,521	6,495

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

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands)

	TOTAL FUNDS	First Year Obligations		First Year Expenditures	
		($000)	%	($000)	%
FY 1997 ACTUAL:	5,865	4,593	79	1,408	24

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.) NOT APPLICABLE

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

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 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0521 STIP	2,475	6,274	5,069	6,955	7,192	6,870	6,472	6,621	CONT.	CONT.
Current Available Funding	2,475	6,141								

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Shipboard Tactical Intelligence Processing (STIP) system is an integrated tactical intelligence shipboard processing system which is the central database server for JMCIS Afloat, the Command and Control Warfare Commander (C2WC) and tactical mission planning systems. Development of this integrated data base 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. STIP also includes providing intelligence data distribution to multiple shipboard warfighters via an analog video distribution system. Efforts are being initiated in FY 97/98 to develop a digital video distribution system to take advantage of latest LAN technology. STIP will integrate Radiant Mercury (RM) into the JMCIS Afloat architecture to meet downgrading and releasability requirements. STIP is also initiating a transition to Commercial Off The Shelf (COTS) hardware and software as part of the current JMCIS initiative to capitalize on the latest Web/PC industry/commercial technology.

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,337) Developed, integrated and tested Central Data Base System/Automated Message Handler (CDBS/AMH) and intelligence applications for FY 96 software release.
- (U) ($100) Developed, integrated and tested advanced digital imagery applications for FY 96 software release.
- (U) ($166) Completed integration and testing of compartmented mode workstation.
- (U) ($375) Continued development of data base support for TDAs on the CDBS.
- (U) ($331) Commenced development of object oriented data base.

- (U) ($166) Commenced investigation and development of CIO, DARO, NRO, USMC, USCG, USAF, USA and other joint intelligence and imagery collection and exploitation systems interfaces with JMCIS Afloat to meet DOD standardization, interoperability and migration requirements.

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($907) Developed, integrated and tested an MIDB based CDBS/AMH and associated intelligence applications to support C2WC and other Warfare Commander functions.

- (U) ($ 838) Developed, integrated and tested advanced digital imagery applications to keep pace with CIO and DARO evolving imagery architectures.

- (U) ($500) Continued development and integration of multi-media display technologies into an Integrated Video System (IVS) including 3-D visualization capability in support of situation awareness, mission/strike planning, STRED improvements, terrain analysis and intelligence support.

- (U) ($694) Continued to develop data base support for TDAs.

- (U) ($575) Continued object oriented data base development.

- (U) ($327) Continued to develop CIO, DARO, NRO, USMC, USCG, USAF, USA and other joint intelligence and imagery collection and exploitation systems interfaces with JMCIS Afloat to meet GCCS/DII COE criteria; e.g., CHBDL, JBS/GBS, Challenge Athena, etc.

- (U) ($300) Began integration of CDBS (providing automated tactical updates) with the Target Development Models for Target Nomination List modules/applications.

- (U) ($1,870) Continued to develop, procure, test and integrate intelligence applications efforts associated with the fielding of Radiant Mercury capabilities on JMCIS platforms.

- (U) ($133) Below Threshold Reprogrammings.

- (U) ($130) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses

and studies.

3. (U) FY 1998 PLAN:

- (U) ($915) Continue developing, integrating and testing MIDB (v 2.0, 3.0, 4.0 etc.) based CDBS (GENSER and SCI) and associated intel applications in accordance with the JMCIS COTS/PC hardware and software initiative/GCCS ("MIG") evolutionary directions and in conjunction with Cryptologic/C2W developments.

- (U) ($861) Continue developing, integrating and testing advanced digital imagery server(s) and Navy-Marine Team unique client applications to keep pace with evolving CIO, DARO and NRO imagery architectures.

- (U) ($200) Begin development of enhanced GENSER-SCI LAN and JMCIS-"RelX" data exchange capabilities based on MIDB 2.0 "filter" approach, and emerging MLS technologies for both alpha-numeric data and imagery.

- (U) ($514) Continue development and integration of multi-media data capture, storage and display technologies into the IVS including 3-D visualization capability in support of situation awareness, mission/strike planning, STRED improvements, UAV data integration, terrain analysis and intelligence support .

- (U) ($732) Continue evolving Navy-USMC Team unique intel and intel-related data base support for JMCIS and Marine Air Ground Task Force C4I (MAGTFC4I)/Expeditionary Warfare applications as required outside MIDB capability.

- (U) ($598) Continue object-oriented data base exploratory development.

- (U) ($369) Continue investigating and developing USAF, Army and other Joint intel/imagery system interfaces.

- (U) ($338) Investigate enhancements to unit level JMCIS Afloat intel capabilities including access to imagery recognition and associated data (Characteristics and Performance (C&P)); e.g., SEALINK connection via JDISS.

- (U) ($100) Begin to converge JMCIS OED intel capability with JMCIS development; provide OED-unique intel tools afloat.

- (U) ($350) Initiate development to transfer digital video data/information among workstations on the same platform and among workstations on multiple platforms.

- (U) ($92) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

4. (U) FY 1999 PLAN:

- (U) ($1,274) Continue developing, integrating and testing MIDB (v 2.0, 3.0, 4.0 etc.) based CDBS (GENSER and SCI) and associated intel applications in accordance with GCCS ("MIG") evolutionary directions and in conjunction with Cryptologic/C2W and other Warfare Commander developments

- (U) ($1,149) Continue developing, integrating and testing advanced digital imagery server(s) and Navy-Marine Team unique client applications to keep pace with evolving CIO, DARO and NRO imagery architectures.

- (U) ($250) Continue to develop enhancements to the GENSER-SCI LAN and JMCIS-"RelX" data exchange capabilities based on MIDB "filter" approach, and emerging MLS technologies for both alpha-numeric data and imagery.

- (U) ($381) Continue development and integration of multi-media data capture, storage and display technologies into the IVS including 3-D visualization capability in support of situation awareness, mission/strike planning, STRED improvements, UAV data integration, terrain analysis and intelligence support .

- (U) ($788) Continue evolving Navy-USMC Team unique intel and intel-related data base support for JMCIS and MAGTFC4I/Expeditionary Warfare applications as required outside MIDB capability.

- (U) ($733) Continue object-oriented data base exploratory development.

- (U) ($445) Continue investigating and developing USAF, Army and other Joint intel/imagery system interfaces.

- (U) ($409) Develop and test enhancements to unit level JMCIS Afloat intel capabilities including access to imagery recognition and associated support data; e.g., C&P.

- (U) ($261) Initiate convergence and testing of OBU/OED intel capability with JMCIS development; provide OED-unique intel tools afloat.

- (U) ($515) Integrate Radiant Mercury (RM) capability into JMCIS to meet the high priority Fleet requirement of C4 data downgrading and releasability for coalition interoperability. RM is a certified, accreditable, automated method to downgrade highly sensitive data over security levels.

- (U) ($400) Implement the Modernized Integrated Database (MIDB) replication in JMCIS to meet the validated Fleet requirements to generate and maintain a consistent intelligence picture among general purpose C2 systems, mission planning systems, and combat direction systems while reducing numbers of databases which have to be maintained.

- (U) ($350) Continue development to transfer digital video data/information among workstations on the same platform and among workstations on multiple platforms.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	2,475	6,317	5,069	6,153
(U) APPROPRIATED VALUE:				
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	-43	0	+802
(U) FY 1999 FMB BUDGET SUBMIT:	2,475	6,274	5,069	6,955
(U) Below Threshold Reprogrammings (BTRs):	0	-133	0	0
(U) CURRENT ALLOCATION:	2,475	6,141	5,069	6,955

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY 1997: -$43K for SBIR Transfer; -$133K reflects funding change due to minor adjustments to finance other department requirements

FY 1999: +$915K for JMCIS Afloat Radiant Mercury; -$113 redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

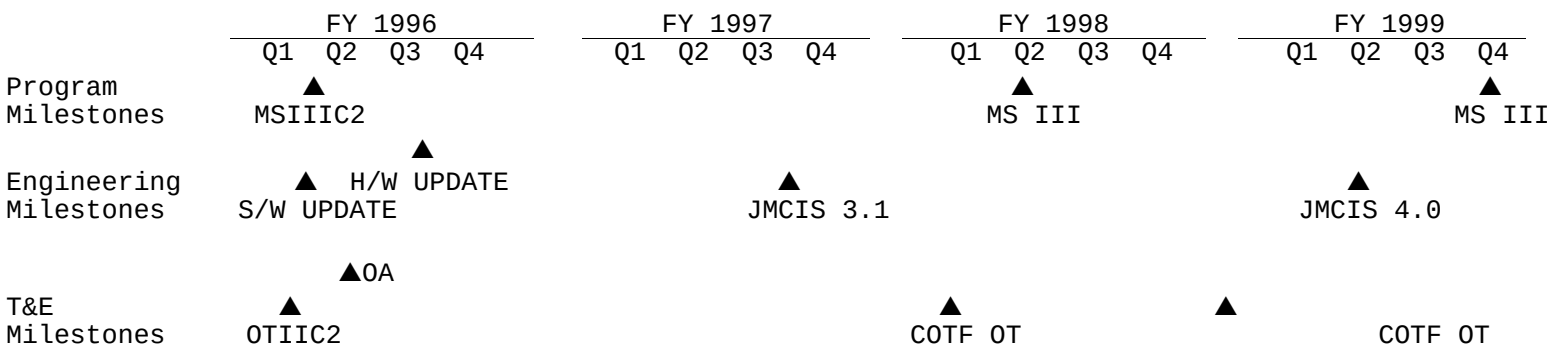
C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LI#2608	13,263	27,479	22,403	39,548	37,536	31,309	25,219	25,623	CONT.	CONT.
(U) OMN	9,771	10,002	10,140	18,274	18,673	16,911	14,237	13,569	CONT.	CONT.

Note: O&M,N for FY 96-01 and CONT. is integrated into JMCIS Afloat

(U) RELATED RDT&E:PE 0604231N (Tactical Command Systems) JMCIS Afloat (formerly Navy Tactical Command System-Afloat (NTCS-A)

D. (U) SCHEDULE PROFILE:



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

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

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management	205	215	250	250
b. Systems Engineering	700	2,907	1,569	3,128
c. Software Development	1,054	2,311	2,450	2,667
d. Hardware Development	166	358	450	560
e. System Test & Evaluation	350	350	350	350
CURRENT ALLOCATION	2,475	6,141	5,069	6,955

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NRAD	WX	VAR			2,521	638	1,586	1,685	2,357	CONT.	CONT.
All Other Contracts	W/OPT	VAR			8,552	382	860	869	968	CONT.	CONT.
Lockheed Martin Denver, CO	W/OPT	VAR					1,130	915	1,030	CONT.	CONT.
Support and Management											
Various	W/OPT	VAR			1,489	205	215	250	250	CONT.	CONT.
Test and Evaluation	PD	VAR			1,631	350	350	350	350	CONT.	CONT.
OPTEVFOR PRC San Diego, CA	Radius,PD	VAR			4,450	900	2,000	1,000	2,000	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

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

Item Description	Fund Type Vehicle	Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development				11,073	1,020	3,576	3,469	4,355	CONT.	CONT.
Subtotal Support and Management				1,489	205	215	250	250	CONT.	CONT.
Subtotal Test and Evaluation				6,081	1,250	2,350	1,350	2,350	CONT.	CONT.
Total Project				18,643	2,475	6,141	5,069	6,955	CONT.	CONT.

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands)

	TOTAL FUNDS	First Year Obligations ($000)	First Year Obligations %	First Year Expenditures ($000)	First Year Expenditures %
FY 1997 ACTUAL:	6,141	3,162	52	261	5

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.)
Obligations and expenditures are below benchmark due to late release of $2M Congressional plus-up for Radiant Mercury. OSD deferral released and allocated 4/1/97.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2215 Joint Interoperability	0	0	0	2,511	2,776	3,066	3,441	3,914	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Joint Interoperability. This program will develop common services for the Naval Services implementation of GCCS and GCSS joint interoperability requirements for sharing of C4I data and for software application reuse by Joint forces. It will provide and implement applications algorithms and interfaces updated for Joint interoperability, saving considerable time and resources that would need to be expended if new/additional software applications were required to be developed. It will produce Naval software products compliant with DII COE software engineering standards and conventions and perform integration with components and mission applications of GCCS, GCSS, TBMCS, JDP, AADC, and ABCS. Approaches to exchange digital video data/information between Joint forces using the latest COTS software will be reviewed, tested and deployed as prototypes. The Joint Interoperability program will ensure compatibility of Navy C2, USMC MAGTAF, and USCG C4I systems with other DII COE based systems to provide common reference and tactical data for afloat, ashore, amphibious and ground based tactical components. COTS licenses for common services to support interoperability with Joint systems will be procured.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

   - (U) Not Applicable.

2. (U) FY 1997 ACCOMPLISHMENTS:

   - (U) Not Applicable.

3. (U) FY 1998 PLAN:

   - (U) Not Applicable.

4. (U) FY 1999 PLAN:

- (U) ($253) Revise JMCIS architecture to be compatible with DoD requirements in DII. Produce requirements engineering data and documentation.
- (U) ($620) Port Navy JMCIS applications to Joint standard hardware platforms and update for compliance with DII requirements. Update algorithms, data and display formats for Joint interoperability.
- (U) ($300) Implement plan for migration of data to common data link.
- (U) ($259) Procure Joint standard hardware for developers and testers of common services.
- (U) ($100) Develop and implement processes to support development and integration of Joint warfare applications.
- (U) ($200) Provide training and technical services for developers of common services and mission applications.
- (U) ($225) Plan and conduct integration and development testing of common services.
- (U) ($104) Develop program documentation and data.
- (U) ($200) Develop improvements to two-way data exchange capabilities to ensure system interoperability.
- (U) ($250) Develop approach to exchange digital video data/information among Joint forces.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X2215
PROJECT TITLE: Joint Interoperability

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	0	0	0	3,552
(U) APPROPRIATED VALUE:				
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	0	0	-1,041
(U) FY 1999 FMB BUDGET SUBMIT:	0	0	0	2,511

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1999: -$1,000K reduction for IT-21; -$41K redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

Not Applicable

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X2215
PROJECT TITLE: Joint Interoperability

D. (U) SCHEDULE PROFILE:

	FY 1996				FY 1997				FY 1998				FY 1999			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Program Milestones															▲ MS III	
Engineering Milestones														▲ JMCIS 4.0		
T&E Milestones															▲ COTF OT	
Contract Milestones																

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2215
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Joint Interoperability

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
Project Management				204
Systems Engineering				478
Software Development				1,079
Hardware Development				400
System Test & Evaluation				350
Total				2,511

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
XYZ	CPFF	10/98							1,479	CONT.	CONT.
NRAD	WX	10/98							478	CONT.	CONT.
Support and Management											
XYZ	CPFF	10/98							204	CONT.	CONT.
Test and Evaluation											
NRAD	WX	10/98							350	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X2215
PROJECT TITLE: Joint Interoperability

Item Description	Fund Type Vehicle	Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development								1,957	CONT.	CONT.
Subtotal Support and Management								204	CONT.	CONT.
Subtotal Test and Evaluation								350	CONT.	CONT.
Total Project								2,511	CONT.	CONT.

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands): NOT APPLICABLE

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.) NOT APPLICABLE

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2216 C4I for Joint Littoral Warfare (JLW)	0	0	0	3,656	3,923	4,162	4,314	4,849	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The C4I for Joint Littoral Warfare (JLW) program supports Joint Service and Navy commanders ashore and afloat, including a wide range of command echelons from the CINC to Joint Task Force to the tactical command level by integrating the components of a JLW evolution. JLW systems will be developed by applying new technology to reduce life-cycle costs and platform independence and will be scaleable to each application. JLW software products will operate on a family of tactical computer configurations, including stand alone single processor configurations, man-portable units, and local area network configurations. JLW capabilities include: (1) a gateway for wide area C4I network communications and interfaces for tactical and common user communications; (2) a common tactical picture based upon intelligence data exploitation and fusion and own force data processing; (3) a common view of battle space area(s) including graphical presentation of environmental, navigational, and mapping data; (4) tactical support data base management and manipulation. The program will use and build upon the Defense Information Infrastructure (DII) Software Development Environment (SDE) and core software developed for NTCS-A and JMCIS Ashore programs. Through a series of evolutionary builds, JLW capabilities will add and/or enhance JMCIS in the areas of mine warfare and mine countermeasures, Theater Air Traffic Defense, Intelligence data exploitation (traditional and non-traditional sources), Theater Ballistic Missile Defense, improved environmental and navigational data for tactical decision areas, coastal ASW and amphibious assault, Tactical Data Link (TADIL) improvements, improved Navy and Joint system interfaces and interoperability. JLW will also introduce Artificial Intelligence to provide counter-proliferation alerts and tactical intelligence. JLW products will be initially deployed at JMCIS Afloat sites and will become part of the JMCIS software re-use library available to all programs using the JMCIS architecture.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2216
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: C4I for Joint Littoral Warfare

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) Not Applicable.

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) Not Applicable.

3. (U) FY 1998 PLAN:

- (U) Not Applicable.

4. (U) FY 1999 PLAN:

- (U) ($420) Perform system requirements analysis and systems design.
- (U) ($200) Develop program documentation and data.
- (U) ($376) Transition to latest technologies to achieve a field deployable JLW capability.
- (U) ($475) Develop new Application Program Interfaces (APIs) to support new JLW mission capabilities.
- (U) ($663) Update JMCIS C4I systems architecture and update/integrate JMCIS software segments to provide Tactical Data Link (TADIL) improvement, improved navigational and environmental data for Tactical Decision Aids and Theater Ballistic Missile Defense.
- (U) ($320) Procure components of the DII Software Development Environment for use by JMCIS/DII developers.
- (U) ($447) Develop/integrate JLW Application Software Segments supporting mine warfare and countermeasures, and amphibious assault.

- (U) ($255) Complete initial phase of JLW/JMCIS Systems Integration.
- (U) ($300) Conduct JLW Developmental Testing.
- (U) ($200) Complete an JLW initial OA.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	0	0	0	6,215
(U) APPROPRIATED VALUE:				
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	0	0	-2,559
(U) FY 1999 FMB BUDGET SUBMIT:	0	0	0	3,656

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1999: -$2,500K reduced for IT-21; $-59 redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604231N
PROGRAM ELEMENT TITLE: Tactical Command System
PROJECT NUMBER: X2216
PROJECT TITLE: C4I for Joint Littoral Warfare

D. (U) SCHEDULE PROFILE:

	FY 1996				FY 1997				FY 1998				FY 1999			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Program Milestones															▲ MS III	
Engineering Milestones														▲ JMCIS 4.0		
T&E Milestones															▲ COTF OT	
Contract Milestones																

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2216
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: C4I for Joint Littoral Warfare

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
Project Management				200
Systems Engineering				675
Software Development				1,961
Hardware Development				320
System Test & Evaluation				500
Total				3,656

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
XYZ	CPFF	10/98							2,281	CONT.	CONT.
NRAD	WX	10/98							675	CONT.	CONT.
Support and Management											
XYZ	CPFF	10/98							200	CONT.	CONT.
Test and Evaluation											
NRAD	WX	10/98							500	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2216
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: C4I for Joint Littoral Warfare

Item Description	Fund Type Vehicle	Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development								2,956	CONT.	CONT.
Subtotal Support and Management								200	CONT.	CONT.
Subtotal Test and Evaluation								500	CONT.	CONT.
Total Project								3,656	CONT.	CONT.

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands): NOT APPLICABLE

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.) NOT APPLICABLE

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2305 Navy Common Operating Environment (COE)	0	0	1,984	1,995	2,047	2,101	2,153	2,209	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Design, develop, update, integrate, test, configuration manage, support and evolve a Naval Common Operating Environment (COE), based on the Joint Defense Information Infrastructure (DII) COE, for all Naval C4I Systems. The Naval COE program contains the fundamental building blocks for all of our fielded Joint Maritime Command Information System (JMCIS) C4I systems in Navy, Marine Corps, and Coast Guard. It is the Navy's tactical implementation of the Global Command and Control System (GCCS) and the Global Combat Support System (GCSS) which provides the warfighter: (1) timely access to battlefield information, and (2) state-of-the-art information processing capability to support the command and control of maritime forces through a combination of communications, intelligence and combat system interfaces.

As the Navy migrates to the DII COE, it will maintain compatibility with the core tactical services of our Joint Command and Control systems (e.g., GCCS) as well as functioning as the COE for the Navy's JMCIS Command and Control systems afloat and ashore. Its core services include communications interfaces, message processing, track database management, track correlation, relational database management, and tactical display capabilities. The Navy COE must continue to service the Marine Corps, foreign military sales, joint and Coast Guard Command and Control programs.

The Navy COE serves as the system integration point for command and control systems in the Naval services. The program has the responsibility of working with each developer to incorporate the requirements of their users so that they might quickly and efficiently integrate and transform present stovepipe capabilities into an interoperable common operational environment. As the number of legacy systems migrating to the DII COE continues to grow, resources for rapidly folding them into the service extensions must keep pace as the complexity and size of the COE grows. As a product of evolutionary acquisition, the Navy COE will continue to evolve with the DII COE, new technology, and Commercial Off-the-shelf products.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2305
PROJECT TITLE: Navy COE

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) Not Applicable.

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) Not Applicable.

3. (U) FY 1998 PLAN:

- (U) ($ 200) Improve processes for integrating to the COE and develop supporting program documentation. Maintain the on-line software library which supports the Naval and DII COE and naval warfare applications for integration and configuration control. Provide on-line distribution of documentation and help desk. Conduct problem reporting and tracking of Naval COE components.

- (U) ($1,402) Integrate and transform Naval core services to be interoperable extensions of the DII COE. Develop tools for integration. Develop updates to keep pace with new technology and commercial-off-the-shelf products. Obtain and manage COTS licenses. Upgrade Application Programmer Interfaces to improve the JMCIS systems integration process. Distribute COE software and provide engineering support for developers to the COE.

- (U) ($ 350) Conduct compliance and functional level testing and Naval COE component certification testing. Conduct development test and evaluation and certification of evolutionary COE products.

- (U) ($32) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

4. (U) FY 1999 PLAN:

- (U) ($ 205) Continue development of program documents and data.

- (U) ($1,431) Integrate and transform Naval core services to be interoperable extensions of the DII COE. Develop tools for integration. Develop updates to keep pace with new technology and commercial-off-the-shelf products. Obtain and manage COTS licenses. Upgrade Application Programmer Interfaces to improve the JMCIS systems integration process. Distribute COE software and provide engineering support for developers to the COE.

- (U) ($ 359) Continue compliance and functional level testing and Naval COE component certification testing. Conduct development test and evaluation and certification of evolutionary COE products.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	0	0	1,984	2,027
(U) Appropriated Value:		0		
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	0	0	-32
(U) FY 1999 FMB BUDGET SUBMIT:	0	0	1,984	1,995

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY 1999: -$32K redirected to develop and update overarching C4ISR mission requirements

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

Not Applicable

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2305
PROJECT TITLE: Navy COE

D. (U) SCHEDULE PROFILE:

	FY 1996				FY 1997				FY 1998				FY 1999			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Program Milestones											▲ MS III				▲ MS III	
Engineering Milestones														▲ JMCIS 4.0		
T&E Milestones									▲ COTF OT						▲ COTF OT	
Contract Milestones																

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2305
PROJECT TITLE: Navy COE

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
Project Management			200	205
Software Development			1,434	1,431
System Test & Evaluation			350	359
Total			1,984	1,995

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands): Not Applicable (new Project).

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
XYZ	CPFF	10/97,98						1,434	1,431	CONT.	CONT.
Support and Management											
XYZ	CPFF	10/97,98						200	205	CONT.	CONT.
Test and Evaluation											
NRAD	WX	10/97,98						350	359	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2305
PROJECT TITLE: Navy COE

Item Description	Fund Type Vehicle	Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development							1,434	1,431	CONT.	CONT.
Subtotal Support and Management							200	205	CONT.	CONT.
Subtotal Test and Evaluation							350	359	CONT.	CONT.
Total Project							1,984	1,995	CONT.	CONT.

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands): NOT APPLICABLE

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.) NOT APPLICABLE

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2306 Naval Simulation System	0	0	3,369	3,025	3,055	3,092	3,147	3,275	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Naval Simulation System (NSS) provides a capability to simulate the execution of Naval Warfare and Operations Other Than War to be used for a number of related purposes. Fleet Command Centers, both ashore and afloat will use this capability for Course of Action Assessment; that is, to assess the effectiveness of operational plans with respect to measures defined by the fleet planner. Acquisition Planners in OPNAV will use this capability to conduct requirements analysis and cost effectiveness analysis for new Naval systems. The Naval Simulation System will also support Command Level training for operational forces at the Task Force or Battlegroup level. To be accessible to fleet planners, the Naval Simulation System will be integrated into the Joint Maritime Command Information System (JMCIS), both afloat and ashore configurations, in such a way as to be compliant with the Global Command and Control System (GCCS). In addition, the Naval Simulation System will support distributed computing on multiple High Performance Computers connected together on a network such as the Defense Information Infrastructure and Fleet Operational Communication Links at multiple classification levels. The same networks that are used to provide access to distributed computing will also be used for Distributed Collaborative Planning by means of which planners at different sites with responsibility for different aspects of the plan can work together collaboratively to produce a single coherent plan. This collaborative planning capability will be used to support Joint Planning between different service components. The Naval Simulation System will undergo Verification and Validation during its design and implementations phases, and will be Accredited for each intended major application. This effort funds the development and maintenance of the Naval Simulation System and the infrastructure of domain experts needed for ongoing Verification, Validation, and Accreditation (VV&A).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) Not Applicable.

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) Not Applicable.

3. (U) FY 1998 PLAN:

- (U) ($610) Add/Improve Warfare Area representations in NSS as specified by the NSS Requirements Working Group and directed by the NSS Configuration Control Board.
- (U) ($270) Identify and import the standard/validated data and information needed to characterize the additional/improved warfare area representations directed by the NSS Configuration Control Board.
- (U) ($330) Add/Improve the interfaces between NSS and similar simulation systems from other services to improve interoperability with other services for an improved Joint Simulation capability to support Joint Assessments and Joint Command Level Training.
- (U) ($610) Add/Improve the NSS functionality supported by NSS in the JMCIS/GCCS environment as specified by the JMCIS Requirements Working Group and directed by the NSS Configuration Control Board.
- (U) ($913) Update and modernize the hardware and firmware suites used by NSS for critical applications as specified by the NSS Requirements Working Group and directed by the NSS Configuration Control Board.
- (U) ($575) Support the necessary domain experts to provide VV&A for those NSS additions/improvements directed by the NSS Configuration Control Board.
- (U) ($61) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

4. (U) FY 1999 PLAN:

- (U) ($563) Add/Improve Warfare Area representations in NSS as specified by the NSS Requirements Working Group and directed by the NSS Configuration Control Board.
- (U) ($315) Identify and import the standard/validated data and information needed to characterize the additional/improved warfare area representations directed by the NSS Configuration Control Board.
- (U) ($270) Add/Improve the interfaces between NSS and similar simulation systems from other services to improve interoperability with other services for an improved Joint Simulation capability to support Joint Assessments and Joint Command Level Training.
- (U) ($720) Add/Improve the NSS functionality supported by NSS in the JMCIS/GCCS environment as specified by the JMCIS Requirements Working Group and directed by the NSS Configuration Control Board.
- (U) ($540) Update and modernize the hardware and firmware suites used by NSS for critical applications as specified by the NSS Requirements Working Group and directed by the NSS Configuration Control Board.
- (U) ($617) Support the necessary domain experts to provide VV&A for those NSS additions/improvements directed by the NSS Configuration Control Board.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	0	0	3,369	3,416
(U) APPROPRIATED VALUE:		0		
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	0	0	-391
(U) FY 1999 FMB BUDGET SUBMIT:	0	0	3,369	3,025

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1999: JMCIS Offset for NTCSS and JMCIS (-342K); -$49K redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

D. (U) SCHEDULE PROFILE: Not Applicable

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2306
PROJECT TITLE: Navy Simulation System

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management			225	226
b. Software Development			2,569	2,133
c. Test and Evaluation			575	666
Total			3,369	3,025

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Various								1,999	1,633	CONT.	CONT.
NRAD	WX	VAR						570	500	CONT.	CONT.
Support and Management											
Various								225	226	CONT.	CONT.
Test and Evaluation PD											
NRAD	WX	VAR						575	666	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: June 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2306
PROJECT TITLE: Navy Simulation System

Item Description	Fund Type Vehicle	Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development							2,569	2,133	CONT.	CONT.
Subtotal Support and Management							225	226	CONT.	CONT.
Subtotal Test and Evaluation							575	666	CONT.	CONT.
Total Project							3,369	3,025	CONT.	CONT.

C. (U) FUNDING PROFILE:

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

C. 2. (U) FY 1997 OBLIGATIONS/EXPENDITURES ($ in thousands): NOT APPLICABLE

EXPLANATION OF LOW OBLIGATIONS OR EXPENDITURES: (Complete if obligations are less than 74% or expenditures are less than 22.6%.) NOT APPLICABLE

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: June 1997

BUDGET ACTIVITY: 5

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

(U) COST (Dollars in thousands)

PROJECT NUMBER TITLE	FY 1996 ACTUAL	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2307 Shipboard LAN/WAN	0	0	498	487	489	979	978	979	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Shipboard LAN/WAN project is a component of the Naval Tactical Command Support System (NTCSS), which is a multi-function program designed to provide standard tactical support information systems to various afloat and associated shore-based fleet activities. The NTCSS mission is to provide the full range of responsive tactical support ADP hardware and software in support of the management of information, personnel, material and funds required to maintain and operate ships, submarines, and aircraft. NTCSS is to provide an efficient management of afloat tactical support data, through the use of standardized hardware and software, to meet the mission support information management requirements for force sustainment in support of the new direction of the Navy and Marine Corps. On 6 June 1995, NTCSS and its component subsystems, discussed below, were selected as Command and Control migration systems under the auspices of ASD(C3I).

NTCSS incorporates the functionality of the Shipboard Non-Tactical ADP Processing (SNAP) systems, the Naval Aviation Logistics Command Management Information System (NALCOMIS), and the Maintenance Resource Management System (MRMS).

SNAP is an automated information system that supports organizational level maintenance, supply, financial and administrative functions on afloat units, at Marine Aviation Logistic Squadrons (MALS), and at associated shore activities. Due to the age and obsolescence of SNAP I, which is currently deployed on the larger ships and at the MALS, and SNAP II, which is currently deployed on the smaller ships and submarines, these systems are being replaced with SNAP III in the 1994 through 2000 time frame. SNAP improves equipment supportability and maintainability and thus readiness through: the improvement in the accuracy of the maintenance, supply, financial and related support data maintained and reported by the ship; and the acceleration of management report preparation and data transmission.

NALCOMIS is an automated, real time, interactive, management information system that provides a modern management tool for day-to-day management of aircraft maintenance at the organizational and intermediate levels. NALCOMIS automates the management of the aviation repairables inventory providing nose-to-tail tracking through the repair and operations cycles.

The scope of NALCOMIS includes 71 intermediate maintenance activities located afloat (CV/LHA/LHD) and ashore at MALS and Naval Air Stations (NAS's), and approximately 359 Navy and Marine squadrons.

MRMS is an automated information system that supports ship intermediate maintenance management of the Atlantic and Pacific Fleets. MRMS supports Type Commands, Group Commanders, Area Coordinators, Readiness Support Groups, Submarine Squadrons, Ship Repair Facilities, and various intermediate Maintenance Activities, both afloat and ashore, for budgeting, planning, production and analysis of ship maintenance. MRMS improves ship readiness through improved maintenance and ship repair management, information resource management, and maintenance data processing.
FY 98 is the first year of RDT&E funds for this project.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

   - (U) Not Applicable.

2. (U) FY 1997 ACCOMPLISHMENTS:

   - (U) Not Applicable.

3. (U) FY 1998 PLAN:

   - (U) ($489) Develop and integrate multi-level security capabilities on unclassified networks used by/managed by NTCSS. This capability will support the Combat Support Information for the Warfighter thrust by enabling tactical systems connected to Classified (GENSER Secret) networks to initiate queries of logistics data bases (such as NTCSS) resident on the unclassified networks, and receive detail or roll-up planning and execution data.

   - (U) ($9) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

4. (U) FY 1999 PLAN:

   - (U) ($487) Continue to incorporate state-of-the-art technologies and business process improvements into interfaces with tactical systems.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1998 PRESIDENT'S BUDGET:	0	0	498	495
(U) Appropriated Value:		0		
(U) ADJUSTMENTS FROM FY 1998 PRESBUDG:	0	0	0	-8
(U) FY 1999 FMB BUDGET SUBMIT:	0	0	498	487

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY 1999: -$8K redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN (LI 2611)	31,904	29,541	49,710	74,533	42,737	36,462	39,458	38,482	CONT	CONT
(U) O&MN	38,876	38,249	40,273	41,340	41,376	41,152	41,213	43,008	CONT	CONT
(U) O&MNR	658	642	639	633	650	668	683	698	CONT	CONT

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604245N
PROGRAM ELEMENT TITLE: USMC H-1 UPGRADES

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H2279/									
4BW/4BN UPGRADE	68,114	86,335	100,264	158,873	109,164	51,944	20,481	CONT	CONT
RDT&E ARTICLES				2	2				

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION The mission of the AH-1W attack helicopter is to provide rotary wing close air support, anti-armor, armed escort, armed/visual reconnaissance and fire support coordination capabilities under day/night and adverse weather conditions. The mission of the UH-1N utility helicopter is to provide command and control and combat assault support under day/night and adverse weather conditions. Also, 4BN missions include special operations support; control, coordination, guidance, supporting fire and aeromedical evacuation. The 4BW/4BN program will replace 2-bladed rotor systems on the AH-1W and UH-1N aircraft. Fully integrated cockpits will be phased into the development after initial work on the drive system is underway. Initial work will consist of simultaneous design efforts for the 4BW and 4BN. Major modifications include: a new rotor system with semi-automatic bladefold of the new composite rotor system, a new performance matched transmission, a new 4-bladed tail rotor and drive system, a more effective stabilizer, upgraded landing gear, and tail pylon structural modifications. This remanufacture will add 10,000 flight hours to 4BW/4BN airframes. The 4BW will increase aircraft maneuverability, speed, and payload (ordnance) capability. The fully integrated cockpits will reduce operator workload and improve situational awareness, thus increasing safety. It will provide growth potential for future weapon systems and avionics, which would increase mission effectiveness and survivability. (As discrete systems have previously been added to both aircraft, pilot workload has progressively worsened.) The cockpits will include integration of on-board mission planning, communications, digital fire control, self navigation, night targeting, and weapons systems in nearly identical crew stations reducing training requirements. The 4BN effort will incorporate the 4BW rotor system into the UH-1N aircraft, as well as a fully integrated cockpit common with the 4BW, maximizing commonality between the two aircraft and providing needed improvements in crew and passenger survivability, payload, power available, endurance, range, airspeed, maneuverability and supportability.

(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.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604245N PROJECT NUMBER: H2279
PROGRAM ELEMENT TITLE: USMC H-1 UPGRADES PROJECT TITLE: 4BW/4BN UPGRADE

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS: (Executed in PE 0603266N)

- (U) ($ 0) Received 4BW/4BN Milestone II decision and approval for Engineering and Manufacturing Development (E&MD)in first quarter.

- (U) ($67,558) Began 4BW/4BN design efforts and successfully conducted 4BW/4BN Preliminary Design Review (PDR). Began design and fabrication of tooling. Began detail parts fabrication and procurement of long lead hardware. Contractor conducted a competition and selected a cockpit integrator. Began cockpit design.

- (U) ($ 550) Began Live, Fire, Test and Evaluation (LFT&E) effort of aircraft subassemblies.

- (U) ($ 6) Reprogrammed for various minor efforts.

2. (U) FY 1998 PLAN:

- (U) ($85,845) Continue 4BW/4BN fabrication of tooling and procurement of long lead hardware. Conduct 4BW/4BN airframe Critical Design Review (CDR). Begin initial fabrication of 4BW/4BN aircraft components. Continue cockpit design, conduct cockpit hardware and software PDR.

- (U) ($ 490) Continue LFT&E effort of aircraft subassemblies.

3. (U) FY 1999 PLAN:

- (U) ($99,409) Continue fabrication of 4BW/4BN aircraft components. Complete cockpit design, hardware and software CDR and begin avionics bench testing. Deliver initial AH-1W/UH-1N aircraft to contractor for teardown and remanufacture into 4BW/4BN. Start 4BW/4BN Structural Test Articles (STA), avionics bench and transmission bench testing. Complete 4BN engineering design. Start assembly of first 4BW EMD aircraft.

- (U) ($ 855) Continue LFT&E effort of aircraft subassemblies.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604245N PROJECT NUMBER: H2279

PROGRAM ELEMENT TITLE: USMC H-1 UPGRADES PROJECT TITLE: 4BW/4BN UPGRADE

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	69,986	80,735	90,264
(U) Appropriated Value:	73,080		
(U) Adjustments from PRESBUDG:	-1,872	+5,600	+10,000
(U) FY 1999 OSD/OMB Budget Submit:	68,114	86,335	100,264

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 reflects a decrease of -$1,872 thousand for Small Business Innovative Research (SBIR) assessment. FY98 increase of +5,600 thousand for resource sponsor repriorization. FY99 increases of $9,500 thousand for resource sponsor reprioritization and +$377 thousand Naval Working Capital Fund (NWCF)surcharge correction and +254 thousand other pricing adjustment; offset by a decrease of -$131 thousand for resource sponsor balancing adjustment.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604245N

PROGRAM ELEMENT TITLE: USMC H-1 UPGRADES

PROJECT NUMBER: H2279

PROJECT TITLE: 4BW/4BN UPGRADE

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
QTY						(5)	(17)	(258)	(280)
APN-1 - Line 8						73,693	216,323	2,595,638	2,885,654

(U) RELATED RDT&E: 0604212N, ASW & Other Helo Developments
0603266N, AH-1T Comp Rotor Blade

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604245N PROJECT NUMBER: H2279

PROGRAM ELEMENT TITLE: USMC H-1 UPGRADES PROJECT TITLE: 4BW/4BN UPGRADE

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	1Q 4BW/4BN MSII			2Q/04 4BW/4BN MSIII
Engineering Milestones	2Q-4Q 4BW/4BN PDR	2Q-4Q 4BW/4BN CDR		
T&E Milestones				2Q/02-4Q/02 4BN TECHEVAL 1Q/03-3Q/03 4BN OPEVAL 3Q/02-1Q/03 4BW TECHEVAL 2Q/03-4Q/03 4BW OPEVAL
Contract Milestones	1Q 4BW/4BN EMD			2Q/02 4BN LRIP #1 2Q/03 4BN LRIP #2 2Q/04 4BN FRP 2Q/03 4BW LRIP 2Q/04 4BW FRP

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604245N
PROGRAM ELEMENT TITLE: USMC H-1 UPGRADES
PROJECT NUMBER: H2279
PROJECT TITLE: 4BW/4BN UPGRADE

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Hardware Development	58,253	78,908	86,739
b. Software Development	1,003	540	522
c. Test and Evaluation	550	490	855
d. Engineering & Technical Support	4,843	2,846	3,998
e. Gov’t Furnished Equipment	2,304	2,251	6,718
f. Program Management	1,155	1,300	1,432
h. Reprogramming for various minor efforts	6		
Total	68,114	86,335	100,264

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604245N PROJECT NUMBER: H2279
PROGRAM ELEMENT TITLE: USMC H-1 UPGRADES PROJECT TITLE: 4BW/4BN UPGRADE

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Major Contracts:										
Bell Helicopter Ft. Worth, TX	SS CPFF	03/96	7,851	7,851	7,851	0	0	0	0	7,851
Bell Helicopter Ft. Worth, TX	SS CPAF	11/96	498,000	498,000	0	58,259	78,908	86,739	CONT	CONT
Gov't Furnished Equipment:										
Various	Various	Various	CONT	CONT	0	2,304	2,251	6,718	CONT	CONT
In-House Support:										
NAWC-AD, Patuxent Rv	WX	10/98	CONT	CONT	729	3,231	2,328	2,393	CONT	CONT
Multiple Field Activities:										
Tech & Engr Spt	WX	10/98	CONT	CONT	1,211	2,615	1,058	2,127	CONT	CONT
Support and Management										
In-House Support: (Travel)		Various			107	130	100	100	CONT	CONT
Misc. CS Contracts:	Various				1,097	1,025	1,200	1,332	CONT	CONT
Test and Evaluation:	Various				0	550	490	855	CONT	CONT

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604245N
PROGRAM ELEMENT TITLE: USMC H-1 UPGRADES
PROJECT NUMBER: H2279
PROJECT TITLE: 4BW/4BN UPGRADE

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development		Not Applicable							
Support and Management		Not Applicable							
Test and Evaluation		Not Applicable							

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	9,791	66,403	84,545	97,977	CONT	CONT
Subtotal Support and Management	1,204	1,155	1,300	1,432	CONT	CONT
Subtotal Test and Evaluation	0	550	490	855	CONT	CONT
Reprogramming for minor efforts		6				
Total Project	10,995	68,114	86,335	100,264	CONT	CONT

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604261N
PROGRAM ELEMENT TITLE: Acoustic Search Sensors

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0480 ASW Sensors & Processing	3,455	10,869	29,134	38,161	25,907	23,059	12,640	CONT	CONT
H2000 Air Deployed Active Receiver (ADAR)	10,202	6,078	1,021	0	0	0	0	0	97,596
TOTAL	13,657	16,947	30,155	38,161	25,907	23,059	12,640	CONT	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 Generic Acoustic Stimulation System (GASS) which is an ocean, sensor and target-modeling system that will add shallow water and range dependent capabilities to all ASW trainers and the Advanced Extended Echo Ranging (AEER) system to provide an improved bistatic acoustic source and signal processing for harsh water environments. A future program planned for this project is the Shallow Water ASW Localization and Attack System (SWALAS) to provide improved localization and attack in regional conflict environments.

(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 operating in deep water. The ADAR Sonobuoy will also be capable of functioning in a passive mode to detect high speed targets. The Air Common Acoustic Processing (ACAP) software programs reside in the UYS-1 (Signal processor in the P-3 and the S-3 aircraft) to provide acoustic data from sonobuoy sensors such as ADAR for display and analysis.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 05

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H0480 ASW Sensors & Processing	3,455	10,869	29,134	38,161	25,907	23,059	12,640	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 Generic Acoustic Stimulation System (GASS) which is an ocean, sensor and target modeling system that will add shallow water and range dependent capabilities to all ASW trainers and the Advanced Extended Echo Ranging (AEER) system to provide an improved bistatic acoustic source and signal processing for harsh water environments. A future program planned for this project is the Shallow Water ASW Localization and Attack System (SWALAS) to provide improved localization and attack in regional conflict environments.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:
(U) GASS

- (U) ($1,109) Completed Milestone II, final source selection activities, and award EMD contract; initiate system design.
- (U) ($ 963) Continued GFE environmental software development to reduce EMD risk.
- (U) ($ 272) Provided engineering oversight of EMD contractor.
- (U) ($ 129) Provided other engineering support and contractor support services.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

(U) AEER

- (U) ($ 289) Prepare EMD solicitation and system specification.
- (U) ($ 238) Conduct analysis of alternatives (AOA) for selection of EMD system configuration.
- (U) ($ 455) Identify requirements for implementation of the Advanced Extended Echo Ranging (AEER) baseline in P-3C Update III AN/USQ-78A equipped aircraft.

(U) GASS

2. (U) FY 1998 PLAN:

(U) GASS

- (U) ($3,600) EMD contractor complete GASS system design and initiate software code and test.
- (U) ($ 390) Continue GFE environmental software development to reduce EMD risk.
- (U) ($ 766) Provide engineering oversight of EMD contractor.
- (U) ($ 947) Provide other engineering support and contractor support services.

(U) AEER

- (U) ($ 500) Complete AOA and Acquisition documentation leading to Milestone II.
- (U) ($3,000) Initiate implementation of AEER baseline in P-3C Update III.
- (U) ($1,460) Initiate systems requirements for implementation of AEER in P-3C Update III.
- (U) ($ 206) Provide other engineering support and contract support services.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

3. (U) FY 1999 PLAN:

(U) GASS

- (U) ($10,100) EMD contractor complete preliminary design review (PDR) for each of four trainer types, procure pre-production hardware and continue code and test.
- (U) ($ 310) Continue GFE environmental software improvements.
- (U) ($ 850) Provide engineering oversight of EMD contractor.
- (U) ($ 1,388) Provide other engineering support and contractor support services.

(U) AEER

- (U) ($ 7,781) Award EMD contract and complete contractor system design review (SDR); initiate subassembly fabrication and test.
- (U) ($ 2,000) Complete concept of operations for implementation of AEER in the P-3C Update III.
- (U) ($ 5,000) Continue software code and test for AEER baseline in the P-3C Update III.
- (U) ($ 1,705) Provide other engineering support and contractor support services.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	3,585	10,869	29,156
(U) Appropriated Value	3,787		
(U) Adjustments from PRESBUDG:	-130	0	-22
(U) FY 1999 OSD/OMB Budget submit:	3,455	10,869	29,134

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 net decrease of $-130 thousand reflects SBIR reduction of $-78 thousand, an additional $-48 thousand for Federally Funded Research and Development Centers (FFRDC) and $-4 thousand for a minor pricing adjustment. The net reduction of $-22 thousand in FY 1999 reflects $+20 thousand Navy Working Capital Fund (NWCF) and a $-42 thousand minor pricing adjustment.

(U) Schedule: AEER MS-II delayed from 1Q/98 to 2Q/98 and EMD contract award from 3Q/98 to 1Q/99 to allow completion of acquisition documentation. AEER TECHEVAL and OPEVAL have subsequently been delayed from 2Q/02-2Q/03 to 4Q/02-1Q/03 (TECHEVAL) and 4Q/02-4Q/03 to 2Q/03-3Q/03 (OPEVAL). The revised milestone schedules displayed in FYs 1999 through 2003 for GASS PDR, CDR and TTPRR reflect the negotiated GASS EMD contract schedule.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	2Q GASS Milestone II	2Q AEER MS-II		3Q/02 GASS MS-III 4Q/01 SWALAS MS-II
Engineering Milestones			1Q GASS PDR #1 1Q AEER SDR	3Q/00 GASS CDR #1 4Q/00 GASS PDR #2 2Q/01 GASS PDR #3/CDR #2 3Q/01 GASS PDR #4 4Q/01 GASS CDR #3 1Q/02 GASS CDR #4 4Q/00 AEER PDR 4Q/01 AEER CDR
T&E Milestones				1Q/02-2Q/03 GASS TTPRR 4Q/02-1Q/03 AEER TECHEVAL 2Q/03-3Q/03 AEER OPEVAL
Contract Milestones	2Q GASS EMD Contract Award		1Q AEER EMD Contract Award	1Q/02 SWALAS EMD Contract Award

FY 1999 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Hardware Development	0	0	6,000
b. Software Development	1,963	7,307	14,950
c. Systems Engineering	693	1,460	1,700
d. Government Engineering Support	517	1,049	4,095
e. Program Management Support	143	698	1,801
f. Contractor Support Services	139	355	588
Total	3,455	10,869	29,134

FY 1999 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
APLABS	C/CPFF	7/93	5,469	5,469	5,469	0	0	0	0	5,469
San Diego, CA										
SAIC	C/CPFF	6/91	7,456	7,456	4,610	963	350	320	1,213	7,456
McLean, VA										
Northrop Grumman	C/CPIF	2/97	45,900	45,900	0	1,000	3,600	10,100	31,200	45,900
Long Island NY										
*AEER EMD Contr	TBD	10/98	TBD	19,750	0	0	0	6,000	13,750	19,750
MISC/In House	WX	10/98	TBD	TBD	13,871	1,210	3,866	6,325	CONT	CONT
P-3 Baseline Contr	TBD	2/98	TBD	12,000			2,000	4,000	6,000	12,000
Support and Management										
MISC/In House	WX	10/98	TBD	TBD	1,269	143	698	1,801	CONT	CONT
MISC/Contrs	C/CPFF	10/98	TBD	TBD	3,492	139	355	588	CONT	CONT
(Aggregate under $1 million)										

Test and Evaluation Not Applicable

GOVERNMENT FURNISHED PROPERTY

PRODUCT DEVELOPMENT - NOT APPLICABLE
SUPPORT AND MANAGEMENT - NOT APPLICABLE
TEST AND EVALUATION - NOT APPLICABLE
*AEER contract shown corrects SWALAS contract displayed in error in the FY 1998 President’s Budget.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development	Not Applicable								
Support and Management	Not Applicable								
Test and Evaluation	Not Applicable								

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	23,950	3,173	9,816	26,745	CONT	CONT
Subtotal Support and Management	4,761	282	1,053	2,389	CONT	CONT
Subtotal Test and Evaluation	0	0	0	0	CONT	CONT
Total Project	28,711	3,455	10,869	29,134	CONT	CONT

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H2000 Air Deployed Active Receiver (ADAR)	10,202	6,078	1,021	0	0	0	0	0	97,586

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 operating in deep water. The ADAR Sonobuoy will also be capable of functioning in a passive mode to detect high speed targets. The Air Common Acoustic Processing (ACAP) software programs reside in the UYS-1 (Signal processor in the P-3 and the S-3 aircraft) to provide acoustic data from sonobuoy sensors such as ADAR for display and analysis.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:
   - (U) ($3,628) Completed build and delivery of TECHEVAL and OPEVAL test units.
   - (U) ($2,901) Completed S-3B/ADAR integration test and conduct system flight test.
   - (U) ($ 570) Completed training materials and equipment for TECHEVAL/OPEVAL.
   - (U) ($1,394) Conducted TECHEVAL of the IEER system.
   - (U) ($1,708) Provided other engineering support and contractor support services.
   - (U) ($ 1) Reprogrammed to Project H1425 for Deskbook reduction.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

2. (U) FY 1998 PLAN:
- (U) ($1,254) Provide system engineering support for completion of TECHEVAL.
- (U) ($ 932) Complete TECHEVAL.
- (U) ($1,165) Complete OPEVAL.
- (U) ($1,370) Initiate Generic Acoustic Stimulator System (GASS) prototype integration into S-3B Weapon System Trainer (WST) for Fleet Introduction Team (FIT) training.
- (U) ($ 360) Complete FIT training materials.
- (U) ($ 997) Provide other engineering support and contractor support services.

3. (U) FY 1999 PLAN:
- (U) ($ 765) Complete GASS prototype/FIT trainer integration.
- (U) ($ 256) Provide other engineering support and contractor support services.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	10,396	6,078	991
(U) Appropriated Value	10,854		
(U) Adjustments from PRESBUDG:	-194	0	+30
(U) FY 1999 OSD/OMB Budget submit:	10,202	6,078	1,021

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 net decrease of $-194 thousand includes $-166 thousand for SBIR, an additional $-14 thousand for Federally Funded Research and Development Centers (FFRDC) and $-14 thousand minor pricing adjustment. The net increase in FY 1999 of $+30 thousand reflects a Navy Working Capital Fund (NWCF) increase of $+31 thousand and a $-1 thousand decrease for minor pricing adjustment.

(U) Schedule: TECHEVAL delayed from 4Q/97-1Q/98 to 4Q/97-2Q/98 and OPEVAL delayed from 2Q-3Q/98 to 3Q-3Q/98 due to additional time required to complete integration and test, thus delaying MS III until 4Q/98.

(U) Technical Not applicable.

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

	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN (SSQ-101) (403600)	0	0	16,958	29,408	38,228	39,183	38,749	CONT	CONT

(U) RELATED RDT&E:
(U) PE 0603254N (ASW Systems Development)

FY 1999 RDT&E,N BUDGET JUSTIFICATION SHEET DATE: September 1997

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

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		4Q MS-III		
Engineering Milestones				
T&E Milestones		4Q/97-2Q/98 TECHEVAL 3Q-3Q/98 OPEVAL		
Contract Milestones				

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Hardware Development	1,924	0	0
b. Software Development	1,339	400	0
c. Systems Engineering	492	109	130
d. Development Test and Evaluation	1,866	932	0
e. Integrated Logistics Support	0	0	0
f. Training Equipment	1,140	1,360	635
g. Government Engineering Support	1,765	1,115	0
h. Program Management Support	1,400	797	181
i. Contractor Support Services	275	200	75
j. Operational Test and Evaluation	0	1,165	0
k. Reprogrammed to project H1425 for Deskbook Reduction.	1		
Total	10,202	6,078	1,021

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
ERAPSCO	C/CPIF	7/92	24,843	24,843	22,919	1,924	0	0	0	24,843
Fort Wayne, IN										
NAWC/AD PAX RV	WX	10/98	46,827	46,827	39,861	4,852	1,984	130	0	46,827
MISC/In House	WX	10/98	9,610	9,610	9,425	185	0	0	0	9,610
Trainer Integr	TBD	10/98	TBD	1,635	0	0	1,000	635	0	1,635
Support and Management										
MISC/In House	WX	10/98	5,335	5,335	2,957	1,400	797	181	0	5,335
MISC/Contrs	C/CPFF	10/98	2,508	2,508	1,958	275	200	75	0	2,508
(Less than $2 million)										
Test and Evaluation										
Miscellaneous (Less than $2 Million)										
	Various	10/98	4,532	4,532	869	1,566	2,097	0	0	4,532
GOVERNMENT FURNISHED PROPERTY										

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Program
Product Development	Not Applicable								
Support and Management	Not Applicable								
Test and Evaluation									
NAWC/AD WAR	WX	N/A	N/A	2,296	0	0	0	0	2,296

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	72,205	6,961	2,984	765	0	82,915
Subtotal Support and Management	4,915	1,675	997	256	0	7,843
Subtotal Test and Evaluation	3,165	1,566	2,097	0	0	6,828
Total Project	80,285	10,202	6,078	1,021	0	97,586

DATE: 12 September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
H1425 V-22	605,682	529,495	287,912	169,384	108,036	44,805	31,557	63,708	6,921,562
TOTAL	605,682	529,495	287,912	169,384	108,036	44,805	31,557	63,708	6,921,562
RDT&E Articles	4								4

A. (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).

(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.

(U) ACQUISITION STRATEGY: 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 countermeasures. The CV-22 will be approximately 90% common with the MV-22.

DATE:12 September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($552,869) Continued MV-22 and CV-22 contract efforts related to the engineering and manufacturing development (EMD) program, including delivery and flight testing of EMD aircraft and government furnished equipment (GFE) integration. Completed mating of aircraft 10. Continued Fatigue Test Article (FTA) efforts. First flight of EMD aircraft 7,8 and 9. Completed aircraft 7 ferry flight to Patuxent River. Awarded maintenance trainer and operational flight trainer upgrade contracts. Continued logistics support analysis (LSA) efforts. Completed static test article (STA) testing. Conducted CV-22 hardware executive Preliminary Design Review (PDR).

- (U) ($52,813) Continued in-house flight test activities, integrated test team (ITTs), integrated product team (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. Trained pilots for EMD testing. Conducted operational assessment (OT-IIC).

2. (U) FY 1998 PLAN:

- (U) ($471,990) Continue MV-22 and CV-22 contract efforts related to the EMD program. Continue FTA efforts. Continue LSA and training efforts. Complete Depot level LSA. Start drop test article (DTA) testing. Start STA test to failure.

- (U) ($57,505) Continue in-house 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 Software PDR. Complete OT assessment (OT-IID).

3. (U) FY 1999 PLAN:

- (U) ($241,966) Continue MV-22 and CV-22 contract efforts related to the EMD program, including flight testing of EMD aircraft and GFE integration. Continue FTA efforts. Continue training efforts. LSA complete. Complete maintenance and pilot operational evaluation (OPEVAL) training. Complete DTA testing.

- (U) ($45,946) Continue in-house 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 Critical Design Review (CDR). Conduct MV-22 technical evaluation (TECHEVAL). Begin MV-22 OPEVAL.

DATE: 12 September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	552,082	529,495	272,716
(U) Adjustments from PRESBUDG:	+53,600	0	+15,196
(U) FY 1999 NAVCOMPT Budget Submit:	605,682	529,495	287,912

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The change in FY 1997 reflects an increased reprogramming action for $68,400 thousand, and fully funds FY97 increment for EMD contract and to maintain program schedule. FY97 decreases of $13,194 thousand for the small business innovative research (SBIR) assessment and $1,606 thousand for revised economic assumptions and below threshold reprogrammings (BTRs). The FY 1999 increase of $15,196 thousand reflect increases to continue FTA efforts.

(U) Schedule: The Maintenance Trainer contract was awarded 2Q97 vice 3Q97. MV-22 OPEVAL period of performance has been extended to Feb 00 to maintain 28 aircraft (A/C) month program. This was necessitated by the transfer of A/C number 9 to CV program and its replacement with an additional low rate initial production (LRIP) A/C for OPEVAL.

(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
APN V-22 &	603,463	472,007	605,447	819,040	1,154,109	1,283,983	1,632,367	17,731,601	24,533,417[1]
Adv Proc	55,879	69,659	55,128	74,315	84,728	108,779	113,286	1,120,372	1,729,291
APN Spares	57,443	22,080	28,173	90,910	147,470	136,903	26,167	452,103	961,249
Total APN	716,785	563,746	688,748	984,265	1,386,307	1,529,665	1,771,820	20,224,857	27,223,957[1]

[1]Includes $231,400 of FY 1989 APN funds.

DATE: 12 September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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

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

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	3Q97 DAB LRIP Review			
Engineering Milestones		2Q98 CV PDR	1Q99 CV CDR	
T&E Milestones	1Q97-4Q97 OT-IIC Assess	3Q98 OT-IID Assess	2Q99-3Q99 TECHEVAL 3Q99-2Q00 OPEVAL	
Milestones	1Q97 CV Def 3Q97 LRIP 1 Def/Full Funding 2Q97 Maint Trainer contract award			

DATE: 12 September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1997	FY 1998	FY 1999
a. Prime Contractor Development	529,192	449,519	221,323
b. Contractor Engineering Support	23,677	22,471	20,643
c. Government Engineering Support	52,813	57,505	45,946
Total	605,682	529,495	287,912

DATE: 12 September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development:										
Bell-Boeing Arlington, VA	CPAF	10/92	TBD	TBD	2,249,234	521,964	437,315	213,380	CONT.	CONT.
Allison Indianapolis, IN	CPIF	12/92	TBD	TBD	154,441	7,228	7,186	4,792	CONT.	CONT.
STI Rockville, MD	T&M	10/98	TBD	TBD	13,164	2,607	1,998	2,066	CONT.	CONT.
VSS Alexandria, VA	T&M	10/98	TBD	TBD	2,192	1,984	1,608	1,398	CONT.	CONT.
Hughes Indianapolis, IN	T&M	10/98	TBD	TBD	0	6,751	5,018	3,151	CONT.	CONT.
NAWCADPAX	WX	10/98	TBD	TBD	*	42,791	55,046	46,526	CONT.	CONT.
NAD Ch Pt	WX	10/98	TBD	TBD	*	9,601	8,852	7,677	CONT.	CONT.
NAWCADLKE	WX	10/98	TBD	TBD	*	5,577	4,667	3,906	CONT.	CONT.
NAWCWDCHL	WX	10/98	TBD	TBD	*	1,484	2,137	937	CONT.	CONT.
NAWCWDMUGU	WX	10/98	TBD	TBD	*	526	1,003	306	CONT.	CONT.
MISC Gov't	various	various	TBD	TBD	*	5,169	4,665	3,773	CONT.	CONT.

* Total FY96 & Prior amounts are not available by activity; however, they are reflected in Subtotal Production Development.

Support and Management:										
MISC Contr.	various	various	3,093	3,093	3,093	0	0	0	0	3,093

DATE: 12 September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	2,486,730	605,682	529,495	287,912	417,490	4,327,309
Subtotal Support and Management	3,093	0	0	0	0	3,093
Subtotal Test and Evaluation	0	0	0	0	0	0
Other FY-96 and Prior Costs 1/	2,591,160	0	0	0	0	2,591,160
Total Project	5,080,983	605,682	529,495	287,912	417,490	6,921,562

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

Date: September 1997

FY 1999 RDT&E,N OSD/OMB BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0606 Aircrew Systems Development									
TOTAL	25,596	12,111	9,520	9,334	9,035	9,222	9,450	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 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 small female aircrew. Acquisition initiatives include competition, the application of streamlining initiatives, use of non-developmental items (NDI), joint and tri-service developments, and the pursuit of NATO/allied cooperative ventures to expedite introduction into Navy and Marine Corps 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 Survival Systems (ACASS), Joint Inflatable Body and Head Restraint System (IBAHRS), Joint Cockpit Air Bag System (JCABS), Cats Eyes Emergency Detachment System (CEEDS), Parachutes, and Crashworthy Troop Seats (CWTS), Non-NACES and Small Occupant Escape System Improvements.
- (U) LIFE SUPPORT: Passenger Anti-Exposure Survival Systems (PAESS), Extreme Cold Weather Improvement Program (ECWIP), Aircrew Modified Equipment Leading to Increased Accommodation (AMELIA), PRC-112 P^3I, Aircrew Accommodation Expansion Program (AAEP), Advanced Oxygen Delivery System (AODS), Advanced Oxygen Mask (AOM), and Combat Survivor Evader Locator (CSEL).
- (U) THREAT PROTECTION: Joint Laser Eye Protection (LEP), Chemical Biological (CB), Navy Combat Edge (NCE), Advanced Technology Crew Station (ATCS), Advanced Integrated Life Support Systems (AILSS), Agile Frequency LEP, Aircrew Integrated Survival Armor Protection (AISAP), and Aircrew Cooling.
- (U) HELMET, VISION AND DISPLAYS: Joint Night Vision System (NVS), Joint Helmet Mounted Cueing System (JHMCS), Passive Noise Reduction (PNR) Earcup and Navy Day/Night All Weather Helmet (NDNAWH).

(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.

Date: September 1997

FY 1999 RDT&E,N OSD/OMB BUDGET ITEM JUSTIFICATION SHEET

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($12,407) NACES P^3I: Continued Phase I Development Test (DT), Preliminary Design Review (PDR) and verified the Engineering Change Proposal (ECP). NACES Phase II, commenced DT. Non-NACES and Small Occupant Escape System Improvements: Commenced DT. ACASS: Continued DT on helo crashworthy systems. JCABS: Commenced DT. CWTS: Completed DT and approved ECP for H-53; and conducted source selection/contract award for H-1, H-3, and H-46 troop seats. Parachutes: Investigated vacuum pack applications for ejection seats.

- (U) ($2,354) ECWIP: Continued DT for cold weather clothing and survival items and prepared ECPs. AMELIA: Continued DT and Operational Test (OT) of modified equipment. AAEP: Continued cockpit mapping/DT. CSEL: Supported Air Force DT and investigated non combat survival radio alternatives.

- (U) ($2,950) LEP: Continued fixed frequency protection DT, commenced OT and prepared Laser Eye ECP. AILSS: Monitored Army EMD for rotary wing system. NCE: Completed OT efforts; obtained Milestone (MS)III decision.

- (U) ($7,885) NVS: Monitored Air Force NVS DT, flight tested AN/AVS-9 DT/OT and completed ECP for AN/AVS-9. JHMCS: Award joint USN/USAF development contract. Continue platform integration, obtain MS II. Conduct Preliminary Design Review (PDR). PNR: Improve design and prototype earcups for DT testing, develop procurement package. NDNAWH: Monitor 6.4 efforts, commence DT.

3. (U) FY 1998 PLAN:

- (U) ($4,229) NACES P^3I: Complete Phase I DT and approve ejection seat ECP. ACASS: Continue DT on helo crashworthy systems. JCABS: Complete integration design, write SH-60 ECP. CWTS: Complete design and certification for H-1, H-3, and H-46 troop seats. NACES Phase II: Review integration studies and component tests. Non-NACES and Small Occupant Escape System Improvements: Continue DT on selected systems.

- (U) ($2,977) ECWIP: Continue DT for cold weather clothing and survival items and prepare ECPs. AMELIA: Continue DT and OT of modified equipment and prepare ECP’s. AAEP: Complete cockpit mappings and commence ECP preparation. AOM: Commence DT studies. CSEL: Support Air Force DT/OT.

- (U) ($1,200) LEP: Complete fixed frequency protection DT, commence OT and approve ECPs. AILSS: Monitor Army EMD for rotary wing system. Aircrew Cooling: Initiate DT studies.

Date: September 1997

FY 1999 RDT&E,N OSD/OMB BUDGET ITEM JUSTIFICATION SHEET

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

- (U) ($3,705) NVS: Monitor and evaluate USAF panoramic NVG program and NVS Detachment system. JHMCS: Continue platform integration and software development. Conduct Critical Design Review (CDR). PNR: Conduct DT. NDNAWH: Continue prototype integration and test.

4. (U) FY 1999 PLAN:

- (U) ($2,703) NACES P^3I: Complete Phase I aircraft integration efforts and platform ECPs. ACASS: Continue DT and commence OT of helo crashworthy systems. CWTS: Complete DT and prepare H-1, H-3, and H-46 platform ECPs.

- (U) ($2,519) ECWIP: Continue DT for cold weather clothing and survival items and prepare ECPs. AMELIA: Continue DT and OT of modified equipment and prepare ECP's. AOM: Initiate EMD DT. CSEL: Support Air Force DT. AAEP: Complete ECP preparation. AODS: Initiate DT studies.

- (U) ($1,045) LEP: Complete fixed frequency OT and prepare ECPs, MS III. Commence agile frequency protection studies.

- (U) ($3,253) NVS: Monitor and participate in NVS Detachment DT/OT, Participate in USAF Panoramic NVG evaluation. JHMCS: Complete platform integration and software development. Commence OT.

Date: September 1997

FY 1999 RDT&E,N OSD/OMB BUDGET ITEM JUSTIFICATION SHEET

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 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	26,083	12,111	14,126
(U) Appropriated Value	27,489		
(U) Adjustments from PRESBUDG:	-487		-4,606
(U) FY 1999 OSD/OMB Budget Submit:	25,596	12,111	9,520

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 decrease reflects $452 thousand for Small Business Innovation Research Assessment (SBIR), $32 thousand for FY97 Revised Economic Assumption, and $3 thousand for resource sponsor program adjustment. FY 1999 net decrease reflects a $4,662 million Resource Sponsor program adjustment,$75 thousand for NWCF surcharge adjustment, and $19 thousand for minor program adjustments.

(U) Schedule: The following milestones have been cancelled due to program restructure and deletion of phased development.

FY 99: 2Q AILSS MSII, 3Q AILSS DT, 2Q NDNAWH OT

(U) Technical: Not applicable.

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)
(U) PE 0604384BP (Chemical Biological (CB) program)
(U) PE 06084201F (Common Avionics related Air Force efforts)

FY 1999 RDT&E,N OSD/OMB BUDGET ITEM JUSTIFICATION SHEET

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

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	3Q NCE MSII&III 1Q JHMCS MSII	4Q JCABS	3Q AODS MSII 2Q AOM MSII 2Q LEP MSIII	JHMCS MSIII
Engineering Milestones	3Q JHMCS PDR 3Q CWTS H-53 ECP 2Q NACES P^3I PDR	4Q LEP ECP 3Q AAEP ECP 4Q NACES P^3I ECP 4Q JHMCS CDR	1Q CWTS H-1, H-3 & H-46 ECPs	LEP ECP NACES P^3I PHASE II, ECP
T&E Milestones	2Q NCE OT COMP. 2Q NACES P^3I DT 2Q CWTS H-53 DT 4Q CWTS H-1,H-3 & H-46 DT	3Q LEP DT COMP. 1Q NDNAWH DT 3Q PNR DT 3Q CWTS H-1,H-3 & H-46 DT 3Q JHMCS DT	3Q LEP OT 3Q AOM DT 4Q JHMCS OT 4Q AODS DT	NACES P^3I PHASE II DT/OT
Contract Milestones	2Q JHMCS EMD 4Q CWTS/H-1,H-3 & H-46 2Q NACES P^3I PHASE I 4Q NACES P I PHASE II	2Q PNR EMD 2Q NACES P^3I PHASE I		NACES P^3I PHASE II/III

FY 1999 RDT&E,N OSD/OMB PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1997	FY 1998	FY 1999
a. System Engineering	10,069	3,698	2,440
b. Developmental T&E	9,000	4,450	3,750
c. Operational T&E	610	363	450
d. ILS	5,917	3,600	2,880
e. SBIR Assessments	0	0	0
Total	25,596	12,111	9,520

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NAWC/AD WAR	WX/RX	10/98			5,972				CONT	CONT
NAWC/AD PAX	WX/RX	10/98			3,350	10,521	3,518	2,600	CONT	CONT
Support and Management										
MISC (less than $1M)	WX/RX	10/98			8,723	5,917	3,493	2,720	CONT	CONT
Test and Evaluation										
MISC (less than $1M)		11/98			12,674	9,158	5,100	4,200	CONT	CONT

GOVERNMENT FURNISHED PROPERTY: NOT APPLICABLE

Date: September 1997

FY 1999 RDT&E,N OSD/OMB PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	9,322	10,521	3,518	2,600	CONT	CONT
Subtotal Support and Management	8,723	5,917	3,493	2,720	CONT	CONT
Subtotal Test and Evaluation	12,674	9,158	5,100	4,200	CONT	CONT
SBIR Assessments	0	0	0	0	0	0
Total Project	30,719	25,596	12,111	9,520	CONT	CONT

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1447 Surf Combatant Combat Sys Imp	76,231	80,842	114,979	160,910	138,329	132,424	129,524	CONT.	CONT.
K1776 Surf Combatant Weapon Sys Mod	2,075	6,123	7,339	4,367	4,478	4,575	4,681	CONT.	CONT.
K1937 Surf Combatant Weapons Dev	4,235	0	7,000	7,500	1,000	0	0	0	196,707
K2100 Test Integration Facility	2,797	0	0	0	0	0	0	0	2,797
K2308 Smart Ship Project	0	969	570	21	23	14	10	0	1,607
TOTAL	85,338	87,934	129,888	172,798	143,830	137,013	134,215	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. 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 a continued increase in the capability of the Combat System in AEGIS cruisers and destroyers. In addition to developing and integrating improvements to the AEGIS Weapon System, this program integrates 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 and Combat System performance 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. The

Smart Ship Project will be incorporated into PE 0604307N under Project K2308 starting in FY 1998. This effort will address reducing shipboard manning requirements and the integration of Commercial Off-The-Shelf (COTS) equipment. The goal is to reduce life cycle costs for Navy ships.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1447 Surf Combatant Combat Sys Imp	76,231	80,842	114,979	160,910	138,329	132,424	129,524	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides AEGIS Cruiser and Destroyer Combat System upgrades and integrates new equipments and systems to pace the threat and capture advances in technology such as fiber optics and distributed architecture. Combat Systems are upgraded in baselines. Baseline 2 (CG 52-58) consists of the Vertical Launching System, TOMAHAWK Weapon System, and Anti-Submarine Warfare upgrades. Baseline 3 (CG 59-64) includes the AN/SPY-1B radar and AN/UYQ-21 consoles. Baseline 4 (CG 65-73) integrates 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 includes the Joint Tactical Information Distribution System (JTIDS) Command and Control Processor, Tactical Data Information Link 16, Combat Direction Finding, Tactical Data Information Exchange System, AN/SLQ-32(V)3 Active Electronic Counter Countermeasures and AEGIS Extended Range (ER) Missile. Baseline 5 was 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; Phase III integrated JTIDS and the OJ-663 color display Tactical Graphics Capability into the AEGIS Combat System. Baseline 6 will be developed in two phases. Baseline 6 Phase I is planned for the last ship in FY 1994, and Phase III is planned for the first ship in FY 1997. Baseline 6 Phase III is the designation for the computer suite resulting from consolidation of the previous Phase II baseline with variations designed to introduce Tactical Ballistic Missile Defense (TBMD) and Cooperative Engagement Capability (CEC) in in-service ships. Baseline 6 upgrades will include embarked helicopters, Fiber Optics as applied to Data Multiplexing System (DMS), implementation of affordability initiatives, the Radar Set Controller Environmental Simulator (RSCES) and Battle Force Tactical Trainer (BFTT), Advanced Display System, Evolved SEASPARROW Missile (ESSM), Identification (ID) upgrades Phase I, Advanced TOMAHAWK Weapon Control System (ATWCS) Phase II, Fire Control System upgrades, and the Joint Maritime Command Information System (JMCIS). Baseline 7 will also be developed in two phases. Baseline 7 Phase I is planned for the last ship in FY 1998 and Phase II is planned for the last ship in FY 2002. Major Baseline 7 upgrades include but are not limited to: AN/SPY-1D(V) radar upgrade, integration of Cooperative Engagement Capability (CEC) and Tactical Ballistic Missile Defense (TBMD) capability (first forward fit implementation), advanced computer architecture, ID upgrades Phase II, Cueing Sensor, STANDARD Missile-2 Block IIIB full integration, Advanced Integrated Electronic Warfare System (AIEWS) Phase I and II, Light Airborne Multipurpose System (LAMPS) helicopter Mark III Block II, Advanced Tactical Support, integrated Naval Surface Fire Support (NSFS), and Mark 50 torpedo with Periscope Depth Attack. This project also addresses the Technology Ship Characteristic Improvement Panel (TSCIP) program for advanced computing architecture applicable to DDG 51 and other future ship classes including SC-21, CVX, and LX. Funding starts in FY 1999 for non-recurring AEGIS cruiser conversion engineering. The program will upgrade selected cruisers with Tactical Ballistic Missile Defense, land attack, and Area Air Defense Coordination (AADC) capabilities.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($16,500) Completed Baseline 6 Phase I computer program coding, debugging and testing. Continued integration of Baseline 6 Phase 1 upgrades into the AEGIS Combat System. Continued rehosting of ACTS computer programs for BFTT, and for C&D and ID related computer programs into COTS based architecture. Conducted computer program Quality Assurance (QA).

- (U) ($18,537) Completed consolidation of previous Baseline 6 Phase IT, Phase IIT and Phase II into Baseline 6 Phase III. Conducted Baseline 6 Phase III System Design Review (SDR) and Preliminary Design Review (PDR). Continued RSCES Engineering Development Model (EDM) development.

- (U) ($16,390) Completed rehost of SPY-1D(V) radar control loop code into adjunct processors including interface simulation computer programs. Began system definition for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I. Conducted system definition and In Process Review to integrate Baseline 7 Phase I upgrades into the AEGIS Combat System. Completed AEGIS Combat System Interface Simulator (ACSIS) rehost.

- (U) ($834) Completed engineering of SM-2 Block IIIB and Block IV capability enhancements and technical assessment and feasibility studies for cueing sensor upgrades which will be integrated into Baseline 7.

- (U) ($7,200) Continued 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) ($16,770) Continued 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.

2. (U) FY 1998 PLAN:

- (U) ($13,600) Conduct Baseline 6 Phase I QA. Complete rehosting of ACTS computer programs for BFTT, and for C&D and ID related computer programs into COTS-based architecture. Conduct Link Certification. Conduct System Qualification Test (SQT) demonstration test at the CSED Site.

- (U) ($23,617) Conduct Baseline 6 Phase III Critical Design Review (CDR). Begin computer program coding, debugging and testing. Complete RSCES EDM development.

- (U) ($19,300) Complete system definition/engineering for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I and start system design. Conduct Baseline 7 Phase I System Design Review (SDR) for integration of upgrades into the AEGIS Combat System. Start system engineering.

- (U) ($6,114) 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) ($18,211) 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 1999 PLAN:

- (U) ($2,500) Complete Baseline 6 Phase I engineering.

- (U) ($21,000) Complete Baseline 6 Phase III computer program code, debugging and testing. Start integration of Baseline 6 Phase III upgrades into the AEGIS Combat System at the CSED Site.

- (U) ($37,800) Continue system engineering for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I. Conduct Baseline 7 Phase I PDR for integration of upgrades into the AEGIS Combat System.

- (U) ($5,000) Start system definition to integrate Baseline 7 Phase II upgrades into the AEGIS Combat System.

- (U) ($12,000) Start system definition and engineering for the AEGIS cruiser conversion program.

- (U) ($2,947) Conduct system definition and start design of an advanced combat system with fully distributed architecture leveraging HIPER-D and other technology efforts.

- (U) ($7,000) Start system definition and engineering development for integration of the Area Air Defense Coordinator (AADC) capability into AEGIS Ships.

- (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) ($19,532) Continue to provide for the participation of Navy laboratories and field activities necessary to perform the engineering an scientific services necessary to monitor and direct the baseline efforts.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	79,022	80,842	102,708
(U) Appropriated Value:	82,537		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:			
a. Adjustments	-6,306		+12,271
(U) FY 1999 OSD/OMB Budget Submit:	76,231	80,842	114,979

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 change due to Congressional Undistributed Reductions. FY 1999 due to CG modernization and minor pricing adjustments.

(U) Schedule: Baseline consolidation measures leading to consolidation of previous Baseline 6 Phase IT, Phase IIT, and Phase II into Baseline 6 Phase III caused schedule adjustments of approximately six months. There is no impact on meeting ship schedules. Baseline 7 Phase I schedules were adjusted as well, with no impact on meeting ship schedules.

(U) Technical: NONE.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

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

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN LI2122, D06-51								
3,533,515	2,823,573	2,686,216	2,804,281	3,160,482	1,346,190	3,285,626	CONT.	CONT.
(U) OPN LI5246								
31,099	26,813	118,884	128,139	119,460	117,379	114,909	CONT.	CONT.

(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: See attachment (1)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Sys Mod

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. System Engineering	63,461	65,266	97,477
b. Gov. Engineering Spt.	11,123	13,880	15,755
c. Pgm. Management Spt.	572	589	607
d. Development Test and Eval.	1,075	1,107	1,140
Total	76,231	80,842	114,979

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Martin Marietta, Moorestown, NJ	SS/CPFF	03/93	401,914	401,914	184,375	59,461	62,631	95,447	CONT.	CONT.
Applied Physics Lab (APL), Baltimore, MD	SS/CPFF	02/94	24,118	24,118	12,868	2,750	4,000	4,500	CONT.	CONT.
McClellan AFB, CA	MIPR	01/94	18,664	18,664	18,664	0	0	0	0	18,664
Navy Surface Warfare Center, Dahlgren, VA	WR	10/93	39,821	39,821	21,445	6,160	5,986	6,230	CONT.	CONT.
Vitro Corp., Silver Spring, MD	C/CPFF	10/92	27,411	27,411	14,661	4,000	4,250	4,500	CONT.	CONT.
Miscellaneous			14,435	14,435	7,388	2,213	2,279	2,555	CONT.	CONT.
Support and Management										
Miscellaneous			8,379	8,379	6,611	572	589	607	CONT.	CONT.
Test and Evaluation										
Miscellaneous			6,596	6,596	3,274	1,075	1,107	1,140	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	259,401	74,584	79,146	113,232	CONT.	CONT.
Subtotal Support and Management	6,611	572	589	607	CONT.	CONT.
Subtotal Test and Evaluation	3,274	1,075	1,107	1,140	CONT.	CONT.
Total Project	269,286	76,231	80,842	114,979	CONT.	CONT.

(U) COST: (Dollars in Thousands)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Sys Mod

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1776 Surf Combatant Weapon Sys Mod	2,075	6,123	7,339	4,367	4,478	4,575	4,681	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 and subsequent updates. The modifications will be introduced into CG 47 Class and DDG 51 Class ships.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($300) Continued AN/SPY-1B/D upgrade analysis support.
- (U) ($1,262) Continued ORTS upgrade for Baselines 3, 4 and 5 design, development and engineering.
- (U) ($513) Began AN/SPY-1B/B(V)/D Moving Target Indicator analysis, design, development and engineering for radar enhancements.

2. (U) FY 1998 PLAN:

- (U) ($600) Continue AN/SPY-1B/D upgrade analysis support, including signal processor overtemperature protection and Track Initiation Processor (TIP) design changes.
- (U) ($1,239) Continue ORTS upgrade for Baselines 3,4, and 5 design, development and engineering.
- (U) ($1,200) Continue AN/SPY-1B/B(V)/D Moving Target Indicator analysis, design, development and engineering for radar enhancement.
- (U) ($1,400) Begin system engineering for AN/SPY-1B/D DECCM upgrades.

- (U) ($1,684) Begin design and engineering for Radar Set Controller Environmental Simulator (RSCES) for AN/SPY-1D(V) radar system.

3. (U) FY 1999 PLAN:

- (U) ($100) Continue AN/SPY-1B/D upgrade analysis support. Complete TIP design changes.
- (U) ($1,200) Continue ORTS upgrade for Baselines 3,4 and 5 design, development and engineering.
- (U) ($1,100) Continue AN/SPY-1B/B(V)/D Moving Target Indicator analysis, design, development and engineering for radar enhancement.
- (U) ($1,800) Continue system engineering for AN/SPY-1B/D DECCM upgrades.
- (U) ($3,139) Continue design and engineering for RCSES for AN/SPY-1D(V) radar system.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	2,114	6,123	7,325
(U) Appropriated Value:	2,204		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:			
a. Adjustments	-129		+14
(U) FY 1999 OSD/OMB Budget Submit:	2,075	6,123	7,339

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997: Change due to Congressional Undistributed Reductions and minor pricing adjustments. FY 1999 change due to minor pricing ajustments.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LI5246								
31,099	26,813	118,884	128,139	119,460	117,379	114,909	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Systems Engineering	1,255	5,274	6,450
b. Government Engineering Support	817	845	884
c. Program Management Support	3	4	5
Total	2,075	6,123	7,339

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Martin Marietta, Morriestown, NJ	SS/CPFF	03/91	25,783	25,783	12,804	1,255	5,274	6,450	CONT.	CONT.
Miscellaneous			4,644	4,644	2,098	817	845	884	CONT.	CONT.
Support and Management										
Miscellaneous			1,068	1,068	1,056	3	4	5	CONT.	CONT.

Test and Evaluation: Not applicable.
GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	14,902	2,072	6,119	7,334	CONT.	CONT.
Subtotal Support and Management	1,056	3	4	5	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	15,958	2,075	6,123	7,339	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapons Dev

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1937 Surf Combatant Weapon Dev	4,235	0	7,000	7,500	1,000	0	0	0	196,707

A.(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: 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 Weapon 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 low cross section sea skimming 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. Two new efforts will start in FY 1999. First, support for a Ballistic Missile Defense Organization (BMDO) Program which is developing a common, backfittable theater-wide radar upgrade signal processor to provide affordable theater-wide exoatmospheric discrimination capability. Second, integration of the AN/SPQ-9B radar into the AEGIS Weapon System to improve capability against the advanced low-altitude threat.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

   · (U) ($3,235) Completed rehosting radar system computer program from two AN/UYK-43 computers to one AN/UYK-43 and one commercial adjunct processor, including testing of microprocessors against AEGIS benchmark requirements, testing commercial operating systems, and computer program architecture development.

   · (U) ($1,000) Conducted DT/Operational Assessment (OA) of the adjunct processor performance at the CSED Site.

2. (U) FY 1998 PLAN: Not Applicable.

3. (U) FY 1999 PLAN:

   · (U) ($3,000) Initiate expanded common signal processor design for the AN/SPY-1 Radar and include advanced AAW functionality and features. The expanded signal processor design will add AAW functionality to and leverage

the common signal processor's TBMD functionality design currently being pursued via TBMD funding. The advanced AAW functionality will implement adaptive digital signal processing to improve low altitude clutter

· (U) ($4,000) Initiate the design for the installation and integration of the AN/SPQ-9B Radar (or its advanced in destroyers and cruisers.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	4,354	0	0
(U) Appropriated Value:	4,538	0	0
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:			
a. Adjustments	-298		+7,000
(U) FY 1999 OSD/OMB Budget Submit:	4,235	0	7,000

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 change due to congressional undistributed reductions and minor pricing adjustments. FY 1999 change due to Theater Wide Radar Improvement and AN/SPQ-9B AEGIS integration.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapons Dev

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

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN LI2122								
3,533,515	2,823,573	2,686,216	2,804,281	3,160,482	1,346,190	3,285,626	CONT.	CONT.

(U) RELATED RDT&E: Not Applicable.

D. (U) SCHEDULE PROFILE: Not Applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Systems Engineering	3,655	0	6,090
b. Government Engineering Support	580	0	910
Total	4,235	0	7,000

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Martin Marietta, Morriestown, NJ	SS/CPFF	03/91	185,955	185,955	176,210	3,655	0	6,090	CONT.	CONT.
Miscellaneous	Not Applicable									
Support and Management										
Miscellaneous	Not Applicable									
Test and Evaluation										
Miscellaneous			2,060	2,060	570	580	0	910	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

	Total FY 1996 Budget	FY 1997 Budget	FY 1998 Complete	FY 1999 Program	To Complete	Total Program
Subtotal Product Development	176,210	3,655	0	6,090	CONT.	CONT.
Subtotal Test and Evaluation	570	580	0	910	CONT.	CONT.
Total Project	176,780	4,235	0	7,000	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K2308 Smart Ship Project	0	969	570	21	23	14	10	0	1,607

A.(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Smart Ship Project (SSP) was initiated by a Chief of Naval Operations directive to examine a variety of means to reduce life cycle cost of ships, concentrating on the fact that a major portion of ship's life cycle cost is manpower. The Project is chartered to devise and implement technology and policy changes which will reduce the workload for a ship's crew. Reduced workload may result in reduced manning and therefore reduce ship life cycle costs. The technology being considered replaces human functions rather than just improving efficiency, and its application requires funding. Policy changes are focused on reducing unnecessary or redundant requirements, and do not require funding. Selected technology and policy changes will be tested in an in-service fleet ship, USS YORKTOWN (CG 48). Those changes which prove successful will be considered for implementation in both current in-service ships and future ships to maximize life cycle cost savings across all Navy ship classes. The Project will develop, procure, install, train and support test projects for demonstration in the two test ship. Successful projects will be analyzed and packaged for wider application in the fleet.

(U) PROGRAM ACCOMPLISHMENTS AND PLAN

1. (U) FY 1997 ACCOMPLISHMENTS: Not Applicable.

2. (U) FY 1998 PLAN:

- (U) ($478) Assess current technology and equipment available through Department of Defense and industry sources which are candidates for reducing shipboard manning requirements and individual crew member workloads. Any manning and workload reductions identified will not affect ship and system readiness and performance, crew safety, nor habitability.

· (U) ($238) Conduct ship and system design and engineering necessary to adapt candidate technology and equipment to adapt to shipboard environment and to integrate the equipment into existing ship systems.

· (U) ($253) Install and check out equipment on board designated ships and conduct at-sea testing.

3. (U) FY 1999 PLAN:

· (U) ($570) Complete installation and check out of candidate technology and associated equipment on board designated ships and conduct at-sea testing.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	969	5,610
(U) Appropriated Value:	0		
(U) Adjustments to FY 1997 Appropriated Value/			
a. Adjustments	0	0	-5,040
(U) FY 1998 President’s Budget			
(U) FY 1999 OSD/OMB Budget Submit:	0	969	570

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999:($-5,040): Funding moved to OPN (-$5,000) and DBOF surcharge correction (-$40).

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LI5246								
31,099	26,813	118,884	128,139	119,460	117,379	114,909	CONT.	CONT.

(U) RELATED RDT&E: Not Applicable.

D. (U) SCHEDULE PROFILE: Not Applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Systems Engineering	0	547	350
b. Government Engineering Support	0	250	150
c. Program Management Support	0	86	70
d. Developmental Test and Evaluation	0	86	0
Total	0	969	570

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Contingent Contractors	SS/CPAF	03/98	1,047	1,047	0	0	547	500	CONT.	CONT.
Support and Management Misc.			406	406	0	0	336	70	CONT.	CONT.
Test and Evaluation Misc.			86	86	0	0	86	0	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	0	547	500	CONT.	CONT.
Subtotal Support and Management	0	0	336	70	CONT.	CONT.
Subtotal Test and Evaluation	0	0	86	0	CONT.	CONT.
Total Project	0	0	969	570	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604310N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S2294 Arsenal Ship Development	27,317	102,994	139,874	79,680	11,287	0	0	0	361,152

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Arsenal Ship project has two major phases: (1) development of a Demonstrator Ship using R&D funds and (2) a subsequent SCN-funded program. The Demonstrator Ship is a prototype used to establish the “proof-of-principle” for high fire-power, low manning strike mission ships. The Chief of Naval Operations has directed that the Demonstrator Ship start at-sea testing prior to award of the first SCN ship. The schedule requires a Functional Design phase in FY 1997. Detail Design and Construction starting in FY 1998, and at-sea tests and trials starting in FY 2000. Initial concept development was funded in PE 0603563N, S2196 in FY 96. Congress appropriated the FY 97 funding under BA 4, PE 0603852N. Funding for FY98 and later are designated BA 5, PE 0604310N.

(U) JUSTIFICATION FOR BUDGET ACTIVITY. This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it will develop and integrate hardware for experimental test related to specific ship or aircraft applications. The program will test the ship’s readiness for transition to full production.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604310N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:
(U) ($27,317) Performed proposal evaluation of Concept Designs/source selection for Functional Designs. Performed Functional Designs. Developed detailed test plan. Products that were produced include: source selection results for concept evaluations; three extensive Demonstrator Ship Contract Design drawing packages, study reports, plans and specifications suitable for a ship procurement; management plans for technology developments; Test Plan for post-delivery testing; Navy/independent cost estimates to compare with industry costs; project plans and documentation for managing the design and construction phases; detailed proposal evaluation/source selection plan.

2. (U) FY 1998 PLAN:
(U) ($102,994) Perform proposal evaluation of Functional Designs, leading to selection of a single industry team to build the Maritime Fire Support Demonstrator. Develop the design details suitable for ship production, order materials and equipments, negotiate purchase agreements for combat systems equipment with vendors, and initiate construction. Products that will be produced include: source selection results for functional design; Detailed Design drawing packages, study reports, plans and specifications suitable a ship production; management plans for the ship production and test phases.

3. (U) FY 1999 PLAN:
(U) ($139,874) Continue construction of the Maritime Fire Support Demonstrator. Lay the keel and start fabrication of structural steel, piping, machinery and information systems components. Pre-test combat and information systems at shore-based facilities.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604310N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	23,977	102,994	139,499
(U) Appropriated Value	25,000	0	0
(U) Adjustments to Appropriated Value/ FY 1998 President's Budget:			
a. Minor Pricing Adjustments	+2,317		+375
(U) FY 1999 OSD/OMB Budget Submit:	27,317	102,994	139,874

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY 1997 and FY 1999 reflect increases due to minor pricing adjustments.
(U) Schedule: Not applicable.
(U) Technical: Not applicable

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

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604310N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999
Program Milestones	(Not Applicable - Non-Acquisition Program)		
Engineering Milestones	Completed Concept Studies - 1Q	Complete Func Designs - 1Q	Complete Detail Design - 4Q
T&E Milestones	TBD	TBD	TBD
Contract Milestones	Awarded Func Design Contracts - 2Q	Award Detail Design and Ship Construction - 2Q	Keel Laying - 2Q

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604310N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	0	60,000	130,874
b. Systems Engineering	27,216	41,994	8,000
d. Miscellaneous	101	1,000	1,000
Total	27,317	102,994	139,874

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

PERFORMING ORGANIZATION

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	Budget to Complete	Total Program
Product Development										
LMC	C/FFP	2/97	5,216	5,216	0	5,216	0	0	0	5,216
BIW	C/FFP	1/97	11,000	11,000	0	11,000	0	0	0	11,000
NGC	C/FFP	1/97	11,000	11,000	0	11,000	0	0	0	11,000
TBD	C/CPIF	1/98	TBD	319,173	0	0	101,994	138,874	78,680	319,548
Test and Evaluation										
TBD	SS/CPIF	11/00	TBD	10,287	0	0	0	0	10,287	10,287
Miscellaneous										
Travel	MIPR	12/96	TBD	550	0	101	90	115	215	521
TBD	TBD	TBD	TBD	3,580	0	0	910	885	1,785	3,580

GOVERNMENT FURNISHED PROPERTY - Not Applicable

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604310N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

Subtotals ($ in thousands)	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	Budget to Complete	Total Program
Subtotal Product Development	0	27,216	101,994	138,874	78,680	346,764
Subtotal Test and Evaluation	0	0	0	0	10,287	10,287
Miscellaneous	0	101	1,000	1,000	2,000	4,101
Total Program	0	27,317	102,994	139,874	90,967	361,152

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
22283 LPD 17 Class Systems Integration	3,990	1,371	12,367	12,708	298	1,084	11,007	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The 12 LPD 17 Class ships are functional replacements for 41 ships of four classes of amphibious ships. These new ships embark, transport, and land elements of Marine landing forces in an amphibious assault by helicopters, landing craft, and amphibious vehicles. Tactics, techniques, and tools for naval expeditionary warfare continue to evolve. The LPD 17 Class configuration must continue to adapt to this evolutionary process, because these ships are expected to be in service until almost 2050. The LPD 17 design includes systems configurations that reduce operating and support costs and facilitate operational performance improvements. System engineering and integration efforts beginning in FY 1997 will develop further reductions in life cycle costs and integrate performance upgrades in a rapid, affordable manner. Possible improvements include composite masts, advanced sensors, advanced computers, advanced command and control software, advanced information systems technologies, and ship based logistics concepts. Cost reduction and improved performance will be accomplished through sustained modeling and simulation efforts, continued personnel reduction efforts, system performance tradeoff evaluation, and naval expeditionary warfare systems engineering. Feedback from the operational forces for integrating system configurations will be accomplished through the Naval Expeditionary Warfare Centers in Quantico, Dahlgren, and Little Creek, Virginia. These efforts will result in well defined specifications and drawings in systems integration design packages that provide technical baselines for follow ship procurements. In addition, these requirements include the Live Fire Test & Evaluation (LFT&E) and Operational Evaluation (OPEVAL) tests required to be conducted on the lead ship. The examination of a revised Anti Air Warfare (AAW) combat system on LPD 22, the second ship in FY 2001, requires additional effort in FY 1998, FY 1999, and FY 2000 as shown in the revised funding profile.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N PROJECT NUMBER: 22283
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration PROJECT TITLE: LPD 17 Class Systems Integration Integration

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 PLANS:

- (U) ($3,990) Conducted naval expeditionary warfare systems engineering efforts for composite masts, performance modeling and simulation, and reduced personnel. Continued live fire test and operational evaluation efforts. Integrated system configuration feedback from the operational forces through the Naval Expeditionary Warfare Centers in Quantico, Dahlgren, and Little Creek, Virginia.

2. (U) FY 1998 PLANS:

- (U) ($1,371) Continue naval expeditionary warfare systems engineering efforts. Review latest operational requirements. Continue live fire test and operational evaluation efforts. Begin update of ship specifications for 1Q/FY00 follow ship contract award. Begin ship design efforts for the revised Anti Air Warfare (AAW) combat system on LPD 22.

3. (U) FY 1999 PLANS:

- (U) ($12,367) Continue naval expeditionary warfare systems engineering efforts. Continue live fire test and operational evaluation efforts. Finalize update to the ship specifications for 1Q/FY00 follow ship contract award. Continue ship design efforts for the revised AAW combat system on LPD 22.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

PROJECT NUMBER: 22283
PROJECT TITLE: LPD 17 Class Systems Integration

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	4,098	471	1,662
(U) Appropriated Value:	4,272		
(U) Adjustment to FY 1997 Appropriated Value/ FY 1998 President's Budget			
a. Adjustments	-282	+900	+10,700
(U) FY 1999 OSD/OMB Budget Submit:	3,990	1,371	12,362

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Funding has been decreased by -282K in FY 1997 due to Congressional undistributed reductions and SBIR transfer. Funding in FY 1998 was increased due to pricing adjustment. Funding in FY 1999 was increased by +10,700K to examine the revised AAW combat system.

(U) Schedule: Not applicable.

(U) Technical: Additional ship design efforts are required to examine the revised AAW combat system for LPD 22.

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

	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN Line 303600									
	0	0	756	1,503	1,610	1,609	1,651	1,813	9,896

(U) RELATED RDT&E:
(U) PE 0604567N Ship Contract Design/Live Fire T&E

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

PROJECT NUMBER: 22283
PROJECT TITLE: LPD 17 Class Systems Integration

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones			2Q Program Review	4Q/02 Deliver Lead Ship 4Q/07 MS III
Engineering Milestones	1Q Initiate Detail Design	4Q Complete Detail Design	2Q Complete Systems Integr. Des. Pack.	
T&E Milestones		4Q DT-IIA	2Q OT-IC	3Q/02 DT-IIB 2Q/04 DT-IIC 4Q/03 OT-IIA
Contract Milestones	1Q Lead Ship Contract Award			1Q/00 Follow Ship Award 1Q/02 2nd Follow Ship Award

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

PROJECT NUMBER: 22283
PROJECT TITLE: LPD 17 Class Systems Integration

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

Project Cost Categories	FY 1997	FY 1998	FY 1999	FY 2000
a. Systems Engineering & Integration	3,740	771	567	2,458
b. Test & Evaluation	250	600	800	250
c. Combat Systems Contract Design Updates	0	0	11,000	10,000
Total	3,990	1,371	12,367	12,708

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: September 1997

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 1996 & Prior/A	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	FY 2000 Budget	To Complete	Total Program
Product Development:											
Avondale Industries, Inc	New Orleans, LA										
AII	SS/CPAF	11/30/98	TBD	10,500	0	0	0	10,500	0	CONT.	CONT.
AII	SS/CPAF	11/30/99	TBD	9,500	0	0	0	0	9,500	CONT.	CONT.
Miscellaneous	Various				0	3,740	771	1,067	2,958	CONT.	CONT.
Support and Management: Not applicable.											
Test and Evaluation:											
Miscellaneous	Various				0	250	600	800	250	CONT.	CONT.

/A FY 1996 Not Applicable - new P.E. established in FY 1997.

GOVERNMENT FURNISHED PROPERTY: Not applicable

	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	FY 2000 Budget	To Complete	Total Program
Subtotal Production Development	3,740	771	11,567	12,458	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	0	
Subtotal Test and Evaluation	250	600	800	250	CONT.	CONT.
Total Project	3,990	1,371	12,367	12,708	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September, 1997

BUDGET ACTIVITY: 05

PROGRAM ELEMENT: 0604312N
PROGRAM ELEMENT TITLE: Tri-Service Standoff Attack Missile (TSSAM)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
A2242 Joint Air to Surface Standoff Missile (JASSM)	0	9,644	0	0	0	0	0		

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Air to Surface Standoff Missile (JASSM) program is an FY-96 new start follow-on weapon system to the canceled Tri-Service Standoff Attack Missile (TSSAM). It is a joint Air Force/Navy Program. JASSM is a long range, conventional air-to-surface, autonomous precision guided, standoff cruise missile compatible with fighter and bomber aircraft and able to attack a variety of fixed and relocatable targets. JASSM will carry a 1,000 pound class penetrator warhead.

(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 1997 ACCOMPLISHMENTS:

- (U) ($0 - Air Force funded) Continued Program Definition and Risk Reduction (PDRR) of JASSM weapons system development and hardware.
- (U) ($0 - Air Force funded) Continued program office stand-up.
- (U) ($0 - Air Force funded) Continued aircraft integration, ground and flight tests.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604312N PROJECT NUMBER: A2242
PROGRAM ELEMENT TITLE: TSSAM PROJECT TITLE: JASSM

2. (U) FY 1998 PLAN:

- (U) ($0 - Air Force funded) Complete MS II and award Engineering and Manufacturing Development (EMD) contract.
- (U) ($3,066) Technical support requirements, support EMD contract.
- (U) ($2,390) Continue aircraft integration.
- (U) ($4,188) Continue ground and flight testing.

3. (U) FY 1999 PLAN:

- (U) ($0) No funding budgeted by the Navy for these efforts in FY 1999 and beyond.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604312N PROJECT NUMBER: A2242
PROGRAM ELEMENT TITLE: TSSAM PROJECT TITLE: JASSM

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	0	+9,644	+17,730
(U) Appropriated Value:			
(U) Adjustments from Pres Budget:	0	0	-17,730
(U) FY 1999 OSD/OMB Budget Submit:	0	9,644	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Funding eliminated in FY 1999 and beyond reflects availability of already existing Navy weapons systems which meet the JASSM capability.

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

(U) RELATED RDT&E:

(U) U.S. Air Force P.E. 0207325F (Joint Air to Surface Standoff Missile (JASSM))

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 05

PROGRAM ELEMENT: 0604312N
PROGRAM ELEMENT TITLE: TSSAM

PROJECT NUMBER: A2242
PROJECT TITLE: JASSM

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		4Q/MSII		
Engineering Milestones				
T&E Milestones				
Contract Milestones		4Q/EMD		

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 05
PROGRAM ELEMENT: 0604312N
PROGRAM ELEMENT TITLE: TSSAM
PROJECT NUMBER: A2242
PROJECT TITLE: JASSM

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Technical Support Requirements		3,066	
b. Aircraft Integration		2,390	
c. Ground and Flight Testing		4,188	
Total	0	9,644	0

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604312N PROJECT NUMBER: A224
PROGRAM ELEMENT TITLE: TSSAM PROJECT TITLE: JASSM

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
	TBD						9,644			

GOVERNMENT FURNISHED PROPERTY: Not Applicable

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development			9,644			
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project	0	0	9,644	0		

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q0528 ADVANCED AIRBORNE MINE COUNTERMEASURES EQUIPMENT	1,273	0	0	0	0	0	0	0	40,161
Q0529 AIRBORNE MINE HUNT SYSTEMS	17,969	16,503	20,392	13,766	8,825	7,310	2,580	0	174,374
Q2047 AIRBORNE LASER MINE DETECTION SYSTEM (ALMDS)	11,193	0	5,000	6,000	6,000	6,000	7,000	0	130,965
TOTAL	30,435	16,503	25,392	19,766	14,825	13,310	9,580	0	345,500

(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 capability to locate pressure-combination and sweep resistant mines at greater coverage rates and by more rapidly deployable means; and a non-acoustic mine detection and classification capability against floating and tethered mines using Light Detection and Ranging (LIDAR) techniques. The cable improvement will provide higher reliability, longer life and higher current capacity.

(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.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q0529 AIRBORNE MINE HUNT SYSTEMS	17,969	16,503	20,392	13,766	8,825	7,310	2,580	0	174,374

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 provide shallow and deep water mine hunting and minefield reconnaissance capabilities against both bottom and moored mines. There is currently no rapid airborne mine neutralization capability to support minehunting, nor does the Navy possess a capability to conduct high speed minefield reconnaissance to determine mine density and location. The Advanced Sonar is being developed for the emergent requirement of integration of AMCM systems with an H-60 type platform. The sonar will be developed to meet the capabilities inherent with the new tow platform. 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.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1997 ACCOMPLISHMENTS:

- (U) ($5,178) Q-20 - Completed fabrication of EMD models, qualification tests.
- (U) ($9,018) Q-20 - Initial tow tests. Completed design of side look Sonar housing.
- (U) ($1,804) Q-20 - Completed risk analysis.
- (U) ($1,969) AMNSYS - Released RFP, conducted test planning, awarded contracts, and performed COEA type analysis.

2. (U) FY 1998 PLAN:

- (U) ($3,000) Q-20 - Complete contractor demonstration. Accept Delivery of Engineering Development Model.
- (U) ($5,169) Q-20 - Conduct final AQS-20 Developmental testing and transition to the Advanced Sonar system.
- (U) ($3,000) AMNSYS - Deliver NDI prototype model.
- (U) ($2,558) AMNSYS - Conduct fly off testing.
- (U) ($2,776) AMNSYS - Procure and test the test equipment, data analysis.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

3. (U) FY 1999 PLAN:

- (U) ($11,140) Advanced Sonar - Advanced Sonar Fly-off.
- (U) ($6,500) AMNSYS - Award EMD contract for integration into the helicopter.
- (U) ($2,552) AMNSYS - Perform system integration, data analysis, TECHEVAL preparations.
- (U) ($200) HORIGAN - Configuration Theory Tactical Decision Aid.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	18,357	16,503	19,937
(U) Appropriated Value:	19,164	0	0
(U) Adjustments to FY 1998 President's Budget:			
a. SBIR	-366	0	0
b. NWCF adjustments/General reductions	-22	0	-717
c. Elimination of AQS-20	0	0	-10,168
d. Add: Advanced Sonar	0	0	+11,140
e. Add: Configuration Theory Tactical Decision Aid	0	0	+200
(U) FY 1999 OSD/OMB Budget Submit:	17,969	16,503	20,392

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q0529
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY97--reflects SBIR (-$366), NWCF adjustments and general reductions (-$22). FY99--reflects NWCF adjustments and general reductions ($-717), elimination of AQS-20 (-$10,168), Advanced Sonar fly-off (+$11,136), Configuration Theory Tactical Decision Aid (+$200).

(U) Schedule: AMNSYS: Milestone III from 3Q/99 to 3Q/00 due to funding constraints.
(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN 424800									
Advanced Sonar	0	0	0	0	0	0	10,993	0	10,993
AMNSYS	0	0	0	4,284	7,759	16,605	0	0	28,648

(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: See attached. Exhibit R-2

AIRBORNE MINE NEUTRALIZATION SYSTEM (AMNS)

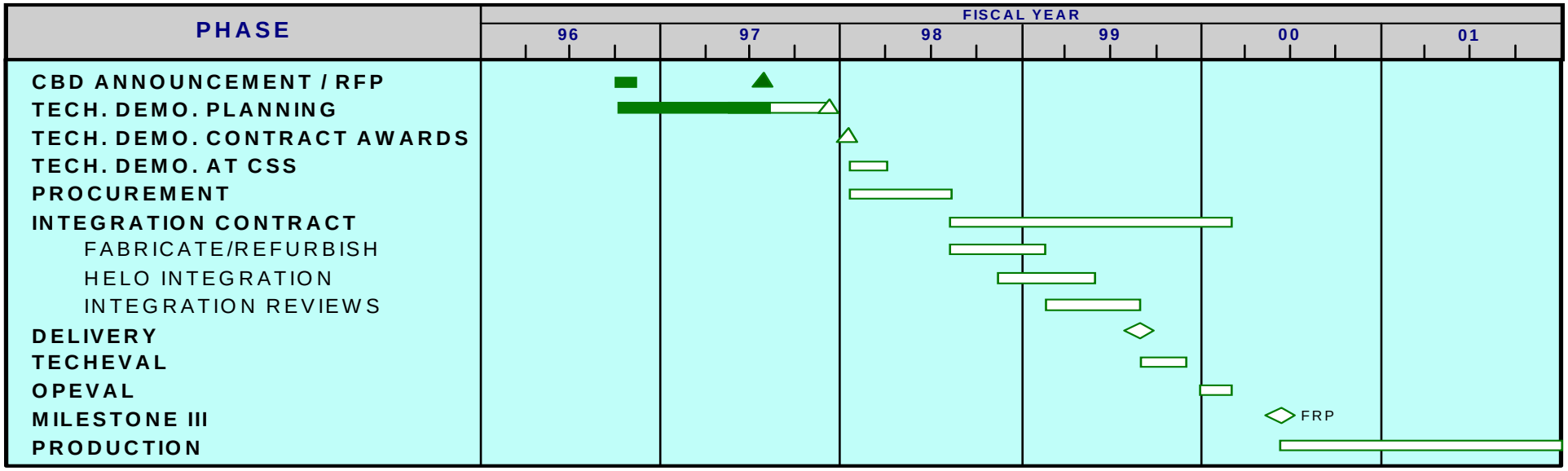


Exhibit R-2

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT NUMBER: Q0529 PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	12,193	7,330	6,143
b. Software Development	2,614	0	0
c. Systems Engineering	0	2,196	1,490
d. Developmental Test & Evaluation	2,000	5,502	2,144
e. Operational Test & Evaluation	0	0	8,883
f. Travel	20	20	20
g. Miscellaneous	1,142	1,455	1,712
Total	17,969	16,503	20,392

Exhibit R-3

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Raytheon Q20	C/CPFF	7/92	55,456	55,456	44,823	9,433	1,200	0	0	55,456
TBD (AMNSYS)	C/CPFF	05/98	9,500	9,500	0	0	3,000	6,500	0	9,500
Various (AMNSYS)	C/CPFF	05/97	1,000	1,000	0	1,000	0	0	0	1,000
TBD (ADV Sonar)	C/CPIF	11/99	15,576	15,576	0	0	0	4,500	11,076	15,576
CSS, Panama City	WR	10/98	46,178	46,178	33,859	1,198	4,292	2,565	4,264	46,178
NSWC, Carderock	WR	10/98	4,800	4,800	0	0	0	1,200	3,600	4,800
Miscellaneous	WR	10/98	22,020	22,020	7,723	4,058	3,799	2,722	3,722	22,020
Support and Management										
Miscellaneous	WR	VARIOUS	6,142	6,142	624	280	430	1,600	3,208	6,142
Test and Evaluation										
OPTEVFOR, VA	WR	10/99	5,000	5,000	0	0	0	0	5,000	5,000
CSS, Panama City	WR	10/97	9,087	9,087	0	2,000	3,782	1,305	2,000	9,087

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

Exhibit R-3

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

PROJECT NUMBER: Q0529
PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

	Total FY 1996 & PRIOR	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	86,405	15,689	12,291	17,487	22,662	154,534
Subtotal Support and Management	624	280	430	1,600	3,208	6,142
Subtotal Test and Evaluation	0	2,000	3,782	1,305	7,000	14,087
Total Project	87,029	17,969	16,503	20,392	32,870	174,763

Exhibit R-3

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q2047 AIRBORNE LASER MINE DETECTION SYSTEMS	11,193	0	5,000	6,000	6,000	6,000	7,000	0	130,965

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. A competitive evaluation of the ALMDS candidate technologies represented by the Magic Lantern and ATD-III systems. The results from this evaluation will significantly reduce the risk of a follow on ALMDS procurement decision.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q2047
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS SYSTEMS

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1997 ACCOMPLISHMENTS:

- (U) ($11,193) Conduct “Fly-off”, technical evaluation

2. (U) FY 1998 PLAN: Not Applicable.

3. (U) FY 1999 PLAN:

- (U) ($1,000) Prepare RFP, evaluate response and award contract.
- (U) ($1,000) Evaluate integration studies.
- (U) ($2,000) Initiate engineering design.
- (U) ($1,000) Prepare ECP for aircraft installation and ILS initiation.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q2047
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	0	0	0
(U) Appropriated Value:	12,000	0	0
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:			
a. SBIR	-302	0	0
b. NWCF adjustments/General reductions	-505	0	0
c. Add: Airborne Laser Mine Detection System	0	0	+5,000
(U) FY 1999 OSD/OMB Budget Submit:	11,193	0	5,000

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q2047
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY97--reflects SBIR (-$302), NWCF adjustments and general reductions (-$505). FY99--addition of Airborne Laser Mine Detection System (+$5,000).

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

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

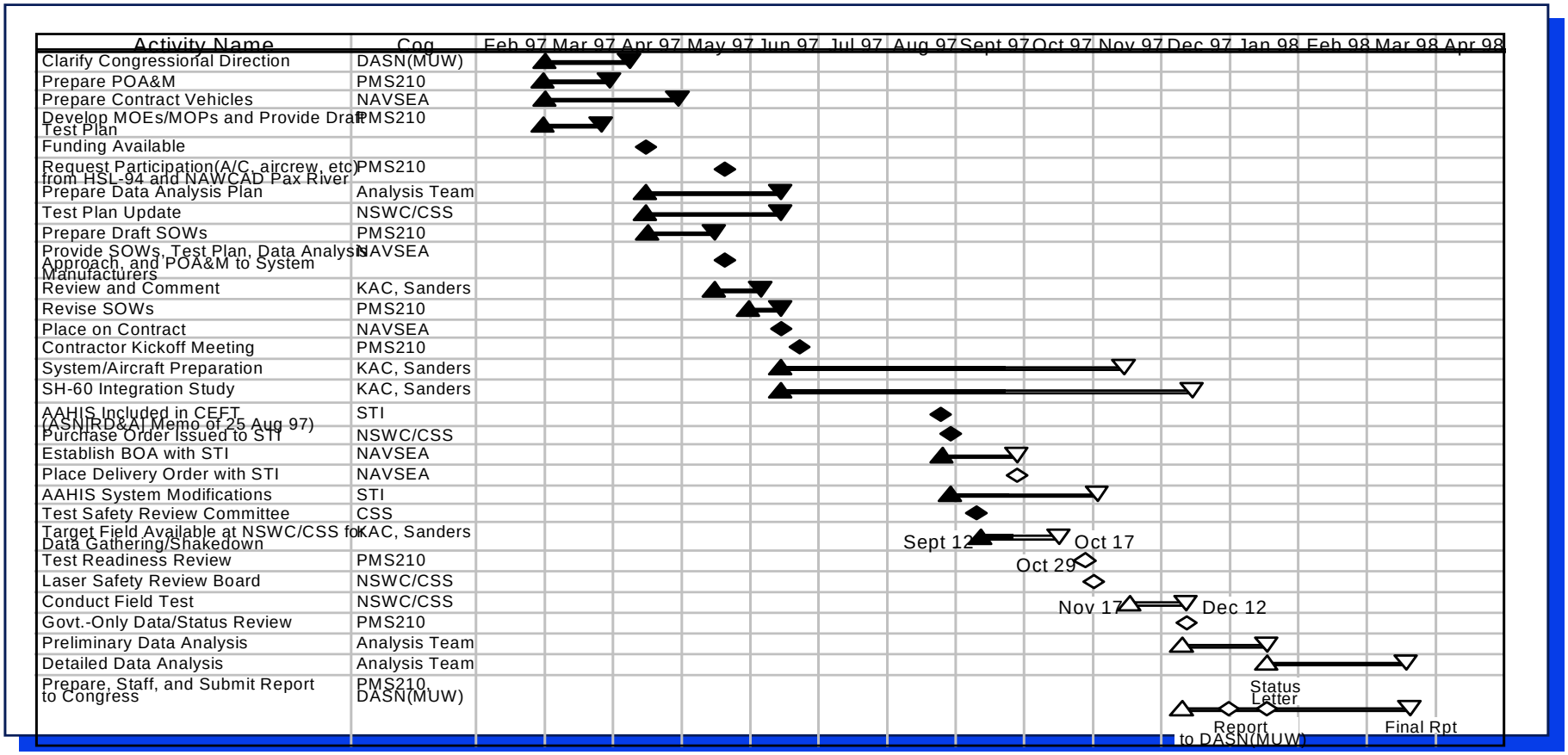
OPN 424800	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
ALMDS	0	0	0	0	0	0	0	0	0

(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)

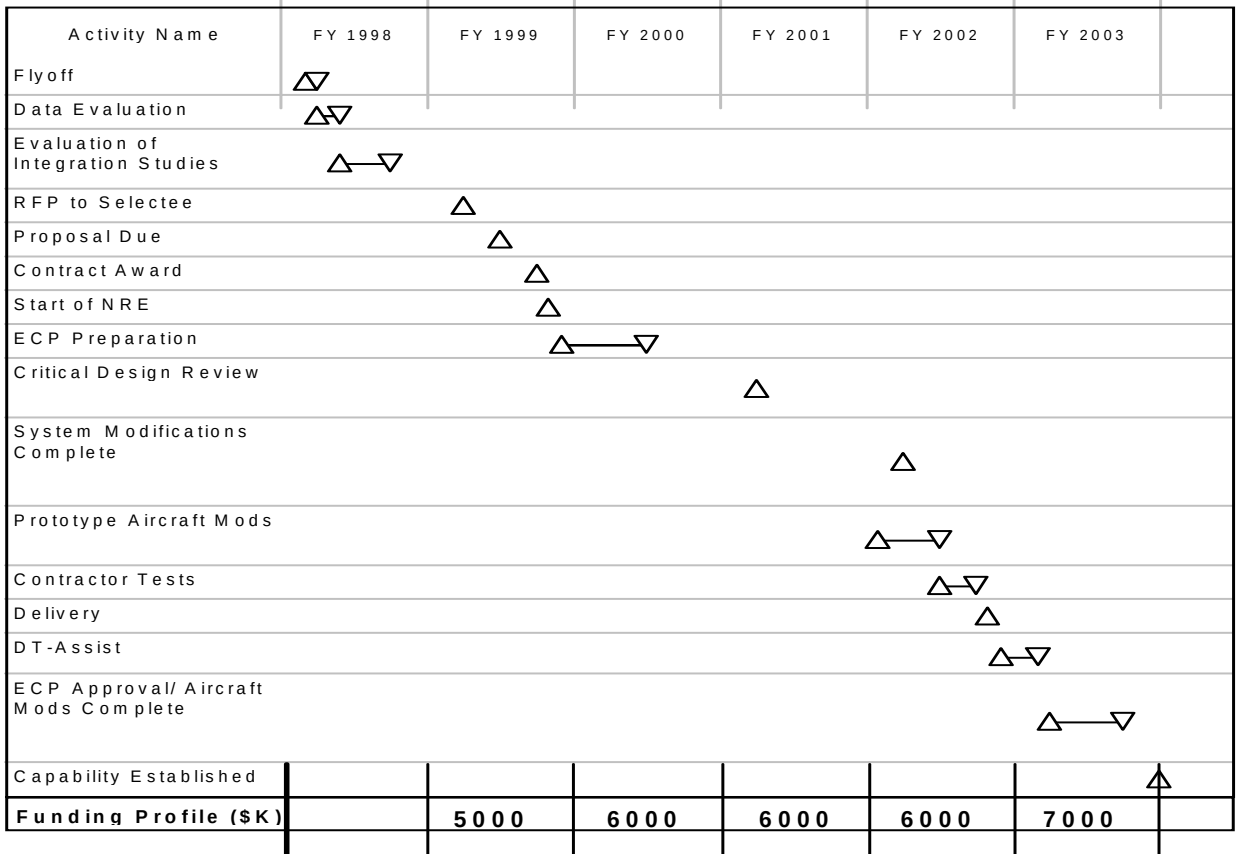
D. (U) SCHEDULE PROFILE: See attached.

Exhibit R-2

CEFT PLAN OF ACTION & MILESTONES



H-60 CONTINGENCY PROGRAM



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1997	FY 1998	FY 1999
a. Primary Hardware Development	5,648	0	2,630
b. Software Development	2,614	0	1,000
c. Systems Engineering	0	0	1,000
d. Developmental Test & Evaluation	2,609	0	0
e. Operational Test & Evaluation	0	0	0
f. Travel	20	0	20
g. Miscellaneous	302	0	350
Total	11,193	0	5,000

Exhibit R-3

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q2047
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

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

PERFORMING ORGANIZATIONS

Performing Activity	Contractor/ Government Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
TBD	C/CPFF	06/98	15,000	15,000	0	0	0	2,000	13,000	15,000
Sikorsky	S/CPFF	06/98	5,000	5,000	0	450	0	500	4,500	5,450
Miscellaneous	WR	various	86,195	86,195	72,550	6,645	0	1,000	6,000	86,195
Support and Management										
CSS, Panama City	WR	10/96	8,569	8,569	6,747	322	0	750	750	8,569
NAWC AD, Pax River	WR	10/96	3,142	3,142	475	1,167	0	750	750	3,142
Test and Evaluation										
CSS, Panama City	WR	10/96	2,609	2,609	0	2,609	0	0	0	2,609
Misc.	WR	10/96	10,000	10,000	10,000	0	0	0	0	10,000

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

Exhibit R-3

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROJECT NUMBER: Q2047
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT TITLE: AIRBORNE LASER MINE DETECTION SYSTEMS

	Total FY 1996 & PRIOR	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	72,550	7,095	0	3,500	23,500	106,645
Subtotal Support and Management	7,222	1,489	0	1,500	1,500	11,711
Subtotal Test and Evaluation	10,000	2,609	0	0	0	12,609
Total Project	89,772	11,193	0	5,000	25,000	130,965

Exhibit R-3

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F0775 Submarine Support Equipment Program	11,217	0	2,652	1,046	1,000	700	700	CONT.	CONT.
S0219 Submarine Sonar Improvement	31,422	0	0	0	0	0	0	CONT.	CONT.
F0219 Submarine Sonar Improvement	0	33,545	37,853	31,629	21,961	21,914	23,711	CONT.	CONT.
X0742 Submarine Integrated Antenna Systems	10,521	3,182	2,914	5,527	5,642	5,767	3,231	CONT.	CONT.
X1411 Submarine Tactical Communications System	4,193	5,567	7,724	5,956	5,033	9,904	6,477	CONT.	CONT.
TOTAL	57,353	42,294	51,143	44,158	33,636	38,285	34,119	CONT.	CONT.

U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Support Equipment Program develops and improves submarine Electronic Support Measures 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 and Intelligence Collection, Maritime Protection, and Joint Strike. The major efforts in this area are the Engineering and Manufacturing Development of the New SSN ESM System (formerly ASTECS), Integrated ESM Mast, ESM On Board Team Trainer, ESM software Program Trouble Report (PTR) Fixes, and de-installation of the ESM Engineering Developmental Model (EDM) from the DT/OT test platform. The ESM system is also planned for backfit on SSN 688 and SEAWOLF class submarines.

(U) The Submarine Sonar Improvement Program delivers block updates to Sonar Systems installed on SSN 688, 688I and TRIDENT Class Submarines 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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) The Submarine Integrated Antenna Systems project develops the antennas needed to communicate in networks such as Ultra High Frequency Satellite Communications, Extremely Low Frequency, Extremely High Frequency, Super High Frequency and Global Positioning System. Hardware developments include: (a) mast-mounted systems; (b) buoyant cable systems; (c) expendable buoy systems and (d) submarine antenna distribution 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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F0775 Submarine Support Equipment program	11,217	0	2,652	1,046	1,000	700	700	CONT.	CONT.

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 and Intelligence Collection; Maritime Protection; and Joint Strike. Specific efforts include development of the: (1) New SSN ESM system, (2) IEM, (3) ESM OBTT, (4) ESM software PTR Fixes and de-installation of the ESM EDM from the DT/OT test platform. The ESM system is also planned for backfit on SSN 688 and SEAWOLF class submarines.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0775
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Support Equipment Program

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($6,697) Completed fabrication and integration, environmental and factory acceptance testing of the IEM EDM's. Began integration with host ESM system.
- (U) ($4,520) Completed New SSN ESM system interface definition and design level detail to support Preliminary and Critical Design Reviews.

2. (U) FY 1998 PLAN:

- Project Funded under Program Element 0604558N Project F1950.

3. (U) FY 1999 PLAN:

- ($1,952) Begin engineering development of ESM OBTT.
- ($700) Perform ESM software PTR fixes.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0775
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Support Equipment Program

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY1999
(U) FY 1998 President's Budget:	11,522	0	0
(U) Appropriated Value:	12,106	0	0
(U) Adjustments to FY97 Appropriated Value/FY 1998 President's Budget:			
a. SBIR Transfer	-291		
b. Undistributed Reductions	-598		
c. Increase for ESM OBTT and ESM Software PTR Fixes			+2,652
(U) FY 1999 OSD/OMB Budget Submit:	11,217	0	2,652

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY97 decrease of $889K is a result of a ($291K) SBIR assessment and ($598K) undistributed reductions. The FY99 increase of $2,652 is for ESM Development Program Shortfalls.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0775
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Support Equipment Program

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

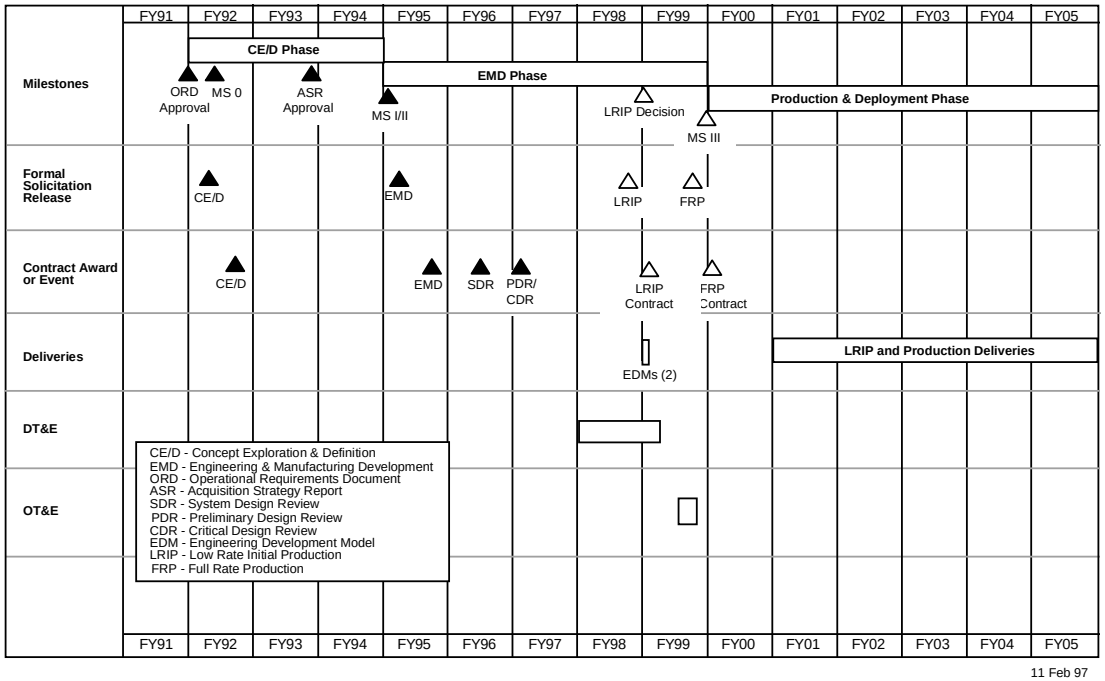
	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 256000	0	0	0	16,684	17,530	22,070	24,388	7,800	88,472
(U) OPN Line 256005	0	0	0	0	960	2,599	2,602	2,700	8,861
(U) O&MN Line BA-1 Subhead 8B2B	0	0	0	700	2,759	2,820	2,882	CONT.	CONT.
(U) SCN Line 201300 (Partial)	0	28,163	20,961	0	21,227	21,709	0	713,840	805,900

(U) RELATED RDT&E:

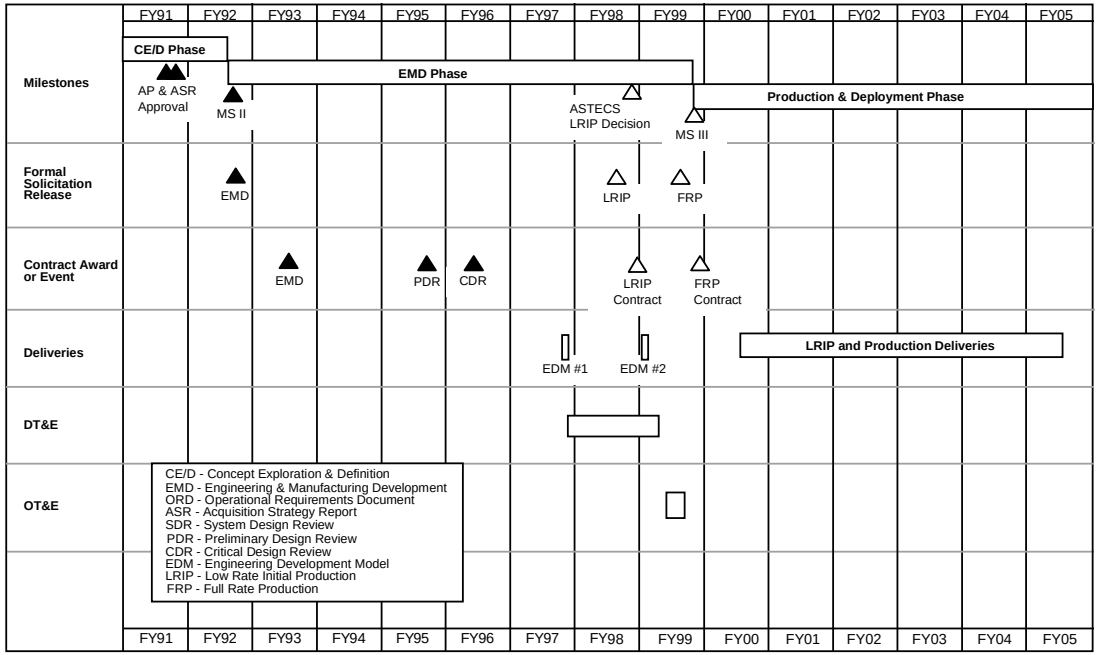
(U) PE 0603562N (Submarine Tactical Warfare System)
(U) PE 0604558N (New SSN Combat Systems Development)

D. (U) SCHEDULE PROFILE: See attached.

ESM Program Schedule



IEM PROGRAM SCHEDULE



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FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0775
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Support Equipment Program

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Prime Hardware	7,022	0	1,326
b. Software Development	1,315	0	796
c. Engineering Support	2,399	0	530
d. Miscellaneous	481	0	0
Total	11,217	0	2,652

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0775
PROGRAM ELEMENT TITLE: Submarine System Equipment Development 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
IEM ADSU EMD										
Raytheon Goleta, CA	C/CPIF/CPAF	4/93	38,367	38,367	33,367	5,000	0	0	0	38,367
IEM/HPI Inter										
ST Research Newington, VA	SS/CPIF	8/94	2,944	2,944	2,944	0	0	0	0	2,944
ESM/IEM BDE System EMD										
Lockheed Martin Syracuse, NY	C/FFP	4/96	7,476	7,476	3,007	4,469	0	0	0	7,476
ESM OBTT/software PTR Fixes										
Lockheed Martin Syracuse, NY	TBD	3/99	CONT.	CONT.	0	0	0	2,652	CONT.	CONT.
Miscellaneous					15,871	1,139	0	0	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0775
PROGRAM ELEMENT TITLE: Submarine System Equipment PROJECT TITLE: Submarine Support Equipment Program

Contractor Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management										
Misc.					6,157	609	0	0	0	6,766
Test and Evaluation										
Misc.					0	0	0	0	0	0

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	55,189	10,608	0	2,652	CONT.	CONT.
Subtotal Support and Management	6,157	609	0	0	0	6,766
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	61,346	11,217	0	2,652	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S0219 Submarine Sonar Improvement	31,422	0	0	0	0	0	0	COMP.	COMP.
F0219 Submarine Sonar Improvement	0	33,545	37,853	31,629	21,961	21,914	23,711	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 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. OPEVAL for AN/BQQ-5E and the TB-29 Array will complete in FY 1997; this will provide quantum improvements in long-range detection and localization for SSN 688 and SSBN 726 Class Submarines. Engineering Change Proposal 7001 to AN/BQQ-5E will provide Low Frequency Active Interference Rejection, Dual Towed Array Processing and Full Spectrum Processing to SSN 688 and SSBN 726 Class Submarines. The Onboard Trainer is being developed to provide pierside and at-sea operational and team training to improve operator efficiency. The AN/BSY-1 ECP 1000, the AN/BQQ-5 Medium Frequency Active Improvement program and Improved Control Display Console Obsolete Equipment Replacement have been modified to become the basis of the Acoustics Rapid Commercial Off The Shelf Insertion program. A-RCI is a multi-phased, evolutionary development effort geared toward addressing the Acoustic Superiority issue through the rapid introduction of interim development products applicable to SSN 688, 688I Flight and SSBN 726 Class Submarines. A-RCI Phase I and II introduce towed array processing improvements; A-RCI Phase III introduces spherical array processing improvements. The AN/BSY-1 High Frequency Upgrade is a stand-alone program which will be introduced as A-RCI Phase IV for SSN 688I only. Towed systems development efforts will focus on (a) tow cable improvements for shallow water towing; (b) hydrophone and telemetry cost reduction alternatives; (c) mechanical endurance improvements; (d) sonar standardization; and (e) OA-9070 handling system design enhancements.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Sonar Improvement

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($21,629) Continued development of A-RCI Phases I, II and III. Conducted A-RCI Phase I Critical Design Review.
- (U) ($6,016) Continued towed array development efforts. Continued TB-16 Multi-line Phase I development and evaluation.
- (U) ($439) Continued OPEVAL for TB-29 and AN/BQQ-5E.
- (U) ($828) Continued development for DTC Improvements.
- (U) ($2,510) Obtained MS II approval and began transition of HF Upgrade Arrays Designs to production.

2. (U) FY 1998 PLAN:

- (U) ($22,498) Conduct at-sea testing of A-RCI Phase I and CDR of Phase III.
- (U) ($2,195) Continue transition of HF Upgrade Arrays Designs to production and begin First Article Test of HF Sensor and Transmit Equipment. Begin transition of New SSN C3I developed High Frequency Processing Software to A-RCI for system integration and test.
- (U) ($7,952) Complete TB-16 Multi-line development and evaluation and perform TB-29( ) concept development and commence Engineering Manufacturing Development.
- (U) ($900) Continue development for Desk Top Computer Improvements.

3. (U) FY 1999 PLAN:

- (U) ($15,971) Conduct at-sea testing of A-RCI Phases II and continue development of A-RCI Phase III.
- (U) ($12,132) Begin system integration testing of AN/BSY-1 HF Upgrade.
- (U) ($8,850) Continue development of TB-29( ) towed array and the OA-9070( ) handling system.
- (U) ($900) Continue development for DTC Improvements.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Sonar Improvement

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	32,125	33,545	37,512
(U) Appropriated Value:	33,562		
(U) Adjustments to FY97 Appropriated Value/ FY98 President's Budget:			
a. Congressional Undistributed Reductions	-1,437		
b. SBIR	-624		
c. FFRDC respread	-24		
d. FY 97 Supp'l Revised Economic Assumptions	-39		
e. March 1997 Update BTR's	-16		
f. NWCF Adjustments			+341
(U) FY 1999 OSD/OMB Budget Submit:	31,422	33,545	37,853

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 decreased $1,437K for Congressional Undistributed Reductions, $624K for SBIR transfer, $24K for FFRDC respread, $39K for FY 97 supplemental revised economic assumptions and $16K for a March 1997 update to BTR's. No change to FY 1998. FY 1999 increased $341K due to NWCF Adjustments.
(U) Schedule: This submit establishes A-RCI Phase I-IV program schedule.
(U) Technical: A-RCI increases technical capabilities over programs through the use of commercial off the shelf components, open system architecture, and leveraging advanced development efforts.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 21470	43,756	77,953	125,890	190,713	182,327	118,289	158,877	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Sonar Improvement

(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))

D.(U) SCHEDULE PROFILE: See attached.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

PROJECT NUMBER: F0219
PROJECT TITLE: Submarine Sonar Improvement

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

PROJECT COST CATEGORIES	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	23,573	25,283	28,613
b. Systems Engineering	5,110	5,353	6,106
c. Program Management Support	642	658	672
d. Test & Evaluation	615	760	812
e. Travel	190	150	150
f. Miscellaneous	1,292	1,341	1,500
TOTAL	31,422	33,545	37,853

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Sonar 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Lockheed Martin Manassas, Virginia	SS/CPAF	1/95	71,256	71,256	22,462	19,963	15,564	9,378	3,889	71,256
Lockheed Martin Manassas, Virginia	SS/CPAF	10/97	7,412	7,412	0	0	250	5,462	1,700	7,412
NUWC Newport, Rhode Island	WR	Various	CONT.		43,228	6,158	6,931	8,497	CONT.	CONT.
Misc	Various	Various	CONT.		8,406	3,924	4,470	7,322	CONT.	CONT.
TBD	C/CPIF	11/97	13,168	13,168	0	0	4,792	5,590	2,786	13,168

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Sonar Improvement

Contractor Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management										
Misc	Various	Various	CONT.	CONT.	4,418	762	778	792	CONT.	CONT.
Test and Evaluation										
Misc	Various	Various	CONT.	CONT.	2,346	615	760	812	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	74,096	30,045	32,007	36,249	CONT.	CONT.
Subtotal Support and Management	4,418	762	778	792	CONT.	CONT.
Subtotal Test and Evaluation	2,346	615	760	812	CONT.	CONT.
Total Project	80,860	31,422	33,545	37,853	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X0742
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Integrated Antenna System

(U) COST (Dollars in thousands)

PROJECTNUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0742 Submarine Integrated Antenna Systems	10,521	3,182	2,914	5,527	5,642	5,767	3,231	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: OE-538/BRC (Improved AN/BRA-34), High Speed Buoyant Cable Antennas (HSBCAs), Submarine Antenna Distribution Systems (SADS), High Data Rate Antennas (HDA), Extremely High Frequency (EHF), Super High Frequency (SHF), Phased Array Antennas (PAAs) and Global Positioning Systems (GPS).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U)($6,928) HDA - Awarded and managed Rapid Prototype (RP) contract and prepared for DT.
- (U) ($1,940) SADS - Completed full funtional development and conducted MS III. Completed preliminary design, conducted PDR, finalized design and began post production.
- (U) ($600) OE-538/BRC - Completed OT-IIB and achieved MSIIA LRIP decision.
- (U) ($1,053) Analyzed and prepared necessary changes from Antenna CSS/TADIXS Shipboard Automated Communications Control System (SACCS) compatibility.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1998 PLAN:

•(U)($1,292) HDA - Continue development, conduct developmental testing and support operational assessment.
•(U)($1,832) SADS - Assemble, integrate and test. Perform developmental testing in support of op-assessment and LRIP.
•(U)($58) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance.

3. (U) FY 1999 PLAN:

•(U)($2,914) Initiate phased array engineering to develop antenna arrays and broadband power amplifiers which support not only MILSTAR, DSCS SATCOM, and GBS but also multiple commercial SATCOM networks. This support transition of Phased Array technology from 6.3 ATD to 6.4 SIAS.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X0742
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Integrated Antenna System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	10,719	3,182	2,906
(U) Appropriated Value:			
(U) Adjustments from FY 1998 PRESBUDG:	-198	0	+8
(U) FY 1999 OSD/OMB Budget Submit:	10,521	3,182	2,914

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 decreases $107K for SBIR adjustment and decreases $91K for FFRDC adjustment. In FY 99 an increase of $86K was due to Undersea Warfare Adjustment and a $32K decrease was due to DBOF Surcharge. In FY 1999 $46K is redirected to develop and update overarching C4ISR mission requirements.

(U) Schedule: SADS version (0) aboard USS Annapolis required additional technical support through FY 96 delaying start of version (1) design into FY 1997. All milestones have been adjusted to reflect change. OE-538/BRC OT-IIB testing continued into FY 1997 requiring redesign/test prior to MS Decision. Due to test anomalies, MSIII was changed to MSIIA authorizing LRIP and deferring MSIII until FY 1999. HDR contract award was rescheduled for 4Q96 to Oct 96 due to additional offer or discussions needed to achieve full competition.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X0742
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Integrated Antenna System

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 313000 Hardware and 313005 Installation (Partial)	4,622	17,403	32,231	39,925	60,310	50,451	72,240	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0602232N (Space and Electronic Warfare (SEW) Technology
(U) PE 0303109N (Satellite Communications) - Provides for the EHF transmitter and receiver that utilizes the antenna developed under this program.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones	4Q HDA MS II	2Q OE-538/MSIIA	3Q SADS MSIIA(LRIP) 3Q HDA MSIIA(LRIP)	1Q SADS MSIII 4Q HDR MSIII 3Q OE-538/BRC MSIII
Engineering Milestones				
T&E Milestones	3Q OE-538/BRC DTIIB/C 4Q OE-538/BRC OTIIA	2Q OE-538/BRC OTIIB	2Q HDA DT/OTII 3Q SADS DTIIA/OTIIA 3Q OE-538/BRC DTIIE 3Q SADS DTIIB 4Q SADS OTIIB	2Q OE-538/BRC DTIIF/OTIIC 3Q HDR DT/OTII
Contract Milestones		1Q HDA RP 4Q OE-538 LRIP (OPN)		

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X0742
PROJECT TITLE: Submarine Integrated Antenna System

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

PROJECT COST CATEGORIES	FY 1997	FY 1998	FY 1999
a. Project Management	1,332	430	340
b. Systems Engineering	1,400	433	711
c. Software Development	561	153	450
d. Hardware Development	5,928	1,762	1,163
e. System Test & Evaluation	400	124	100
f. Integrated Logistic Support	500	156	50
g. Site/Platform Integration	400	124	100
CURRENT ALLOCATION	10,521	3,182	2,914

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X0742
PROGRAM ELEMENT TITLE: Submarine System Equipment Development 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Raytheon Marlborough, MA	CPFF	10/96	TBD	TBD	8,256	3,300	570	0	0	12,126
NAVUNSEAWARCEN New London, CT; Newport, Rhode Island	WX	10/95	CONT.	CONT.	5,681	4,904	879	1620	CONT.	CONT.
Misc Contracts	Various	Various	CONT.	CONT.	1,531	495	100	744	CONT.	CONT.
Misc Labs	WX	Various	CONT.	CONT.	849	90	50	100	CONT.	CONT.
Support and Management										
Misc Contracts	Various	Various	CONT.	CONT.	480	1,332	500	350	CONT.	CONT.
Test and Evaluation										
Misc. Labs						400	1083	100		

GOVERNMENT FURNISHED PROPERTY - Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X0742
PROJECT TITLE: Submarine Integrated Antenna System

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	16,317	8,789	1,599	2,464	CONT.	CONT.
Subtotal Support and Management	480	1,332	500	350	CONT.	CONT.
Subtotal Test and Evaluation	0	400	1083	100	CONT.	CONT.
Total Project	16,797	10,521	3,182	2,914	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X1411
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Tactical Communication System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X1411 Submarine Tactical Communications System	4,193	5,567	7,724	5,956	5,033	9,904	6,477	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 through automation and integrated network management; (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 Support System (SCSS) 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 the OPNAV approved SCSS Program Summary. It specifically funds the development of the improved Submarine Message Buffer (SMB) and SCSS. These two efforts will develop the computer controlled radio room for submarines. Ships without SCSS 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 SCSS and the transition to Multifunction Information Distribution System (MIDS).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:
   - (U) ($911) Completed DT/Operational Testing (OT) testing of improved SMB.
   - (U) ($260) Continued development of the Hi Data Rate System.
   - (U) ($1,780) Completed SCSS Phase I Integration.
   - (U) ($406) Continued Intergration and developmental testing for MIDS/JTIDS.

•(U) ($710) Systems engineering for SCSS on TRIDENT Integrated Radio Room (IRR).
•(U) ($126) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance.

2. (U) FY 1998 PLAN:

•(U) ($4,067) Begin SCSS Phase II Integration Design.
•(U) ($1,399) Continue integration and development testing for MIDS/JTIDS.
•(U) ($101) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnasissance (C4ISR) implementation guidance.

3. (U) FY 1999 PLAN:

•(U) ($4,258) Continue SCSS Phase II integration.
•(U) ($2,822) Continue integration and development testing for MIDS/JTIDS.
•(U) ($644) Conduct land based testing of Phase II SCSS components.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development

PROJECT NUMBER: X1411 PROJECT TITLE: Submarine Tactical Communication System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	4,272	5,567	7,496
(U) Appropriated Value:			
(U) Adjustments from FY 1998 PRESBUDG:	-79	0	+228
(U) FY 1999 OSD/OMB Budget Submit:	4,193	5,567	7,724

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 decreased $57K for SBIR adjustment, decreased $16K for FFRDC adjustment and decreased $6K for miscellaneous deductions. FY99 increased $2070 for MIDS and decreased $1760 to finance other Navy requirements, decreased $125K for redirection to develop and update overarching C4ISR mission requirements and increased $43K for NWCF adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X1411
PROJECT TITLE: Submarine Tactical Communication System

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

NUMBER TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 313000 Hardware and 313005 Installation (Partial)	20,819	18,350	21,282	19,866	16,237	13,452	12,671	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0204163N (Fleet Communications)
(U) PE 0602232N (Space & Electronic Warfare (SEW) Technology)

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X1411
PROJECT TITLE: Submarine Tactical Communication System

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

PROJECT COST CATEGORIES	FY 1997	FY 1998	FY 1999
a. Project Management	878	897	916
b. Systems Engineering	960	2,020	2,064
c. Software Development	1,523	1,310	2,683
d. Hardware Development	472	727	770
e. Test and Evaluation	360	613	1,291
CURRENT ALLOCATION	4,193	5,567	7,724

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: X1411
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Tactical Communication 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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Misc Contracts	Various	Various	CONT.	CONT.	938	345	358	409	CONT.	CONT.
NCCOSC NRaD San Diego, CA	WX	10/95	CONT.	CONT.	2,479	1,785	1,310	1,236	CONT.	CONT.
NAVUNSEAWARFCEN Newport, RI	WX	10/95	CONT.	CONT.	1,019	415	1,603	1,728	CONT.	CONT.
Misc Labs	Various	Various	CONT.	CONT.	165	410	786	2,144	CONT.	CONT.
Support and Management										
Misc Contracts	Various	Various	CONT.	CONT.	400	878	897	916	CONT.	CONT.
Test and Evaluation Misc. Labs						360	613	1291		

GOVERNMENT FURNISHED PROPERTY: Not applicable.

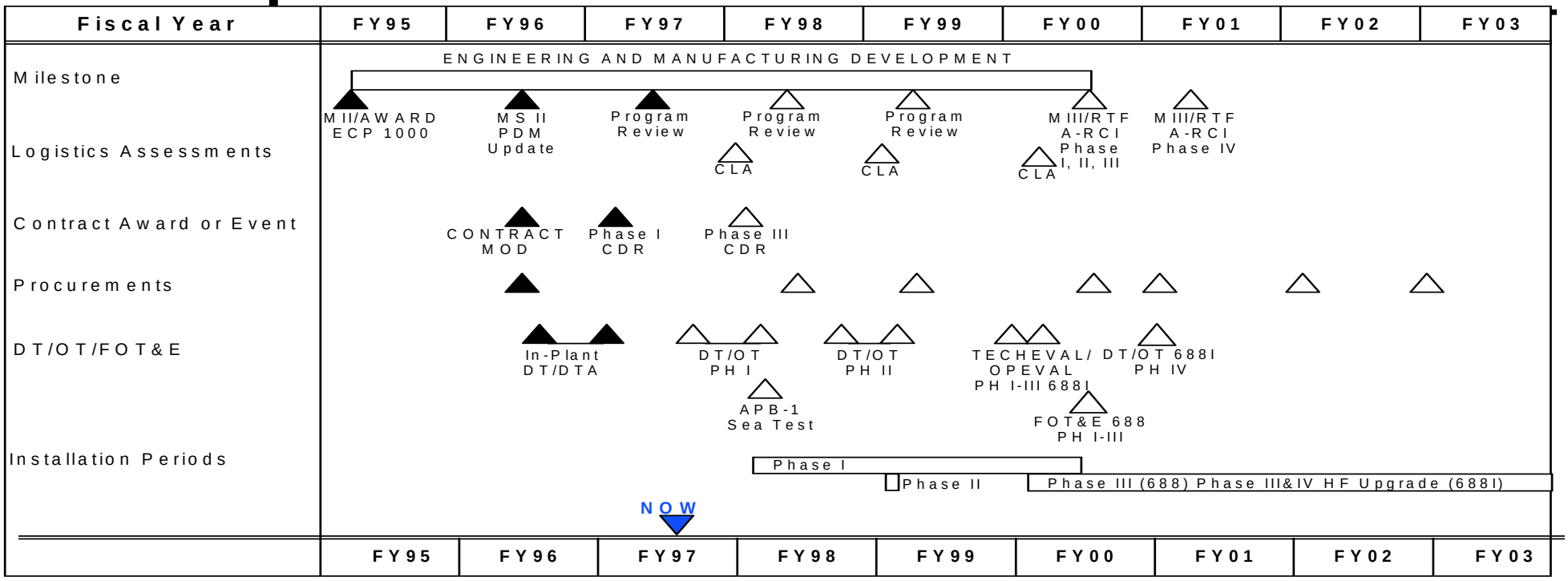
FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X1411
PROJECT TITLE: Submarine Tactical Communication System

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	4,601	2,955	4,057	5,517	CONT.	CONT.
Subtotal Support and Management	400	878	897	916	CONT.	CONT.
Subtotal Test and Evaluation	0	360	613	1,291	CONT.	CONT.
Total Project	5,001	4,193	5,567	7,724	CONT.	CONT.

MASTER PROGRAM SCHEDULE

PROGRAM ELEMENT: 0604503N PROJECT NUMBER: F0219



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07/09/97

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0993 Carrier Air Traffic Control	5,731	6,741	1,280	1,861	1,903	1,941	1,991	Cont.	Cont.
W1657 Air Traffic Control (ATC) Improvements	5,608	1,297	1,900	2,253	2,451	2,503	2,565	Cont.	Cont.
W0718 Marine Air Traffic Control And Landing Systems (MATCALS)	*1,174	1,260	1,060	1,073	2,071	2,113	2,166	Cont.	Cont.
TOTAL	12,513	9,298	4,240	5,187	6,425	6,557	6,722	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.

* Previously reflected under project X0718.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0993 Carrier Air Traffic Control	5,731	6,741	1,280	1,861	1,903	1,941	1,991	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 1997 ACCOMPLISHMENTS:

- (U) ($2,233) Completed MTD development for AN/SPN-46(V) and AN/SPN-43(V)

DATE: September 1997

1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N PROJECT NUMBER: W0993
PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT TITLE: Carrier ATC

- (U) ($700) Provided engineering support, test & evaluation for MTD.
- (U) ($700) Continued Passive Point development.
- (U) ($2,098) Continued development effort to upgrade AN/SPN-42T systems.

2. (U) FY 1998 PLAN:

- (U) ($2,608) Provide engineering support, test & evaluation for MTD and AN/SPN-42T systems.
- (U) ($708) Continue Passive Point development.
- (U) ($2,225) Continue development effort to upgrade AN/SPN-42T systems.
- (U) ($200) Complete AN/SPN-43 MTD development.
- (U) ($1,000) Begin development of halyard protection for AN/SPN-43.

3. (U) FY 1999 PLAN:

- (U) ($730) Continue development effort to upgrader AN/SPN-42T systems.
- (U) ($400) Provide engineering support, test & evaluation for Passive Point and AN/SPN-42T systems.
- (U) ($150) Continue development of halyard protection for AN/SPN-43.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	5,865	6,741	1,972
(U) Appropriated Value	6,117	0	0
(U) Adjustments from PRESBUDG:	-134	0	-692
(U) FY 1999 OSD/OMB Budget Submit:	5,731	6,741	1,280

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 decrease of $127 thousand reflects Small Business Renovation Research assessment and $7 thousand is from the FY 1997 Supplemental Revised Economic Assumptions. FY 1999 decrease of $3 thousand is due to minor pricing adjustments and a $689 thousand decrease is from a DON Review mark due to low expenditure rate.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Automatic Carrier Landing System									
	9,484	13,200	10,462	20,486	19,466	19,215	19,622	Cont.	Cont.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W0993
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 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		2Q-4Q 43 Halyard Protective Dev.		
Engineering Milestones	4Q PP Prototype			
T&E Milestones	1Q-2Q MTD Testing	2Q-3Q MTD Testing 1Q-2Q PPS Testing	1Q-2Q PPS Testing	Cont.
Contract Milestone				

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W0993
PROJECT TITLE: Carrier ATC

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Primary Hardware Dev	5,023	5,898	600
b. Systems Engineering Sup	503	544	460
c. T & E Support	50	154	80
d. Project Management Sup	125	125	125
e. Travel	30	20	15
Total	5,731	6,741	1,280

DATE: September 1997

UNCLASSIFIED

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: W0993
PROGRAM ELEMENT TITLE: Air Control (Eng) 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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program	
Product Development											
Sierra Nevada Reno, NV	CPFF	5/93	11,174	11,174	8,939	2,235	0	0	0	11,174	
Miscellaneous		Various	-	-	2,430	3,291	6,442	1,060	Cont.	Cont.	
Support and Management											
Miscellaneous		Various	-	-	289	155	145	140	Cont.	Cont.	Cont.
Test and Evaluation											
Miscellaneous		Various	-	-	535	50	154	80	Cont.	Cont.	

GOVERNMENT FURNISHED PROPERTY : Not applicable.

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W0993
PROJECT TITLE: Carrier ATC

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	11,369	5,526	6,442	1,060	Cont.	Cont.
Subtotal Support and Management	289	155	145	140	Cont.	Cont.
Subtotal Test and Evaluation	535	50	154	80	Cont.	Cont.
Total Project	12,193	5,731	6,741	1,280	Cont.	Cont.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W1657 ATC Improvements	5,608	1,297	1,900	2,253	2,451	2,503	2,565	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, e.g., 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 1997 ACCOMPLISHMENTS:

- (U) ($2,424) Continued Global Positioning System (GPS) data link/landing system efforts.
- (U) ($330) Developed Performance Support System/Computer Based Training (PSS/CBT) framework for ATC.
- (U) ($450) Provided in-house engineering support for GPS and PSS/CBT.
- (U) ($2,404) Provided development engineering and contract support for Joint Precision Approach Landing System (JPALS) M/S 0 efforts, including development of an Analysis of Alternatives.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W1657
PROJECT TITLE: ATC Improvements

2. (U) FY 1998 PLAN:

- (U) ($820) Continue GPS data link/landing efforts.
- (U) ($300) Continue PSS/CBT efforts.
- (U) ($177) Provide in-house engineering support for GPS and PSS/CBT efforts.

3. (U) FY 1999 PLAN:

- (U) ($1,047) Continue GPS data link/landing efforts.
- (U) ($500) Continue program management efforts.
- (U) ($353) Provide in-house engineering support for GPS and PSS/CBT efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	3,231	1,297	2,830
(U) Appropriated Value:	3,373	0	0
(U) Adjustments from PRESBUDG:	+2,377	0	-930
(U) FY 1999 OSD/OMB Budget Submit:	5,608	1,297	1,900

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 | PROGRAM ELEMENT: 0604504N | PROJECT NUMBER: W1657
PROGRAM ELEMENT TITLE: Air Control (Eng) | PROJECT TITLE: ATC Improvements

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 decrease of $27 thousand resulted from Small Business Innovation Research reduction and a $5 thousand decrease due to FY 1997 Supplemental Revised Economic Assumptions. Additionally in FY 1997, a $2,409 thousand increase is due to program restructuring which adds the JPALS program to W1657. FY 1999 reflects a decrease of $4 thousand for minor program adjustments, $48 thousand for Navy Working Capital Fund (NWCF), and the OPNAV N88 Flag Board elected to cut $934 thousand. A $2 thousand decrease is from the NCCOSC NWCF, but a $58 thousand increase is from the NAWCAD NWCF.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN National Air Space System	-	2,239	28,885	37,685	38,486	62,261	40,135	30,147	239,838

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	4Q JPALS AoA submit to AFROC			
Engineering Milestones				
T&E Milestones	1Q-2Q Evaluate GPS prototype	1Q-2Q Evaluate GPS prototype	1Q-2Q Evaluate GPS prototype	Cont.
Contract Milestones				

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1997	FY 1998	FY 1999
a. Primary Hardware	-	-	-
b. Ancillary Hardware Dev	-	-	-
c. Software Development	330	200	200
d. Systems Engineering	4,878	872	1,405
e. Training Development	85	50	50
f. ILS	55	30	70
g. T & E Support	110	70	100
d. Project Management Support	110	50	50
e. Travel	40	25	25
Total	5,608	1,297	1,900

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NAWC Pax River	WX	10/1/98	-	-	2,269	2,633	500	1,322	Cont.	Cont.
Miscellaneous		Various	-	-	25,084	2,715	652	403	Cont.	Cont.
Support and Management										
Miscellaneous		Various	-	-	2,408	150	75	75	Cont.	Cont.
Test and Evaluation										
Miscellaneous		Various	-	-	1,961	110	70	100	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)

PROJECT NUMBER: W1657
PROJECT TITLE: ATC Improvements

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	27,353	5,348	1,152	1,725	Cont.	Cont.
Subtotal Support and Management	2,408	150	75	75	Cont.	Cont.
Subtotal Test and Evaluation	1,961	110	70	100	Cont.	Cont.
Total Project	31,722	5,608	1,297	1,900	Cont.	Cont.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0718 Marine Air Traffic Control And Landing System (MATCALS)	1,174	1,260	1,060	1,073	2,071	2,113	2,166	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 Landing System (ATCALS) at Navy/Marine Corps expeditionary airfields. This program transferred to COMNAVAIRSYSCOM P.E. 0604504N, Project W0718 in November 1996. (FY-97)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($525) Developed software enhancements as an eventual replacement (FY98-99) for previous versions of the MATCALS Operational and Precision Approach. Functions Software is required to accomodate Air Traffic Control services for new and/or modernized Fleet aircraft and this includes software development documentation.

- (U) ($126) Continued studies for migration of MATCALS to future architecture systems (JMCIS, CAC2S, JPALS, AN/UYK-70, Common ATC console).

- (U) ($108) Completed study to define requirements for next-generation communication systems.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: W0718
PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT TITLE: Marine Air Traffic Control And Landing System

- (U) ($255) Commenced study to incorporate automatic FAA handoff of MATCALS ATC tracks (hardware & software).

- (U) ($10) Completed study to determine supportability of new development hardware.

- (U) ($150) Flight services for testing (A/C costs).

2. (U) FY 1998 PLAN:

- (U) ($635) Test and certify software improvements required to improve safety of flight and to ensure integration with TADIL B/C systems. Develop new software for precision landing capability, IV&V of new software for both operational and precision approach programs.

- (U) ($355) Conduct studies to define requirements for Joint Precision Approach and Landing System (JPALS) for joint operations, CAC2S for Maritime Operations, interoperability, suitability of new technology (T/R Modules) for automatic landing system and common console.

- (U) ($270) Test and Evaluate First Articles of improved communication systems hardware.

3. (U) FY 1999 PLAN:

- (U) ($340) Conduct integration and system upgrade analysis for future FMF ATC system. (ATNAVICS, JPALS, CEC, CAC2S): hardware and software

- (U) ($125) Develop software upgrades for safety of flight and new capabilities for existing and future systems.

- (U) ($120) Provide/fund A/C flight services test plan engineering support for test and evaluation of new systems and software.

- (U) ($365) Provide program office support for development and test of new FMF ATC system and software IV&V.

- (U) ($110) Conduct test and evaluation of new software and hardware development and upgrades.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: W0718
PROJECT TITLE: Marine Air Traffic Control And Landing System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	+1,198	1,260	1,615
(U) Appropriated Value	0	0	0
(U) Adjustments from PRESBUDG:	-24	0	-555
(U) FY 1999 NAVCOMPT Budget Submit:	1,174	1,260	1,060

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 ($24 thousand) decrease is due to SBIR transfer. FY 1999 ($555) decrease is due to N88 final balance adjustment ($2), Navy Working Capital Fund surcharge ($9), N88 Flag Board MATCALS adjustment ($537) and NWCF NCCOSC adjustment ($7).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN MATCALS	*1,827	9,726	10,360	9,990	10,687	10,927	11,228	Cont.	Cont.

*SPAWAR Program under Subhead 52MJ

(U) RELATED RDT&E: Not applicable.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)

PROJECT NUMBER: W0718
PROJECT TITLE: Marine Air Traffic Control And Landing System

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					
Engineering Milestones				4Q Field SW Improvements	Cont.
T&E Milestones			1Q-2Q Evaluate SW Improvements	1Q-2Q Evaluate SW Improvements	Cont.
Contract Milestones					

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604507N
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor
PROJECT NUMBER: V1440
PROJECT TITLE: EMSP

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
V1440 EMSP	20,733	3,462	2,651	1,153	1,176	1,443	1,465	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 1997 ACCOMPLISHMENTS:

- (U) ($11,320) Migrated AN/UYS-2A operating system from MIL Spec hardware to Commercial-Off-The-Shelf (COTS) hardware with an Open System Architecture.
- (U) ($5,000) Developed a prototype COTS-based Input Signal Conditioner (ISC) to replace current MIL Spec hardware used for sonobuoy signal processing.
- (U) ($500) Built a prototype enclosure that provides an environment that will allow Airborne Low Frequency Sonar (ALFS) SH-60 acoustic signal processing to be performed using COTS hardware.
- (U) ($3,913) Supported engineering design, software development, integration and test of engineering changes to SH-60 ALFS, AN/SQQ-89, P-3 Special Projects, AN/BSY-2 and DDG 993 acoustic signal processing systems.

2. (U) FY 1998 PLAN:

- (U) ($3,462) Start migration of AN/SQQ-89, SH-60 ALFS, and P-3 Special Projects acoustic signal processing application software functions to COTS hardware. Work with COTS signal processor hardware vendors to foster standards that will facilitate the migration and promote use of open system architecture.

3. (U) FY 1999 PLAN:

- (U) ($2,651) Complete migration of AN/SQQ-89, SH-60 ALFS, and P-3 Special Projects sonobuoy signal processing application software functions to COTS hardware. Work with COTS signal processor hardware vendors to foster standards that will facilitate the migration and promote use of open system architecture.

(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.

B. (U) PROGRAM CHANGE SUMMARY:	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	21,740	3,462	3,224
(U) Appropriated Value:	22,718		
(U) Adjustments to FY 1997 Appropriated Value/FY 1998 President's Budget:			
a. Congressional Undistributed Reductions	-978		
b. SBIR	-558		

c. Revised Economic Assumptions	-27		
d. Update BTRs	-422		
e. EMSP offset for NTCSS and JMCIS AFLOAT (IT-21)			-590
f. NWCF adjustments			+17
(A) FY 1999 OSD Budget Submit:	20,733	3,462	2,651

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease in FY 1997 is due to Congressional Undistributed Reductions ($978), SBIR ($558K), Revised Economic Assumptions ($27), Update BTRs ($422). Decrease of $590K in FY 1999 is due to EMSP Offset for NTCSS and JMCIS AFLOT (IT-21)/EMSP Reduction/Realignment and increase of $17 in FY 1999 is due to NWCF adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 102	1,983	1,962	1,791	1,868	1,805	2,051	2,263	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0205620N (Surface ASW Combat System Integration) Provides funding for AN/SQQ-89 unique interfaces.

(U) PE 0604212N (Anti-Submarine Warfare and Other Helicopter Development) Provides funding for ALFS unique interfaces.

D. (U) SCHEDULE PROFILE:
AN/UYS-2 PRODUCTION PROFILE

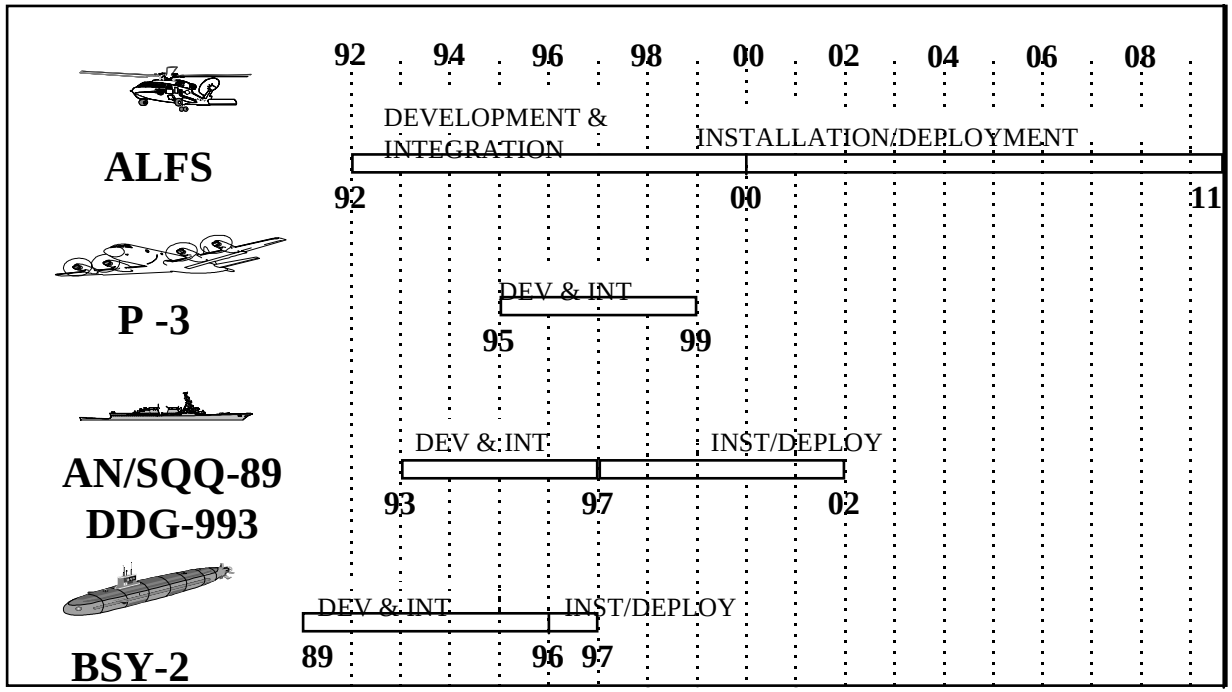
FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604507N
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor

PROJECT NUMBER: V1440
PROJECT TITLE: EMSP



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1997	FY 1998	FY 1999
a. Software Development	13,876	600	400
b. Systems Engineering	5,573	1,832	1,421
c. Integrated Logistics Support	812	600	400
d. Configuration Management	100	60	50
e. Project Management Support	204	200	200
f. Travel	68	70	70
g. Miscellaneous	100	100	110
TOTAL	20,733	3,462	2,651

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604507N
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor
PROJECT NUMBER: V1440
PROJECT TITLE: EMSP

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 1996 &Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Lucent N00024-94-C-6363 N00024-97-C-6361	SS/CPFF	4/94	36,000	36,000	20,814	11,276	500	700	CONT.	CONT.
Lockheed-Martin N00024-97-C-6368	SS/CPFF	1/97	19,029	19,029	0	5,500	1,250	650	CONT.	CONT.
NAWC/AD Patuxent River,MD	WR	Var.				1,006	900	650	CONT.	CONT.
NSWC/Crane	WR	Var.				1,050	400	250	CONT.	CONT.
Various						1,697	212	201	CONT.	CONT.
Support and Management		Var.				204	200	200	CONT.	CONT.
Test and Evaluation						0	0	0	0	0

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604507N
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor
PROJECT NUMBER: V1440
PROJECT TITLE: EMSP

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development				0	0	0	0	0	0
Support and Management				0	0	0	0	0	0
Test and Evaluation				0	0	0	0	0	0

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	20,814	20,529	3,262	2,451	CONT.	CONT.
Subtotal Support and Management	0	204	200	200	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	20,814	20,733	3,462	2,651	CONT.	CONT.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604512N
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W2232 CV Launch and Recovery Systems	9,265	9,225	8,578	9,295	9,624	10,038	7,354	CONT.	CONT.
Current Actual Program Value:	9,711								

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 recover and launch 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), will provide longer range, higher accuracy visual landing aids (VLA) for pilots landing on aircraft carriers.

- (U) The Integrated Shipboard Information System (ISIS) will 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) is a real-time, tactical, local area network configuration managed for the specific support of the Air Department and the Aircraft Launch and Recovery Equipment (ALRE) data requirements on ships. It also provides connectivity among ALRE systems such as ICOLS, ISIS and Advanced Launch and Recovery Control Systems (ALRCS) and links Air Operations with other onboard tactical and support networks.

- (U) The ALRCS will introduce modern, modularized computer control systems to the catapults and arresting gear on aircraft carriers.

- (U) The Virtual Imaging System for Approach and Landing (VISUAL) will provide ship’s force and pilots with enhanced images of the aircraft and ship, respectively, in low visibility and night conditions.
-
- (U) The Shipboard Optical Landing System (SOLS) will provide advanced visual landing aids (VLA) for fixed wing, rotary wing and VSTOL aircraft, so that pilots can fly safer and more accurate approaches to all classes of ships.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

(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 1997 ACCOMPLISHMENTS:

- (U) ($3,440) Awarded contract to deliver ICOLS/LRLS Engineering Development Models (EDM), and performed qualification testing prior to delivery of first two EDMs, one of which (EDM #1) will be installed on USS CARL VINSON (CVN 70) for development testing (DT). Provided engineering and management support to program.

- (U) ($3,350) Completed fabrication, integration and qualification testing of the ICOLS/IFLOLS. Installed the nonstabilized unit (EDM #2) at the Naval Air Test Center, Patuxent River, MD and conducted performance verification tests prior to installation of the stabilized unit (EDM #1) on USS GEORGE WASHINGTON (CVN 73). Installed EDM #2 at NAS Oceana to provide pilot familiarization training for USS GEORGE WASHINGTON (CVN 73). DT of the unit was successfully completed and the system was certified ready for Operational Evaluation (OPEVAL). Provided pre-production support for the unit installed on USS GEORGE WASHINGTON (CVN 73). Provided engineering and management support to the program.

- (U) ($1,875) Conducted Milestone II decision to proceed to the Engineering & Manfacturing Development (E&MD) phase of the CV/CVN Variant of the ISIS program. Continued design and integration of the ISIS EDM for installation on USS THEODORE ROOSEVELT (CVN 71) and conducted In-Process Review (IPR) with Fleet users to validate the ISIS EDM design. Provided pre-production support for the ISIS ADM installed on USS GEORGE WASHINGTON (CVN 73). Provided engineering and management support to the program.

- (U) ($ 600) Conducted Milestone II decision to proceed to the E&MD phase of the CV/CVN Variant of the ADMACS/ISIS program. Initiated design of the ADMACS/ISIS EDM for installation on USS GEORGE WASHINGTON (CVN 73). Provided engineering and management support to the program.

- (U) This submission does not reflect a reprogramming of $445K from 0603512N and $1K for revised economic assumptions. The reprogrammed funds were used to cover the cost growth associated with the installation and evaluation of the IFOLS and to fund a facility usage fee assessed on the ADMACS by the Joint Maritime Information Command System (JMICS).

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

2. (U) FY 1998 PLAN:

- (U) ($ 910) Conduct Technical Evaluation (TECHEVAL) of the ICOLS/LRLS non-stabilized unit (EDM #2) at NAS Lemoore, prior to the TECHEVAL of EDM #1 on USS CARL VINSON (CVN 70). The Milestone III decision to proceed to production will then be held. Provide pre-production suport for the unit installed on USS CARL VINSON (CVN 70). Provide engineering and management support to the program, particularly for the transition from the E&MD phase to the production phase.

- (U) ($2,565) Conduct OPEVAL of the ICOLS/IFLOLS on USS GEORGE WASHINGTON (CVN 73) and prepare documentation for a Milestone III decision to proceed to production. Provide pre-production support for the unit installed on USS GEORGE WASHINGTON (CVN 73). Provide engineering and management support to the program, particularyly for the transition from the E&MD phase to the production phase.

- (U) ($2,525) Complete design and integration of the CV/CVN variant of the ISIS EDM for installation on USS THEODORE ROOSEVELT (CVN 71). Complete installation and check-out of the ISIS EDM on USS THEODORE ROOSEVELT (CVN 71) and start TECHEVAL. Provide pre-production support for the unit installed on USS THEODORE ROOSEVELT (CVN 71) and the ISIS ADM installed on USS GEORGE WASHINGTON (CVN73). Provide engineering and management support to the program.

- U) ($3,225) Complete design and integration of the CV/CVN variant of the ADMACS/ISIS EDM for installation on USS GEORGE WASHINGTON (CVN 73) and conduct Critical Design Review (CDR) with Fleet users to validate the ADMACS/ISIS EDM design. Start installation of the ADMACS/ISIS EDM on USS GEORGE WASHINGTON (CVN 73). Provide integration support for the various ADMACS increments under development. Provide engineering and management support to the program.

3. (U) FY 1999 PLAN:

- (U) ($ 600) Complete outstanding DT/OT issues and conduct a Milestone III decision to proceed to production for the ICOLS/IFLOLS. Provide pre-production support for the unit installed on USS GEORGE WASHINGTON (CVN 73). Provide engineering and management support to the program, particularly for the transition from the E&MD phase to the production phase.

- (U) ($1,000) Complete TECHEVAL of the CV/CVN variant of the ISIS EDM on USS THEODORE ROOSEVELT (CVN 71) and conduct an Operational Assessment (OA). Complete documentation for a Milestone III decision to proceed to Low Rate Initial Production (LRIP). Provide pre-production support for the unit installed on USS THEODORE ROOSEVELT (CVN 71). Provide engineering and management support to the program, particularly for the transition from the E&MD phase to the production phase.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

- (U) ($2,930) Complete installation and check-out of the CV/CVN variant of the ADMACS EDM on USS GEORGE WASHINGTON (CVN 73). Conduct TECHEVAL and OPEVAL of the ADMACS/ISIS EDM on USS GEORGE WASHIGNTON (CVN 73). Prepare documentation for an IPR to proceed to Full Rate Production (FRP). Provide integration support for the various ADMACS increments under development. Provide engineering and management support to the program, particularly for the transition from the E&MD phase to the production phase.

- (U) ($1,848) Conduct Milestone II decision to proceed to the E&MD phase of the ALRCS EDM. Initiate the design and integration of the ALRCS EDM. Provide engineering and management suport to the program.

- (U) ($2,200) Conduct Milestone II decision to proceed to the E&MD phase of the LHA/LHD Variant of the ADMACS/ISIS EDM. Initiate the design and integration of the LHA/LHD variant of the ADMACS/ISIS EDM. Provide engineering and management support to the program.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President’s Budget:	6,285	9,225	10,292
(U) Appropriated Value:	6,571		
(U) Adjustments from President’s Budget:	+2,980		-1,714
(U) FY 1999 0SD/OMB Budget Submit:	9,265	9,225	8,578

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 reflects an increase of $3,000 thousand for the LRLS EDM contract award and a decrease of $27 thousand for Navy Working Capital Fund (NWCF) adjustment. FY 99 reflects a $2,000 thousand decrease due to delayed initiation of the VISUAL program E&MD phase from FY99 through FY00, and an increase of $286 thousand for Naval Working Capital Fund rate adjustment.

(U) Schedule: The following milestones have been changed to correct administrative errors.

From:	To:
ALRCS MS II 2Q/97	ALRCS MS II 2Q/99
ADMACS CDR 4Q/97	ADMACS CDR 3Q/98
VISUAL MS II 2Q/98	VISUAL MS II 2Q/00
ISIS DT 1Q/97	ISIS DT 3Q/98

(U) Milestone changes in FY97 thru FY99 for CV/CVN ADMACS/ISIS were the result of delayed processing and approval of the ORD and TEMP within OPNAV, deferring the authorization and execution of program efforts. The LRLS system CDR is no longer required as the system was procured as COTS, therefore the CDR was deleted from the submit. The ICOLS/LRLS EDM installation on the USS CARL VINSON (CVN 70) must be be done in 1Q FY98 vs 4Q FY97 as a post availability job due to work load constraints at Puget Sound Naval Shipyard. Restoral of Consolidated Support Aircraft (CSA) created the VISUAL program MS II schedule slip to FY00. All other changes were made to provide additional program details.

(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN (PE 0204216N, Aircraft Launch and Recovery Equipment)									
	0	2,850	17,500	20,200	16,200	17,700	19,700	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603512N (Carrier Systems Development)

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999
Program Milestones	CV/CVN-ADMACS/ ISIS: 4Q MSII	LRLS: 1Q MSIII	IFLOLS: 1Q MSIII CV/CVN-ADMACS/ ISIS: 2Q MSIII ALRCS: 2Q MSII LHA/LHD ADMACS/ ISIS: 2Q MSII
Engineering Milestones	CV/CVN-ISIS IPR: 4Q	CV/CVN-ADMACS/ ISIS CDR: 3Q	ALRCS CDR: 4Q LHA/LHD ADMACS/ ISIS CDR: 4Q
Test & Evaluation Milestones	IFLOLS DT 12/96-03/97 IFLOLS OT (08/97-01/98)	LRLS DT (10/97-11/97) ISIS DT (04/98-07/98)	ISIS OA (11/98) CV/CVN-ADMACS/ ISIS DT (03/99-07/99) CV/CVN-ADMACS/ ISIS OT (08/99)
Contract Milestones	LRLS: 1Q EDM Award		

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1997	FY 1998	FY 1999
a. Primary Hardware Development	6,718	4,285	3,348
b. Software Development	1,893	3,053	3,147
c. Integrated Logistics Support	279	938	824
d. Development Test & Evaluation	375	949	1,259
Total	9,265	9,225	8,578

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NAWCAD-LKE	WR	10/01/97	N/A	N/A	11,208	6,050	9,025	8,378	CONT.	CONT.
Raytheon	FP	12/30/96	4,475	4,475	1,460	3,015	0	0	0	4,475
Support and Management					180	200	200	200	CONT.	CONT.
Test and Evaluation					0	0	0	0	0	0

GOVERNMENT FURNISHED PROPERTY: Not applicable.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems PROJECT TITLE: CV Launch & Recovery Sys

	FY 1996 Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	12,668	9,065	9,025	8,378	CONT.	CONT.
Subtotal Support and Management	180	200	200	200	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	
Total Project	12,848	9,265	9,225	8,578	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: Sept 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1828 Combat Readiness & Sustainability	702	744	865	875	947	968	990	CONT.	CONT.
S2054 Integrated Fire Protection/Damage Control	3,124	5,337	5,430	5,573	5,690	5,809	5,931	CONT.	CONT.
TOTAL	3,826	6,081	6,295	6,448	6,637	6,777	6,921	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 Personnel Protection/Damage Control/Fire Protection and Firefighting equipment, devices, and systems for rapid control/suppression of damage/fire with retention of ship mission.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S1828
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Combat Readiness & Sustainability

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1828 Combat Readiness & Sustainability	702	744	865	875	947	968	990	CONT.	CONT.

(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 mission capability. Includes development of electrical components that support uninterruptable combat capability and damage tolerant structures.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($702) Completed engineering development of electrical fault clearing device and conducted land-based acceptance testing. Completed planning for full scale weapon effects T&E employing a blast/fragmentation warhead, shipboard generators, distribution system, and equipment loads.

2. (U) FY 1998 PLAN:

- (U) ($356) Conduct full scale weapon effects T&E of electrical fault clearing device.

- (U) ($388) Initiate development of damage tolerant structural fabrication techniques and configurations that prevent local hull girder collapse and ship sinking from close-in underwater explosions (UNDEX), and post-damage

hull girder breaking due to crack growth under sea state loading. Initiate full scale weapon effects testing of alternative configurations designed to prevent local hull girder collapse.

3. (U) FY 1999 PLAN :

- (U) ($363) Initiate development of a shipboard electrical fault simulation model that generates weapon-induced fault conditions for use in supporting electrical system design diagnostics and for training to restore electrical systems; identify modeling approaches.

- (U) ($502) Continue full scale UNDEX testing of alternative configurations to prevent local hull girder collapse.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	709	744	872
(U) Appropriated Value	1,523		
(U) Adjustments to FY 1997 Appropriated Value/FY1998 President's Budget			
a. Adjustments	-821		-7
(U) FY 1999 OSD/OMB Budget Submit:	702	744	865

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 changes due to: -785K Near Term Mine Warfare Reprogramming; General Undistributed Reductions of -29K, -5K SBIR Transfer; and a -2K Revised Economic Assumption. FY 1999 change due to -7K NWCF corrections.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S1828
PROGRAM ELEMENT TITLE: Ship Survivability 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,N:

(U) PE 0603514N, Project S0384 (Combat Survivability Design)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S1828
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Combat Readiness & Sustainability

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999
PROGRAM MILESTONES			
Engineering Milestones		4Q Structural Configurations Evaluation Plan	
			4Q Shipboard Fault Simulation Modeling Approaches
T&E Milestones	4Q Electrical Fault Clearing Device Acceptance Tests	4Q Electrical Fault Clearing System T&E	
			4Q Structural Configuration Tests
Contracts Milestones (Not applicable)			

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S2054
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Integrated Fire Protection/Damage Control

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S2054 Integrated Fire Protection/Damage Control	3,124	5,337	5,430	5,573	5,690	5,809	5,931	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project supports the engineering development and fleet introduction of a computer-based, total ship, damage control assessment and monitoring system that enables a rapid/coordinated response to wartime and peacetime casualties for effective recovery/restoration. In a reduced manning environment, develop the total ship tactics and doctrine for effectively fighting major ship threatening conflagrations (fire, smoke, flooding) resulting from wartime threats and peacetime accidents. This project also supports the development, testing, and evaluation of equipment and devices for protecting personnel (starting in FY 98).

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($888) Initiated firefighting experiments aboard ex-USS SHADWELL in support of developing tactics and doctrine for the water mist fire extinguishing and smoke ejection systems.

- (U) ($300) Initiated ship-based Real Time Damage Tracking (RTDT) fire and smoke sensor system evaluation aboard the USS Rushmore and finalized specification.

- (U) ($100) Developed specfication for an interactive on-line reference implementation of Naval Ships Technical Manual (NSTM), Ch. 555, “Shipboard Firefighting”, that will enable firefighting personnel to effectively formulate and implement a plan-of-attack.

- (U) ($200) Continued development of standardized Human Computer Interface (HCI) guidelines that ensure a consistent look and feel for all Damage Control System (DCS) software applications.

- (U) ($415) Completed development of the training course curriculum for DCS. Provided software support for DCS T&E ships.

- (U) ($375) Developed DCS communications module requirements that allows ships to transmit relief and restoration assistance requests/damage control data to accompanying ships in the battle group or shore locations. Identified offboard communication hardware integration options and DC data transmission requirements.

- (U) ($405) Initiated integration of combat system sensor data with DCS (pre-hit configuration management module) to enable the ship to predict the probable hit location of an anti-ship cruise missile and extent of damage so that pre-emptive actions, such as vital systems realignment, can be initiated. Identified combat system hardware integration approaches for transferring missile track and signature data to DCS. Prepared software development plan.

- (U) ($221) Conducted fleet evaluations aboard the ex-USS SHADWELL to identify required DCS upgrades to ensure rapid fire and smoke boundary setting and effective resource management.

- (U) ($220) Investigated the cause of hazardous hydrogen sulfide gas generation within the Aqueous Film Forming Foam Firefighting System; developed recommended solutions.

2. (U) FY 1998 PLAN:

- (U) ($275) Complete RTDT Fire/Smoke Sensor evaluations aboard the USS Rushmore.

- (U) ($550) Complete DCS HCI guidelines and prepare DCS software development standards. Provide software support for DCS T&E ships.

- (U) ($1,600) Complete firefighting experiments aboard the ex-USS Shadwell in support of developing tactics and doctrine for the water mist fire extinguishing and smoke ejection systems.

- (U) ($1,912) Continue development of the pre-hit configuration management module. Develop software requirements for a threat model that predicts impact point, a damage model that estimates damage based on threat type, and a systems model for realigning systems into more survivable configurations. Initiate software coding.

- (U) ($300) Initiate investigation of cold water/weather and anti-exposure suits with heat retention capabilities to be utilized by DC personnel in the event of a flooding casualty.

- (U) ($450) Initiate evaluation of conditioned firefighting clothing (Integrated Firefighter’s Protective Ensemble) that will increase the time firefighters can remain on-station during extreme environments by minimizing rate of rise of body core temperature, reducing heat stress and fatigue. Commercially available microencapsulated, heat initiated PCMs inserted into firefighter’s gloves, boots, socks, anti-flash hoods, and coveralls will be evaluated for suitability.

- (U) ($250) Initiate evaluation of personnel monitoring systems integrated with DCS that will: (1) monitor heart rate and other vital signs to indicate when it is time to remove a firefighter prior to the onset of heat stress, and (2) track personnel location.

3. (U) FY 1999 PLAN:

- (U) ($3,130) Continue development of the pre-hit configuration module. Complete software coding. Conduct land-based T&E of selected combat system/DCS hardware integration approach; evaluate ability to track missile and predict

hit point using simulated missile flight profiles and signatures. Initiate shipboard T&E to evaluate operational effectiveness.

- (U) ($1,100) Initiate development of tactics and doctrine for automated firefighting and DC systems. Conduct fleet evaluations aboard the ex-USS Shadwell to determine level of crew involvement/ monitoring during an automated response.

- (U) ($400) Conduct shipboard evaluations of cold water/weather and anti-exposure suits with body heat retention systems.

- (U) ($450) Continue evaluation of conditioned firefighting clothing that increases the time firefighters can remain on-station during extreme environments.

- (U) ($350) Continue evaluation of personnel monitoring systems that will monitor heart rate and track personnel location.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S2054
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Integrated Fire Protection/Damage Control

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	3,174	5,337	6,216
(U) Appropriated Value	5,309		
(U) Adjustments to FY 1997 Appropriated Value/FY 1998 President's Budget			
a. Adjustments	-2,185		-786
(U) FY 1999 OSD/OMB Budget Submit:	3,124	5,337	5,430

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 changes due to: Near Term Mine Warfare Reprogramming of -2,000K; General Undistributed Reductions of -135K; SBIR Transfer -44K; and a -6K Revised Economic Assumption. FY 1999 changes due to pricing adjustments.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S2054
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Integrated Fire Protection/Damage Control

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line BA1/81HB/0910/HB008	0	0	5,206	12,688	4,654	11,049	3,039	TBD	TBD
(U) OPN Line 902091 (Battle Dress)	4,000	8,000	8,075	8,266	0	0	0	TBD	TBD

(U) RELATED RDT&E:

(U) PE 0603514N, Project S1565 (Fire Protection/Damage Control Systems)

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S2054
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Integrated Fire Protection/Damage Control

D. (U) SCHEDULE PROFILE:

PROGRAM MILESTONES	FY 1997	FY 1998	FY 1999
Engineering Milestones	4Q DCS Training Curriculum Materials		
		2Q DCS HCI Guidelines	
	4Q Interactive Firefighting Reference Specification		
	4Q RTDT Specification		
	4Q DCS Communication Module Requirements		
	4Q DCS Pre-hit Configuration Management Module Software Development Plan	4Q Pre-hit Configuration Management Software Requirements	4Q Pre-hit Configuration Management Module Software Code

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S2054
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Integrated Fire Protection/Damage Control

	FY 1997	FY 1998	FY 1999
PROGRAM MILESTONES			
T&E Milestones		3Q Pre-Hit Module Land-Based Evaluations	
		4Q Water Mist/ Smoke Ejection System Doctrine Evaluations	
			4Q Cold Water/Weather Evaluations
Contract Milestones: None			4Q Conditioned Firefighting Clothing Evaluations
Contract Milestones: None			4Q Personnel Monitoring System Evaluations

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Sept 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S2054
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Integrated Fire Protection/Damage Control

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

PROJECT COST CATEGORIES	FY 1997	FY 1998	FY 1999
a. Engineering Assessments/ Design Studies	345	400	200
b. Test and Evaluation	1,394	3,537	4,532
c. Software Development	1,365	1,380	678
d. Travel	20	20	20
TOTAL	3,124	5,337	5,430

B.(U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands) Not Applicable

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N
PROGRAM ELEMENT TITLE: Combat Information Center (CIC) CONVERSION/NTDS IMPROV

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
NTDS SOFTWARE IMPROVEMENTS									
U1604	9,562	11,325	4,783	4,527	4,272	4,355	4,445	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 improved littoral warfare capabilities. The program's objective is to develop integrated real time command and control systems that will increase ship's 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 Joint (TADILJ) (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. In addition, the computer program is being modified to accommodate extensive use of COTS/NDI/OPEN Systems architecture hardware and firmware, and to operate in an Akcita Control Element 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.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT TITLE: NTDS SOFTWARE IMPROV.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($6,606) Completed PAT and CSIT on the ACDS Block I Level 2 computer program. Delivered certified program to CVN-69 for System Integration Test (SIT), fast cruise, sea trials, participated in CEC IOC events and continued to correct priority TRs reported from the fleet. (10/1/96 - 9/30/97)
- (U) ($350) Completed LHD-1 system installation, on board training, and participated in the CEC IOT&E events.
- (U) ($575) Completed crew training on the LHD-1, follow on training on the CVN69 and LHD 1 in the spring and delivery of System Operator Manuals (SOMs) and Technical Manuals.
- (U) ($946) Continued to conduct DT/OT testing on the lead ship (CVN-69) and perform safety certification, TECHEVAL (8/97) and OPEVAL (10/97) of the Level 2 computer program.
- (U) ($515) Began preparation of required documentation for ASN(RDA) Formal Review to achieve Milestone III.
- (U) ($570) Continued improvements to JMCIS interface to include TBMD data, unit/land tracks, and Air Tasking Orders (ATOs) and upgrade the Geo-Server Mapping Capability to include Digital Terrain and Elevation data, Cities, and Airfields.

2. (U) FY 1998 PLAN:

- (U) ($4,261) Complete Level 2 delivery, conduct a successful OPEVAL (10/29/97) and achieve Milestone III (4/98).
- (U) ($1,250) Complete CSIT on the ACDS Block 1 Level 2 CEC Version, participate in formal CEC DT/OT events and OPEVAL testing.
- (U) ($1,343) Complete development and testing of ACDS Block 1 Level 2.2 and continue to implement corrections against operational deficiencies in order to deliver to the LHD-7 CSASF in 6/98.
- (U) ($4,471) Conduct system engineering (critical item development specification, interface control drawings), conduct a Logistic Support Analysis (LSA) and commence system development efforts for Akcita Control Element which integrates the Ship Self Defense System (SSDS). (CV(N), LPD-17,LHD and LHA)

3. (U) FY 1999 PLAN:

(U) ($4,783) Complete system engineering and minimal software coding of Akcita Control Element and begin software unit testing.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT TITLE: NTDS SOFTWARE IMPROV.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	9,848	11,325	9,781
(U) Appropriated Value:	10,280		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:	-718		-4,998
(U) FY 1999 OSD/OMB Budget Submit:	9,562	11,325	4,783

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Change in FY 1997 is due to Congressional Undistributed Reductions and minor pricing adjustments. FY 1999 change due to program restructure.

(U) Schedule: Rephased to coincide with CEC installation.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT TITLE: NTDS SOFTWARE IMPROV.

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

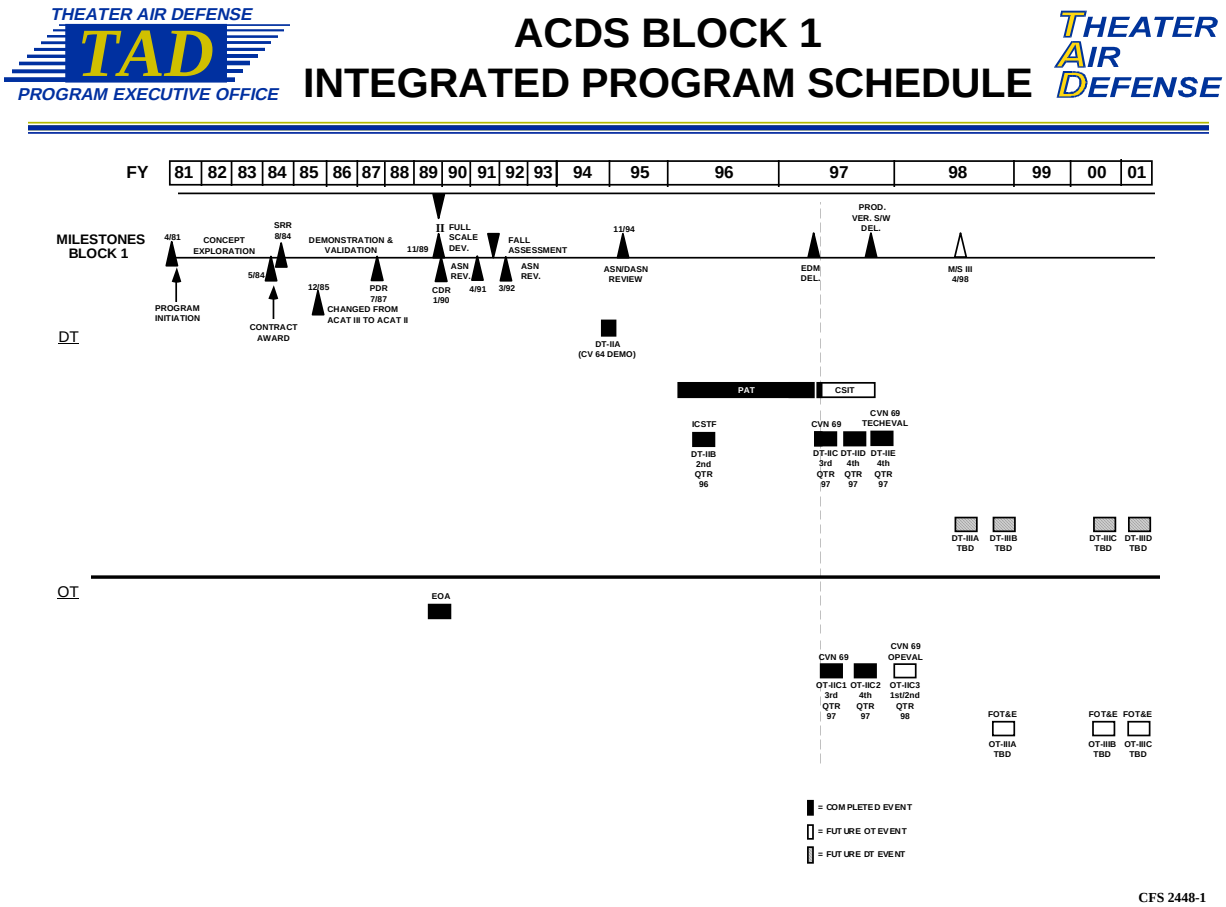
	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) O&M,N 0708017N/486N/46N80 Ship System Tactical	5,368	9,225	12,020	12,917	14,798	15,538	16,315	CONT.	CONT.
(U) SCN PMS-312 CVN Ship Class	0	0	0	0	20,135	25,620	0	0	0
(U) SCN PMS 317 LPD-17 Ship Class	0	0	16,057	28,513	29,153	29,384	30,452	0	0
(U) OPN PEO(TAD)C CEC Program Office	0	0	48,523	111,115	97,548	179,823	183,201	544,018	1,164,228

(U) RELATED RDT&E:
(U) PE 0603717N (Command and Control Processor) (C2P)
(U) PE 0205604N (Navy JTIDS)
(U) PE 0604755N (Cooperative Engagement Capability) (CEC)
(U) PE 0205604N (Tactical Data Links)
(U) PE 0604231N (Navy Tactical Combat System - Afloat) (NTCS-A)
(U) PE 0604755N (Ship Self Defense System) (SSDS)
(U) PE 0603872C (Tactical Ballistic Missile Defense)(TBMD)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT TITLE: NTDS SOFTWARE IMPROV.

D. (U) SCHEDULE PROFILE:



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604

PROGRAM ELEMENT TITLE: CIC Conversion/NTDS Improvement PROJECT TITLE: NTDS Software Improvements

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. S/W Development and Integration	5,430	7,384	2,800
b. TDA/PAT Conduct/Training/System Engineering	1,963	1,721	873
c.Operating System License/Technical Support	209	0	0
d. Integrated Logistics Support	169	200	75
e. Risk Assessment	0	0	0
f. Configuration Management	50	127	50
g. IV&V Agent / Test Support	547	128	0
h. DT/OT Efforts	705	706	450
I. Test Facilities / HDW and Development	200	0	0
j. Engineering / MSS Support	175	150	150
k. Installation Costs / ED Hardware	50	0	0
l. Travel	64	60	50
m. Miscellaneous /SBIR	0	849	335
Total	9,562	11,325	4,783

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE:CIC Conversion/NTDS Improvements PROJECT TITLE: NTDS Software 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 FY1996 &Prior	FY1997 Actual	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development :										
Hughes Aircraft Co. San Diego, CA	C/CPAF	05/84	106,521	106,521	106,521	0	0	0	0	106,521
Hughes Aircraft Co. San Diego, CA	SS/CPFF	05/94	16,694	16,694	10,948	3,246	2,500	0	0	16,694
Hughes Aircraft Co. San Diego, CA	SS/CPAF	08/97	21,229	21,229	0	0	5,240	2,835	13,154	21,229
NCCOSC / RDTE DIV San Diego, CA	WR	Various	43,748	43,748	39,904	1,963	1,281	300	300	43,748
Miscellaneous Contractor	Various	Various	10,281	10,281	5,308	1,703	1,120	425	1,725	10,281
Misc Govt. Activities	Various	Various	4,047	4,047	2,125	524	200	623	575	4,047
Support and Management :										
Miscellaneous	Various	Various	1,168	1,168	293	175	150	150	400	1,168
Test and Evaluation :										
Miscellaneous	Various	Various	22,476	22,476	18,515	1,252	834	450	1,425	22,476

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE:CIC Conversion/NTDS Improvements PROJECT TITLE: NTDS Software Improvements

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1996 &Prior	FY1997 Actual	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development									
Miscellaneous	Various	Various	Various	11,756	699	0	0	0	12,455

Support and Management : Not applicable.

Test and Evaluation : Not applicable.

	FY1996 &Prior	FY1997 Actual	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	176,562	8,135	10,341	4,183	15,754	214,975
Subtotal Support and Management	293	175	150	150	400	1,168
Subtotal Test and Evaluation	18,515	1,252	834	450	1,425	22,476
Total Project	195,370	9,562	11,325	4,783	17,579	238,619

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1941 AN/BSY-2	17,543	23,701	11,883	6,675	3,587	0	1,999	0	1,816,558

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides systems engineering support to the AN/BSY-2 Submarine Combat Systems (SCS) and develops software fixes and enhancements designed to correct system deficiencies or anomalies identified during shipyard testing, at sea testing, IN-SERVICE trials, during Acoustic Trials (Phase I and Phase II, Weapons System Accuracy Trials (WSAT)and Technical Evaluation (TECHEVAL) and Operational Evaluation (OPEVAL). It introduces Joint Maritime Command and Information Systems (JMCIS) and Advanced Capability (ADCAP) torpedo shallow water capability to the AN/BSY-2 SCS system. It develops, integrates and tests the scheduled Block 2 and Block 3 system upgrades which enhance acoustic detection capabilities and combat control functions of the system and successfully supports the completion of TECHEVAL and OPEVAL events. It provides for TECHEVAL and OPEVAL test planning, asset and equipment procurements and provides direct government and contractor engineering support for conduct of TECHEVAL and direct government engineering support for OPEVAL conduct. This program also provides Technical Design Agent (TDA) support for the AN/BQG-5A(V)1 Standalone Wide Aperture Array system being produced by Lockheed Martin Federal Systems (LMFS). Funding is also provided for initiation of the AN/BSY-2 SCS capability improvement 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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($10,490) Completed Block 1A2 development and test and continued Block 2 development, integration and test, including the complete development, integration, testing and certification of JMCIS and ADCAP shallow water capability. Continued Consolidated Shore Facility operations which provide the sole land based tactically equivalent facility for fleet problem trouble report reconstruction and resolution.
- (U) ($6,053) Completed Combat System Installation Certification testing and support and resolved system discrepancies identified during shipyard testing, sea trials, Acoustic Trials (Phase I and II) and early TECHEVAL events.
- (U) ($1,000) Developed, initiated and supported developmental test events and early TECHEVAL events scheduled during FY97.

2. (U) FY 1998 PLAN:

- (U) ($14,977) Continue to provide software and engineering support to resolve system discrepancies identified during WSAT, developmental testing and early TECHEVAL Test Events. Complete integration, test and acceptance of the AN/BSY-2 Block 2 upgrade. Initiate development, test and integration of the AN/BSY-2 Block 3 upgrade.
- (U) ($1,664) Continue to develop, initiate and support developmental test events and early TECHEVAL test events.
- (U) ($3,759) Continue development and integration of Navigation Data Distribution and Display System.
- (U) ($1,241) Continue development, integration and test of JMCIS.
- (U) ($2,060) Provide TDA support for AN/BQG-5A(V)1 Standalone Wide Aperture Array development effort and participate in the Integrated Product Team with the prime contractor LMFS, Manassas, Va.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

3. (U) FY 1999 PLAN:

- (U) ($9,486) Continue to provide software and engineering support to resolve system discrepancies identified during developmental testing, early TECHEVAL test events and fleet operations. Complete Block 3 integration, test and acceptance. Initiate Block 4 development and integration effort.
- (U) ($1,061) Continue to provide TDA support for the AN/BQG-5A(V)1 Standalone Wide Aperture Array development effort and IPT efforts at LMFS, Manassas, Va.
- (U) ($1,336) Continue TECHEVAL and OPEVAL test planning efforts and conduct of developmental testing and early TECHEVAL events. Complete procurement of TECH/OPEVAL assets and related test equipment to conduct TECH/OPEVAL.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	17,828	23,701	18,584
(U) Appropriated Value:	18,952	0	0
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget			
a. General adjustments	-753	0	0
b. Navy Working Capital Fund adjustment	-379	0	187
c. FY 1997 SBIR Transfer	-255	0	0
d. Navigation Data Distribution and Display	0	0	-3,000
e. Enhanced Modular Signal Processor	0	0	-1,864
f. FY97 Revised Economic Assumptions	-22	0	0
g. AN/BSY-2 Restructure	0	0	-2,000
h. DBOF Surcharge Correction	0	0	-24
(U) FY 1999 OSD/OMB Budget Submit:	17,543	23,701	11,883

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 - The funding decrease of $255 finances the Small Business Innovative Research transfer. The funding decrease of $379 is a Navy Working Capital Fund adjustment; the funding decrease of $753 is for an undistributed general budget adjustment; and the $22 decrease is for revised FY97 economic assumptions. FY 1999 - The funding decrease of $3,000 reduced funding for the Navigation Data Distribution and Display System and the $2,000 reduction was because the TECH and OPEVAL slipped from FY 1999 to FY 2000. The funding decrease of $1,864 reflects the slip of the Enhanced Modular Signal Processor replacement effort from FY 1998 to commence FY 2003. The $24 reduction was for a DBOF Surcharge Correction and the addition of $187 was a Navy Working Capital Fund adjustment.

(U) Schedule: FY 1997 - Acoustic Trials and WSAT have been extended due to rescheduling the Seawolf (SSN21) delivery. FY 1998 - Commencement of some TECHEVAL events has slipped from last quarter of FY 1998 to FY 2000. FY 1999: Commencement of OPEVAL has slipped from the third quarter of FY 1999 to FY 2000.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

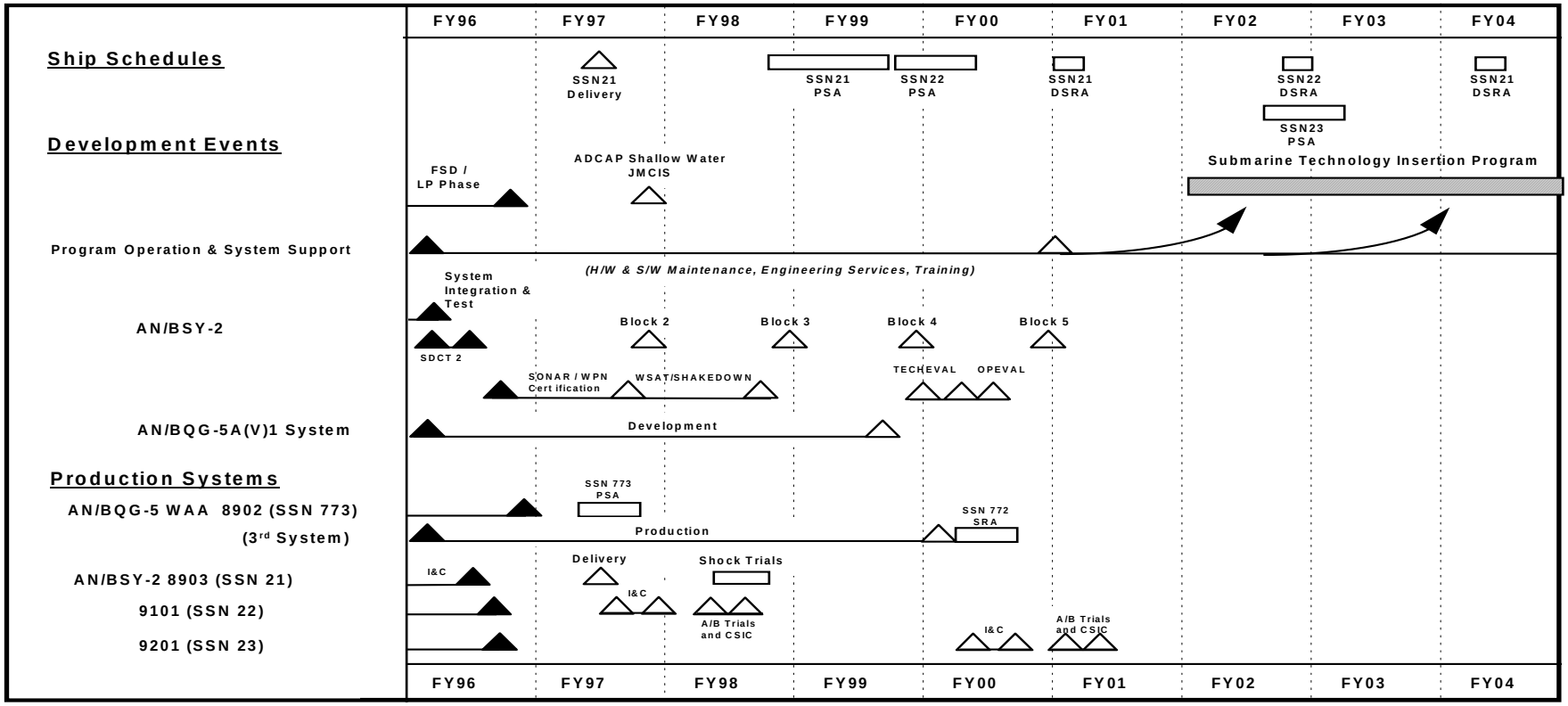
C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(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)

D. (U) SCHEDULE PROFILE: See attached.

AN/BSY-2 MASTER SCHEDULE



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Software Development/Systems Engineering	8,323	15,515	6,921
b. Technical Design Agent (TDA)/ Engineering Support	5,780	6,322	3,526
c. Program Management Support	2,255	0	0
d. Developmental/Operational Test Evaluation Effort	1,000	1,664	1,336
e. Travel	185	200	100
Totals	17,543	23,701	11,883

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
LMC, Syracuse, NY	C/FPI	12/87	1,206,787	1,206,787	1,206,787	0	0	0	0	1,206,787
LMC, Syracuse, NY	C/AF	12/95	28,956	28,956	3,565	4,582	10,886	5,972	3,951	28,956
Raytheon, Portsmouth,RI	C/FPI	2/91	22,318	22,318	22,318	0	0	0	0	22,318
AT&T,Greensboro,NC	C/FPI	2/91	39,912	39,912	39,912	0	0	0	0	39,912
IBM Manassas, VA	FFP	3/86	16,800	16,800	16,800	0	0	0	0	16,800
NUWC Newport, RI	WR	11/96	302,543	302,543	286,174	8,315	5,184	2,870	0	302,543
NSWC Crane, IN	WR	11/96	15,650	15,650	15,650	0	0	0	0	15,650
NTSC Orlando, FL	WR	11/96	5,257	5,257	5,257	0	0	0	0	5,257
LMFS, Mannasas,VA	C/AF		3,759	3,759	0	0	3,759	0	0	3,759
Miscellaneous	Various	Various	35,564	35,564	34,464	0	300	500	300	35,564
Support and Management										
EG&G, Rockville MD	C/CPAF	10/87	77,003	77,003	74,748	2,255	0	0	0	77,003
NUWC, Newport RI	WR/RC	11/96	38,069	38,069	34,165	1,051	1,708	1,145	0	38,069
MITRE, McLean VA	MIPR	11/96	7,404	7,404	7,094	170	140	0	0	7,404
Miscellaneous	Various	Various	470	470	0	170	60	60	180	470

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Test and Evaluation										
NUWC, Newport, RI	WR/RC	11/96	12,030	12,030	500	1,000	1,664	1,036	7,830	12,030
LMC, Syracuse, NY	CP/AF	12/95	300	300	0	0	0	300	0	300
GOVERNMENT FURNISHED PROPERTY										
Product Development										
Miscellaneous	Various	Various	Various	3,236	3,236	0	0	0	0	3,236
Support and Management				0	0	0	0	0	0	
Test and Evaluation										
Miscellaneous	Various	Various	Various	500	500	0	0	0	0	500

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

	FY 1996 & Prior	FY 1997 Actuals	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	1,634,163	12,897	20,129	9,342	4,251	1,680,782
Subtotal Support and Management	116,007	3,646	1,908	1,205	180	122,946
Subtotal Test and Evaluation	1,000	1,000	1,664	1,336	7,830	12,830
Total Project	1,751,170	17,543	23,701	11,883	12,261	1,816,558

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development

(A) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1947 New Design SSN HM&E	265,469	211,277	148,647	141,102	130,104	92,153	102,709	272,700	1,859,386
F1950 New Design SSN Combat System Development	97,959	95,796	73,540	68,692	69,342	58,977	53,235	125,659	913,389
TOTAL	363,428	307,073	222,187	209,794	199,446	151,130	155,944	398,359	2,772,775

(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 is 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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1947 New Design SSN HM&E	265,469	211,277	148,647	141,102	130,104	92,153	102,709	272,700	1,859,386

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 balanced New SSN platform capability, affordability, and flexibility in a low rate production environment. The thrust of these efforts will be to develop and apply multiple, advanced HM&E system technologies which are integrated into the design of the New SSN. The IPPD approach to technology innovation and ship integration will enable advances in military capability, while proactively controlling development and acquisition costs, impacts on ship weight and volume, and mitigating technical risks. New technologies are being transitioned from industry and Government research and development programs where doing so offers substantial performance and/or affordability payoffs. Leveraging and capitalizing on existing technologies and vendor bases for components from SSN 688I, TRIDENT, and SEAWOLF helps minimize both cost and risk. Varying degrees of re-engineering of existing systems is required to adapt them to the new submarine’s requirements. HM&E development will support a FY 1998 lead ship construction contract award.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($230,821) Continued design, manufacturing, and qualification testing of prototype technologies and components such as: main propulsion unit, ship service turbine generator, weapons stowage, handling and launch systems, thrust bearing, electromagnetic signature reduction, emergency diesel generator, non-Chloro Fluoro Carbon (CFC) air conditioning unit, gas discharge system, special hull treatments, interior communications systems, thin line towed array handling system, bow dome, integrated low pressure electrolyzer system, ship control system, hydraulic actuators and valves, and reverse osmosis desalination unit. Completed design and tested scaled prototype propulsor on large scale vehicle. Continued survivability (shock) qualification testing and analyses of various components. Continued system verification studies, tests, and analyses in support of ship design including signature, hydrodynamics, materials, and survivability analyses and tests using a multitude of large and small scale test vehicles.

- (U) ($9,059) Continued effectiveness analyses and evaluations relating to force effectiveness. Conducted analysis in support of force effectiveness assessment and component performance tradeoffs. Maintained cost reducing approach to New SSN construction through use of IPPD's concurrent engineering and design/build philosophy. Continued coordination of New SSN specification at the shipbuilder. Continued cost estimating and validation of cost reduction ideas for New SSN overall design development. Continued environmental compliance and pollution prevention efforts, achieving both SECDEF and SECNAV awards for Acquisition Program Pollution Prevention.

- (U) ($21,425) Continued development of logistic support concept for Commercial-Off-The-Shelf (COTS) configuration items, conducted 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, operation and support cost research, and prototyping of a digital data environment that supports the Joint Continuous Acquisition Life Cycle Support (JCALS) concepts. Prepared test plans, vulnerability report, test index and Master Plan for Ship Testing (MPST). Continued data evaluation for Test and Evaluation Master Plan (TEMP). Prepared test plans and schedules for developmental testing, acoustics, shock launcher trials. Conducted Live Fire Test and Evaluation (LFT&E) modeling and analysis.

- (U) ($4,164) Provided IPPD, Design/Build team program support at shipyards, Navy laboratories and in-house. Performed engineering evaluations of ship integration assessments of ship design and systems development issues including structures fabrication process streamlining, confirmation of component acoustic performance requirements, and software development and integration across multiple ship systems.

2. (U) FY 1998 PLAN:

- (U) ($183,332) Continue design, manufacturing, and qualification testing of prototype systems and components such as: main propulsion unit, ship service turbine generator, weapons stowage, handling and launch systems, thrust bearing, electromagnetic signature reduction, emergency diesel generator, non-CFC air conditioning unit, gas discharge system, special hull treatments, thin line towed array handling system, integrated low pressure electrolyzer system, ship control system, hydraulic actuators and valves, and reverse osmosis desalination unit. Complete testing of next design configuration scaled prototype propulsor on large scale vehicle and initiate design and manufacture of full scale propulsor. Continue shock qualification testing and analyses of various components. Continue system verification studies, tests, and analyses in support of ship design including signature, hydrodynamics, materials and survivability analyses and tests using a multitude of large and small scale test vehicles. Provide IPPD, Design/Build team support at shipyards, Navy laboratories and in-house. Support ship design and construction efforts with engineering evaluations and ship integration assessments for emergent ship design and systems development issues.

- (U) ($8,344) 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. Continue cost estimating and validation of cost reduction concepts for New SSN overall design development. Continue environmental compliance and pollution prevention efforts.

- (U) ($12,987) Continue development of logistic support concept for COTS configuration items, conduct RM&A modeling analyses of New SSN systems, continue development of an onboard team trainer and HM&E trainers, and continue prototyping digital data environment that supports the JCALS concepts.

- (U) ($6,614) Continue the development of the TEMP, Vulnerability Report(VAR)and Non-Propulsion Test Index(NPTI), provide IPPD support to Commander Operational Test and Evaluation Force(COTF)operational assessments. Prepare test plans and schedules associated with developmental testing, shock, acoustic and launchers trials testing, weapons accuracy testing and technical evaluation. Conduct engineering evaluation of test results, LFT&E modeling and analysis. Continue development of the total ship test plan in support of Developmental Test/Operational Test (DT/OT), DT/OT-IIA-IIF.

3. (U) FY 1999 PLAN:

- (U) ($122,467) Continue design, manufacturing, and qualification testing of prototype technologies and components such as: main propulsion unit, ship service turbine generator, weapons stowage, handling and launch systems, thrust bearing, electromagnetic signature reduction, special hull treatments, integrated low pressure electrolyzer system, ship control system, and reverse osmosis desalination unit. Continue design and manufacture of full scale propulsor. Continue shock qualification testing and analyses of various components. Continue system verification studies, tests, and analyses in support of ship design including signature, hydrodynamics, materials, and

survivability analyses and tests. Provide IPPD, Design/Build team support at shipyards, Navy laboratories and in-house. Support ship design and construction efforts with engineering evaluations and ship integration assessments for emergent ship design and systems development issues.

- (U)($7,933) 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)($11,632) Continue development of: COTS support concepts, RM&A modeling analyses, development of trainers and prototyping a digital data environment that supports the Continuous Acquisition Life Cycle Support virtual enterprise concept. Prepare test plans associated with developmental testing. Conduct engineering evaluation of test results. Conduct LFT&E modeling and analysis. Develop Sea Trial Plan for Shipbuilder and Post Shipbuilder Sea Trials.

- (U)($6,615) Continue the development of the TEMP, VAR and NPTI. Plan and coordinate second shipbuilder T&E efforts. Provide IPPD support to COTF operational assessments. Prepare test plans, schedules and support associated with developmental testing, conduct Combat Control Off-hull Test Series, Shock, Acoustic and Launchers Trials Testing, Weapons Accuracy Testing and Tech Eval. Conduct engineering evaluation of test results. LFT&E modeling and analysis. Continue development of the total ship test plan in support of DT/OT-IIA-IIF.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999	
(U) FY 1998 President's Budget:	271,930	215,280	144,015	
(U) APPROPRIATED VALUE	284,187	0	0	
(U) Adjustments to FY 1997 APPROPRIATED VALUE/FY 1998 PRESIDENTS BUDGET				
a. FY 1997 SBIR transfer	-5,536	0	0	
b. Undistributed Reductions/ Adjustments	-13,182	-4	632	
c. *Delay SEAWOLF Shock Testing	0	-3,999	0	*This action does not reflect pending re-programming agreements of FY98 (+2M) and FY99 (+2M)
d. New SSN Tech Insertion	0	0	4,000	
(U) FY 1999 OSD/OMB Budget Submit:	265,469	211,277	148,647	

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1997 decrease of $18,718K is attributed to SBIR transfer(-5,536K)and undistrib uted reductions, (-$13,182K. The FY 1998 decrease of $4,003K is attributed to Undistributed Reductions(-4K) and Delay SEAWOLF Shock Testing(-3,999K). The FY 1999 increase of $4,632 is attributed to Undistributed Adjustments(632K) and New SSN Tech Insertion(4,000K).

(U) Schedule: Not applicable

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN Line 201300 PE: 0204281N	289,882	2,599,762	2,057,573	766,534	1,763,360	2,110,877	1,020,426	49,538,863	61,838,866
(U) SCN Line 201310 PE: 0204281N	490,511	0	0	0	0	0	0	0	589,217
(U) O&M,N Line BA-3 Subhead: 3B4K	0	0	303	312	321	331	341	352	1,960
(U) O&M,N Line BA-3 Subhead 3B1K	0	0	0	4,594	3,580	4,596	5,614	10,664	29,048
(U) OPN Line Item 1320 BA-1	0	0	0	0	0	14,255	1,744	15,978	31,977
(U) OPN Line Item 2762 BA-2	0	0	0	0	0	7,553	0	0	7,553
(U) OPN Line Item 5661 BA-4	0	0	0	0	0	5,952	2,728	20,328	29,008

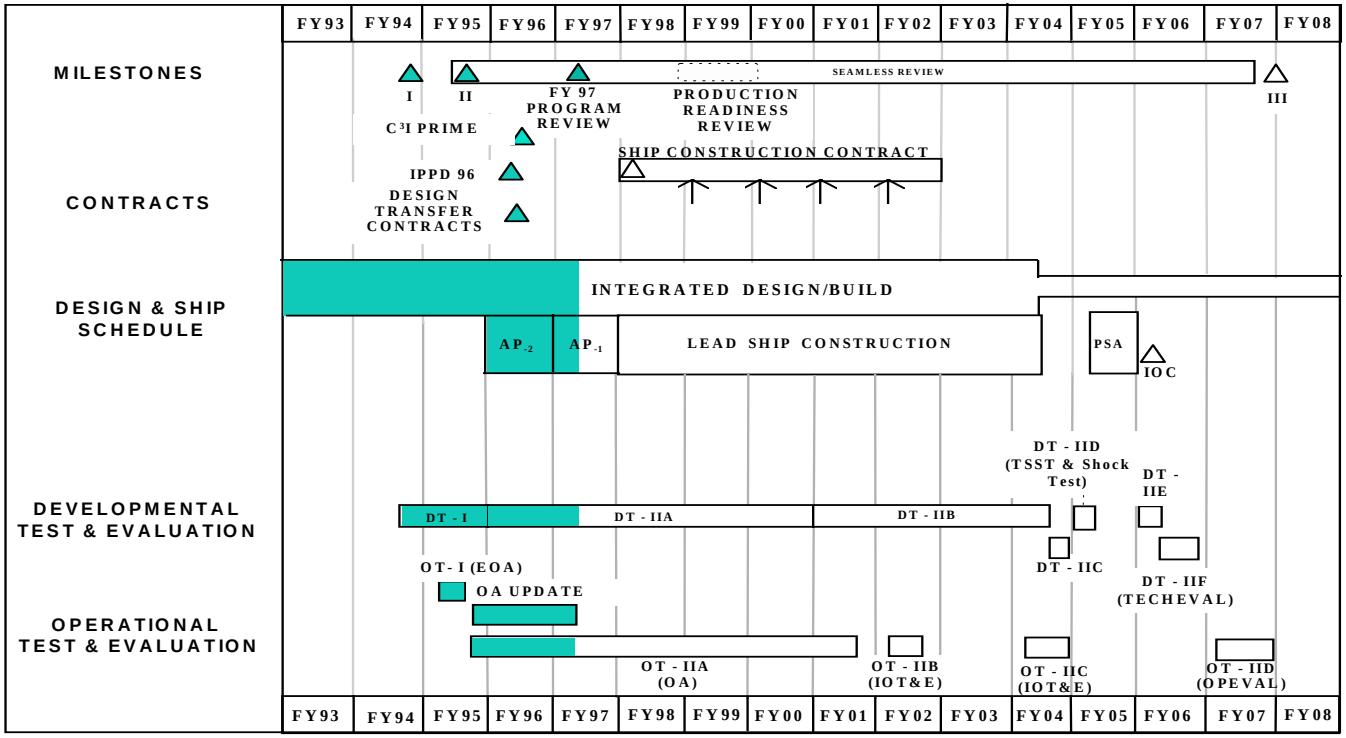
(U) RELATED RDT&E:
(U) PE 0603561N (Advanced Submarine System Development)
(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

D. (U) SCHEDULE PROFILE:

PLANNING SCHEDULE
NEW ATTACK SUBMARINE PROGRAM



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1997	FY 1998	FY 1999
a. Design/Management Support	1,180	1,200	1,220
b. On-Site Design/Build Team Support	3,075	2,650	2,677
c. Mission Effectiveness	272	361	371
d. Subsafe/Safety	1,590	1,428	1,356
e. Environmental	5,641	5,034	4,479
f. Technical Specification Support	1,470	1,534	1,693
g. Cost Analysis	358	348	405
h. New SSN Ship & Module	28,267	14,886	15,352
i. Signature Reduction/Analysis	23,572	22,057	15,884
j. Survivability Engineering Development	14,914	21,071	16,892
k. Structural Engineering R&D	4,579	2,201	872
l. Main Propulsion Unit Development	26,324	22,878	10,435
m. Propulsion System Engineering Development	27,847	24,364	19,881
n. Electrical System Engineering Development	31,979	23,132	4,061
o. Auxiliary System Engineering			

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

	Development	28,291	16,530	7,143
p.	Materials/Coatings Engineering R&D	9,346	6,351	3,898
q.	Weapons Launcher System Engineering R&D	13,394	8,333	8,091
r.	Logistics	16,240	12,987	11,632
s.	Program Support	4,164	3,597	3,676
t.	General Test Support	5,185	6,614	6,615
u.	CFE Electronics Engineering Development	17,781	13,721	12,014
Total		265,469	211,277	148,647

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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) 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NSWC Carderock, MD	WR	VARIOUS	570,983	570,983	129,277	65,739	50,925	41,947	283,095	570,983
NSWC Carderock, MD	RC	VARIOUS	3,269	3,269	1,807	1,462	0	0	0	3,269
NAWC,ORLANDO, FL	WR	VARIOUS	35,818	35,818	677	1,005	6,548	6,897	20,691	35,818
NUWC, Newport, RI	WR	VARIOUS	73,635	73,635	36,668	9,386	8,015	8,311	11,255	73,635
FISC, Norfolk, VA	RC	VARIOUS	4,504	4,504	2,254	2,250	0	0	0	4,504
SUPSHIP, Groton,CT	PD	VARIOUS	111,480	111,480	29,115	31,400	22,434	9,093	19,438	111,480
SPAWAR/ Applied Research Lab/PENN State University	SS/CPIF	1/94	10,711	10,711	5,551	1,950	1,620	855	735	10,711
EB Corp., Groton, CT	SS/CPFF	1/95	190,193	190,193	63,009	55,990	40,524	12,978	17,692	190,193
EB Corp., Groton, CT	SS/CPFF	5/95	262,331	262,331	51,166	43,701	60,650	47,714	59,100	262,331
EG&G INC.	C/CPAF	12/96	26,603	26,603	0	9,749	5,394	4,405	7,055	26,603
Newport News Shipbuilding, Newport News, VA	SS/CPFF	2/93	15,785	15,785	13,554	1,057	420	267	487	15,785
MISCELLANEOUS	VARIOUS	VARIOUS	199,503	199,503	143,804	31,695	3,285	4,364	16,355	199,503
Support and Management										
MISCELLANEOUS	VARIOUS	VARIOUS	60,308	60,308	13,873	6,901	7,238	7,452	24,844	60,308
Test and Evaluation										
MISCELLANEOUS	VARIOUS	VARIOUS	294,263	294,263	4,470	3,184	4,224	4,364	278,021	294,263

GOVERNMENT FURNISHED PROPERTY: Not applicable.

Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

Subtotal Product Development	476,882	255,384	199,815	136,831	435,903	1,504,815
Subtotal Support and Management	13,873	6,901	7,238	7,452	24,844	60,308
Subtotal Test and Evaluation	4,470	3,184	4,224	4,364	278,021	294,263
Total Project	495,225	265,469	211,277	148,647	738,768	1,859,386

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1950
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN Combat System Development

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1950 New Design SSN Combat System Development	97,959	95,796	73,540	68,692	69,342	58,977	53,235	125,659	913,389

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project encompasses the top level systems development and overall integration into the ship of the New SSN C^3I System (formerly referred to as Combat Systems), which includes multiple subsystems. The traditional distinct phasing of the ship design process has been replaced with a continuous concurrent engineering process called IPPD. This serves to maintain the focus of multi-discipline teams consisting of the Government, shipbuilder and suppliers. This process, which includes the C^3I 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(ESM), Exterior Communications, Submarine Regional Warfare System, Navigation, Total Ship Monitoring, Imaging, Tactical Acoustic Communications, Radar, Navigation Data Distribution and Display (ND^3), Interior Communications, Tactical Support Devices, Fiber Optic Cable Subsystem, 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) including electronic integration as well as physical integration into the platform of the aforementioned subsystems.

(U) New SSN is using an acquisition and implementation approach based on an Open System, COTS Non-Developmental Items and subsystems; leveraging on-going subsystems developments; and developing new subsystems when needed to satisfy New SSN requirements. The recurring cost of future C^3I Systems are being reduced to meet the program’s affordability goals and satisfy operational requirements. Subsystems must be developed or modified to: (1) reduce the shipbuilding and construction recurring costs through the use of COTS components; (2) use advanced computer technologies to evolve to an open system design; (3) enhance capabilities to support expanded operational requirements, reduced manning, and reduced shipboard component footprint.

(U) To meet the collective future threat, the submarine force must operate as effectively in littoral 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 C^3I 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 capabilities.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($16,690) System level development activities continued in the following areas: structurally integrated enclosure (SIE) interface development; development of C^3I System design data to support integration into the platform; and conduct system engineering functions such as requirements management, interface control, test and evaluation planning; C^3I Subsystem integration planning.

- (U) ($59,958) Continued Sonar, Combat Control and Architecture (S/CC/A) Subsystem development: continued detailed hardware design, software transition and development, development of logistics support, prepared for system integration and test, initiate procurement of test hardware and non-propulsion electronics systems integration. Incorporated development of ND^3 functions into the Architecture and Combat Control subsystems development. Completed an Integrated Development Plan for more common submarine combat system development with Acoustic Rapid COTS Insertion (A-RCI), AN/BQG-5A and CCS-MK2. Completed multi-purpose processor (MPP) software development for the New SSN C^3I Sonar Subsystem and the Navy's A-RCI effort. The MPP software was developed and tested under the A-RCI program and incorporated into the New SSN C^3I System as a non-developmental item to minimize development risk to the New SSN C^3I System program.

- (U) ($21,311) Continued development efforts to support unique requirements for other subsystems. Finalized ESM subsystem and Imaging interface definition with C^3I subsystems. Completed design level detail to support Preliminary and Critical Design Reviews.

2. (U) FY 1998 PLAN:

- (U) ($9,761) Continue system level development activities in the following areas: SIE electronics integration; development of C^3I System test and evaluation procedures to support integration testing and installation/test into the platform; and conduct system engineering functions such as requirements management, interface control and test and evaluation planning to support formal DT and OT events.

- (U) ($79,258) Continue S/CC/A subsystem development: continue detailed hardware/software development and integration, logistics support, preparation for integration and test and procurement of test hardware and non-propulsion electronics intra-subsystem integration.

- (U) ($6,777) Continue development efforts to support unique requirements for other subsystems. Perform integration testing and problem resolution for the ESM and Imaging subsystems at contractor's facility.

3. (U) FY 1999 PLAN:

- (U) ($9,624) System level development activities continue in the following areas: SIE electronics integration; development and validation of C^3I System test and evaluation procedures to support integration testing and installation/test into the platform; and conduct system engineering functions such as requirements management, interface control, test and evaluation planning to support formal DT/OT; C^3I Subsystem integration planning.

- (U) ($59,029) Continue S/CC/A subsystem development; complete hardware and software development; complete final critical design review; continue logistics support and the procurement of test hardware and non-propulsion electronics intra-subsystem integration. Continue intersubsystem integration.

- (U) ($4,887) Continue development efforts to support unique requirements for other subsystems. Perform ESM and Imaging subsystem Engineering Development Model integration testing.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999	
(U) FY 1998 President's Budget:	100,254	95,796	66,348	
(U) Appropriated Value:	105,113	0	0	
(U) Adjustments to FY 1997 Appropriated Value/FY 1998 President's Budget:				
a. Undistributed Reductions/ Adjustments	-4,859	0	+458	
b. *FY97 Cut: C^3I Contract Savings Estimate	-7,000	0	0	*an additional $4,700K was cut during the Appropriation Reviews for GAO "prior year savings"
c. FY97 Add: COTS MPP	+7,000	0	0	
d. ND^3	0	0	+4,734	
e. New SSN - C^3I System Engineering and Integration	0	0	+2,000	
f. FY 1997 SBIR Transfer	-1,997	0	0	
g. FY 97 Supp'l - Revised Economic Assumptions	-123	0	0	

h. March 1997 Update BTRs	-175	0	0
(U) FY 1999 OSD/OMB Budget Submit:	97,959	95,796	73,540

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1997 decrease of $7,154K is attributable to undistributed reduction (-$4,859), C^3I contract savings (-$7,000K), COTS MPP (+$7,000K), SBIR assessment (-$1,997K), revised economic assumptions (-$123K) and March 1997 Update BTRs (-$175K). The FY 1999 increase of $7,192K includes undistributed adjustments (+$458K). Also, additional resources were programmed to FY 1999 to address identified system engineering and integration efforts for the C3I System (+$2,000K) and ND^3 (+$4,734K).

(U) Schedule: Not applicable.

(U) Technical: The ND^3 functionality had previously been provided by the submarine Navigation Sensor System Interface, a backfit program that was canceled as a result of budget constraints. This function is now provided as an integral portion of the C^3I architecture and fully funded within this Project, F1950.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1950
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN Combat System Development

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN Line 201300 PE: 0204281N	289,882	2,599,762	2,057,573	766,534	1,763,360	2,110,877	1,020,426	49,538,863	60,838,866
(U) SCN Line 201310 PE: 0204281N	490,511	0	0	0	0	0	0	0	589,217
(U) O&M,N Line BA-1 Subhead: 852B				700	2,759	2,882	2,882	Cont.	Cont.
(U) O&M,N Line BA-3 Subhead: 3B4K	0	0	303	313	322	332	341	352	1,963
(U) O&M,N Line BA-3 Subhead 3B1K	0	0	1,657	4,594	3,580	4,596	5,613	10,664	30,704
(U) OPN Line Item 1320 BA-1	0	0	0	0	0	14,255	1,744	15,978	31,977
(U) OPN Line Item 2762 BA-2	0	0	0	0	0	7,553	0	0	7,553
(U) OPN Line Item 5661 BA-4	0	0	0	0	0	5,952	2,728	20,328	29,008

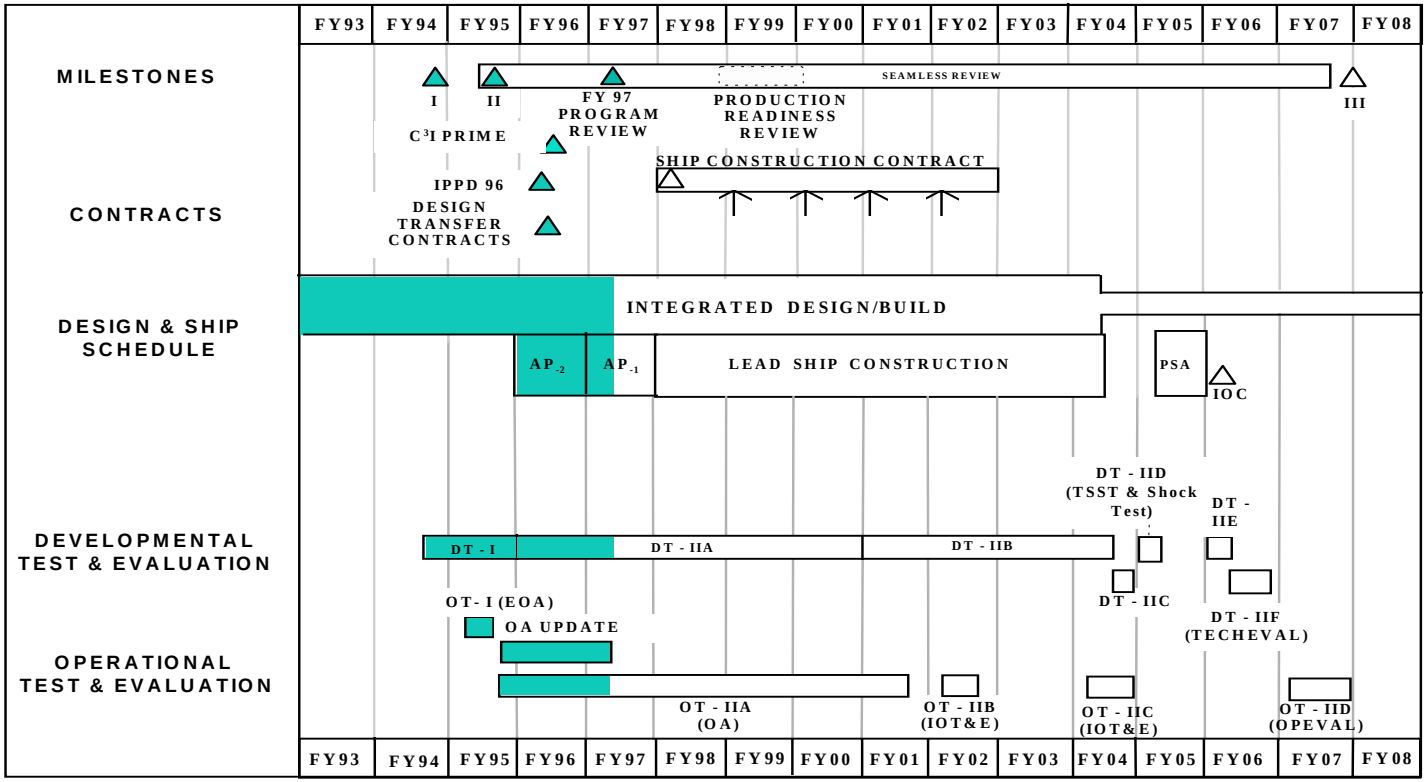
U) RELATED RDT&E:
(U) PE 0603504N (Advanced Submarine Combat Systems Development)
(U) PE 0603561N (Advanced Submarine System Development)
(U) PE 0603562N (Submarine Tactical Warfare Systems)
(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0604503N (Submarine System Equipment Development)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)
(U) PE 0604574N (Navy Tactical Computer Resources)
(U) PE 0604777N (Navigation/ID Systems)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1950
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN Combat System Development

D. (U) SCHEDULE PROFILE:

PLANNING SCHEDULE
NEW ATTACK SUBMARINE PROGRAM



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1950
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN Combat System Development

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. S/CC/A/ND[3]	59,958	79,258	59,029
b. SYSTEM LEVEL	16,690	9,761	9,624
c. EXTERIOR COMMS	2,639	835	573
d. IMAGING	2,365	3,608	1,348
e. NAVIGATION	1,754	111	116
f. ESM	14,553	2,223	2,850
Total	97,959	95,796	73,540

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1950
PROGRAM ELEMENT TITLE: New Design SSN Development 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Lockheed Martin St. Paul, MN	SS/CPFF/CPIF	9/94	24,928	24,928	14,793	2,037	1,082	1,106	5,910	24,928
Digital Systems Resources, Fairfax, VA	SS/CPIF	3/94	43,203	43,203	36,203	7,000	0	0	0	43,203
EB Corp., Groton, CT	SS/CPFF	10/94	31,261	31,261	14,238	3,042	2,603	1,800	9,578	31,261
NUWC, Newport, RI	VARIOUS	VARIOUS	215,961	215,961	88,474	17,069	13,215	13,699	83,504	215,961
Kollmorgen Northampton, MA	C/CPIF	1/95	22,032	22,032	14,000	1,665	3,606	2,761	0	22,032
Lockheed/ Martin, Syracuse, NY	C/FFP	7/95	35,850	35,850	21,876	13,075	374	500	25	35,850
Lockheed/ Martin, Manassas, VA	C/CPAF	4/96	212,128	212,128	17,329	42,421	55,945	38,078	58,355	212,128
TBD	VARIOUS	VARIOUS	69,118	69,118	0	0	8,858	6,294	53,966	69,118
Miscellaneous	VARIOUS	VARIOUS	169,665	169,665	50,256	5,447	2,588	1,138	110,236	169,665
Support and Management										
EG&G, Rockville, MD	C/CPFF	6/94	5,568	5,568	3,644	1,924	0	0	0	5,568
EG&G, Rockville, MD	C/CPAF	12/96	22,377	22,377	0	766	5,354	5,471	10,786	22,377
EG&G, Rockville, MD	C/CPAF	11/96	1,410	1,410	0	1,410	0	0	0	1,410
Miscellaneous	VARIOUS	VARIOUS	57,350	57,350	9,376	1,913	1,596	1,270	43,195	57,350

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1950
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN Combat System Development

Test and Evaluation

Miscellaneous	VARIOUS	VARIOUS	2,538	2,538	0	190	575	1,423	350	2,538

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	257,169	91,756	88,271	65,376	321,574	824,146
Subtotal Support and Management	13,020	6,013	6,950	6,741	53,981	86,705
Subtotal Test and Evaluation	0	190	575	1,423	350	2,538
Total Project	270,189	97,959	95,796	73,540	375,905	913,389

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F1946 SSN 21 Development	84,647	53,541	27,809	29,531	4,943	28,468	2,485	0	1,706,002
Unfunded Requirements		17,000							
Total		70,541							

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The SEAWOLF submarine will be a multi-mission ship that will introduce unprecedented performance capabilities. It will be the quietest, most heavily-armed attack submarine the Navy has ever built. The design of the SEAWOLF is based on an extensive research and development program and will incorporate technological advancements to provide: order of magnitude improvement in ship quieting; improved acoustic sensors; more capable combat systems; greater weapon capacity and capability; quieter launch; weapon launch at high ship speed; advanced reactor; improved performance machinery program; an advanced propulsor; increased operating depth; improved ship control; and enhanced survivability.

(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 1997 ACCOMPLISHMENTS:

- (U) ($19,879) Full Ship Shock Test (FSST) execution, deferred to future year effort. Forward funds to FY 1998.
- (U) ($13,165) Continued development of ASHT including system qualification and inspection. Commenced planning for FY98 trial installation on SSN21 Post Shakedown Availability (PSA). Completed ongoing research, test and redesign program for Mold-in-Place/Special Hull Treatment repair. Financed with dollars budgeted in support of Target Strength, Ship Control, EM and Launcher trials.
- (U) ($26,646) Commenced pre-PSA trials, e.g., acoustic trials, weapons/sonar certification. Continued FSST planning and environmental assessments. Continued deficiency assessment and resolution in acoustic silencing including propulsor. Conducted component shock test qualification efforts.

- (U) ($11,078) Developed and finalized software configuration for non propulsion electronics (i.e. ship control, Weapons, Stowage and Handling System (WSHS), Exterior Communications System, monitoring including final certification and test.

- (U) ($13,879) Conducted emergent research, test and redesign program for wide aperture array. Completed emergent research, test and redesign program for titanium alloy forgings based on concerns raised over brittle fracture of weapons launch system hull closures. Continued Integrated Product Team execution of Risk Management Plans in all high risk areas. Continued Improved Performance Machinery Program (IPMP) development.

2. (U) FY 1998 PLAN:

- (U) (-$17,000) Funds are required to complete FSST and have been requested from Congress on the CNO’s priority list.

- (U) ($18,450) Commence PSA installation of ASHT on SSN21.

- (U) ($20,819) Complete analysis of pre-PSA acoustic trial data. Remaining required funding for FSST. Start Operational Test (OT) planning. Continue deficiency assessment and resolution in acoustic silencing including propulsor.

- (U) ($7,910) Continue submarine technology developments and risk management efforts.

- (U) ($6,362) Complete development, certification and final software configuration of Non-Propulsion Electronics (NPE) systems (ship control, WSHS, etc.) and weapons launch.

3. (U) FY 1999 PLAN:

- (U) ($20,751) Commence post-PSA trials, e.g., acoustic trials, and weapons/sonar certification. Continue Operational Test (OT) planning only. Re-engineering and design to correct acoustic deficiencies including propulsor. Complete post-PSA analysis of ASHT installation on SSN21.

- (U) ($3,719) Re-engineering and correction of deficiencies in Non Propulsion Electronics (NPE) systems including ship control, WSHS, ECS, etc.

- (U) ($3,339) Continue risk management efforts in all high risk areas.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	87,524	49,542	27,731
(U) Appropriated Value:	91,931	0	0
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget			
a. FFRDC	-36	0	0
b. SBIR	-1,302	0	0
c. Other undistributed marks	-5,946	0	0
d. NWCF surcharge correction	0	0	-110
e. Delay SEAWOLF Shock Testing	0	3,999	0
f. NWCF R&D Surface/Undersea Warfare Centers	0	0	188
(U) FY 1999 OSD/OMB Budget Submit	84,647	53,541	27,809

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 97 decrease of $7,284K is a result of FFRDC (-$36K), SBIR (-$1,302K) and for Other undistributed marks (-$5,946K). The FY98 increase of $3,999K is for Performance, Launcher & EM Trials. The FY99 net increase of $78K is a result of DBOF Surcharge Correction (-$110K) and for NWCF R&D Surface/Undersea Warfare Centers (+$188K).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

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

	FY 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN #201200	704,963	658,671	162,567	21,077	9,528	2,170	13,520	12,463	0	8,140,259
(U) MILCON P-398	0	0	0	0	0	0	0	0	0	27,300
(U) OPN #094900, #051000	4,835	57,002	6,442	23,994	29,792	11,722	1,547	156	0	311,861
(U) OPN #098000, #144500	0	0	0	0	0	0	0	0	0	2,254

(U) RELATED RDT&E:

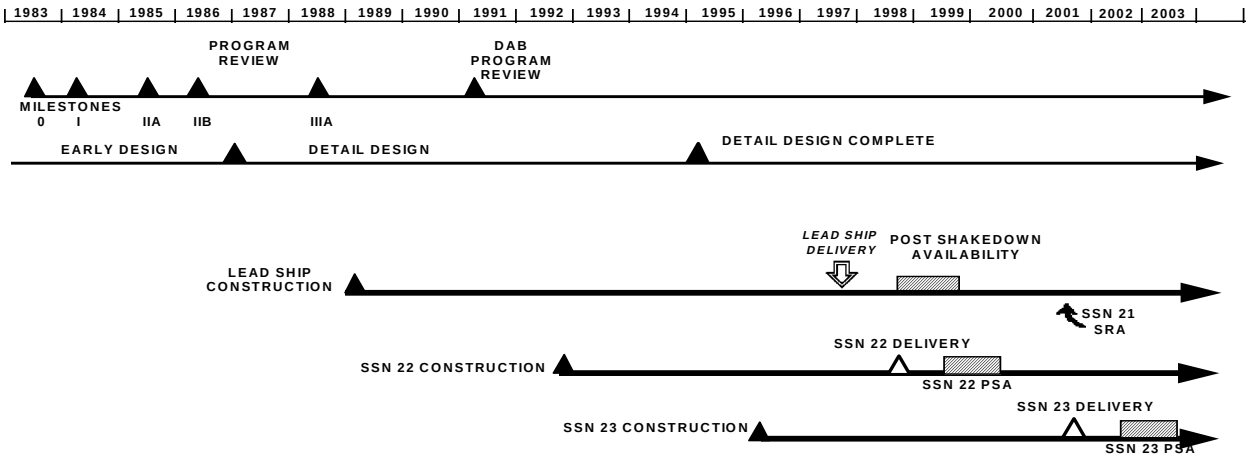
(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0604524N (Submarine Combat Systems)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

D. (U) SCHEDULE PROFILE:

PLANNING SCHEDULE PROGRAM



SEAWOLF PROGRAM
LAST YEAR IN A FOURTEEN YEAR PROCESS
TOWARD LEAD SHIP DELIVERY

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Submarine Silencing	4,621	10,104	4,270
b. Advanced Ship Control	6,127	5,438	3,500
c. Improved Performance Machinery Program	1,574	600	0
d. Shock	1,955	0	0
e. Propulsor	1,906	995	526
f. Target Strength Reduction	13,165	18,450	1,000
g. Weapons, Stowage & Handling	4,951	924	219
h. Advanced Submarine Technology	12,305	7,310	3,339
i. Test & Evaluation	38,043	9,720	14,955
Total	84,647	53,541	27,809

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

Product Development										
General Dynamics Groton CT	SS/CPFF	7/83	352,500	352,500	317,582	18,491	11,790	1,843	2,794	352,500
Newport News Shipbuilding Newport News VA	SS/CPFF	4/87	115,604	115,604	111,748	2,288	801	767	0	115,604
NSWC Carderock MD	WR/RC	Various	308,238	308,238	291,454	6,532	7,027	2,330	895	308,238
NUWC Newport RI	WR	Various	60,244	60,244	37,428	4,025	4,532	7,192	7,067	60,244
Miscellaneous	Various	Various	465,604	465,604	449,943	9,924	2,601	1,620	1,516	465,604
Support and Management										
Miscellaneous	Various	Various	45,330	45,330	34,195	4,970	4,023	2,142	0	45,330

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Test and Evaluation										
General Dynamics Groton CT	SS/CPFF	7/83	92,057	92,057	66,845	21,529	3,683	0	0	92,057
NSWC Carderock MD	WR	Various	97,850	97,850	63,760	12,302	16,335	1,656	3,797	97,850
Miscellaneous	Various	Various	168,575	168,575	101,623	4,586	2,749	10,259	49,358	168,575

GOVERNMENT FURNISHED PROPERTY Not applicable

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	1,208,155	41,260	26,751	13,752	12,272	1,302,190
Subtotal Support and Management	34,195	4,970	4,023	2,142	0	45,330
Subtotal Test and Evaluation	232,228	38,417	22,767	11,915	53,155	358,482
Total	1,474,578	84,647	53,541	27,809	65,427	1,706,002

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY2002 ESTIMATE	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S0236/F0236 SSN Combat System Improvement	21,460	45,663	28,073	18,431	1,951	1,181	6,780	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 (OER), the program develops improvements to hardware which has become increasingly difficult and not economical to maintain. The thrust of the CCS Improvement program is the fleet introduction of CCS MK2 Program D0 and the development of CCS MK2 Program D0 Blocks 1 and 2. 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, incorporates a direct interface to the Global Positioning System, incorporates Joint Maritime Command Information System (JMCIS) into CCS MK2, and implements Advanced Tomahawk Weapon Control System (ATWCS), ADCAP torpedo improvements and several other miscellaneous enhancements. CCS MK2 Program D0 Block 2 incorporates into submarine CCS anticipated upgrades to ADCAP, Tomahawk and Harpoon, and implements additional OER. AN/BSG-1 (formerly known as Tomahawk Land Attack Missile - Nuclear (TLAM-N) Portable Launching System (PLS)) provides SSN Submarines with a stand alone TLAM-N Missile launching capability.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236/F0236
PROGRAM ELEMENT TITLE:Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

(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 1997 ACCOMPLISHMENTS:

   - (U) ($17,799) Continued development of CCS MK2 Program D0 Block 1C.
   - (U) ($3,661) Obtained Milestone II and awarded contract for AN/BSG-1.

2. (U) FY 1998 PLAN:

   - (U) ($29,896) Commence System Design Certification Testing (SDCT) for CCS MK2 Program DO Block 1C.
   - (U) ($15,767) Continue development of AN/BSG-1.

3. (U) FY 1999 PLAN:

   - (U) ($21,713) Complete SDCT and begin Development Test (DT) for CCS MK2 Program DO Block 1C.
   - (U) ($6,360) Continue development of AN/BSG-1.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE:Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	21,837	45,663	32,376
(U) Appropriated Value:	22,899		
(U) Adjustments to FY 1997 Appropriated Value/FY 1998 President's Budget:			
a. FY97 SBIR Transfer	-350		
b. Congressional Undistributed Reductions	-1,062		
c. Revised Economic Assumptions	-27		
d. TLAM/N Contract Savings			-4,398
e. NWCF Adjustments			+95
(U) FY 1999 OSD/OMB Budget Submit:	21,460	45,663	28,073

U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 adjustments are due to SBIR transfer (-350K), Congressional Undistributed Reductions (-1,062K) and Revised Economic Assumptions (-27K). FY 99 adjustments were due to TLAM-N contract cost savings (-4,398K) and NWCF adjustments (+95K).

(U) Schedule: The development and testing schedules for CCS MK2 Program D0 Block 1C were adjusted due to changes in technical content described below. The CDR and SDCT milestones moved to accomodate commonality with the NSSN Combat Control program. TOMAHAWK Block IV capability has been deferred allowing for shortened and consolidated test events. The net result is a single Milestone III for all variants of CCS MK2 Block 1C by May 2000.

(U) Technical: The CCS MK2 Program D0 Block 1C program has been adjusted to maximize foreground software commonality with the NSSN Combat Control program. Due to changes in the TOMAHAWK Baseline Improvement Program (TBIP), OPNAV has directed TOMAHAWK Block IV missile capability be deferred and accomplished as an Engineering Change to the existing program baseline.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236/F0236
PROGRAM ELEMENT TITLE:Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 54200									
	14,307	20,511	18,874	41,675	39,522	56,451	56,143	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0204229N (Tomahawk & Tomahawk Missile Planning Center)
(U) PE 0205632N (MK 48 ADCAP)
(U) PE 0603504N (Advanced Submarine Combat Systems Dev.)
(U) PE 0604503N (Submarine System Equipment Dev.)
(U) PE 0604707N (Submarine Electronic Warfare Architecture/Eng. Support)

D. (U) SCHEDULE PROFILE: See attached.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236/F0236
PROGRAM ELEMENT TITLE:Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	6,872	13,702	3,028
b. Software Development	6,055	17,903	6,150
c. Government Engineering Support/ Systems Engineering	7,700	10,471	5,943
d. Independent Software Nuclear Safety Analysis	0	936	814
e. Test and Evaluation	111	473	9,819
f. Program Management Support	460	1,600	1,102
g. Miscellaneous	262	578	1,217
Total	21,460	45,663	28,073

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236/F0236
PROGRAM ELEMENT TITLE:Submarine Tactical Warfare System 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Raytheon Portsmouth, RI	SS/FPI	Jun 94	18,916	18,916	18,916	0	0	0	0	18,916
Raytheon Portsmouth, RI	C/CPIF	Jun 96	40,333	40,333	7,243	5,545	16,657	6,190	4,698	40,333
Raytheon Portsmouth, RI	C/CPIF	Jun 97	12,446	12,446	0	1,905	8,700	850	991	12,446
NUWC Newport, RI	WR	Oct 96	N/A	N/A	35,127	7,700	10,471	5,943	CONT.	CONT.
Cruise Missile Project Washington, DC	PD	Dec 96	N/A	N/A	2,958	150	3,800	2,167	CONT.	CONT.
Various	TBD	TBD	N/A	N/A	218,390	5,589	3,962	2,002	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236/F0236
PROGRAM ELEMENT TITLE:Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management										
EG&G Rockville, MD	C/CPFF	Sep 94	9,000	9,000	4,141	460	1,600	1,102	1,697	9,000
Test and Evaluation										
Various	TBD	TBD	N/A	N/A	3,037	111	473	9,819	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

Subtotal Product Development	282,634	20,889	43,590	17,152	CONT.	CONT.
Subtotal Support and Management	4,141	460	1,600	1,102	CONT.	CONT.
Subtotal Test and Evaluation	3,037	111	473	9,819	CONT.	CONT.
Total Project	289,812	21,460	45,663	28,073	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1803 Ship Contract Design	203	51,720	86,595	148,806	175,309	242,540	232,866	CONT.	CONT.
S2197 Ship Specifications	2,412	2,296	1,298	1,317	1,293	1,412	4,104	CONT.	CONT.
S2198 Live Fire Test and Evaluation	88	3,831	8,826	7,666	1,521	4,238	3,383	CONT.	CONT.
S2301 Carrier Contract Design	0	17,866	39,113	51,635	65,741	62,692	50,837	CONT.	CONT.
S2302 Carrier Live Fire Test and Evaluation	0	0	0	20,771	13,890	0	0	CONT.	34,691
TOTAL	2,703	75,713	135,832	230,195	257,754	310,882	291,190	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 Feasibility Study (usually after Milestone I) engineering, programmatic and acquisition documentation, including ship specifications and contractual documents, associated with the acquisition of Navy ships. This line also supports Live Fire Test and Evaluation for new ship designs.

(U) Contract Design has traditionally been 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 has provided 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) Under Acquisition Reform for new design ships and submarines , traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering Integrated Product and Process Development (IPPD) process extending through and after contract award. This serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder, system programs, and suppliers. Government/Industry Integrated Product Team(s) (IPTs) will utilize the IPPD process to develop the design in an Integrated Product and Data Environment (IPDE). The design approach is part of an acquisition strategy that is based on commercial practices and incorporates a phased technical definition. This may involve continuing efforts (where Milestone I has not occurred) in those cases where IPTs would be disrupted after Feasibility Study conclusion.

(U) For the Future Carrier (CVX), Government/Industry Integrated Product Team(s) will utilize the IPPD process to develop industry sea-based tactical aviation platform design(s) to a level of detail sufficient for prospective shipbuilders to produce the most effective, affordable product achievable in the most efficient manner. This PE also supports Live Fire Test and Evaluation (LFT&E) for the Future Carrier (CVX) 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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1803 Ship Contract Design	203	51,720	86,595	148,806	175,309	242,540	232,866	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program supports the development of all technical, programmatic, and contractual documentation required after feasibility studies 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 1997 ACCOMPLISHMENTS:

- (U) ($ 203) Commenced AOE SLEP Contract Design.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1998 PLAN:

- (U) ($25,000) DD 21 industry team design studies. Multiple contracts will be awarded to industry teams structured to enable the contractors to investigate the complex technical issues of the program, perform trade-off studies, develop the planning for the management, engineering and production of the system.

- (U) ($8,500) Begin design and engineering development of a computational plant architecture testbed leading to the ships information system for the DD 21 family of ships. This system will provide survivable, common open architecture for HM&E, combat systems, C4I and administrative elements and will be designed with the flexibility to be incorporated into future surface ships.

- (U) ($4,500) DD 21 system engineering development of a technical assessment model that will be used to review the technical feasibility of the industry proposals in Phase I of the acquisition strategy. Begin development of the Smart Product Model which constitutes the complete representation of the ship’s requirements, design and capabilities at each stage of the life cycle.

- (U) ($7,400) Begin implementation of the engineering development team responsible for participation, oversight and monitoring of the industry team effort for DD 21. Begin implementation of the DD 21 source selection and evaluation team that will be used to transition to Phase II of the acquisition strategy.

- (U) ($2,500) Begin DD 21 technology transition and integration efforts for candidate systems which may be incorporated into the lead ship by the industry teams. Review development schedules and timelines to ensure that technical risk is properly managed.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

- (U) ($3,820) Initiate top down functional analysis to determine crew workload in order to address DD 21 manning goals.

4. (U) FY 1999 PLAN:

- (U) ($ 3,000) Commence CG Conversion Contract Design.
- (U) ($50,000) Initial system design for DD 21. Two industry teams will begin development of the system functional baseline, comment on and validate the performance specification, develop and validate cost estimates, and develop a detailed engineering and production plan necessary to design and deliver the lead ship.
- (U) ($9,500) Continue design and engineering development, and begin demonstration and testing to support the design effort for the computational plant architecture leading to the ships information system for DD 21.
- (U) ($6,100) Continue implementation of the engineering development team responsible for the participation, oversight and monitoring of the industry effort for DD 21.
- (U) ($ 2,495) Continue DD 21 technology transition and integration efforts for candidate systems which may be incorporated into the lead ship by the industry teams. Review development schedules and timelines to ensure that technical risk is properly managed.
- (U) ($5,700) Continue top down functional analysis to determine crew workload in order to address DD 21 manning goals.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT TITLE: Ship Contract Design

- (U) ($4,000) DD 21 system engineering development of a technical assessment model that will be used to review the technical feasibility of the industry proposals in Phase I of the acquisition strategy. Continue development of the Smart Product Model which constitutes the complete representation of the ship's requirements, design and capabilities at each stage of the life cycle.

- (U) ($ $5,800) Begin AOE(X) Contract Design.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	3,958	51,720	80,941
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:			
a. Adjustments	-3,755		+5,645
(U) FY 1999 OSD/OMB submit:	203	51,720	86,595

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 decrease due to SBIR Transfer (-$105K), revised econ. assump. (-$5K) and BTR (-$3,645K)
FY 1999 increase due to CG Mod (+$3,000K), AOE(X) adjustments (+$2,762K) and DBOF (-$108K)

(U) Schedule: The current SCN Plan is as follows:

CG MOD	FY 2002/3
CVN 77	FY 2002
DD 21	FY 2004
AOE (X)	FY 2003
LHA/LH(X)	FY 2005
Command Ship	FY 2005
CV(X)	FY 2006

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0603564N (Ship Preliminary Design/Feasibility Studies)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E
PROJECT NUMBER: S1803
PROJECT TITLE: Ship Contract Design

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999
Program Milestones		4th Qtr AOE(X) MS I 1ST Qtr DD 21 MS I	
Engineering Milestones	See Individual Ship Acquisition Program Documentation.		
T&E Milestones	See Individual Ship Acquisition Program Documentation.		
Contract Milestones		DD21 Industry Team Studies	

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Systems Engineering Development	153	14,020	21,945
b. Program Management Support	50	1,550	2,250
c. Travel	0	150	400
d. Technology Assessments/Integration	0	2,500	2,500
e. Industry Team Design Studies	0	25,000	50,000
f. Computational Plant Architecture	0	8,500	9,500
Total	203	51,720	86,595

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
JJMA Arlington, Va.	C	3/95	Cont.	Cont.	1,500	100	1,300	2,450	Cont.	Cont.
AME Arlington, Va.	C	3/95	Cont.	Cont.	2,570	0	0	1,000	Cont.	Cont.
CD-NSWC Carderock, MD.	WR	A.N.	Cont.	Cont.	500	0	2,660	3,000	Cont.	Cont.
NAVAIR Arlington, VA.	WR	A.N.	Cont.	Cont.	700	0	3,331	3,500	Cont.	Cont.
SPAWAR Arlington, VA.	PD	Var.	Cont.	Cont.	0	0	90	90	Cont.	Cont.
DD-NSWC Dahlgren, VA.	WR	A.N.	Cont.	Cont.	380	0	10,200	13,000	Cont.	Cont.
NRL Washington, DC.	WR	A.N.	Cont.	Cont.	0	0	670	670	Cont.	Cont.
Competitive TDB	C	3/98	TBD	TBD	0	0	25,000	50,000	TBD	TBD

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S1803
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

Government Performing Activity	Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
NCCOSC/NRAD San Diego, CA.	WR	A.N.	Cont.	Cont.	50	0	889	900	Cont.	Cont.
APL/JHU Laurel, MD.	C	10/97	Cont.	Cont.	0	0	940	940	Cont.	Cont.
Techmatics Fairfax, VA	C	10/97	Cont.	Cont.	0	0	1,800	1,125	Cont.	Cont.
Vitro Silver Spring,MD	C	10/97	Cont.	Cont.	0	0	890	890	Cont.	Cont
NSWC/CR Crane, IN	WR	10/97	Cont.	Cont.	0	0	665	665	Cont.	Cont
NSWC/PHD Port Hueneme, CA	WR	10/97	Cont.	Cont.	0	0	370	370	Cont.	Cont
Misc. TBD	Var.	Var.	Cont.	Cont.	0	53	1,365	5,745	Cont.	Cont.
Support and Management										
Misc. TBD	Var.	Var.	Cont.	Cont.	180	50	1,550	2,250	Cont.	Cont.

Test and Evaluation - None.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER: S1803
PROGRAM ELEMENT TITLE:Ship Contract Design/Live Fire T&E 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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
None										
Support and Management										
None										
Test and Evaluation										
None										

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	9,044	153	50,170	84,345	Cont.	Cont.
Subtotal Support and Management	180	50	1,550	2,250	Cont.	Cont.
Subtotal Test and Evaluation	0	0	0	0	Cont.	Cont.
Total Project	9,224	203	51,720	86,595	Cont.	Cont.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOW DATE: September 1997

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) FUNDING PROFILE ($ in thousands)Not required for this submittal.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT TITLE: Ship Specifications

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997* ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S2197 Ship Specifications	2,412	2,296	1,293	1,317	1,293	1,412	4,104	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project funds the development, implementation and integration 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. This project also funds development, improvement and update of NAVSEA cognizant acquisition specifications including integration of Federal and Military Specifications, Handbooks General Specifications for Ships of the U.S. Navy and COTS equipment/systems into a Performance Based, bidable ship contract design acquisition package. These documents are required to reflect the latest technologies (e.g. open systems architecture for information and power systems), manufacturing techniques, environmental requirements, hazardous material reduction, safety and legal/Congressional requirements.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($ 300) Continued to develop, improve and update NAVSEA cognizant acquisition specifications. Continue development of Specification data base and Open Systems Architecture.

- (U) ($2,112) Continued development of CAD II analysis programs, program integration and development of CAD II ship design systems and modeling techniques for application on DD 21 and AOE(X).

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1998 PLAN:

- (U) ($ 500) Continue to develop, improve and update NAVSEA cognizant acquisition specifications. Continue development of Specification data base and Open Systems Architecture.
- (U) ($ 994) Continue development of CAD II analysis programs and program integration. Continue development of CAD II ship design systems and modeling techniques for application on DD 21 and AOE(X).
- (U) ($ 802) Commence development of Performance Based Ship Acquisition Specification Program.

3. (U) FY 1999 PLAN:

- (U) ($ 500) Continue to develop, improve and update NAVSEA cognizant acquisition specifications. Continue development of Specification data base and Open Systems Architecture.
- (U) ($ 793) Continue development of Performance Based Ship Acquisition Specification Program.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	2,758	2,296	1,293
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget			
a. Adjustments	-346		
(U) FY 1999 OSD/OMB Budget Submit	2,412	2,296	1,293

(U) CHANGE SUMMARY EXPLANATION:

Funding: Decrease in FY 1997 due to SBIR adjustment (-$70K) and general reductions (-$398K).

(U) Schedule: The current SCN Plan is as follows:

CG MOD	FY 2002/3
CVN 77	FY 2002
DD 21	FY 2004
AOE(X)	FY 2003
LHA/LH(X)	FY 2005
Command Ship	FY 2005
CV(X)	FY 2006

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Specifications

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 1997	FY 1998	FY 1999
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 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1997	FY 1998	FY 1999
a. CAD Systems Engineering	1,612	494	0
b. CAD Software Development	500	500	0
c. Specification Improvements	300	500	500
d. Performance Based Specifications	0	802	798
Total	2,412	2,296	1,298

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E P ROJECT 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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
SPCC	WR	A.N.	Cont.	Cont.	1,270	590	700	0	Cont.	Cont.
Mechanicsburg, Pa.										
JJMA	C	2/95	Cont.	Cont.	596	308	300	500	Cont.	Cont.
Arlington, Va.										
CD-NSWC WR	WR	A.N.	Cont.	Cont.	589	564	500	0	Cont.	Cont.
Carderock, MD.										
PSNSY	WR	A.N.	Cont.	Cont.	0	120	0	0	Cont.	Cont.
Pudget Sound,WA										
AME	C	2/95	Cont.	Cont.	100	686	500	500	Cont.	Cont.
Arlington, Va.										
Misc.	Var.	A.N.	Cont.	Cont.	49	139	296	298	Cont.	Cont.

Support and Management
None

Test and Evaluation
None

GOVERNMENT FURNISHED PROPERTY
None

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Specifications

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development									
None									
Support and Management									
None									
Test and Evaluation									
None									

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	2,604	2,407	2,296	1,298	Cont.	Cont.
Subtotal Support and Management	0	0	0	0	Cont.	Cont.
Subtotal Test and Evaluation	0	0	0	0	Cont.	Cont.
Total Project	2,604	2,407	2,296	1,298	Cont.	Cont.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Specifications

C. (U) FUNDING PROFILE ($ in thousands) Not required for this submittal.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S2198 Live Fire Test & Evaluation	88	3,831	8,826	7,666	1,521	4,238	3,383	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 1997 ACCOMPLISHMENTS:

- (U) ($ 88) Supported LPD 17 Live Fire Test and Evaluation

2. (U) FY 1998 PLAN:

- (U) ($ 3,831) Commence DD 21 Live Fire Test and Evaluation.

5. (U) FY 1999 PLAN:

- (U) ($ 7,876) Continue DD 21 Live Fire Test and Evaluation.
- (U) ($ 950) Commence AOE(X) Live Fire Test and Evaluation.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	88	3,831	8,826
(U) Adjustments to FY 1997 Appropriated Value/: FY 1998 President's Budget			
(U) FY 1999 OSD/OMB Budget Submit	113	3,831	8,826

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: Funding increase in FY 1997 is due to SBIR transfer ($-2K) and BTR (+$25K).

(U) Schedule: The current SCN Plan is as follows:

CG MOD	FY 2002/3
CVN 77	FY 2002
AOE(X)	FY 2003
DD 21	FY 2004
LHA/LH(X)	FY 2005
Command Ship	FY 2005
CV(X)	FY 2006

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

(U) Technical: Not applicable

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 1997	FY 1998	FY 1999
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 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Develop LFT&E Test Models	88	1,400	3,067
b. Threat Analysis Development	0	1,400	2,259
c. Test Procedure Development	0	831	3,000
d. Program Support	0	200	500
Total	88	3,831	8,826

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Test and Evaluation										
Misc.	Var.	A.N.	Cont.	Cont.	0	88	3,631	8,326	Cont.	Cont.
Support and Management										
TBD					0	0	200	500	Cont.	Cont.
Product Development										
None										

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
GOVERNMENT FURNISHED PROPERTY									
None									
Product Development									
None									
Support and Management									
None									
Test and Evaluation									
None									

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Test and Evaluation	0	88	3,631	8,326	Cont.	Cont.
Subtotal Support and Management	0	0	200	500	Cont.	Cont.
Subtotal Product Development	0	0	0	0	Cont.	Cont.
Total Project	0	88	3,831	8,826	Cont.	Cont

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S2301 Carrier Contract Design	0	17,866	39,113	51,635	65,741	62,692	50,837	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project encompasses the design efforts for the CVN 77 and CVX Contract Design. The traditional distinct phasing of the design process for aircraft carriers has been replaced with a continuous concurrent engineering Integrated Product and Process Development (IPPD) process extending through and after contract award. This serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder, aviation programs, and suppliers. Government/Industry Integrated Product Team(s) (IPTs) will utilize the IPPD process to develop the design in an Integrated Product and Data Environment (IPDE). The design approach is part of an acquisition strategy that is based on commercial practices and incorporates a phased technical definition.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 PLAN: Not applicable.

2. (U) FY 1998 PLAN:

- (U) ($17,866) Commence CVN 77 Contract Design.

3. (U) FY 1999 PLAN:

- (U) ($39,113) Continue CVN 77 Contract Design.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 98 President's Budget:	0	17,866	34,844
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:			
a. Adjustmens			+4,269
(U) FY 1999 OSD/OMB Submission	0	17,866	39,113

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2301
PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT TITLE: Carrier Contract Design

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Increases in FY 1999 due to various pricing and rate adjustments.

(U) Schedule: CVN 77 is scheduled for FY 2002. CV(X) is scheduled for FY 2006.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0603512N (Carrier Systems Development)
(U) PE 0603564N (Ship Feasibility Studies)

D. (U) SCHEDULE PROFILE:

	FY1997	FY 1998	FY 1999
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 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2301
PROGRAM ELEMENT TITLE: Contract Design/Live Fire T&E PROJECT TITLE: CV Contract Design

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Trade-off Analysis	0	4,963	5,971
b. Integration Assessments	0	12,903	14,130
c. Design and Integrate Selected Changes	0	0	16,012
d. Prepare Contract Package	0	0	3,000
Total	0	17,866	39,113

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2301
PROGRAM ELEMENT TITLE: Contract Design/Live Fire T&E PROJECT TITLE: CV 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	FY 1996 & Prior Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
ADVANCED MARINE ENTERPRISES, ARLINGTON, VA										
	PR	Nov 97	Cont.	Cont.	0	0	1,637	3,453	Cont.	Cont.
GEORGE G. SHARP, ARLINGTON, VA										
	PR	Nov 97	Cont.	Cont.	0	0	1,973	5,070	Cont.	Cont.
LOCKHEED MARTIN CORPORATION, ARLINGTON, VA										
	PR	Dec 97	Cont.	Cont.	0	0	2,791	6,948	Cont.	Cont.
NSWC - CARDEROCK, BETHESDA, MD										
	WR	Nov 97	Cont.	Cont.	0	0	1,964	4,145	Cont.	Cont.
NEWPORT NEWS SHIPBUILDING, NEWPORT NEWS, VA										
	PR	Nov 97	Cont.	Cont.	0	0	7,529	15,889	Cont.	Cont.
NAWC - LAKEHURST, NJ										
	WR	Nov 97	Cont.	Cont.	0	0	1,472	3,108	Cont.	Cont.
Total					0	0	17,366	38,613	Cont.	Cont.
Support and Management										
Contractor (TBD)	Misc.	Feb 98	Cont.	Cont.	0	0	500	500	Cont.	Cont.

Test and Evaluation Not Applicable

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2301
PROGRAM ELEMENT TITLE: Contract Design/Live Fire T&E PROJECT TITLE: CV Contract Design

GOVERNMENT FURNISHED PROPERTY

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 1996 & Prior Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development		Not Applicable								
Support and Management		Not Applicable								
Test and Evaluation		Not Applicable								

Total

	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	17,366	38,613	Cont.	Cont.
Subtotal Support and Management	0	500	500	Cont.	Cont.
Subtotal Test and Evaluation	0	0	0	0	0
Total Project	0	17,866	39,113	Cont.	Cont.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Standards Embedded Computer Resources

PROJECT NUMBER& TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1353 Standard Hardware	25,372	2,224	2,129	2,457	2,529	3,342	3,173	CONT.	CONT.
W0845 Advanced Mission Computer (AMC)	1,102	1,184	5,091	10,002	15,951	6,625	5,921	CONT.	CONT.
X2265 Naval Warfare Tactical Data Base	1,075	1,386	1,194	1,294	1,327	1,432	1,492	CONT.	CONT.
TOTAL	27,549	4,794	8,414	13,753	19,807	11,399	10,586	CONT.	CONT.
RDT&E Articles		2	23	16					41

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project S1353, Standard Hardware: This project provides 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, development of the AN/UYQ-70 display suite, assessment of Open Architecture display components, the Mass Memory Storage Device (MMSD), and other standard peripherals.

(U) Project W0845, Advanced Mission Computer (AMC): This project provides for airborne digital computer requirements with a standard commercial open design that will permit rapid technology infusion through pre-planned product improvements. The focus of the open systems AMC development is to provide existing platforms with Higher Order Language (HOL) and high speed bus architecture. The AMC also includes (1) the integration of commercially based processors, (2) development of input/output and other special function modules (voice recognition), (3) development of a backplane based on the commercial (open system) industry standards, (4) support of the additional design, test and qualification necessary to meet multi-user requirements and bring other programs' non-development item/commercial off-the-shelf (NDI/COTS) modules and designs into the open systems AMC family. The lead user is the F/A-18 E/F. Potential users include SH-60R, V-22, AH-1W, EA-6B, and F/A-18C/D.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Standards Embedded Computer Resources PROJECT TITLE: Standard Hardware

(U) Project X2265, The Naval Warfare Tactical Database (NWTDB) is an information management infrastructure project to solve data interoperability problems and implement DOD data architecture and standards in Navy. NWTDB is the data architecture component of Copernicus. NWTDB has developed management and engineering processes to define and translate information needs to automated systems, and to manage changes resulting from new operational requirements or technology advances. Database integration, data standardization, and configuration management are supported by reverse engineering database structures and definitions into a common format to facilitate data interoperability problem identification and resolution. The management and engineering processes, and authoritative database structures are documented in the NWTDB Standards Manual which is distributed to Navy C^4ISR and combat system architects, system developers, reference database producers, other services and agencies, and selected foreign governments. The Data Analysis and Reconciliation Tool (DART), a Microsoft Windows based application, is being evolved to support the full information management life cycle; i.e. linking databases and transfer formats to operational information requirements. DART supports systems documentation, configuration management, DOD standard data element generation, and requirements traceability. In August 1996, DASN C^4I recommended the NWTDB process and DART tool to ASD C^3I as a practical approach to solve data interoperability problems and support database integration, especially for the Global Command and Control System. NWTDB management process received OSD Award in 1993. Management responsibilities are defined in OPNAVINST 9410.6 of 13Jul93, “NWTDB Requirements for Tactical Naval Warfare Systems” which implements DoD Directive 4630.5 of 12 Nov 92, “Compatibility, Interoperability and Integration of Tactical Command, Control, Communication and Intelligence (C^3I) Systems”, and DoD Directive 8320.1 of 26 Sep 91, “DoD Data Administration”. OPNAVINST 9410.6 also specifies that Navy system developers and database producers will transition to NWTDB data standards and structures by the year 2000.

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

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 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1353 Standard Hardware	25,372	2,224	2,129	2,457	2,529	3,342	3,173	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, development of the AN/UYQ-70 display suite, assessment of Open Architecture display components, the Mass Memory Storage Device (MMSD), and other standard peripherals.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($656) Updated the COSIP Computer Resources Information Base (CRIB) through assessment and certification of new candidate technologies, including distributed operating and network systems for AEGIS, Ship Defense, and other related activities.

- (U) ($24,332) Via the COSIP CRIB, investigated technology infusion into the AN/UYQ-70(V). This includes intensive study and testing of flat panel technology and its adaptation to the Navy's tactical display needs. Develop AN/UYQ-70 variant for the New Attack Submarine Program.

- (U) ($384) Via COSIP, investigated requirements for common, ruggedized shipboard racks and enclosures.

2. (U) FY 1998 PLAN:

- (U) ($731) Continue expansion of COSIP CRIB to increase viability of COTS technology into tactical systems via additional testing of commercial products.

- (U) ($978) Using COSIP CRIB tools and data, continue investigating technology infusion into the AN/UYQ-70(V)to embrace wider range of Navy surface applications using new COTS technology.

- (U) ($515) Continue efforts to develop shipboard racks/enclosures and common tactical data systems.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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3. (U) FY 1999 PLAN:

- (U) ($800) Continue increasing CRIB database by incorporating additional testing data of commercial technology.
- (U) ($798) Using COSIP CRIB tools and data, continue to investigate technology infusion into the AN/UYQ-70(V) to meet Navy emerging subsurface and airborne tactical display/processor requirements.
- (U) ($531) Continue Information Technology Electronic Commerce (ITEC) support.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	26,540	2,224	2,157
(U) Appropriated Value:	27,690	0	0
(U) Adjustments to FY 1999 Appropriated Value/FY 1998 President's Budget:			
a) SBIR	-628		
b) Undistributed Reductions	-1,150		-28
c) FY 97-16 MPN	-100		
d) FY 97 Rvsd Ecomonic Assumption	-32		
e) BTR	-408		
(U) FY 1999 OSD/OMB Budget Submit:	25,372	2,224	2,129

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:FY 97 decrease of $2,318K results from a SBIR assessment (-$628K), undistributed reductions (-$1,150K), FY 97-16 MPN (-100K), FY 97 Revised Economic Assumption (-32), and BTR (-408).

(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 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 0604307N (AEGIS WEAPON SYSTEM MODS)
- (U) PE 0604366N (STANDARD MISSILE IMPROVEMENTS)
- (U) PE 0604372N (NEW THREAT UPGRADE)
- (U) PE 0604755N (SHIP SELF DEFENSE)

D. (U) SCHEDULE PROFILE: Not applicable.

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	22,657	0	0
b. Software Development	440	500	550
c. Government Engineering Support	2,200	1,649	1,504
d. Travel	75	75	75
Total	25,372	2,224	2,129

DATE: September 1997

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Loral/St. Paul	Various	Various	184,820	184,820	161,623	22,657	0	0	0	184,820
Misc	Various	Various	Cont.	Cont.	50,000	440	500	550	Cont.	Cont.
Support and Management										
Misc	Various	Various	Cont.	Cont.	6,390	75	75	75	Cont.	Cont.
Test and Evaluation:										
Misc	Various	Various	Cont.	Cont.	8,394	250	305	296	Cont.	Cont.
NSWC Dahlgren	Various	Various	Cont.	Cont.	7,933	950	670	604	Cont.	Cont.
NUWC Newport	Various	Various	Cont.	Cont.	8,313	1,000	674	604	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	211,623	23,097	500	550	Cont.	Cont.
Subtotal Support and Management	6,390	75	75	75	Cont.	Cont.
Subtotal Test and Evaluation	24,640	2,200	1649	1,504	Cont.	Cont.
Total Project	242,653	25,372	2,224	2,129	Cont.	Cont.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Standards Embedded Computer Resources PROJECT TITLE: AMC

(U) COST (Dollars in thousands)

PROJECT NUMBER& TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0845 AMC	1,102	1,184	5,091	10,002	15,951	6,625	5,921	CONT.	CONT.
RDT&E Articles		2	23	16					41

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Advanced Mission Computer (AMC) project provides for airborne digital computer requirements with a standard commercial open design that will permit rapid technology infusion through pre-planned product improvements. The focus of the open systems AMC development is to provide existing platforms with Higher Order Language (HOL) and high speed bus architecture. The AMC also includes (1) the integration of commercially based processors, (2) development of input/output and other special function modules (voice recognition), (3) development of a backplane based on the commercial (open system) industry standards, (4) support of the additional design, test and qualification necessary to meet multi-user requirements and bring other programs' non-development item/commercial off-the-shelf (NDI/COTS) modules and designs into the open systems AMC family. The lead user is the F/A-18 E/F. Potential users include SH-60R, V-22, AH-1W, EA-6B, and F/A-18C/D.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($439) Performed requirements definition to develop an AMC system consisting of commercial off-the-shelf (COTS)/Open Systems mission processors, high speed bus architecture, and a HOL Operational Flight Program (OFP) for the F/A-18 E/F.
- (U) ($655) Developed acquisition strategy and prepared the Request For Proposal (RFP).
- (U) ($ 8) Consists of -$9 thousand reprogrammed to P.E. 0604215N, Project W0572 and +$1 thousand reserved for revised economic reduction.

2. (U) FY 1998 PLAN:

- (U) ($362) Award contract and perform Preliminary Design Review (PDR).
- (U) ($722) Achieve Milestone II and support negotiation leading to contract award and develop acquisition documentation.
- (U) ($100) Coordinate engineering manufacturing and development (EMD) integration efforts with F/A-18 E/F. An additional $141 thousand is forward financing with fiscal year 1997 carryover due to low expenditures for fiscal year 1996.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Standards Embedded Computer Resources PROJECT TITLE: AMC

3. (U) FY 1999 PLAN:

- (U) ($4,187) Complete Critical Design Review (CDR) and continue development and integration of open systems AMC for F/A-18 E/F.
- (U) ($904) Begin hardware prototype/integration.

B. (U) PROGRAM CHANGE SUMMARY

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	1,118	1,184	1,446
(U) Appropriated Value:	1,189	--	--
(U) Adjustments from PRESBUD:	(16)	0	3,645
(U) FY 1999 OSD/OMB Budget Submit:	1,102	1,184	5,091

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 reflects a reduction of $14 thousand for the Small Business Innovative Research (SBIR) assessment and $2 thousand for revised economic adjustment. FY 1998 reflects no change in program. FY 1999 reflects an increase of $6,850 thousand to accelerate development and integration of the AMC for the F/A-18E/F, an increase of $10 thousand for Navy Working Capital Funds (NWCF) rate increase, a reduction of $204 thousand for C4I Miscellaneous Expenditures, a reduction of $3000 thousand for Extraordinary Program Growth, and a reduction of $11 thousand for minor pricing adjustments.

(U) Schedule: FY 1998 reflects a change in PDR from 2Q 1998 to 3Q 1998. This is a result of Phase 0 Requirements Definition. FY 1999 reflects a change in CDR from 4Q 1998 to 1Q 1999. This is a result of Phase 0 Requirements Definition.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands): Not Applicable.
(U) RELATED RDT&E:
(U) PE 0204136N F-18 Squadrons
(U) PE 0604215N Standards Development

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Standards Embedded Computer Resources

PROJECT NUMBER: W0845
PROJECT TITLE: AMC

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		2Q MS II (2/98)		
Engineering Milestones		3Q PDR (5/98)	1Q CDR (11/98)	
T&E Milestones				
Contract Milestones		2Q EMD AWD II (2/98)		

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Standards Embedded Computer Resources

PROJECT NUMBER: W0845
PROJECT TITLE: AMC

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Program Planning	100	25	200
b. Technical Program Mgmt Support	50	21	225
c. Prime Eqpmt/E&MD Prime Contract	367	1,023	4,035
d. System T&E/OT&E	18	10	100
e. System Engineering	335	25	415
f. Travel	18	18	20
g. Contract Services	206	62	96
h. Reprogramming to W0572	8	0	0
Total	1,102	1,184	5,091

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Standards Embedded Computer Resources PROJECT TITLE: AMC

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Boeing		02-98	TBD	TBD	692	367	1,023	4,035	CONT.	CONT.
Miscellaneous		12-98	TBD	TBD	19,212	513	89	860	CONT.	CONT.
Support and Management										
Miscellaneous		12-98	TBD	TBD	1,147	196	62	96	CONT.	CONT.
Test and Evaluation										
Miscellaneous		02-99	TBD	TBD	150	18	10	100	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	Total FY 1996 & Prior*	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	19,904	880	1,112	4,895	CONT.	CONT.
Subtotal Support and Management	1,147	196	62	96	CONT.	CONT.
Subtotal Test and Evaluation	150	18	10	100	CONT.	CONT.
Reprogrammed to W0572	0	8	0	0	CONT.	CONT.
Total Project	21,201	1,102	1,184	5,091	CONT.	CONT.

*FY 96 & prior includes program information from FY 90 through FY 96 on programs still remaining in the FYDP years.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X2265
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Naval Warfare Tactical Data Base

(U) COST (Dollars in thousands)

PROJECT NUMBER& TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2265 Naval Warfare Tactical Data Base	1,075	1,386	1,194	1,294	1,327	1,432	1,492	CONT.	CONT.
Current Available Funding	1,075								

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Naval Warfare Tactical Database (NWTDB) is an information management infrastructure project to solve data interoperability problems and implement DOD data architecture and standards in Navy. NWTDB is the data architecture component of Copernicus. NWTDB has developed management and engineering processes to define and translate information needs to automated systems, and to manage changes resulting from new operational requirements or technology advances. Database integration, data standardization, and configuration management are supported by reverse engineering database structures and definitions into a common format to facilitate data interoperability problem identification and resolution. The management and engineering processes, and authoritative database structures are documented in the NWTDB Standards Manual which is distributed to Navy C^4ISR and combat system architects, system developers, reference database producers, other services and agencies, and selected foreign governments. The Data Analysis and Reconciliation Tool (DART), a Microsoft Windows based application, is being evolved to support the full information management life cycle; i.e. linking databases and transfer formats to operational information requirements. DART supports systems documentation, configuration management, DOD standard data element generation, and requirements traceability. In August 1996, DASN C^4I recommended the NWTDB process and DART tool to ASD C^3I as a practical approach to solve data interoperability problems and support database integration, especially for the Global Command and Control System. NWTDB management process received OSD Award in 1993. Management responsibilities are defined in OPNAVINST 9410.6 of 13Jul93, “NWTDB Requirements for Tactical Naval Warfare Systems” which implements DoD Directive 4630.5 of 12 Nov 92, “Compatibility, Interoperability and Integration of Tactical Command, Control, Communication and Intelligence (C^3I) Systems”, and DoD Directive 8320.1 of 26 Sep 91, “DoD Data Administration”. OPNAVINST 9410.6 also specifies that Navy system developers and database producers will transition to NWTDB data standards and structures by the year 2000.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X2265
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Naval Warfare Tactical Data Base

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(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($ 99) Developed final NWTDB Standards Manual Version Three for C^4ISR and combat system architects and system developers.
- (U) ($ 70) Incorporated Universal Joint Task List in DART 1.09.
- (U) ($105) Tested DART 1.09 and finalize build.
- (U) ($100) Developed DART 1.09 User's Guide for system architects, system developers, and data administrators.
- (U) ($ 36) Analyzed JMCIS Afloat and MIDB 2.0 differences supported by DART.
- (U) ($ 35) Registered Surface Ship Combat Systems database in NWTDB.
- (U) ($105) Developed NWTDB Capstone Model for Navy C^4I Process.
- (U) ($287) Developed DART 2.0 Applications:
  - Rehosted for platform independence and client/server applications to supports IT-21 and JMCIS 98 environment.
  - Developed USMTF screens and comparison to database data elements.
  - Revised Universal Joint Task List screens
  - Developed Universal Navy Task List screens.
  - Created a port to client/server.
- (U) ($100) Developed draft DART 2.0 User's Guide.
- (U) ($100) Technical support to implement DOD data architecture and standards process, including the CIO mission and the High Level Architecture and Modeling and Simulation Resource Repository interface planning.
- (U) ($ 38) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C^4ISR) implementation guidance. Develop and update Naval C^4ISR mission to incorporate an overarching operational, systems, technical and information architecture. Conduct associate C^4ISR analyses and studies.

2. (U) FY 1998 PLAN:

- (U) ($ 50) Develop TADIL screens and comparison to database data elements.
- (U) ($ 50) Test DART 2.0 and finalize build.
- (U) ($ 50) Finalize DART 2.0 User's Guide for system architects, system developers, and data administrators.
- (U) ($200) Continue to register core Naval Tactical Systems (emphasis on combat ID system databases) and changes to the NWTDB Standards Manual Version Three, including incorporation of IW links and nodes effort funded by OSD in FY97.

- (U) ($150) Develop Operational Requirements Models to support definition of information exchange requirements:
  - Amphibious
  - Strike
  - Undersea
  - Surface
  - Air
  - C2/IW
  - Integrated Naval C^4I
- (U) ($100) Develop NWTDB Standards Manual - Version Four.
- (U) ($335) Develop DART 3.0 Client/Server applications including on-line registration, configuration management, and security features via internet to support IT-21 implementation, and interface to the Modeling and Simulation Resource Repository System.
- (U) ($100) Develop year 2000 problem identification aids in DART.
- (U) ($100) Develop draft DART 3.0 User's Guide for operational users, systems architects, system developers, and data administrators.
- (U) ($ 75) Test DART 3.0 and finalize build.
- (U) ($ 50) Develop to support the CIO mission a data requirements to mission measure of performance matrices.
- (U) ($101) Technical support to implement DOD architecture and data standards process, including coordination with NATO GROUP 5.
  (U) ($ 25) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C^4ISR) implementation guidance. Develop and update Naval C^4ISR mission to incorporate and overarching operational, systems, technical and information architecture. Conduct associated C^4ISR analyses and studies.

3. (U) FY 1999 PLAN:

- (U) ($ 90) Develop final DART 3.0 User's Guide.
- (U) ($180) Continue to register Naval tactical systems (emphasis on mission planning databases)and changes to the NWTDB Standards Manual - Version Four.
- (U) ($218) Develop DART 3.1 configuration management and metadata warehousing features to support data fusion/pull.
- (U) ($ 41) Expand TADIL screens and comparison to USMTF and database elements.
- (U) ($ 70) Test DART 3.1 and finalize build.
- (U) ($ 90) Develop DART 3.1 User's Guide.
- (U) ($170) Collect data and prototype in DART a capability linking systems data requirements to mission traceability to support CIO assessment.
- (U) ($100) Develop NWTDB Standards Manual - Version Five as an on-line publication.
- (U) ($135) Expand Naval C^4I Engineering Data Models for combat ID and mission planning.
- (U) ($100) Technical Support to implement DOD architecture and data standards process, including coordination with NATO GROUP 5.

DATE: September 1997

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X2265
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Naval Warfare Tactical Data Base

B. (U) PROGRAM CHANGE SUMMARY

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	1,303	1,386	1,423
(U) Appropriated Value:			
(U) Adjustments from FY 1998 PRESBUDG:	-228	0	-229
(U) FY 1999 OMB BUDGET SUBMIT:	1,075	1,386	1,194

**Comparability transfer: FY-96 funded under X1976.
Program broken out into S2265 during PR-97 to provide visibility. Program transferred to SPAWARSYSCOM and project number changed to X2265 during Navy review of FY 98 Budget Submission.

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997: -22K Reduction is 60965 (64438) FY 1997 SBIR transfer; -$205K reflects funding change due to minor adjustments to finance other department requirements; -$1K minor Navy adjustments.

FY 1999: -142K Reduction is 17046 NWTDB offset for NTCSS and JMCIS; -$20K redirected to develop and update overarching C^4ISR mission requirements; -$67K minor Navy adjustments.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604601N
PROGRAM ELEMENT TITLE: Mine Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q0267 Mine Improvements	2,371	2,365	0	835	2,000	6,982	15,459	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 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. Initiate development of a Littoral Sea Mine (LSM).

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N PROJECT NUMBER: Q0267
PROGRAM ELEMENT TITLE: Mine Development PROJECT TITLE: Mine 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) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($1,216) Completed the preliminary design of the ACV algorithm. Began the development of an algorithm that specifically addresses Diesel-Electric/Mini-Subs (DE/MS). Continued to develop and generate actuation and damage operational data for fleet minefield planning for high priority targets. Completed the development of a shallow water array for magnetic and pressure signatures.
- (U) ($1,155) Completed the development of MK-132 mine battery using the AA lithium cell. Began the development of a larger lithium cell for use in standard mine warfare system power supplies; evaluated the improved safety and performance potential of lithium cell technologies. Continued the development of the improved pressure sensor and test set. Continued to conduct system analyses for LSM.

2. (U) FY 1998 PLAN:

- (U) ($1,172) Complete the development of the ACV algorithm and publish a final report. Continue the development of the DE/MS algorithm and begin initial investigation of an algorithm specifically addressing remote control of mines code firmware for the fast patrol algoritm. Continue to develop and generate actuation and damage operational data for fleet minefield planning for high priority targets.
- (U) ($1,193) Continue development of a larger lithium cell. Complete preliminary designs of batteries using those cells. Complete development of MK-130 Mine battery using the AA lithium cell.Complete the development of the improved pressure sensor and test set. Complete the system analyses for LSM.

3. (U) FY 1999 PLAN: Not Applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N PROJECT NUMBER: Q0267
PROGRAM ELEMENT TITLE: Mine Development PROJECT TITLE: Mine Improvements

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	2,381	2,815	3,650
(U) Appropriated Value:	2,505		
(U) Adjustments to FY 1997 Appropriated Value/FY 1998 President's Budget:			
Adjustments	-134	-450	-3650
(U) FY 1999 OSD/OMB Budget Submit:	2,371	2,365	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY97 reflects minor adjustments and SBIR -$134K.
FY98 (-$450) changes due to various pricing adjustments. FY99 (-$3,650) pricing adjustments.
(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 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N PROJECT NUMBER: Q0267
PROGRAM ELEMENT TITLE: Mine Development PROJECT TITLE: Mine Improvements

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

PROJECT COST CATEGORIES	FY 1997	FY 1998	FY 1999
a. System Testing	250	350	0
b. System Engineering Development	783	1,020	0
c. SW Support	781	650	0
d. Logistics	240	150	0
e. Program Management	290	175	0
f. Travel	20	20	0
g. SBIR	7	0	0
TOTAL	2,371	2,365	0

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION ($ in thousands) Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons

(U) COST: (Dollars in Thousands)

PROJECT NUMBER TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
A2183 SLAM ER	30,333	28,890	5,245	1,627	2,969	3,120	4,740	CONT.	CONT.
TOTAL	30,333	28,890	5,245	1,627	2,969	3,120	4,740	CONT.	CONT.
RDT&E ARTICLES	19	4							

(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/Inertial Navigation System (GPS/INS) (EGI), modified Tomahawk wings and warhead, and the existing advanced mode of the AWW-13 data link pod. The Automatic Target Acquisition (ATA) tracker is being integrated into the SLAM ER missile to enhance its capability to attack and kill low thermal contrast, and small targets in clutter urbane scenes, and in poor weather. The ATA capability will also reduce the overall number of Standoff Outside Area Defense (SOAD) missiles needed by increasing the Probability of Kill for part of the target set. In addition, ATA increases pilot and aircraft survivability by minimizing the time that the pilot needs to fly with his head down to control the weapon. To accommodate future U.S. Air Force and Navy aircraft integration, SLAM ER will incorporate a MIL-STD-1760 interface.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons
PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 PLAN:
- (U) ($18,096) Continued Engineering & Manufacturing Development (E&MD) efforts. Deliver SLAM ER flight test missiles and supported testing.
- (U) ($ 1,051) Continued F/A-18 aircraft integration, flight clearance and software efforts.
- (U) ($ 1,300) Continued Osprey Jaywalker efforts.
- (U) ($ 5,503) Continued Warhead development and testing, Government and Contractor support.
- (U) ($ 4,383) Performed Flight Readiness Review and start Missile Flight Test and Evaluation and complete Assistant Secretary of the Navy (Research, Development and Acquisition) (ASN(RD&A)) Program Review for Low Rate Initial Production (LRIP)I.

2. (U) FY 1998 PLAN:
- (U) ($ 9,570) Continue E&MD efforts. Provide SLAM ER missile support.
- (U) ($ 1,000) Complete F/A-18 aircraft OFP-13C SLAM ER integration, flight clearance and develop the F/A-18 OFP-15C Automatic Target Acquisition (ATA) software.
- (U) ($ 2,100) Continue Osprey Jaywalker efforts.
- (U) ($ 3,970) Complete Warhead development and continue testing. Continue Government and Contractor support.
- (U) ($12,250) Continue Missile Flight Test and Evaluation and complete ASN(RD&A) Program Review for LRIP II.

3. (U) FY 1999 PLAN:
- (U) ($ 1,500) Complete E&MD efforts.
- (U) ($ 500) Complete Osprey Jaywalker efforts.
- (U) ($ 3,245) Complete testing, Government and Contractor support.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons
PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/1999 President's Budget:	30,991	28,890	5,167
(U) Appropriated Value	32,322		
(U) Adjustments from Pres. Budget:	-658		78
(U) FY 1999 OSD/OMB Budget Submit:	30,333	28,890	5,245

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY97 net decrease of -$658 thousand reflects an adjustment of -$616 thousand for Small Business Innovation Research, and -$42 thousand for revised economic assumption reductions. The FY99 net increase of $78 thousand is for the Navy Working Capital Fund (NWCF).

(U) Schedule: Osprey Jaywalker efforts will complete in FY 1999 due to the closeout of the contract, which is scheduled to occur in FY 1999 rather than in FY 1998. SLAM ER Automatic Target Acquisition (ATA) software requires a modification in FY 1998 to the F/A-18 OFP-15C software to load the target photo into the missile.

(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
WPN									
SLAM Quantity	0	0	0	0	0	0	0	0	812*
* 75 completed as SLAM ERs									
*737 completed as SLAMs									
	0	0	0	0	0	0	0	0	1,087,815
WPN Line 17									
Quantity	60	45	54	58	38	38	38	294	625
SLAM-ER	40,378	30,694	36,374	36,568	28,950	29,657	30,607	194,300	427,528

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons
PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

C. (U) OTHER PROGRAM FUNDING SUMMARY (cont.)

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	2Q FRR 2Q LRIP (I)	2Q LRIP (II)	2Q MSIII	
Engineering Milestones				
T&E Milestones	1Q/97-3Q/98 CC 1Q/97-2Q/98 DT-IIC 2Q DT-1 MSL FIRE	2Q/3Q DT-IID 2Q/98-1Q/99 OT-IIA 2Q OTRR	1Q/2Q OPEVAL	
Contract Milestones			2Q FRP	

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons
PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. E&MD	18,096	9,570	1,500
b. Osprey Jaywalker CCM/Sep	1,300	2,100	500
c. F/A-18 Flight/AC Integration	0	0	0
d. F/A-18 Software Development	1,051	1,000	0
e. Systems Engineering	1,150	1,000	1,459
f. Warhead Development	2,500	2,600	0
g. Test and Evaluation	4,383	12,250	1,451
h. Government Field Support	1,526	75	119
i. Advisory & Assistance Services	229	220	140
j. Travel	98	75	76
Total	30,333	28,890	5,245

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons
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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Comp	Total Program
Product Development:										
McDonnell Douglas St. Louis, MO	SS/CPIF	09/94	125,624	125,624	96,458	18,096	9,570	1,500	cont.	cont.
China Lake, CA	WX	11/97	22,404	22,404	13,695	3,650	3,600	1,459	cont.	cont.
OSP	PD	10/97	11,250	11,250	7,350	1,300	2,100	500	cont.	cont.
Miscellaneous	WX	11/97	TBD	TBD	9,675	2,675	1,150	195	cont.	cont.
Support and Management:										
Miscellaneous		07/98	916	916	327	229	220	140	cont.	cont.
Test and Evaluation:										
Pt. Mugu, CA	WX	11/97	20,676	20,676	2,592	4,383	12,250	1,451	cont.	cont.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons

PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	127,178	25,721	16,420	3,654	cont.	cont.
Subtotal Support and Management	327	229	220	140	cont.	cont.
Subtotal Test and Evaluation	2,592	4,383	12,250	1,451	cont.	cont.
Total Project	130,097	30,333	28,890	5,245	cont.	cont.

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FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604610N
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
V2234 LIGHTWEIGHT TORPEDO DEVELOPMENT	10,381	17,290	8,207	9,407	8,807	8,007	2,607	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The funding is to design, integrate and test the Lightweight Hybrid Torpedo (LHT) by taking advantage of current USN investments in torpedo hardware and torpedo technology. The torpedo will be comprised of components and software from the MK 46 Torpedo, MK 50 Torpedo, and MK 48 ADCAP Torpedo. The Lightweight Hybrid Torpedo will incorporate improvements in the shallow water, littoral warfare counter-countermeasure environments.

(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 1997 ACCOMPLISHMENTS:

- (U) ($3,445) Continued LHT Engineering and Manufacturing Development Contract (Required for Contract cost growth and material commitments).
- (U) ($564) Continued development and production of Ancillary Hardware, including Fleet Exercise Section(FES) and Automatic Test Equipment (ATE), to support LHT.
- (U) ($2,293) Continued development of tactical and signal processing software.
- (U) ($1,133) Conducted simulation efforts in support of tactical software development.
- (U) ($2,946) Performed Lightweight torpedo system engineering efforts.

2. (U) FY 1998 PLAN:

- (U) ($2,364) Continue LHT Engineering and Manufacturing Development Contract.
- (U) ($5,371) Continue development and production of Ancillary Hardware, including Fleet Exercise Section (FES)and Automatic Test Equipment (ATE), to support LHT.
- (U) ($3,829) Development of tactical and signal processing software continues.
- (U) ($1,286) Continue simulation efforts in support of tactical software development.
- (U) ($4,440) Continue Lightweight torpedo system engineering efforts.

3. (U) FY 1999 PLAN:

- (U) ($544) Continue LHT Engineering and Manufacturing Development Contract.
- (U) ($1,220) Continue development and production of Ancillary Hardware (Complete development of Fleet Exercise Section (FES)) and Automatic Test Equipment (ATE) to support LHT.
- (U) ($1,772) Continue development of tactical and signal processing software.
- (U) ($2,444) Continue simulation and initiate in-water test program in support of tactical software development.
- (U) ($2,227) Continue Lightweight torpedo system engineering efforts.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT PROJECT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	10,832	17,290	8,129
(U) Appropriated Value:	15,019		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:	-4,638		+78
(U) FY 1999 OSD/OMB Budget Submit:	10,381	17,290	8,207

(U) CHANGE SUMMARY EXPLANATION:.

(U) Funding:
FY 97: Changes due to minor pricing (-251), Congressional undistributed adjustments (-530), BTRs (-200) and E&MD Contract Savings (-3,657).
FY 99: Changes due to consolidation of Program Element 0603610N MK50 Shallow Water Performance (+2,820), and a decrease of 2,742 for various adjustments.

(U) Schedule: The LHT program has been restructured. The restructure includes: shift of LHT IOC to FY03 vice FY01; shift in the testing program to FY99-02 from FY98-FY01, with continuation of the RDT&E E&MD contract to completion as originally planned; shift in LRIP to FY00/01, vice FY99/FY00; and shift in full rate production to FY02 vice FY01.

(U) Technical: Not applicable.

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

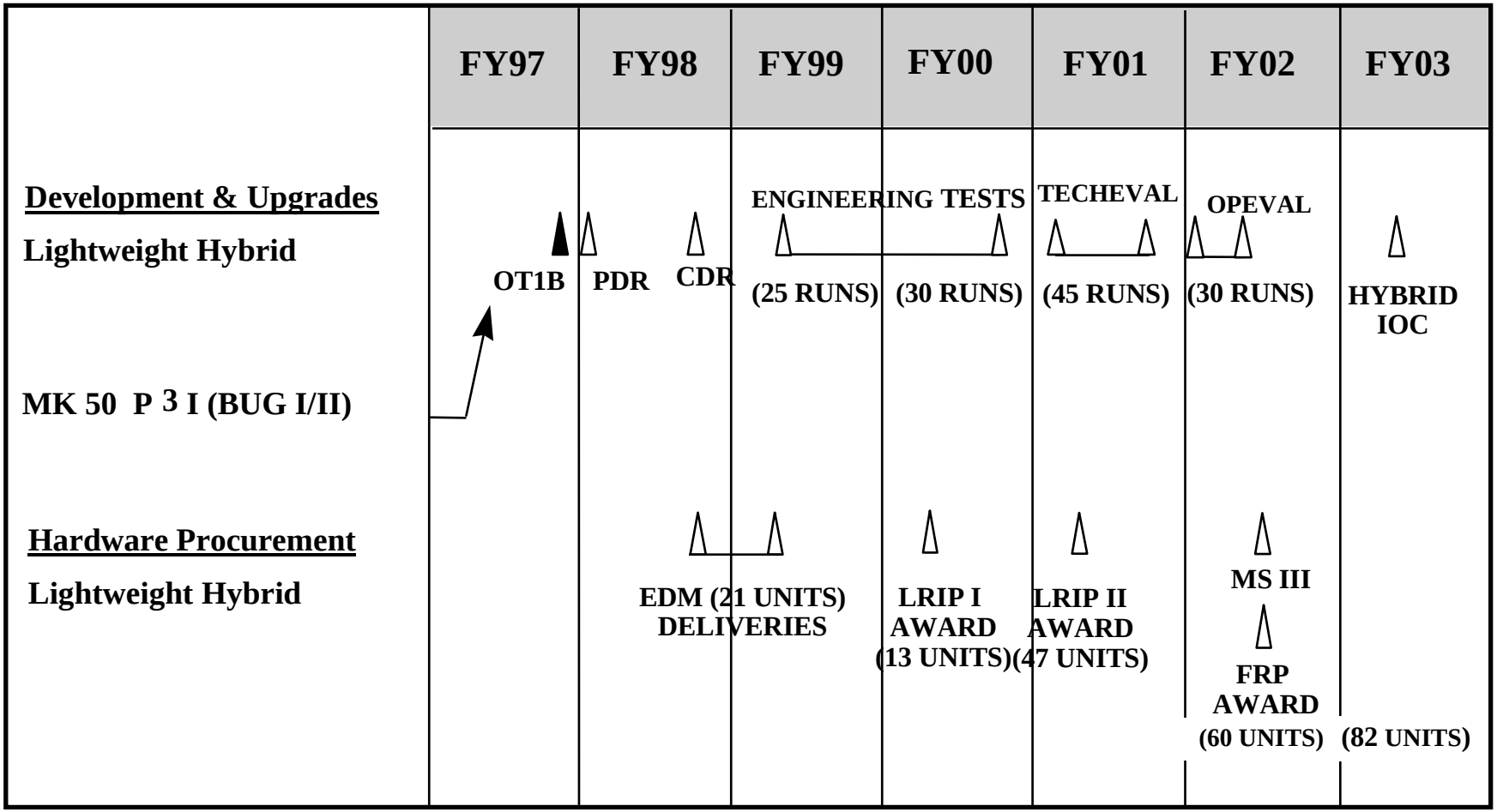
	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
WPN/321500	0	0	0	16,666	28,067	31,796	38,231	355,444	470,204

(U) RELATED RDT&E: Not Applicable.

D. (U) SCHEDULE PROFILE: See Attached

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT PROJECT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604610N
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	3,445	2,364	544
b. Ancillary Hardware Development	564	5,371	1,220
c. Software Development	2,293	3,829	1,772
d. System, Test & Evaluation	1,133	1,286	2,444
e. Systems Engineering	2,390	3,856	1,880
f. Program Management Support	556	584	347
Total	10,381	17,290	8,207

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT PROJECT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NUWC	WR	OCT 97	CONT.	CONT.	20,636	5,976	13,086	6,992	CONT.	CONT.
Alliant Contract	C/CPAF	JUN 96	17,268	17,268	10,115	3,445	2,364	544	800	17,268
Various	VAR	VAR	CONT.	CONT.	1,536	468	581	106	CONT.	CONT.
Support and Management										
ARL/PSU	C/CPFF	JAN 98	CONT.	CONT.	3,533	0	265	150	CONT.	CONT.
Various	VAR	VAR	CONT.	CONT.	907	445	930	347	CONT.	CONT.
Test and Evaluation										
COMOPTEVFOR	VAR	OCT 97	CONT.	CONT.	33	47	64	68	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY:

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development									
Alliant Contract	C/FP	MAR 96	JUL 97	2,797	0	0	0	0	2,797
Support and Management				0	0	0	0	0	0
Test and Evaluation				0	0	0	0	0	0

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT PROJECT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT

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

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	35,084	9,889	16,031	7,642	CONT.	CONT.
Subtotal Support and Management	4,440	445	1,195	497	CONT.	CONT.
Subtotal Test and Evaluation	33	47	64	68	CONT.	CONT.
Total Project	39,557	10,381	17,290	8,207	CONT.	CONT.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE **September 1997**

BUDGET ACTIVITY
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604612M Marine Corps Mine/Countermeasures Systems

PROJECT
C2106

COST *(In Thousands)*	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
C2106 ADVANCED COUNTERMEASURES SYSTEMS (ACS)	3522	950	3923	7272	5767	4673	1990	Continuing	Continuing
Quantity of RDT&E Articles									

A. (U) Mission Description and Budget Item Justification:

(U) The ACS program is a "tool box" approach, using a variety of systems, each of which center on a particular aspect of the neutralization of blast-hardened and complex-fused mines, and unexploded munitions. This includes current and future threat explosives that defeat the effectiveness of current minefield breaching systems. The Primary goals of this package are to achieve very high neutralization percentages against the targeted threat; joint applicability for use with primary assault platforms to include land and amphibious assaults. The ACS program researches and develops follow on minefield clearing and assault breaching capabilities that will neutralize current and future blast-hardened and complex-fused mines. ACS will alleviate a critical deficiency in clearing minefields during amphibious operations. Current breaching assets are 1950s technology that do not meet breaching mission requirements.

(U) Justification for Budget Activity: This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because of the need to research and test new and emerging technologies which will meet required mission criteria prior to production approval decisions.

(U) FY 1997 Accomplishments:

- (U) $ 2100 **Explosive Standoff Minefield Breacher (ESMB):** Funded the Marine Corps portion of the Program Definition and Risk Reduction (PDRR) phase of the FY 1997 contract. This included development of a prototype system. This concluded Marine Corps participation in the joint Army led program.
- (U) $ 1000 **Expeditionary Mine Clearance Systems:** Forward financed the development and testing of remoting the D-8 bulldozer with modified mine plow and conduct live fire testing. Remanufacture full width mine plows for developmental testing and design certification.
- (U) $ 422 **Contractor Support:** Provided management support analysis of contractor results using a management support contractor. Continued to provide support in preparation of milestone documentation and contract deliverables.

(U)Total $ 3,522

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE September 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604612M Marine Corps Mine/Countermeasures Systems	PROJECT C2106

(U) FY 1998 Planned Program:

- (U) $ 0 **Expeditionary Mine Clearance Systems:** Complete operational testing on full width mine plows. This effort financed with $1M of FY97 funds.
- (U) $ 575 **Expeditionary Mine Clearance Systems:** Remanufacture one Flail unit for testing. Funding includes contractor test support and test equipment.
- (U) $ 50 **Advanced Mine Detector Program:** Fund Program Determination and Risk Reduction (PDRR).
- (U) $ 100 **Ground Marking System (GMS):** Perform Engineering Analysis of the British developed Pathfinder system. The Pathfinder was evaluated under the Foreign Comparative Test Program in FY 1995.
- (U) $ 225 **Contractor Support:** Update all program documentation , and provide management support using a support contract.

(U)Total $ 950

(U) FY 1999 Planned Program:

- (U) $ 2398 **Expeditionary Mine Clearance Systems:** Complete evaluation of the remanufactured Flail system. Remanufacture and test the remaining Flail systems. Test systems. Funding includes contractor support and all test equipment and material.
- (U) $ 75 **Advanced Mine Detector:** Transition to engineering and manufacturing development.
- (U) $ 500 **Ground Marking System:** Remanufacture existing Pathfinder system for testing. Manufacture mounting brackets for additional vehicles. Conduct testing. Complete testing.
- (U) $ 120 **Magnetic Countermine Systems (MACS):** Fund for laboratory salaries, hardware and testing for Program Determination and Risk Reduction (PDRR) phase.
- (U) $ 600 **Shaped Charge Munitions (SCM):** Test and evaluate non-developmental item SCM's in live mine testing.
- (U) $ 230 **Contractor Support:** Update all program documentation for and provide management support using a support contract.

(U)Total $ 3,923

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE **September 1997**

BUDGET ACTIVITY
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604612M Marine Corps Mine/Countermeasures Systems

PROJECT
C2106

B. (U) Project Change Summary

	FY 1997	FY 1998	FY 1999
(U) Previous President's Budget	3588	950	3907
(U) Adjustments to Previous President's Budget	-66	0	+16
(U) Current Budget Submit	3522	950	3923

(U) Change Summary Explanation:

(U) Funding: The FY 1997 funding decrease reflects the Small Business Innovation Research assessment and revised economic adjustments. The FY 1999 adjustment due to Navy Working Capital Fund surcharge.

(U) Schedule: Not applicable

(U) Technical: Not applicable

C. (U) Other Program Funding Summary (APPN, BLI #, NOMEN)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) PMC, BLI# 637100, Advanced Mine/Countermeasures Systems	0	0	0	0	0	0	1,191	CONT	CONT

(U) Related RDT&E

(U) PE 0602131M (Marine Corps Landing Force Technology)
(U) PE 0603612M (Marine Corps Mine Countermeasures)
(U) PE 0603640M (Marine Corps Advanced Technology Demonstrations)

D. (U) Schedule Profile: Not applicable.

FY 1998/99 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N
PROGRAM ELEMENT TITLE: Joint Direct Attack Munition (JDAM)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2137 JDAM	30,010	12,714	11,914	11,916	15,512	2,401	2,410	0	170,354
RDT&E articles									
Guided Test Vehicles	114								

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: JDAM is a joint acquisition program combining Department of Navy and Air Force requirements to upgrade existing General Purpose Bomb capabilities in adverse weather and at 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.

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($10,900) Completed Developmental Testing (DT-IIA) and continued test engineering support, initiated test phases: DT-IIB/Operational Testing (OT-IIA); DT-IIIA; OT-IIB (Operational Evaluation (OPEVAL) 11C Overlay Control Store (OCS)); and planning efforts for OT-III (Follow-on Test & Evaluation (FOT&E) Operational Flight Program (OFP) 13C).

- (U) ($ 5,721) Continued OFP software development for flight testing, and JDAM Mission Planning Module (MPM) development for Tactical Air Mission Planning System (TAMPS).

- (U) ($ 1,624) Procured JDAM Test Assets (Guided Test Vehicles (GTVs)).

- (U) ($ 8,959) Performed systems engineering, Integrated Logistics Support (ILS) and program support for the JDAM E&MD Phase II contract and Initial Operating Capability (IOC); and prepared for and supported the Low Rate Initial Production (LRIP) decision; and supported the AV-8B integration effort.

- (U) ($ 2,806) Continued systems engineering, ILS, program support, and testing for Joint Programmable Fuze (JPF) E&MD program.

2. (U) FY 1998 PLAN:

- (U) ($ 354) Complete DT-IIIA testing, OT-IIB (OPEVAL 11C OCS) testing, and conduct DT-IIIB/OT-III (DT/FOT&E OFP 13C) testing.
- (U) ($ 885) Continue OFP software activities supporting flight testing, and JDAM MPM development for TAMPS.
- (U) ($ 860) Continue to incrementally fund JDAM Test Assets (GTVs) procured in FY96 and FY97.
- (U) ($ 6,284) Perform systems engineering, ILS and program support for the JDAM E&MD Phase II, Milestone (MS) III decision, fleet deployment IOC, and perform systems engineering support for the Product Improvement Program (PIP) development program.
- (U) ($ 3,305) Continue support of the JDAM integration effort on the AV-8B.
- (U) ($ 1,026) Continue systems engineering, ILS, program support, and testing for JPF E&MD program.

3. (U) FY 1999 PLAN:

- (U) ($ 255) Complete JDAM MPM software development.
- (U) ($ 6,552) Perform systems engineering, ILS and program support in preparation for fleet introduction IOC of the JDAM weapons system including the JPF program, and continue systems engineering efforts supporting the PIP program.
- (U) ($ 5,107) Continue support of the JDAM integration effort on the AV-8B.

DATE: September 1997

FY 1998/99 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE: Joint Direct Attack Munition PROJECT TITLE: JDAM

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
FY 1998 Presidents Budget Submit:	33,461	12,714	11,853
Appropriated Value:	35,130		
Adjustments from PRESBUDG:	-3,451	0	61
FY 1999 OSD/OMB Budget Submit:	30,010	12,714	11,914

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY97 reduction of -$3,451 million reflects decreases of -$2,833 thousand for various reprogrammings for higher Navy priorities, -$539 thousand for the Small Business Innovative Research (SBIR) transfer; and -$79 thousand for various minor adjustments. The FY99 increase of $61 thousand reflects an increase of $109 thousand for the Navy Working Capital Fund (NWCF) surcharge correction, and a decrease of -$48 thousand for minor program adjustments.

(U) Schedule: The rephasing/reallocating of test requirements and organizational participation has resulted in the following changes: DT-IIB 1Q 97/4Q 97 now 4Q 96/4Q 97; OT-IIA 2Q 97/4Q 97 now 3Q 97/4Q 97; DT-IIIA 3Q 97/2Q 98 now 2Q 97/1Q 98; OT-IIIA 3Q 97/2Q 98 replaced by DT-IIIB 1Q 98/2Q 98; and OT-IIIB 3Q 98/3Q 98 now OT-III 2Q 98/3Q 98.

(U) Technical: Not Applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
PAN&MC/B.A-1 - Ammunition - JDAM	-	29,520	42,030	36,755	30,790	31,430	68,122	475,711	710,792
PAAF/B.A-1 - Ammunition-JDAM									
USAF (3011) Weapons Procurement	23,010	61,003	54,402	131,507	253,514	223,789	218,020	371,407	1,336,652

RELATED RDT&E:
Air Force PE 0604618F Joint Direct Attack Munitions (JDAM).

DATE: September 1997

FY 1998/99 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE: Joint Direct Attack Munitions PROJECT TITLE: JDAM

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	3Q LRIP	3Q MS-III		
Engineering Milestones				
T&E Milestones	DT-IIB 4Q 96/4Q 97 DT-IIIA 2Q 97/1Q 98 OT-IIA 3Q 97/4Q 97 OT-IIB 4Q 97/1Q 98	DT-IIIB 1Q 98/2Q 98 OT-III 2Q 98/3Q 98		
Contract Milestones				

DATE: September 1997

FY 1998/99 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE:Joint Direct Attack Munition PROJECT TITLE: JDAM

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

Project Cost Categories	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate
a. System Engineering	3,341	2,543	3,372
b. A/C Integration/Certification	868	3,374	5,151
c. OFP S/W Development	4,283	617	151
d. TAMPS S/W Development	1,438	267	104
e. Development Test & Evaluation	6,249	71	0
f. Operational Test & Evaluation	4,499	128	0
g. Test Asset Hardware	1,624	860	0
h. Integrated Logistics Support (ILS)	1,295	549	754
i. Training	968	809	311
j. Travel	175	130	89
k. Contractor Engineering Support	2,988	2,645	1,810
l. Joint Programmable Fuze (JPF)	2,282	721	172
TOTAL	30,010	12,714	11,914

DATE: September 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE:Joint Direct Attack Munition PROJECT TITLE: JDAM

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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Contract Costs ($2.0M or more):										
OFP Software Dev. BOA 10/98 McDonnell Douglas Aircraft			13,251	13,251	10,407	2,584	260	0	0	13,251
JDAM (Software Dev) (TAMPS) Texas Instruments	CPAF	10/99	8,224	8,224	4,449	460	65	45	3,205	8,224
Less than $2.0M (Aggregate Total)			3,363	3,363	1,981	1,382	0	0	0	3,363
In-house Support:										
NAWC, CL JDAM DEV.	WX	10/99	91,786	91,786	36,216	8,465	8,321	9,970	28,814	91,786
Support and Management:										
Less than $2.0M (Aggregate Total):			14,854	14,854	6,797	3,163	2,775	1,899	220	14,854

DATE: September 1997

FY 1998/99 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE:Joint Direct Attack Munition PROJECT TITLE: JDAM

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

Government Performing Activity	Contractor/ Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
PERFORMING ORGANIZATIONS (Continued)										
Test and Evaluation:										
Contract Costs ($2.0M or more):										
F/A-18 A/C BOA (McDonnell Douglas, St.Louis, MO)		10/97	6,216	6,216	6,214	2	0	0	0	6,216
In-house Support:										
JDAM TEST										
NAWC-PAX	WX	10/98	4,523	4,523	3,764	658	101	0	0	4,523
NAWC-CL	WX	10/98	13,910	13,910	1,906	11,672	332	0	0	13,910

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development				0	0	0	0	0	0
Support and Management				0	0	0	0	0	0
Test and Evaluation:									
Test Assets	CPAF MIPR	10/95 10/97	Oct 97 - Mar 98	11,743	1,624	860	0	0	14,227

DATE: September 1997

FY 1998/99 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604618N PROJECT NUMBER: E2137
PROGRAM ELEMENT TITLE:Joint Direct Attack Munition PROJECT TITLE: JDAM

	FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	53,053	12,891	8,646	10,015	32,019	116,624
Subtotal Support and Management	6,797	3,163	2,775	1,899	220	14,854
Subtotal Test and Evaluation	23,627	13,956	1,293	0	0	38,876
Total Project	83,477	30,010	12,714	11,914	32,239	170,354

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604654N
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Q1829 Explosive Ordnance Disposal Procedures	5,600	6,613	7,004	7,243	7,419	7,584	7,759	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 DOD/DOE/FBI Memorandum of Understanding for response to Improvised Nuclear Devices (INDs). The program also provides for the acquisition of high priority foreign mines. The analysis and exploitation of these mines will provide for the development of MCM and unique EOD procedures. This project develops procedures in accordance with CNO approved NAPDD 426-852.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($4,590) Obtained foreign ordnance and developed EOD render-safe procedures for new sophisticated domestic and foreign ordnance.
- (U) ($1,010) Developed IND countermeasures procedures and participated in exercises and joint working groups.

2. (U) FY 1998 PLAN:

- (U) ($5,013) Continue to obtain foreign ordnance and develop EOD render-safe procedures for new sophisticated domestic and foreign ordnance.
- (U) ($1,100) Continue to develop IND countermeasures procedures and participate in exercises and joint working groups.
- (U) ($500) Obtain high priority foreign mines for analysis and exploitation to provide for the development of Mine Countermeasures procedures.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

3. (U) FY 1999 PLAN:

- (U) ($5,219) Obtain foreign ordnance and develop EOD render-safe procedures for new sophisticated domestic and foreign ordnance.
- (U) ($1,035) Develop IND countermeasures procedures and participate in exercises and joint working groups.
- (U) ($750) Obtain high priority foreign mines for analysis and exploitation to provide for the development of Mine Countermeasures procedures.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	5,609	6,613	6,975
(U) Appropriated Value:	7,346		
(U) Adjustments to Appropriated Value/FY 1998 President's Budget:			
a. Adjustments:	-1,746		+29
(U) FY 1999 OSD/OMB Budget Submit:	5,600	6,613	7,004

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Adjustments in FY 97 are due to Near Term Mine Warfare Plan, -$1,500 and NWCF/General adjustments, -$246K. FY 99 increase due to minor adjustments.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

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

(U) RELATED RDT&E: All conventional ordnance related developments, both domestic and foreign, manufactured or improvised.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997	FY 1998	FY 1999
a. RSP Development	4,590	5,013	5,219
b. IND Countermeasures	1,010	1,100	1,035
c. Foreign Mine Acquisition	0	500	750
Total	5,600	6,613	7,004

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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:

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NAVEODTD IH	WR	10/96	CONT.	CONT.	135,067	5,306	6,613	7,004	CONT.	CONT.
MISC	WR/MP	1/96	640	640	346	294	0	0	0	640

Support and Management Not applicable.
Test and Evaluation Not applicable.

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development	Not applicable.								

Support and Management Not applicable.

Test and Evaluation Not applicable.

FY 1999 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	135,413	5,600	6,613	7,004	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	135,413	5,600	6,613	7,004	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: 26 September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604703N PROJECT NUMBER: L1822
PROGRAM ELEMENT TITLE: Manpower, Personnel, Training, Simulation, and Human Factors PROJECT TITLE: Manpower, Personnel, Training, Simulation, and Human Factors

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
L1822 Manpower, Personnel, Training, Simulation, and Human Factors	754	1,022	1,257	1,258	1,286	1,314	1,344	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program applies advanced technologies to operational requirements in manpower, personnel, training, simulation, and human factors, and transitions into operation those projects demonstrated in advanced development. Enabling technologies include adaptive testing, mathmatical optimization, statistical and econometric forecasting, computer-based simulation, and decision support systems.

(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 1997 PLANS:

- (U) ($98K) Completed development and validation of the Brig Training Assessment Model and transition to operational use.
- (U) ($152K) Completed validation of the Quality of Life Predictive Model and transition to an operational system.
- (U) ($199K) Completed conversion of demonstration Medical Manpower Allocation Model to an All-Navy model for implementation.

- (U) ($305K) Begin development of Navy Training Quota Management System which will develop "booking profiles" for each class from history and match current bookings against the profile. Project will allow schools to project ahead whether a class is over or underfilling to either add or cancel a class. Additionally, Navy will be able to compare each user's current bookings with the profile, determine that a particular user is not using its quota share, and reallocate the quotas to other users.

2. (U) FY 1998 PLANS:

- (U) ($400K) Complete validation and transition of the All-Navy Medical Manpower Allocation Model. Complete development of the rate forecasting models for Military Personnel Navy Appropriation. Begin development of interfaces between the planning models and budget calculation and execution models.

- (U) ($350K) Continue development of Navy Training Quota Management System which will develop "booking profiles" for each class from history and match current bookings against the profile.

- (U) ($272K) Begin transition of the proof of concept prototype model developed under the successful 6.3 Assignment Policy Management System (APMS) subproject. APMS capabilities will be integrated into the development of the Job Advertisement and Selection System (JASS) within the Military Assignment, Selection, and Transfer (MAST) System and provide a tool to execute new policy initiatives such as the Home Basing policy. A redesign of the APMS model and monitoring subsystem to conform to the JASS and MAST standards and the development of seamless interfaces is required to effectively integrate APMS within JASS.

3. (U) FY 1999 PLANS:

- (U) ($350K) Complete development and validation of Navy Training Quota Management System.

- (U) ($357K) Continue development of the Assignment Policy Management System (APMS).

- (U) ($350K) Begin transition of successful products of the 6.3 Distribution 2000 Prototyping Project to demonstrate that technologies/models developed will work across a range of officer and enlisted detailing communities.
- (U) ($200K) Begin transition of the models developed under the successful 6.3 Decision Aids for Strength Control subproject and integrate them into an operational system. This subproject will address the problems in managing the enlisted strength planning system and the budget development and execution system as an integrated system.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1998	FY 1999
(U) FY 1998/1999 President's Budget:	1,022	1,252
(U) Adjustments from FY 1998/1999 PRESBUDG:	0	+5
(U) FY 1999 OSD/OMB Submission:	1,022	1,257

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Funding adjustment of +5K in FY 99 is a correction to prior Navy Working Capital Fund (NWCF) surcharge reduction.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: 26 September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604703N PROJECT NUMBER: L1822
PROGRAM ELEMENT TITLE: Manpower, Personnel, Training, Simulation, and Human Factors PROJECT TITLE: Manpower, Personnel, Training, Simulation, and Human Factors

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

(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

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: 26 September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604710N
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG)

A. (U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R0371	1,901	2,961	2,572	2,624	2,656	2,672	2,777	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; and adaptation of renewable/alternative energy technologies to Navy facility needs. Provide test and evaluation support to the companion PE 0603724N Project R0829. Annual savings of $130M were achieved in FY 1995 and, as currently funded, $155M is projected for FY 2000 compared to FY 1985 cost.

(U) This program, and the companion PE 0603724N Navy Energy Program (ADV), support the achievement of Executive Department, DoD, and Navy Energy Management Goals; and also address the Office of the Secretary of Defense (OSD), the Secretary of the Navy, and the Chief of Naval Operations direction to make up-front investment in technologies that reduce future cost of operation and ownership of the fleet and supporting infrastructure. Navy is TRISERVICE lead for the implementation of renewable/alternative energy systems across DoD.

(U) Joint Mission Areas/Warfare Areas (JMA/WA): This program directly supports the following JMA's: Forward Engagement/Deterrence, Maritime Support of Land Forces, and Strike; and WAs: Air Superiority, Maritime Superiority, Strike, and Forward Deployed Combat Capable Forces.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: 26 September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604710N PROJECT NUMBER: R0371
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG) PROJECT TITLE: Energy Conservation (ENG)

(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 1997 ACCOMPLISHMENTS:
   - (U) ($500) Aircraft: Developed Flight Optimization Routines for Energy Management (FOREM) software for P-3C and AV-8B; continued fleet requested enhancements of FOREM software and began conversion to WINDOWS format. Defined airframe to computer interfaces required to automate P-3 Flight Performance Advisory System (FPAS) sensor inputs (e.g. fuel flow, external winds and temperature, MACH NO. and altitude). Identified a means to transfer FOREM generated flight plans to the F/A-18 and P-3 FPAS systems. Provided palmtop portable computers running FOREM to Marine Corps squadrons for in-the-field flight planning.
   - (U) ($901) Ships: Installed stern flap on DD-963/CG-47 test ship for powering trials. Supported endurance test of CV/CVN modified air conditioning plant (R114 replacement program), monitoring efficiency. Continued advanced easy release and ablative copper/cobiocide anti-fouling coating ship trials; belly stripe and hull patch performance demonstrations; and life cycle management studies.
   - (U) ($500) Facilities: Tested and evaluated advanced solar photovoltaic (PV) systems incorporating thin film receptors and ganged, parallel, processors/controllers. Continued test and evaluation of solar/wind and solar/fuel cell hybrid power systems. Evaluated hydrogen storage technologies for PV/fuel cell power systems (joint with NASA).

2. (U) FY 1998 PLAN:
   - (U) ($538) Aircraft: WINDOWS version of FOREM will be developed and tested for P-3 aircraft and distributed to fleet. Develop airframe to computer interfaces required to automate P-3 FPAS sensor inputs (e.g. fuel flow, external winds and temperature, MACH NO. and altitude). Develop a means to transfer FOREM generated flight plans to the F/A-18 and P-3 FPAS systems. Provide palmtop portable computers running FOREM to transport type aircraft

(C-2, C-9, KC-130, UC-12) for on-board real-time updates for fuel state, weather changes, engine out performance. Develop laptop FOREM system for E-6A TACAMO aircraft.

- (U) ($1,773) Ships: Conduct pre-installation powering trials for TAO-187 hydrodynamic mods. Optimize air conditioning impeller/compressor design for new 125 ton air conditioning plant to avoid efficiency losses in R114 replacement program. Life cycle management procedures development for advanced hull coatings. Conduct full hull trial of advanced ablative copper/cobiocide paint.
- (U) ($600) Facilities: Test and evaluate hydrogen storage techniques and operational scale PV/Fuel Cell hybrid power system. Initiate development of renewable energy power systems including large remote PV/hybrid stand alone and medium to large PV grid support systems.

3. (U) FY 1999 PLAN:

- (U) ($759) Aircraft: Complete conversion of FOREM software to WINDOWS format. Examine cost effectiveness of FPAS systems for additional aircraft with newly available Global Positioning Satellite system computer assets (e.g. C-9, KC-130, C-2, E-2). Extend FOREM to additional aircraft such as MV-22.
- (U) ($1,013) Ships: Install and conduct powering trials for TAO-187 hydrodynamic mods and DDG-51 stern flap retrofit. Monitor ship trials of easy release and ablative copper/cobiocide hull coatings. Assist fleet introduction of hull inspection/cleaning remotely operated vehicle. Test and evaluate high efficiency air conditioning plants, supporting both R114 replacement program and development efforts for new construction.
- (U) ($800) Facilities: Continue development of renewable energy power systems for DOD facility applications. Navy is Lead Service for DOD implementation of these systems which include: PV hybrid systems (PV/diesel, PV/wind, PV fuel cell, etc.) for stand alone remote, and grid support applications; geothermal primary power systems; and PV peak shaving systems.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: 26 September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604710N PROJECT NUMBER: R0371
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG) PROJECT TITLE: Energy Conservation (ENG)

B. (U) PROGRAM CHANGE SUMMARY

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	1,903	2,088	2,535
(U) Adjustments from FY 1998 PRESBUDG:	-2	+873	+37
(U) FY 1999 OSD/OMB Budget Submission:	1,901	2,961	2,572

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 adjustment is due to revised economic assumptions (-2). FY 1998 increase is to fund a special project (+873). FY 1999 adjustment is due to Navy Working Capital Fund (NWCF) surcharge correction (-22) and other NWCF adjustments (+59).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: 26 September 1997

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))

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: 26 September 1997

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 1997	FY 1998	FY 1999
Engineering Development & Testing	1,901	2,961	2,572

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

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & Title	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program
X2134 BGPHES-ST	3,059	2,127	2,562	981	737	754	770	Cont.	Cont.
X2135 CHBDL-ST	2,184	2,404	3,306	1,567	1,576	1,611	1,648	Cont.	Cont.
Total	5,243	4,531	5,868	2,548	2,313	2,365	2,418	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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & Title	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program
X2134 BGPHES-ST	3,059	2,127	2,562	981	737	754	770	Cont.	Cont.

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, CV/CVN, LCC, and AGF Ships Signal Exploitation Space (SSES). The BGPHES-ST 5-position, 6-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 (RS-6BN).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($506) Completed rehost of software to TAC-N computer and definition of software interfaces to host the ship's C^4I system.

- (U) ($400) Continued P^3I development effort to access other ES-3A PME, including special signals.
- (U) ($509) Continued P^3I development effort to access other USAF U-2S PME, including special signals.
- (U) ($170) Initiated USAF U-2S interoperability test with rehosted TAC-N configuration.
- (U) ($1,000) Initiated the development of EPR-157/EPR-208 functional capabilities into existing BGPHES-ST hardware.
- (U) ($422) Completed rehost of software to TAC-N computer and definition of software interfaces to host the ship's C^4I system.
- (U) ($ 52) Developed and updated Naval Command, Control, Communications, Computers, Intelligence, Sensors, and Reconnaissance (C^4ISR) implementation guidance. Developed and updated the Naval C^4ISR mission to incorporate overarching operational systems, technical and information architectures. Conduct associated C^4ISR analyses and studies.

2. (U) FY 1998 PLAN:

- (U) ($250) Initiate development effort to access EP-3E Joint Signals Avionics Family (JSAF) Low Band Subsystem Sensor (LBSS).
- (U) ($514) Complete USAF U-2S interoperability test with rehosted TAC-N configuration.
- (U) ($540) Complete P^3I development effort to access other ES-3A PME, including special signals.
- (U) ($484) Continue P^3I development effort to access other USAF U-2S PME, including special signals.

- (U) ($300) Complete the development of EPR-157/EPR-208 functional capabilities into existing BGPHES-ST hardware.
- (U) ($ 39) Continue development and update of Naval C^4ISR implementation guidance. Develop and update the Naval C^4ISR mission to incorporate overarching operational systems, technical and information architectures. Conduct associated C^4ISR analyses and studies.

3. (U) FY 1999 PLAN:

- (U) ($450) Continue P^3I development effort to access other USAF U-2S PME, including special signals.
- (U) ($500) Initiate development design engineering of BGPHES-ST on the LCC/AGF class.
- (U) ($600) Initiate development effort to rehost software to TAC-(N+1) computer and definition of software enhancements to host ship's C^4I system.
- (U) ($712) Continue P^3I development effort to access EP-3E JSAF LBSS.
- (U) ($300) Initiate P3I development effort to USAF U-2S JSAF PME.

B. (U) PROGRAM CHANGE SUMMARY: FY 1997 FY 1998 FY 1999

(U) FY 1998 President's Budget:	2,723	2,127	2,608
(U) Appropriated Value:			
(U) Adjustments from FY 1998 PRESBUDG:	+336		-46
(U) FY 1999 OSD/OMB Submit:	3,059	2,127	2,562

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

(U) FY 1997: -$60K for SBIR transfer, +$399K for minor Navy adjustments, and -$3K for inflation adjustment.

(U) FY 1999: -$42K redirected to develop and update overaching C^4ISR mission requirements, -$4K for Navy Capital Working Fund adjustment.

(U) Schedule: Current schedule unchanged.

(U) Technical: Not Applicable.

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

FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

OPN Line 2434	37,526	50,208	75,484	78,216	50,863	35,587	33,893	Cont.	Cont.
O&M,N 4B7N	1,327	1,515	1,536	1,710	1,934	1,988	2,039	Cont.	Cont.

(U) RELATED RDT&E: PE 0305885G, Project 05500, BGPHES-ST.

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999
Program Milestones		IOC 2Q	
Engineering Milestones	P^3I Development	P^3I Development	P^3I Development
T&E Milestones	JTF-EX-97-02	Interoperability Testing	Interoperability Testing
Contract Milestones	Award Prod Contract 1Q		

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Project Management	141	213	256
b. Systems Engineering	150	814	1,316
c. Hardware and Software Development	1,663	397	690
d. System Test & Evaluation	1,055	703	300
e. Integrated Logistic Support	50		
Total:	3,059	2,127	2,562

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development:									
E-Systems Inc., Melpar Div Falls Church, VA	CPFF BOA	1/96	23,204	23,204	1,813	1,211	2,006	Cont.	Cont.
Support and Management					191	213	256	Cont.	Cont.
Test and Evaluation					1,055	703	300	Cont.	Cont.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
GOVERNMENT FURNISHED PROPERTY: N/A					
Subtotal Product Development	1,813	1,211	2,006	Cont.	Cont.
Subtotal Support and Management	191	213	256	Cont.	Cont.
Subtotal Test and Evaluation	1,055	703	300	Cont.	Cont.
Total Project	3,059	2,127	2,562	Cont.	Cont.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program
X2135 CHBDL-ST	2,184	2,404	3,306	1,567	1,576	1,611	1,648	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 systems and delivered to the Joint Service Imagery Processing System - Navy (JSIPS-N).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($297) Completed Physical and Functional Configuration Audits. This effort was funded by $300K of FY 96 carryover funding.
- (U) ($200) Completed rehost to TAC 4 computers, complete design for Solid State Power Amplifier, new embedded COMSEC, and spectrum analyzer.
- (U) ($500) Incorporated design changes from DT/OT.
- (U) ($350) Updated supporting documentation for production.

- (U) ($318) Continued Test and Evaluation with other systems such as Joint Services Imagery Processing System (JSIPS) and Tier II+ Unmanned Air Vehicle (UAV).

- (U) ($467) Completed rehost to TAC-4 computers, complete design for solid state power amplifier, new embedded COMSEC, and spectrum analyzer.

- (U) ($ 52) Developed and updated Naval Command, Control, Communications, Computers, Intelligence, Sensors, and Reconnaissance (C^4ISR) implementation guidance. Developed and updated the Naval C^4ISR mission to incorporate overarching operational systems, technical and information architectures. Conduct associated C^4ISR analyses and studies.

2. (U) FY 1998 PLAN:

- (U) ($859) Initiate development of Dual Simultaneous Link Capability. This effort will be forward funded by an additional $300K of FY 97 carryover funding.

- (U) ($320) Initiate development efforts for wideband encryption (KG-135) enhancements.

- (U) ($500) Continue Test and Evaluation with other systems such as Joint Services Imagery Processing System (JSIPS) ATARS, GUARDRAIL, U-2 ASARS II Improvement Program (AIP), and High Altitude Endurance (HAE) UAVs.

- (U) ($681) Initiate development efforts for ship-to-ship data connectivity.

- (U) ($ 44) Continue development and update of Naval C^4ISR implementation guidance. Develop and update the Naval C^4ISR mission to incorporate overarching operational systems, technical and information architectures. Conduct associated C^4ISR analyses and studies.

3. (U) FY 1999 PLAN:

- (U) ($200) Flight test of dual simultaneous link capability.
- (U) ($475) Initiate development efforts for interoperability with other emerging sensor systems.
- (U) ($585) Continue development efforts for ship-to-ship data connectivity.
- (U) ($750) Initiate multi-queing capability development.
- (U) ($746) Complete development of wideband encryption (KG-135) enhancements.
- (U) ($550) Continue Test and Evaluation with other systems such as Joint Services Imagery Processing System (JSIPS) ATARS, GUARDRAIL, U-2 AIP, and HAE UAVs.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	1,755	2,404	3,367
(U) Appropriated Value:			
(U) Adjustments from FY 1998 PRESBUDG:	+429		-61
(U) FY 1999 OSD/OMB Submit:	2,184	2,404	3,306

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

(U) FY 1997: -$35K for SBIR transfer; -$3K for FFRDC reduction; and +$469K to complete rehost to TAC-4 computers, complete design for solid state power amplifier, embedded COMSEC and spectrum analyzer; and -$2K inflation adjustment.

(U) FY 1999: -$54K redirected to develop and update overaching C^4ISR mission requirements, -$7K for Navy Capital Working Fund adjustment.

(U) Schedule: Current schedule unchanged.

(U) Technical: Not applicable.

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

	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	To Complete	Total Program
OPN Line 2434	37,526	50,208	75,484	78,216	50,863	35,587	33,893	Cont.	Cont.
O&M,N	590	957	947	1,197	1,215	1,246	1,274	Cont.	Cont.

(U) RELATED RDT&E: PE 0603261N Project A2174 Joint Service Imagery Processing Systems - Navy (JSIPS-N).

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999
Program Milestones	1Q FCA 1Q PCA	IOC 2Q	
Engineering Milestones	TAC-4 Rehost		-Wideband Encryption Interface -Dual Simultaneous Link
T&E Milestones	JIF-EX-97-02 JSIPS-N Test	-Guardrail Interoperability -JSIPS-N DT/OT	-Guardrail/UAV/ U-25 AIP Interoperatibility Tests

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1997	FY 1998	FY 1999
a. Project Management	266	240	333
b. Systems Engineering	544	1,200	1,500
c. Hardware & Software Development	715	464	1,023
d. System Test & Evaluation	405	500	450
e. Integrated Logistic Support	254		
f. Site/Platform Integration			
Total:	2,184	2,404	3,306

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development		10/93	20,502	20,502	20,502				0	20,502
Loral Salt Lake City, UT	FFP	W/Options								
P^3I Development										
Loral	Various	Various	TBD	TBD		1,259	1,664	2,523	Cont.	Cont.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management				520	240	333	Cont.	Cont.
Test & Evaluation				405	500	450	Cont.	Cont.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

GOVERNMENT FURNISHED PROPERTY: N/A

	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	1,259	1,664	2,523	Cont.	Cont.
Subtotal Support and Management	520	240	333	Cont.	Cont.
Subtotal Test and Evaluation	405	500	450	Cont.	Cont.
Total Project	2,184	2,404	3,306	Cont.	Cont.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
E2068									
JSOW	82,271	71,526	74,118	53,921	37,177	24,008	2,902	0	792,839
RDT&E Articles	31	6	9	8	8	0	0		

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 JSOW Baseline (AGM-154A) variant will include a kinematically efficient airframe, an 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 JSOW AGM-154A Low Rate Initial Production contract option for 100 units was awarded in February 1997. The JSOW Unitary (AGM-154C) 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 (AGM-154B) 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 is a joint Navy/Air Force program.

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

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System
PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

1. (U) FY 1997 ACCOMPLISHMENTS:

(U) BASELINE:

- (U) ($14,812) Completed E&MD efforts.
- (U) ($ 3,217) Completed systems engineering technical efforts, completed developmental testing (DT-IIC), and conducted Production Readiness Review (PRR).
- (U) ($ 2,822) Conducted and completed operational testing (OT-IIB) testing.
- (U) ($ 3,857) Completed F/A-18 integration efforts.

(U) UNITARY:

- (U) ($39,837) Continued E&MD efforts.
- (U) ($ 5,742) Continued systems engineering technical efforts.
- (U) ($ 1,020) Continued F/A-18 Integration efforts.

(U) BLU-108:

- (U) ($ 5,382) Continued E&MD efforts.
- (U) ($ 1,900) Began procuring Government Furnished Equipment (GFE) assets.
- (U) ($ 2,233) Continued systems engineering technical efforts, conducted Critical Design Review (CDR), and commenced DT&E planning.
- (U) ($ 159) Continued F/A-18 integration efforts.
- (U) ($ 1,290) Continued Sensor Fuze Weapon efforts.

This submission does reflect internal BTR program decrease of $4K for FY-97 revised economics recission.

2. (U) FY 1998 PLAN:

(U) UNITARY:

- (U) ($53,642) Continue E&MD efforts.
- (U) ($ 8,030) Continue systems engineering technical efforts, Mission Planning System integration, safety approvals and DT&E planning.
- (U) ($ 1,565) Continue F/A-18 integration efforts.

(U) BLU-108:

- (U) ($ 4,097) Continue E&MD efforts.
- (U) ($ 3,463) Continue systems engineering technical efforts and start DT&E.
- (U) ($ 29) Complete F/A-18 Integration efforts.
- (U) ($ 700) Continue Sensor Fuze Weapon efforts.

3. (U) FY 1999 PLAN:

(U) UNITARY:

- (U) ($56,750) Continue E&MD efforts.
- (U) ($ 5,081) Continue systems engineering technical efforts, Mission Planning System integration, safety approvals, test and evaluation planning and conduct Critical Process Review #2.
- (U) ($2,269) Begin Developmental Testing & Evaluation (DT&E).
- (U) ($2,135) Continue F/A-18 integration efforts.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System
PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

(U) BLU-108:

- (U) ($ 5,110) Complete E&MD efforts.
- (U) ($ 2,173) Complete systems engineering technical efforts and complete IOT&E.
- (U) ($ 600) Complete Sensor Fuze Weapon efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	82,488	71,526	78,828
(U) Appropriated Value:	86,266		
(U) Adjustments from PRESBUDG:	- 217		- 4,710
(U) FY 1999 OSD/OMB Budget Submit:	82,271	71,526	74,118

(U) CHANGE SUMMARY EXPLANATION:

(U) The net FY 97 decrease of $217 thousand is due to the Small Business Innovative Research decrease of $1,706 thousand, a reduction of $111 thousand for FY-97 revised economics recission; and an increase of $1,600 thousand for a reprogramming for Sensor Fuze Weapon efforts. The net FY-99 decrease of $4,710 thousand is the result of restructuring Unitary variant development efforts and a decrease of $103 thousand in minor program adjustments. These decreases are partially offset by increase of $393 thousand for Navy Working Capital Fund adjustments.

(U) Schedule: The JSOW Unitary: FY-97 Critical Process Review #1 (CPR) was completed 4Q/97. DT-IIB and OT-IIA were combined and renamed System Flight Test to be consist with the Selected Acquisition Report (SAR) and changed from 3Q/99-1Q/00 to 2Q/99-4Q/00. The JSOW BLU-108 Critical Design Review occurred in 3Q/97 vice 1Q/97 due to required environmental lid seal design improvements. JSOW BLU-108 FY-98 IOT&E was redesignated as a combined DT/OT test phase and rescheduled from 1Q/98-1Q/99 to 2Q/01-4Q/01 to allow more time for Air Force Systems to mature.

(U) Technical: Not Applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System PROJECT TITLE: JSOW

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

	FY 1996 & PRIOR	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
USN WPN, PE: 223000										
BASELINE										
$s	25,594	81,332*	58,665	111,398	138,130	113,308	116,923	129,089	1,356,055	2,130,494
Qty’s	0	100	113	324	560	497	524	584	6098	8800
BLU-108										
$s	0	0	0	16,921	77,993	94,916	117,095	98,703	54,419	460,047
Qty’s	0	0	0	0	188	251	335	282	144	1200
UNITARY										
$s	0	0	0	0	8,763	116,008	134,651	152,427	3,684,126	4,095,975
Qty’s	0	0	0	0	0	118	167	209	7306	7800
USAF WP, APPN: 3020 PE: 27324F										
BASELINE										
$s	0	0	0	24,072	30,330	38,087	16,072	16,299	537,028	661,888
Qty’s	0	0	0	77	121	171	65	53	2513	3000
BLU-108										
$s	0	0	0	14,456	57,880	74,364	76,816	108,284	827,019	1,158,819
Qty’s	0	0	0	23	142	206	225	314	2090	3000

*Includes a FY97 Congressional plus-up of $15.574M to be executed with the FY98 procurement.

(U)RELATED RDT&E:

(U) PE: 0604727F (USAF RDT&E,F BLU-108)

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: JOINT STANDOFF WEAPON PROGRAM
PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones				
Baseline			1Q MS-III	
Unitary				4Q/02 MS-III
BLU-108				1Q/01 MS-III
Engineering Milestones				
Baseline	1Q PRR			
Unitary	4Q CPR #1		2Q CPR #3	4Q/00 #3
BLU-108	3Q CDR			

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System
PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
T&E Milestones				
Baseline	OT-IIB 2Q-4Q/97			
Unitary			SYSTEM FLIGHT TEST DT-11B/OT-IIA 2Q/99-4Q/00	OT-IIB 1Q-3Q/01
BLU-108		COMBINED DT&E/IOT&E 2Q/98-3Q/98		
Contract Milestones				
Baseline	2Q LRIP (OPTION)	4Q LRIP (FIRST DELIVERY)		
Unitary				1Q/00 ST/STE (OPTION)
BLU-108			2Q/99 LRIP (OPTION)	

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon
PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	63,237	58,624	62,727
b. Systems Engineering	5,283	6,601	3,182
c. Integrated Logistics Support	658	654	954
d. Training Development	236	184	598
e. F/A-18 Integration	5,036	1,594	2,135
f. Developmental Test and Evaluation	3,226	2,318	2,449
g. Operational Test and Evaluation	2,822	0	0
h. Government Engineering Support	321	580	935
i. Program Management Support	1,112	771	938
j. Travel	340	200	200
k. BTR	<4>	0	0
Total	82,271	71,526	74,118

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon 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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Major Contracts:										
DEM/VAL	C/CPIF	10/88	22,101	22,101	22,101	0	0	0	0	22,101
PRE-MS-I	C/CPIF	10/88	3,275	3,275	3,275	0	0	0	0	3,275
PRE-E&MD	C/CPIF	10/88	3,143	3,143	3,143	0	0	0	0	3,143
TI B/L E&MD	C/CPIF	10/92	243,776	243,786	228,964	14,812	0	0	0	243,776
TI UNITARY PRE-E&MD	C/CPIF	10/94	6,316	6,316	6,316	0	0	0	0	6,316
TI UNITARY E&MD	C/CPIF	08/95	269,256	269,256	29,600	39,837	53,642	56,750	89,427	269,256
TI BLU-108 PRE-E&MD	C/CPIF	01/94	474	474	474	0	0	0	0	474
TI BLU-108 E&MD	C/CPIF	06/95	17,268	17,268	2,679	5,382	4,097	5,110	0	17,268
MTECHNOLGY BLU-108/SMART RACK	C/CPIF	10/95	4,585	4,585	4,585	0	0	0	0	4,585
MCDONNELL DOUGLAS F/A-18 INTEGRATION	C/CPIF	10/95	20,327	20,327	10,507	4,063	1,275	1,708	2,774	20,327
TEXTRON (GFE) BLU-108	C/CPFF	10/96	1,900	1,900	0	1,900	0	0	0	1,900
Misc Contracts: (< $1M)		10/96	5,307	5,307	2,084	1,306	885	867	165	5,307
In-House Support:										
NAWCAD, PAX WX		10/94	1,000	1,000	1,000	0	0	0	0	1,000
NAWC WD, CL WX		10/98	115,723	115,723	87,364	6,177	7,439	4,734	10,009	115,723
PMA-265, CL WX		10/98	16,092	16,092	13,679	973	319	427	694	16,092

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon
PROJECT NUMBER: E2068
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 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management										
In-House Support:										
Misc Contracts:		10/98	23,996	23,996	13,392	1,773	1,551	2,073	5,207	23,996
Test and Evaluation										
In-House Support:										
NAWCWD,CL	WX	10/98	28,486	28,486	15,876	3,226	2,318	2,449	4,617	28,486
OPTEVFOR	PD	10/98	9,814	9,814	1,877	2,822	0	0	5,115	9,814

GOVERNMENT FURNISHED PROPERTY. Not Applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon
PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

	Total FY 1996 & Prior	FY 1997 Actual	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	415,771	74,450	67,657	69,596	103,069	730,543
Subtotal Support and Management	13,392	1,773	1,551	2,073	5,207	23,996
Subtotal Test and Evaluation	17,753	6,048	2,318	2,449	9,732	38,300
BTR(NON-ADD)		<4>				<4>
Total Project	446,916	82,271	71,526	74,118	118,008	792,839

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO ESTIMATE	TOTAL COMPLETE	PROGRAM
U0166 SPS IMPROVEMENT PROG		19,881	3,756	2,745	492	0	0	0	0	66,130
U0167 5" RAM MISSILE		18,792	14,136	4,307	7,749	7,959	8,147	8,348	CONT.	CONT.
U0172 CIWS PHALANX		4,695	0	0	0	0	0	0	0	146,375
U0173 NATO SEASPARROW		44,750	48,687	33,220	13,341	4,623	4,817	4,934	CONT.	CONT.
U0665 IRST		6,892	0	0	0	0	0	0	0	47,375
U0954 SHIPBOARD EW IMPR.		8,191	2,819	2,051	2,706	0	0	0	CONT.	CONT.
U2178 QRCC		25,608	27,710	28,279	24,854	13,657	13,954	14,277	CONT.	CONT.
U2190 NULKA		6,016	8,233	2,352	1,458	1,105	536	1,081	CONT.	CONT.
U2309 AIEWS		0	26,929	41,612	54,250	35,639	36,232	46,811	CONT.	CONT.
U2348 MULTI-FUNCTION RADAR		0	0	36,200	73,200	80,400	90,900	77,100	CONT.	CONT.
U2349 SSD LAUNCHER		0	0	7,500	12,200	15,300	7,000	2,600	CONT.	CONT,
TOTAL		134,825	132,270	158,266	190,250	158,683	161,586	155,151	CONT.	CONT.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element 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 timeline 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), Shipboard Electronic Warfare Improvements (U0954) and Advanced Integrated Electronic Warfare System (U2309) projects. These improvements to both active and passive detection capabilities are complementary to the ship signature reduction technology also being pursued through project U0954. The Multi-Function Radar (U2348) will provide designated ships with an affordable, high performance radar system for ship defense well into the next century.
(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. Gun system improvements address system detection, rateof-fire, number of rounds on target, first round accuracy, and reliability and maintenance. Project U2349, the Ship Defense Launcher System, will provide designated ships not having a Vertical Launch System (VLS) with an affordable, light weight means of employing the Evolved SeaSparrow Missile (ESSM).

(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.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0166 SPS IMPROVEMENT PROGRAM									
	19,881	3,756	2,745	492	0	0	0	0	66,130

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 1997 ACCOMPLISHMENTS:
   - (U) ($200) Continued radar 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) ($9,607) Continued funding ongoing AN/SPQ-9B Radar development contract. Conduct First Article Testing (FAT) on two production proof kits. Support integration into MK 86 system at Land Based Test Site (LBTS).
   - (U) ($2,438) Initiated First Article Testing (FAT) at contractor site and MK 86 integration testing at Naval Surface Warfare Center, Port Hueneme Division (NSWC/PHD).
   - (U) ($169) Continued Digital Sidelobe Cancellation development as a product improvement to the AN/SPQ-9B Radar.
   - (U) ($7,467) Develop EDM AN/SPS-48 solid state transmitter.

2. (U) FY 1998 PLAN:

- (U) ($200) Continue radar analysis/trade-off studies and implementation of functional and performance allocations among elements comprising integrated SSDS, including system interface adaptations and preparation/conduct of associated tests and demonstrations.
- (U) ($2,357) Complete contractor PPK development. Conduct developmental testing at NSWC Port Hueneme and aboard DD-963 class ship. Commence Operational Testing (OT).
- (U) ($1,199) Complete FAT at contractor site and MK 86 integration testing at NSWC Port Hueneme Division

3. (U) FY 1999 PLAN:

- (U) ($200) Continue radar analysis/trade-off studies and implementation of functional and performance allocations among elements comprising integrated SSDS, including system interface adaptations and preparation/conduct of associated tests and demonstrations.
- (U) ($2,545) Complete OT IIC on DD-963 class ship.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	20,994	3,756	2,747
(U) Appropriated Value	21,892		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget	-2011		-2
(U) FY 1999 OSD/OMB Budget Submit:	19,881	3,756	2,745

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY 1997 change is due to Congressional Undistributed Reductions, minor pricing adjustments, and minor reprogrammings.
FY 1999 decrease is due to minor pricing adjustments.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

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

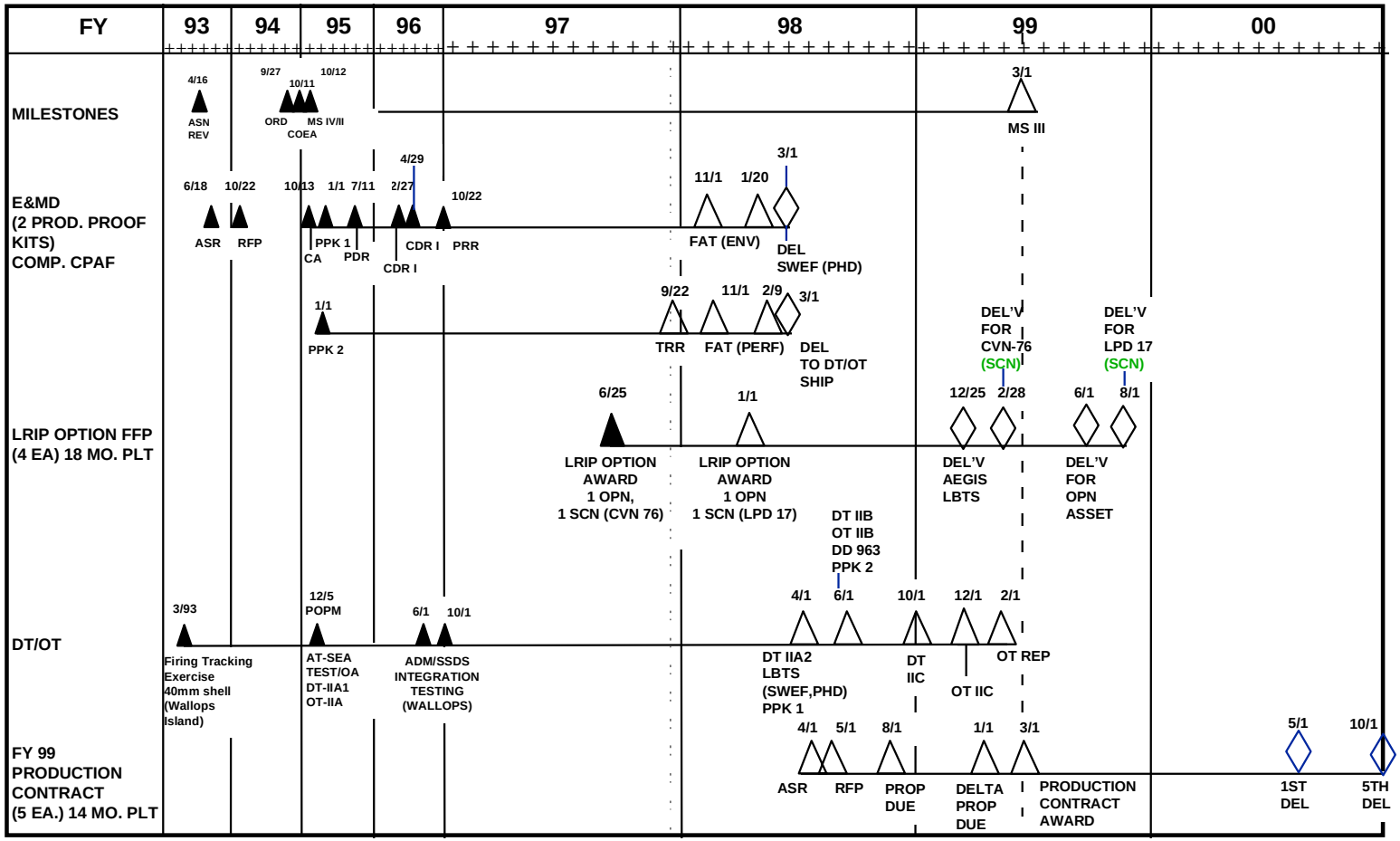
	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN 14UK / LINE 511000/05/06	10,206	9,753	20,691	18,740	23,518	29,059	37,756	9,200	158,923

(U) RELATED RDT&E: Not applicable.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0166

PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: SPS Improvement Program

D. (U) SCHEDULE PROFILE:



BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE:Ship Self Defense

PROJECT NUMBER: U0166
PROJECT TITLE: SPS Improvement Program

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. System Development Contract	15,983	800	0
b. Contractor Engineering Support	750	50	100
c. Government Engineering Support	2,606	915	747
d. Test and Evaluation		1961	1868
e. Miscellaneous	542	30	30
Total	19,881	3,756	2,745

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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	FY1996 & Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
Norden Systems Melville, NY	CPAF	10/94	29,536	29,536	19,129	9,607	800	0	0	29,536
NRL Washington, DC	WR/RC	Various	8,168	8,168	7,468	700	0	0	0	8,168
NAVSURFWARCENDIV Port Hueneme, CA	WR	Various	6,443	6,443	5,377	1,066	0	0	0	6,443
Miscellaneous (NSWC/CD, JHU/APL)	PD/WR	Various	6,327	6,327	3,205	1,048	915	747	412	6,327
ITT/G Van Nuys, CA	FFP	11/97	7,000	7,000	0	7,000	0	0	0	7,000
Support and Management										
Miscellaneous (EG&G, Techmatics)	CPFF	Various	2,545	2,545	1,995	260	80	130	80	2,545
Test and Evaluation										
Miscellaneous (NSWC/PHD)	WR/RC	Various	2,983	2,983	1,823	0	400	760	0	2,983
NRL Washington, DC	WR	Various	2,869	2,869	0	200	1,561	1,108	0	2,869

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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/ FundType Vehicle	Award/ Oblig Date	Delivery Date	FY1996 & Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development									
Transmitter (Air Force)	MIPR	1/95	3/95	259	0	0	0	0	259

Support and Management - Not applicable.

Test and Evaluation - Not applicable.

	FY1996 & Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	35,438	19,421	1,715	747	412	57,733
Subtotal Support and Management	1,995	260	80	130	80	2,545
Subtotal Test and Evaluation	1,823	200	1,961	1,868	0	5,852
Total Project	39,256	19,881	3,756	2,745	492	66,130

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0167
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: 5" Rolling Airframe Missile

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0167 5" ROLLING AIRFRAME MISSILE	18,792	14,136	4,307	7,749	7,959	8,147	8,348	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 post launch dependence.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:
   - (U) ($1,500) Conducted Government Electromagnetic Environmental Effects (E3) testing.
   - (U) ($5,100) Continued algorithm development.
   - (U) ($2,800) Conducted government and contractor simulations.

- (U) ($1,000) Documentation/Evaluation of test results.
- (U) ($1,500) Completed Electronics Design.
- (U) ($1,500) Completed Seeker Design.
- (U) ($1,492) Continued to support development of system interface adaptations as necessary to provide effective SSD integration.
- (U) ($1,700) Completed EM flight tests.
- (U) ($1,000) Conducted Aircraft Captive Carry Seeker testing.
- (U) ($1,200) Prepared for Technical/Operational Evaluation (TECH/OPEVAL) Testing.

2. (U) FY 1998 PLAN:
   - (U) ($6,890) Conduct DT/OT-IIB.
   - (U) ($1,700) Conduct Tech Eval (DT-IIC).
   - (U) ($1,925) Conduct OPEVAL (OT-IIC).
   - (U) ($1,350) Conduct contractor and government simulation efforts.
   - (U) ($901) Documentation/Evaluation of test results.
   - (U) ($1,370) Continue to support development of system interface adaptations as necessary to provide effective SSD integration.

3. (U) FY 1999 PLAN:
   - (U) ($3,816) Conduct OT-IIIA (FOT&E).
   - (U) ($491) Continue to support development of system interface adaptations as necessary to provide effective SSD integration.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0167
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: 5" Rolling Airframe Missile

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	19,170	14,136	4,616
(U) Appropriated Value	20,016		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget	-1,224		-309
(U) FY 1999 OSD/OMB Budget Submit:	18,792	14,136	4,307

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: Change in FY 1997 is due to Congressional Undistributed reductions. Change in FY 1999 is due pricing adjustments.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

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

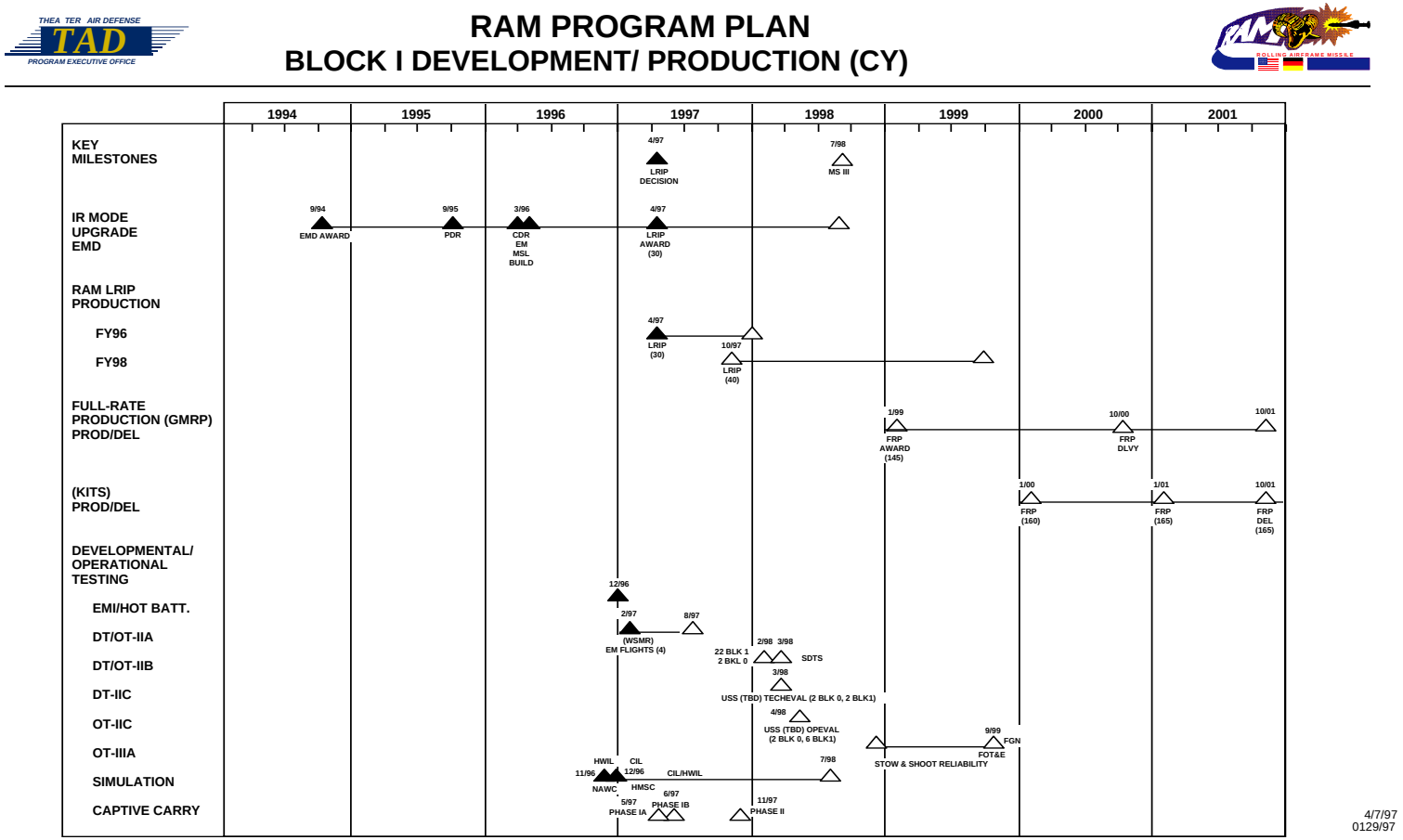
	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LINE 523800:	43,423	68,292	61,217	44,150	20,749	45,805	45,282	CONT.	CONT.
(U) WPN LINE 224200:	46,858	44,082	45,873	49,808	51,862	74,014	77,147	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

BUDGET ACTIVITY 5: PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE:Ship Self Defense

PROJECT NUMBER: U0167
PROJECT TITLE: 5" Rolling Airframe Missile

D. (U) SCHEDULE PROFILE:



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 1997	FY 1998	FY 1999
a. Primary Hardware Development	9,941	380	0
b. Ancillary Hardware Development	1,143	950	350
c. Developmental Test and Evaluation	1,686	525	0
d. Operational Test and Evaluation	1,591	9,101	2,355
e. Contractor Engineering Support	320	300	50
f. Government Engineering Support	2,732	1,300	881
g. Travel	235	210	180
h. Miscellaneous	1,144	1,370	491
Total	18,792	14,136	4,307

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0167
PROGRAM ELEMENT TITLE:Ship Self Defense PROJECT TITLE: 5" Rolling Airframe Missile

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 & Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	Budget To Complete	Total Program
Product Development :										
HMSC - 89C5339 Tuscon, AZ	SS/CPFF	09/89	19,630	19,630	19,630	0	0	0	0	19,630
HMSC - 94C5435 Tuscon, AZ	SS/CPAF	06/94	CONT.	CONT.	28,486	9,634	0	0	CONT.	CONT.
JHU/APL Laurel, MD	SS/CPFF	12/94	CONT.	CONT.	2,775	1,143	950	350	CONT.	CONT.
NAVAIRWARCEN / WD China Lake, CA	WR	Various	CONT.	CONT.	12,236	2,184	1,100	681	CONT.	CONT.
Miscellaneous	Various	Various	CONT.	CONT.	208,302	2,234	2,160	871	CONT.	CONT.
Support and Management :										
Miscellaneous	Various	Various	CONT.	CONT.	2,824	320	300	50	CONT.	CONT.
Test and Evaluation :										
HMSC - 94C5435 Tuscon, AZ	SS/CPAF	10/96	CONT.	CONT.	0	1,056	6,251	1,549	CONT.	CONT.
NAVAIRWARCEN / WD Pt. Mugu, CA	WR	01/95	CONT.	CONT.	512	230	1,850	600	CONT.	CONT.
Miscellaneous	Various	Various	CONT.	CONT.	397	1,991	1,525	206	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0167
PROGRAM ELEMENT TITLE:Ship Self Defense PROJECT TITLE: 5" Rolling Airframe Missile

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	Budget To Complete	Total Program
Product Development : Not applicable.									
Support and Management : Not applicable.									
Test and Evaluation									
HMSC - 94C5435	SS/CPAF	12/95	12/96	3,687	0	0	0	0	3,687

	FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	Budget To Complete	Total Program
Subtotal Product Development	271,429	15,195	4,210	1,902	CONT.	CONT.
Subtotal Support and Management	2,824	320	300	50	CONT.	CONT.
Subtotal Test and Evaluation	4,596	3,277	9,626	2,355	CONT.	CONT.
Total Project	278,849	18,792	14,136	4,307	CONT.	CONT.

FY *1999* RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0173 NATO SeaSparrow	44,750	48,687	33,220	13,341	4,623	4,817	4,934	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program encompasses three (3) primary efforts to enhance ship self defense:

1. (U) EVOLVED SEASPARROW MISSILE (ESSM): A cooperative effort among 10 NATO SeaSparrow Nations, including the U.S. to improve the capability of the SeaSparrow Missile to counter the low altitude, highly maneuverable Anti-Ship Cruise Missile (ASCM) threat. The program consists of evolving the SeaSparrow Missile through development of a new rocket motor with tail control, thrust vector control and ordnance (warhead) upgrade as well as modifications to the MK41 VLS to fire from a single cell 4 ESSM (QuadPack), and modifications to NATO SEASPARROW Surface Missile System (NSSMS) to provide ESSM capability.

2. (U) The MK91 NATO SEASPARROW Guided Missile Fire Control System (GMFCS) Rearchitecture Program integrates NSSMS into the Ship Self Defense System (SSDS) Architecture to provide an additional layer of ship missile defense. This effort consists of combining the Firing Officer Console and Radar Set Console functionality into a single Advanced Display System Console (AN/UYQ 70); modifying the Signal Data Processor and eliminating the MK157 Computer Signal Data Converter, and System Evaluation and Trainer (SEAT) which cannot accommodate further upgrade; and redistributing this functionality within SSDS compatible microprocessors. This approach will eliminate the analog, point-to-point architecture, limited input-output channel and computer processing reserve deficiencies resident in the existing MK57 NSSMS, as well as allow for full exploitation of the capabilities of the future ESSM and provide significant reductions (50%) in NSSMS cost of ownership and manning.

3. (U) Improvements to the Self Defense Surface Missile System (SDSMS), SWY-1 NSSMS to sustain effective capability. The focus of this effort is primarily on modifications to operational computer programs to support integration on multiple ship classes to support battle group operation.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0173
PROJECT TITLE: NATO SeaSparrow

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

(a) (U) ESSM [$38,423]

- (U) ($17,047) Provided incremental funding to continue ESSM EMD efforts at Hughes including the S-Band capability for AEGIS ESSM Uplink. Conducted CDR, delivered test assets to support the first major development test event (DT-IIA).
- (U) ($1,675) Provided incremental funding for continuation of ESSM Warhead development. Finalize warhead qualification tests and deliver assets for warhead arena and vulnerability testing.
- (U) ($11,476) Continued MK41 VLS ESSM QuadPack development effort at United Defense, Lockheed Martin and Government Labs. Deliver first Canisters for Packaging, Handling, Storage and Transportation Qualification.
- (U) ($8,225) Continued ESSM Integration (Integrated Product Team participation) and government lab/engineering efforts associated with EMD. Supported CDR, conducted first major Development Test event (DT-IIA) and conduct Insensitive Munitions (IM) testing.

(b) (U) MK91 Rearchitecture [$6,086]

- (U) ($5,331) Continued effort on EMD Contract with Raytheon to modify NSSMS MK91 to integrate with SSDS Architecture.
- (U) ($755) Initiated integration engineering efforts to support NSSMS MK91 SSDS Software Test. Prelimary Design Review (PDR) conducted in Nov 1996, to kick-off software development which led to formal qualification testing in Sept 1997. Began installation of modified equipment on the Self Defense Test Ship in Sept 1997.

(c) (U) OTHER SDSMS (SWY-1/2/3) [$241]

- (U) ($241) Continued parallel development effort to support modifications to Mk23 TAS hardware to support installation of TAS radar in SSDS configured ships.

2. (U) FY 1998 PLAN:

(a) (U) ESSM [$40,207]

- (U) ($18,158) Incremental funding to continue ESSM EMD efforts at Hughes, including the S-Band capability for AEGIS ESSM uplink. Continue DT-IIA testing, deliver production representative missiles to support at sea development test and operational assessment (DT-IIB/OT-IIA).
- (U) ($1,340) Incremental funding for continuation of ESSM Warhead development. Continue live fire threat/vulnerability testing.
- (U) ($11,900) Continue MK41 VLS ESSM Quad Pack development effort at United Defense, Lockheed Martin and government labs. Conduct land based firings and testing associated with launcher enviroment.

2. (U) FY 1998 PLAN (Cont'd):
   - (U) ($8,809) Continue ESSM integrated product team efforts and govenment lab/engineering efforts associated with EMD. Support DT-IIB/OT-IIA for ESSM.

   (b) (U) MK91 Rearchitecture [$6,249]
   - (U) ($6,249) Complete effort on EMD Contract to Raytheon to modify MK91 to integrate with SSDS Architecture. Complete formal software qualification testing in Mar 1998. Commence Lead Ship installation of hardware in Jan 1998, and software in Mar 1998, during LHD 3 availability.

   (c) (U) OTHER SDSMS (SWY-1/2/3) ($2,231)
   - (U) ($2,231) Modify computer programs to address deficiencies identified in Software Qualification Tests. Continue efforts associated with support of SSDS Configuration.

3. (U) FY 1999 PLAN:
   (a) (U) ESSM [$30,961]
   - (U) ($17,767) Incremental funding to continue ESSM EMD efforts at Hughes, including the S-Band capability for AEGIS ESSM uplink. Conduct DT-IIE/OT-IIB in Self Defense Test Ship (SDTS); conduct TECHEVAL/OPEVAL on LHD Class ships. Achieve Milestone III decision.
   - (U) ($6,460) Continue MK41 ESSM Quad Pack development effort at United Defense, Lockheed Martin and government labs. Conduct system integration testing and land base missile firings.
   - (U) ($6,734) Continue ESSM integrated product team participation and government lab engineering efforts associated with EMD Support development and operational tests.

   (b) (U) MK91 Rearchitecture [0]

   (c) (U) OTHER SDSMS (SWY-1/2/3 [$2,259]
   - (U) ($2,259) Continue efforts associated with support of SSDS Configuration.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999

(U) FY 1998 President's Budget:	45,437	48,687	14,233
(U) Appropriated Value:	47,475		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget	-3,311		18,987
(U) FY 1999 OSD/OMB Budget Submit:	44,750	48,687	33,220

(U) ADJUSTMENTS TO APPROPRIATED VALUE:

(U) FY 1997 changes due to Congressional Undistributed Reductions and minor pricing adjustments. FY1999 change due to program restructure and minor pricving adjustments.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
• (U) 1. WPN BA-2 Other Missiles, Evolved SeaSparrow Missile (ESSM)									
	2,478	15,529	31,420	57,229	61,008	72,006	72,628	CONT.	CONT.
• (U) 2. OPN BA-4 NATO SEASPARROW									
			5,285	5,930	5,854	6,151	6,376	CONT.	CONT.

(U) RELATED RDT&E:
- (U) PE 0603609N (Conventional Munitions)
- (U) PE 0604307N (AEGIS Combat System Engineering)
- (U) PE 0604755N (U2178 Quick Reaction Combat Capability-QRCC)

FY *1999* RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173

UNCLASSIFIED

D. (U) SCHEDULE PROFILE: (ESSM / NATO SEASPARROW Rearchitecture)

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones			4Q LRIP PMR	4Q MS III
Engineering Milestones	1Q SRR 2Q SDR 4Q PDR	4Q CDR		
T&E		3Q DT-IIA	3Q DT-IIB	1Q DT-IIE
Milestones			3Q DT-IIC 3Q OT-IIA	1Q OT-IIB 2Q DT-IIF 4Q OT-IIC
Contract Milestones				1Q LRIP CA (Allied) 2Q LRIP OA (US)

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NATO Seasparrow

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	23,138	23,627	17,767
b. Ancillary Hardware Development	8,508	8,390	7,219
c. Software Development	975	1,256	863
d. System Engineering	4,932	5,715	3,074
e. Development Test and Evaluation	2,885	4,463	1,581
f. Integrated Logistics Support	755	727	224
g. Engineering Support	765	821	452
h. Program Management Support	498	510	344
I. Program Management Personnel	575	1,395	1,023
j. Travel	320	325	330
k. Miscellaneous	475	720	150
I. Other	924	738	193
Total	44,750	48,687	33,220

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
(a) SDSM ENHANCEMENTS:										
Raytheon - Wayland, MA	SS/CP	06/95	TBD	TBD	13,857	5,331	5,469	0	0	24,657
Hughes - Fullerton, CA	SS/CPFF	06/95	TBD	TBD	3,538	0	0	0	0	3,538
Vitro - Rockville, MD	SS/CPFF	03/95	TBD	TBD	2,346	0	278	0	0	2,624
Miscellaneous	SS/CPFF	Various	TBD	TBD	18,523	200	1,209	950	CONT.	CONT.
(b) ESSM/QUAD PACK:										
Hughes - Tuscon, AZ	LC/CPAF	06/95	TBD	TBD	50,519	17,047	18,158	17,767	CONT.	CONT.
Lockheed-Martin/ UNDEF/ Baltimore MD/Minn, MN	LC/CPAF	06/95	TBD	TBD	17,641	9,076	7,239	6,460	CONT.	CONT.
Raytheon/ED - Wayland, MA	SS/CPFF	06/95	TBD	TBD	3,737	0	0	0	0	3,737
TDW (German Company) NSWC Dahlgren Contracted with a German Contractor to Manufacture Warhead	LC/CP	08/95	TBD	TBD	3,126	872	0	0	0	3,998
Miscellaneous	SS/CPFF	Various	CONT.	CONT.	3,707	1,261	2,604	759	CONT	CONT

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Comple	Total Program
Support and Management										
(a) SDSM ENHANCEMENTS:										
Miscellaneous	SS/CPFF	11/93	3,769	3,769	3,769	0	0	0	0	3,769
(b) ESSM/QUAD PACK:										
Miscellaneous	Various	Various	CONT.	CONT.	87	82	70	70	CONT.	CONT.

Test and Evaluation : Not applicable**.**

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development									
(a) SDSM ENHANCEMENTS:									
Miscellaneous	WR	Various	Various	1,694	396	309	0	0	2,403
(b) ESSM/QUAD PACK:									
NAWC-CL / NSWC-DD	WR	Various	Various	9,888	4,774	4,255	2,260	CONT.	CONT.
NSWC/PHD	WR	Various	Various	1,375	1,070	1,521	1,645	CONT.	CONT.
Miscellaneous	WR	Various	Various	738	440	482	351	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NATO Seasparrow

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Support and Management									
(a) SDSM ENHANCEMENTS:									
Miscellaneous	WR/PD	Various	Various	2,052	240	665	513	CONT.	CONT.
(b) ESSM/QUAD PACK:									
NSPO/Various	PD	Various	Various	2,061	1,076	1,227	707	CONT.	CONT.
Miscellaneous	Various	Various	Various	249	0	738	157	CONT.	CONT.
Test and Evaluation									
(a) SDSM ENHANCEMENTS:									
Miscellaneous	WR	Various	Various	1,376	160	550	796	CONT.	CONT.
(b) ESSM/QUAD PACK:									
Miscellaneous	WR	Various	Various	2,125	2,725	3,913	785	CONT.	CONT.

	FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	130,689	40,467	41,524	30,192	CONT.	CONT.
Subtotal Support and Management	8,218	1,398	2,700	1,447	CONT.	CONT.
Subtotal Test and Evaluation	3,501	2,885	4,463	1,581	CONT.	CONT.
Total Project	142,408	44,750	48,687	33,220	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U0954 Shipboard EW Improvements	8,191	2,819	2,051	2,706	0	0	0	0	185,825

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Shipboard Electronic Warfare (EW) Improvements Program major efforts are:
OUTLAW BANDIT Ship Signature management includes development of Radar Cross Section (RCS) reduction treatments for FFG-7, DD 963, CG 47 class ships and also covers RCS measurement and control techniques.
Advanced Integrated Electronic Warfare System (AIEWS) is the next generation EW system and will be an integral part of the ship combat system (AEGIS and SSDS). It will be developed using a two phased approach. Increment 1 will introduce advanced Electronic Support (ES), consisting of precision Electronic Support Measures (ESM), Specific Emitter identification (SEI) and special receiver, increased processing throughput, open architecture, Standard Combat systems work station with new Human Machine Interface (HMI), decoy integration and EMI improvements. Increment 2 will introduce advanced Electronic Attack (EA) which will include both RF and IR capabilities. This development will support both backfit and forward fit.
Note: Funding for AIEWS is transferred to Project U2309 commencing in FY 1998.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($5,795) AIEWS -Continued AIEWS Increment 1 development by consolidating AIEWS BAA results into RFP for EMD contract award
- (U) ($2,396) OUTLAW BANDIT - Continued signature measurement tests. Continued P3I and signature improvements, including RAM improvement program.

2. (U) FY 1998 PLANS:
- (U) ($2,819) OUTLAW BANDIT - Develop next generation ship measurement radar. Refine RCS prediction tool. Continue fire control system RCS reduction development. Conduct airborne measurement radar tests. Improve material measurement arch. Continue RAM improvements. Conduct future threat survivability study.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0954
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Shipboard EW Improvements

3. (U) FY 1999 PLAN:

- (U) ($2,051) OUTLAW BANDIT - Continue signature measurement tests. Continue systems engineering improvements, including T&E cost reduction initiative. Continue P3I and signature/RAM improvement program.

B.. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	8,657	2,819	3,067
(U) Appropriated Value:	9,094		
(U) Adjustments to FY1997 Appropriated Value/ FY1998 President's Budget	-903	0	-1,016
(U) FY1999 OSD/OMB Budget Submit:	8,191	2,819	2,051

(U) CHANGE SUMMARY EXPLANATION: Decrease in FY1997 is due to undistributed Congressional reduction and minor pricing adjustments. FY1999 adjustment due to program restructure and minor pricing adjustments.

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

C. (U) OTHER PROGRAM FUNDING SUMMARY:

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line Item 2346 9 C3 Countermeasures	505	6,891	6,233	9,542	6,152	5,950	9,740	CONT.	CONT.

(U) RELATED RDT&E: None

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0954
PROJECT TITLE: Shipboard EW Improvements

D. (U) SCHEDULE PROFILE: See Attached.

THEATER AIR DEFENSE
TAD
PROGRAM EXECUTIVE OFFICE

OUTLAW BANDIT SCHEDULE

Theater Air Defense

ACAT LEVEL: III

DESCRIPTION:

OUTLAW BANDIT IS A SHIP SIGNATURE REDUCTION PROGRAM, APPLYING RADAR ABSORBENT MATERIAL (RAM) TO SELECTED AREAS OF A SHIP'S EQUIPMENT, SUPERSTRUCTURE, AND WEAPON SYSTEMS. PCMS ENHANCES SHIP SURVIVABILITY WHEN USED IN CONJUNCTION WITH AN/SLQ-32 AND DECOYS.

MAJOR PROGRAM INTERFACES: PEO SC-AP

SHIPS: DESIGNATED DD 963, CORT AND NON-CORT, FLIGHTS 3 AND 4 FFG AND CG 47 CLASSES

SCHEDULE:

	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02
TESTING	DT-IV; DT-III (DD); (ONGOING)	DT-III (CG)						
DEPLOYMENT	FFG, DD, CG (ONGOING)							

1

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1997	FY 1998	FY 1999
a. Major SW Contracts	1,476	0	0
b. System Engineering	1,910	879	350
c. Program Spt/Review/Meetings-In/House Spt	1,416	0	0
d. Test & Evaluation	150	150	100
e. Contractor Eng. Spt	332	400	400
f. Program Mgmt Spt	400	400	400
g. Logistic Spt	947	100	100
h. Pre Planned Prod. Imprvmt	358	477	350
i. Software Development/Documentation	200	100	100
j. RCS Radar Improvement	200	100	100
k. Travel	82	30	30
l. Misc	720	183	121
Total:	8,191	2,819	2,051

FY1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
ADCAP/NMSO	SS/CPFF	12/86	18,916	18,916	18,916	0	0	0	0	18,916
PHASE E/NMSO	C/CPFF	05/92	13,329	13,329	13,329	0	0	0	0	13,329
AIEWS/NMSO	C/CPFF	03/95	11,000	11,000	11,000	0	0	0	0	11,000
DSR SW DEV	C/CPFF	03/95	5,305	5,305	3,829	1,476	0	0	0	5,305
HUGHES/LOCKHEED										
AIEWS-BAA	C/CPFF	12/95	1,498	1,498	1,498	0	0	0	0	1,498
PHASE E/AIEWS										
NRL	WR/RCP	12/94	25,012	25,012	23,825	1,187	0	0	0	25,012
NSWC/DD-AIEWS	WR/RCP	12/96	9,740	9,740	8,120	1,620	0	0	0	9,740
NSWC/PHD/NAWC/										
CRANE/NWAD	WR/RCP	01/95	22,002	22,002	20,759	786	0	0	0	22,002
OUTLAW BANDIT										
NRL	WR	10/94	CONT.	CONT.	15,846	350	300	200	CONT.	CONT.
NSWC/DD/NSWC/CD										
NSWC/PHD/NCCOSC	WR/RCP	01/95	CONT.	CONT.	21,704	1,088	1,356	800	CONT.	CONT.
SPCC	WR	10/94	CONT.	CONT.	1,389	0	0	0	CONT.	CONT.
TRAVEL	WR	10/94	CONT.	CONT.	918	82	30	30	CONT.	CONT.
MISC	VAR	VAR	CONT.	CONT.	1,249	720	183	121	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0954
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Shipboard EW Improvements

Contractor/ Government Performing Activity	Method/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total PROG
Support and Management										
ADCAP/PHASE E AIEWS/OUTLAW BANDIT NMSO/NAVSEA/APL)	PD/PR	10/94	CONT.	CONT.	19,713	732	800	800	CONT.	CONT.
Test and Evaluation										
ADCAP/PHASE E/OUTLAW	01/95	10/94	CONT.	CONT.	7,963	150	150	100	CONT.	CONT.

Government Furnished Property: Not applicable.

	FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	142,382	7,309	1,869	1,151	1,756	154,467
Subtotal Support and Management	19,713	732	800	800	800	22,845
Subtotal Test and Evaluation	7,963	150	150	100	150	8,513
Total Project	170,058	8,191	2,819	2,051	2,706	185,825

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U2178 Quick Reaction Combat Capability (QRCC)	25,608	27,710	28,279	24,854	13,657	13,954	14,277	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The QRCC project implements an evolutionary acquisition of improved ship self defense capabilities against anti-ship cruise missiles for selected ships by integrating existing and programmed anti-air warfare stand-alone systems. It provides an automated quick reaction and multi-target engagement capability emphasizing performance in the littoral environment. Integration focuses on coordinating existing sensor information, providing threat identification and evaluation, assessing defensive readiness, and recommending an optimized defensive tactical response to counter single and multiple anti-ship cruise missile attacks. Subsequent modifications and upgrades will optimize the Ship Self Defense System and provide enhanced self defense capabilities while allowing for insertion of advanced technologies during Engineering and Manufacturing Development and Production and Deployment Phases. System design emphasizes use of nondevelopmental items, commercial standards, Next Generation Computer Resources, computer program reuse, and open architecture. QRCC replaces manual control of several different ship self defense systems with a single integrated capability under the computer aided control of ship operators. Improvements to current system performance for short range anti-air ship self defense will implement the Ship Self Defense System (SSDS), incorporate multi-sensor integration of existing sensors, improve ship defense local command and control functions by automation of the detect through engagement sequence under the control of flexible embedded doctrine, integrate and coordinate weapon systems, and provide hardkill/softkill integration. 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. 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 (AN/SLQ-32). Other ship systems such as ship support, navigation, and Identification 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, AN/SPQ-9 radar, and other sensors, as well as the RAM, CIWS, and AN/SLQ-32 installations on other ship classes. Ships with the Advanced Combat Direction System (ACDS) will also have those systems integrated with SSDS to optimize the use of offboard track data in ship self defense and to transmit SSDS track data to other ships.

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. FY 1997 ACCOMPLISHMENTS:
   - (U) ($8,100) Completed DT and conduct OT on LSD-41 class ship.
   - (U) ($14,629) Continued E&MD of SSDS MK 1 for follow-on class ships.
   - (U) ($750) Supported programmatic documentation changes.
   - (U) ($2,129) Supported logistics requirements due to ship class adaptations.

2. FY 1998 PLAN:
   - (U) ($22,307) Prepare critical item development specifications and interface control drawings, conduct logistic support analysis, and commence software coding of SSDS MK1 for follow-on class ships. (CV(N), LPD-17, LHD, and LHA)
   - (U) ($1,325) Prepare updated documentation for SSDS integration with RAM BLK 1.
   - (U) ($4,078) Conduct FOT&E on Self Defense Test Ship (SDTS) in conjunction with RAM BLK 1 testing.

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3. FY 1999 PLAN:
   - (U) ($17,895) Complete software coding for LPD-17 and CV(N) ship classes and conduct software unit testing.
   - (U) ($4,572) Integrate hardware and software for LPD-17 and CV(N) ship classes.
   - (U) ($5,812) Commence ILS documentation (training, technical manuals) for LPD-17 and CV(N) ship classes.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	26,246	27,710	28,326
(U) Appropriated Value	29,480		
(U) Adjustments to FY 1997 Appropriated Value / 1998 President's Budget.	-3,872		-47
(U) FY 1999 OSD/OMB Submit:	25,608	27,710	28,279

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease in FY 1997 is due to reductions for Near Term Mine Warfare Plan, Congressional Undistributed general reductions and minor pricing adjustments. Decrease in FY 1999 is due to minor pricing adjustments.

(U) Schedule: Not Applicable.

(U) Technical: Not applicable.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 523900, 523905 (MK 1)	19,177	5,841	23,497	59,535	62,433	66,528	65,964	CONT.	CONT.
(U) O&MN 14D90 Wpn Maint. QRCC	4,161	5,300	7,003	6,430	6,296	6,414	6,487	CONT.	CONT.
(U) SCN CV(N) ship class SSDS MK1	0	0	0	0	14,900	19,130	0	0	34,030
(U) SCN LPD-17 ship class SSDS MK 1	0	0	13,100	26,750	27,400	28,000	28,600	29,200	153,050

(U) RELATED RDT&E: PE 0603755N (Ship Self Defense)
PE 0604518N (Advanced Combat Direction System Block 1)

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:

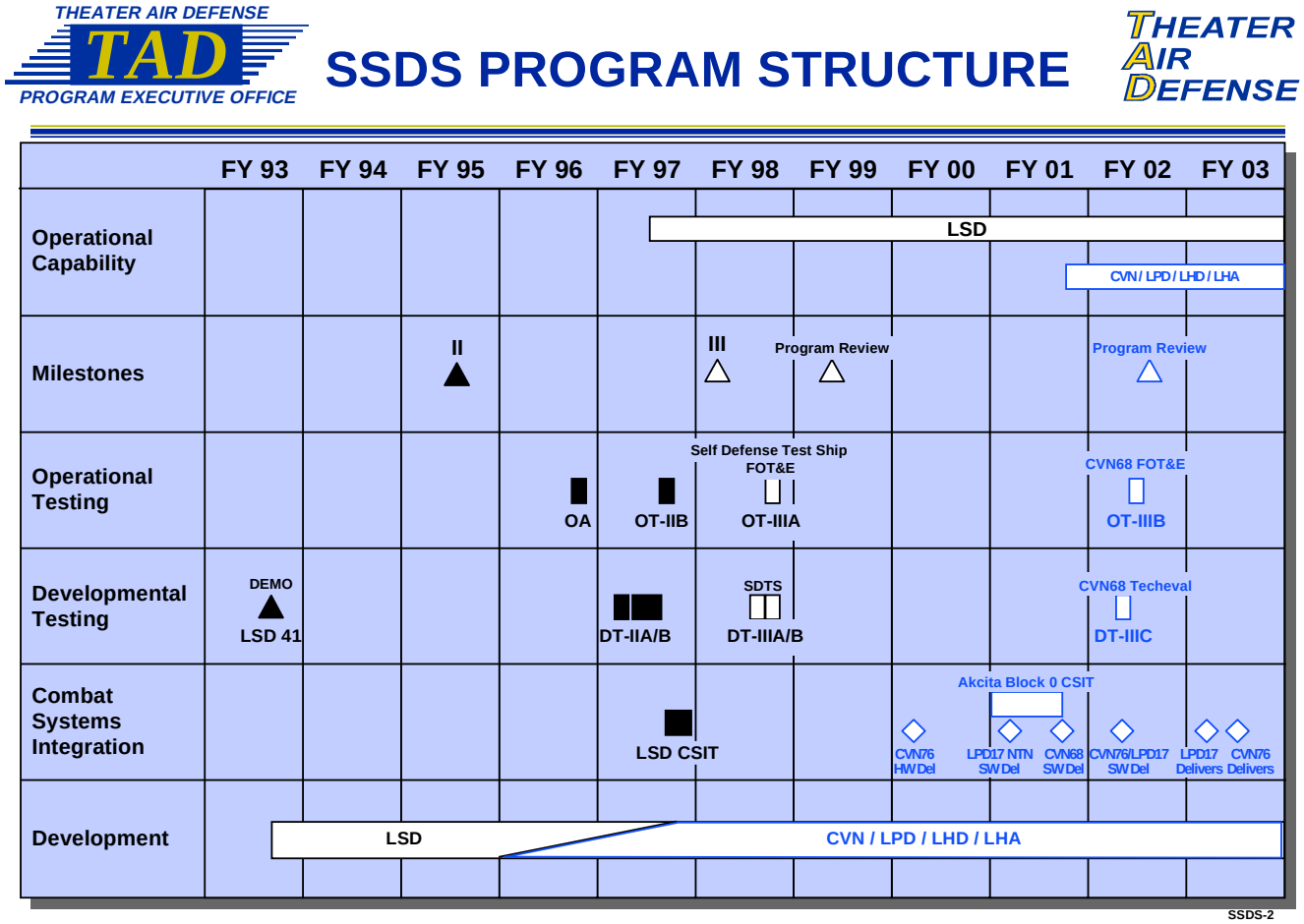


 Exhibit R-2

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1997	FY 1998	FY 1999
a. Primary Hardware Development	0	0	0
b. Software Development	10,864	11,533	16,576
c. Systems Engineering	3,636	8,098	6,278
d. Training Development	800	800	889
e. Integrated Logistics Support	400	400	289
f. Configuration Management	198	200	187
g. Install	0	0	0
h. Test & Evaluation	5,614	2,475	479
i. Government Engineering Support	2,978	2,700	2,413
j. Program Management Support	348	750	405
k. Documentation	600	600	604
l. Travel	170	154	159
Total	25,608	27,710	28,279

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
Hughes San Diego, CA	SS/CPAF	10/95	39,509	39,509	26,880	10,864	1,765	0	0	39,509
Hughes Tucson, AZ	SS/FP	10/94	17,740	17,740	17,740	0	0	0	0	17,740
Hughes San Diego, CA	SS/CPAF	8/97	CONT.	CONT.	0	0	12,421	23,707	CONT.	CONT.
NAVSURFWARCENDIV Port Hueneme, CA	WR	Various	CONT.	CONT.	3,896	50	0	375	CONT.	CONT.
NAVSURFWARCENDIV Dahlgren, VA	WR	Various	CONT.	CONT.	4,312	2,753	1,754	300	CONT.	CONT.
JHU/APL Laurel, MD	SS/FP	10/93	CONT.	CONT.	13,125	2,614	3,344	500	CONT.	CONT.
Raytheon Maynard, MA	SS/FP	6/95	4,000	4,000	4,000	0	0	0	0	4,000
NRL Washington DC	WR	Various	CONT.	CONT.	502	120	100	75	CONT.	CONT.
NWAD Corona, CA	WR	Various	CONT.	CONT.	865	982	125	0	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense
PROJECT NUMBER: U2178
PROJECT TITLE: Quick Reaction Combat Capability

Contractor/ Government Performing Activity	Contract Method/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development (Cont.)										
NWAD-AD St. Inigoes, MD	WR	Various	4,056	4,056	3,236	820	0	0	0	4,056
MISC. Various	Various	Various	CONT.	CONT.	2,153	1,960	4,568	2,767	CONT	CONT.
Support and Management										
MISC. Various	Various	Various	CONT.	CONT.	2,799	348	750	405	CONT.	CONT.
Test and Evaluation										
NAVSURFWARCENDIV Port Hueneme, CA	WR	Various	CONT.	CONT.	3,880	1,867	2,000	0	CONT.	CONT.
NAVSURFWARCENDIV Dahlgren, VA	WR	Various	CONT.	CONT.	7,080	3,230	0	0	CONT.	CONT.
MISC. Various	Various	Various	566	566	566	0	883	0	CONT.	566

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense
PROJECT NUMBER: U2178
PROJECT TITLE: Quick Reaction Combat Capability

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development									
HARDWARE - ADS Equipment, LAUs, Fiber Optic Cables									
Unisys									
St. Paul, MN	SS/FP	1/94	4/95	3,863	0	0	0	0	3,863
HARDWARE - Command Table									
NRaD									
San Diego, CA	WR	Various	CONT.	474	0	0	150	0	474

	FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	81,046	20,163	24,077	27,874	CONT.	CONT.
Subtotal Support and Management	2,799	348	750	405	CONT.	CONT.
Subtotal Test and Evaluation	11,526	5,097	2,883	0	CONT.	CONT.
Total Project	95,371	25,608	27,710	28,279	CONT.	CONT.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2190
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NULKA Decoy

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U2190 NULKA Decoy	6,016	8,233	2,352	1,458	1,105	536	1,081	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 1997 ACCOMPLISHMENTS:
   - (U) ($5,652) Conducted DT/OT testing required to achieve a milestone III decision for the stand-alone NULKA system. Continued research and development of payload improvements required to counter the next generation threat and to improve EMC capability. Continued integration of NULKA with SSDS.
   - (U) ($364) Forward financing of FY 1998 requirements due to low execution rates.

2. (U) FY 1998 PLAN:
   - (U) ($8,233) Complete SSDS integration. Incorporate initial P3I enhancements into production qualified units and conduct captive carry testing to validate ECCM performance.

3. (U) FY 1999 PLAN:

   (U) ($2,352) Conduct FOT&E of initial P3I into NULKA. Conduct performance validation testing and FOT&E for inclusion in production units.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2190
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NULKA Decoy

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	6,111	8,233	8,314
(U) Appropriated Value:	6,377		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget:	-361		-5,962
(U) FY 1999 OSD/OMB Budget Submit:	6,016	8,233	2,352

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease in FY 1997 is due to Congressional Undistributed Reductions.. FY 1999 decrease is due to transfer of funds to a classified program.
(U) Schedule: Not Applicable.
(U) Technical: Not Applicable.

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

	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 COMPLETE	FY 2003 PROGRAM	TO	TOTAL
(U) OPN Line 553000 (Anti-ship Missile Decoy System)	21,441	23,372	20,039	21,262	19,200	18,839	17,560	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

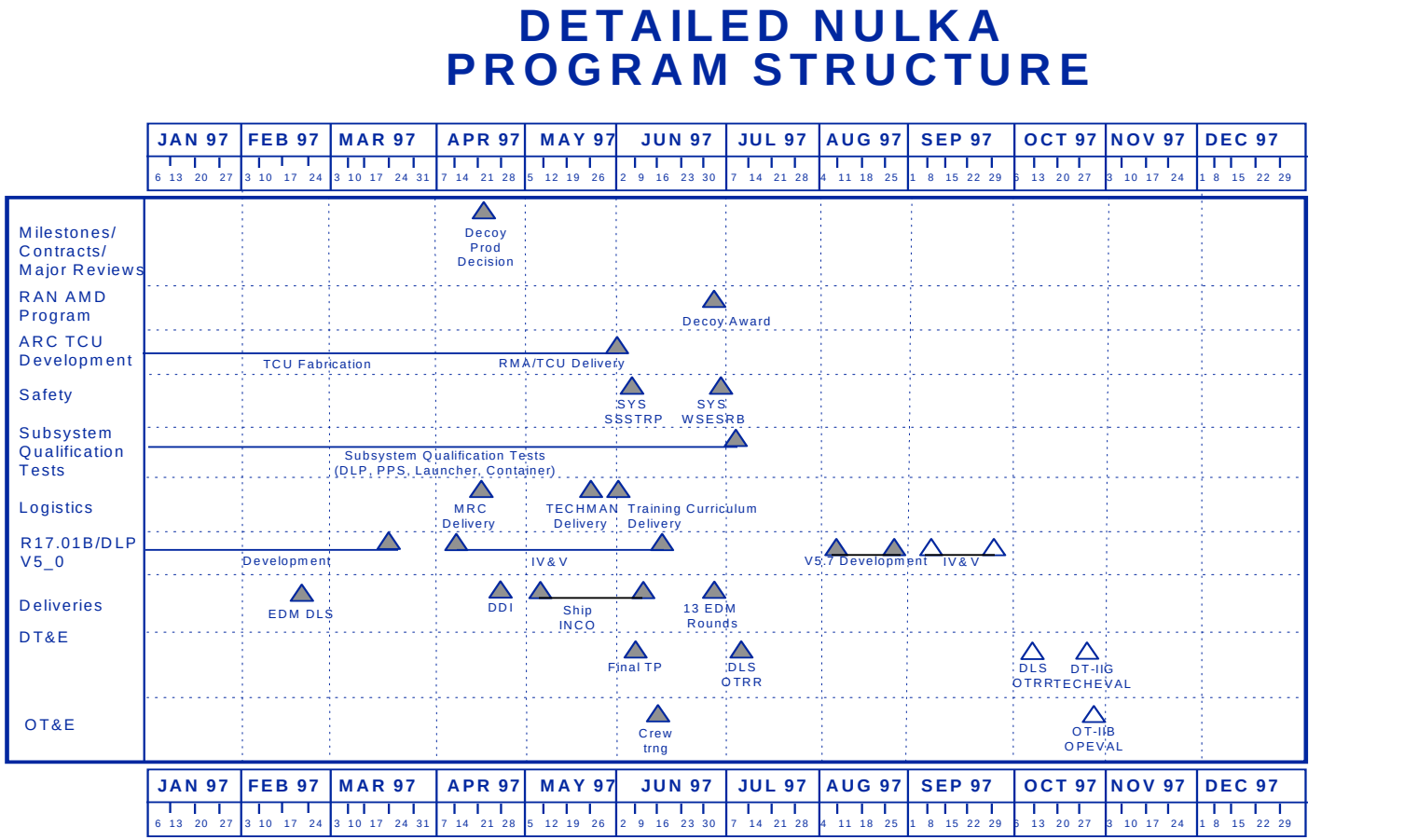
DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2190
PROJECT TITLE: NULKA Decoy

D. (U) SCHEDULE PROFILE:



29 Aug 97

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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 1997	FY 1998	FY 1999
a. Design and analysis	2,905	6,581	569
b. Hardware Fabrication and Procurement	1,101	1,317	1,548
c. Demonstration Test and Evaluation	475	0	0
d. Operational test and Evaluation	1,300	100	0
e. Program management Support	175	175	175
f. Travel	60	60	60
Total	6,016	8,233	2,352

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

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

Contractor/ Government Performing Activity	Contract Method/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
NAVSURFWARCENDIV Crane, IN	WR	Various	CONT.	CONT.	970	350	400	400	CONT.	CONT.
NAVSURFWARCENDIV Indian Head, MD	WR/RC	Various	CONT.	CONT.	1,125	350	150	150	CONT.	CONT.
NAVSURFWARCENDIV Dahlgren, VA	WR	Various	CONT.	CONT.	1,491	1,805	900	1,000	0	CONT.
NRL Washington, DC	WR	Various	CONT.	CONT.	540	700	400	567	0	CONT.
Sippican Boston, MA	SS/CPFF	09/96	3,600	3,600	1,300	1,300	1,000	0	0	3,600
AWA, Australia	SS/CPFF	05/96	2,636	2,636	1,460	1,176	0	0	0	2,636
NAVSUP Washington, DC	PD	Various	5,148	5,148	0	0	5,148	0	0	5,148
Support and Management										
Techmatics Arlington, VA	CC/CPFF	06/96	CONT.	CONT.	456	175	175	175	CONT.	CONT.
Miscellaneous	Various	Various	CONT.	CONT.	225	60	60	60	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2190
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NULKA Decoy

Contractor/ Government Performing Activity	Contract Method/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Test and Evaluation:										
OPTEVFOR	WR	11/07/96	100	100	0	100	0	0	0	100

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	6,886	5,681	7,998	2,117	CONT.	CONT.
Subtotal Support and Management	681	235	235	235	CONT.	CONT.
Subtotal Test and Evaluation	0	100	0	0	0	0
Total Project	7,567	6,016	8,233	2,352	CONT.	CONT.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U2309 Advanced Integrated Electronic Warfare System (AIEWS)									
	0	26,929	41,612	54,250	35,639	36,232	46,811	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Advanced Integrated Electronic Warfare System (AIEWS) is the next generation EW system and will be an integral part of the ship combat system (AEGIS and ISDS). It will be developed using a two phased approach. Increment 1 will introduce advanced Electronic Support (ES) consisting of precision Electronic Support Measures (ESM), Specific Emitter Identification (SEI) and special receiver, increased processing throughput, open architecture, a standard combat system workstation with new Human Machine Interface (HMI), decoy integration, and EMI improvements. Increment 2 will introduce both RF and IR advanced Electronic Attack (EA) capabilities. This development will support both backfit and forward fit. Note: FY 1997 and prior funding for AIEWS is contained in U0954.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS: Not applicable.

2. (U) FY 1998 PLANS:

- (U) ($25,104) Initiate AIEWS Increment 1 EMD to include receiver, SEI, precision ESM; implementation of risk reduction efforts, and advanced technology demonstration development including integration efforts for both AEGIS (Baseline 6 & 7) and ISDS Combat Systems.
- (U) ($1,075) Initiate development of Increment 1 logistics efforts to include electronic technical documentation, embedded training foundation, perform manpower analysis and efforts supporting smart ship manning demonstration.
- (U) ($750) Initiate Increment 2 electronic attack trade study to optimize and ensure compatibility of onboard (RF/IR) countermeasures with offboard (RF/IR) countermeasures.

3. (U) FY 1999 PLANS:
   - (U) ($39,182) Continue Increment 1 EMD and initiate Increment 2 risk reduction efforts.
   - (U) ($1,480) Continue development of Increment 1 logistics efforts.
   - (U) ($950) Continue/complete electronic attack trade study.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	0	26,929	41,487
(U) Appropriated Value:	0		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget			+125
(U) FY 1999 OSD/OMB Budget Submit:	0	26,929	41,612

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY 1999 increase is due to minor pricing adjustments.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY:

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 231300 (AIEWS)	0	0	0	0	0	28,429	54,571	45,870	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

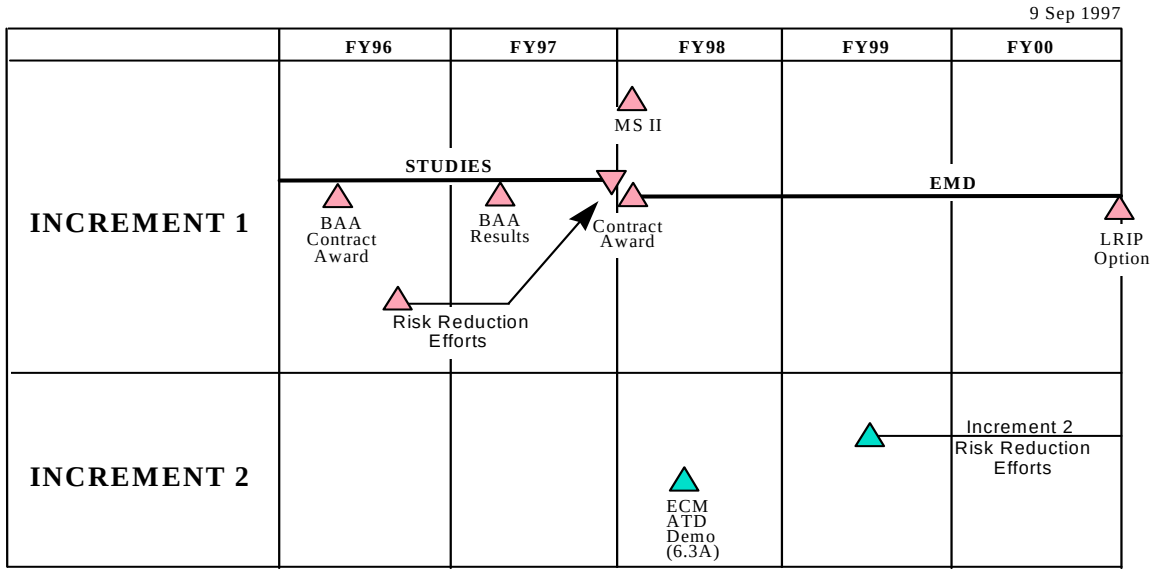
FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2309
PROJECT TITLE: Advanced Integrated Electronic Warfare System (AIEWS)

D. (U) SCHEDULE PROFILE:

AIEWS
PROGRAM SCHEDULE



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2309
PROJECT TITLE: Advanced Integrated Electronic Warfare System (AIEWS)

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Hardware Development	0	7,545	20,506
b. Software Development	0	12,511	14,276
c. Systems Engineering	0	3,200	2,447
d. Government Engineering Support	0	1,705	1,467
e. Test & Evaluation	0	0	500
f. Contractor Engineering Support	0	190	190
g. Integrated Logistics Support	0	1,075	1,480
h. Travel	0	100	100
i. Miscellaneous	0	603	646
Total	0	26,929	41,612

Note: Funding for AIEWS through FY97 is contained in U0954

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2309
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Advanced Integrated Electronic Warfare System (AIEWS)

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 FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
DSR CAP SW Development	C/CPFF	3/95*	16,170	16,170	0	0	8,200	5,650	0	16,170
TBD Increment 1 EMD	C/CPAF	12/97	TBD	TBD	0	0	10,356	25,632	CONT	CONT
NRL	WR/RCP	10/97	CONT	CONT	0	0	2,755	1,705	CONT	CONT
NSWC/DD	WR/RCP	10/97	CONT	CONT	0	0	2,475	2,509	CONT	CONT
NSWC/PHD	WR/RCP	10/97	CONT	CONT	0	0	350	680	CONT	CONT
NSWC/CD;NWAD	WR/RCP	10/97	CONT	CONT	0	0	400	500	CONT	CONT
AEGIS Backfit Integration	WR/RCP	10/97	CONT	CONT	0	0	1,500	3,500	CONT	CONT
Travel	WR	10/97	CONT	CONT	0	0	100	100	CONT	CONT
Miscellaneous	Various	Various	CONT	CONT	0	0	603	646	CONT	CONT

* Note: Funding for AIEWS is contained in Project U0954 for FY97 and prior.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2309
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Advanced Integrated Electronic Warfare System (AIEWS)

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Support and Management										
NSMO Technical Support	PD	10/94	CONT	CONT	0	0	190	190	CONT	CONT
Test and Evaluation										
AIEWS Increment 1	Various	12/98	CONT	CONT	0	0	0	500	CONT	CONT

GOVERNMENT FURNISHED PROPERTY: Not applicable

	FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	0	0	26,739	40,922	CONT	CONT
Subtotal Support and Management	0	0	190	190	CONT	CONT
Subtotal Test and Evaluation	0	0	0	500	CONT	CONT
Total Project	0	0	26,929	41,612	CONT	CONT

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2348
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Multi Function Radar (MFR)

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U2348 Multi Function Radar (MFR)	0	0	36,200	73,200	80,400	90,900	77,100	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Multi Function Radar (MFR) will provide designated ships with an affordable, high performance radar system for ship defense well into the next century. Ships employing the MFR will achieve a level of force protection that employs a nearly “puncture proof” ship defense capability against all varieties of threats envisioned in a littoral environment.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:
   - Not Applicable.

2. (U) FY 1998 PLAN:
   - Not Applicable.

3. (U) FY 1999 PLAN:
   - (U) ($36,200) Startup of Multi Function Radar (MFR) development program: Selection of E&MD contractor, begin E&MD phase of MFR.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2348
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Multi Function Radar (MFR)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	0	0	0
(U) Appropriated Value:	0		
(U) Adjustments to FY 1997 Appropriated Value/ FY 1998 President's Budget	0	0	+36,200
(U) FY 1999 OSD/OMB Budget Submit:	0	0	36,200

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY 1999 adjustment due to program startup.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

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

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM

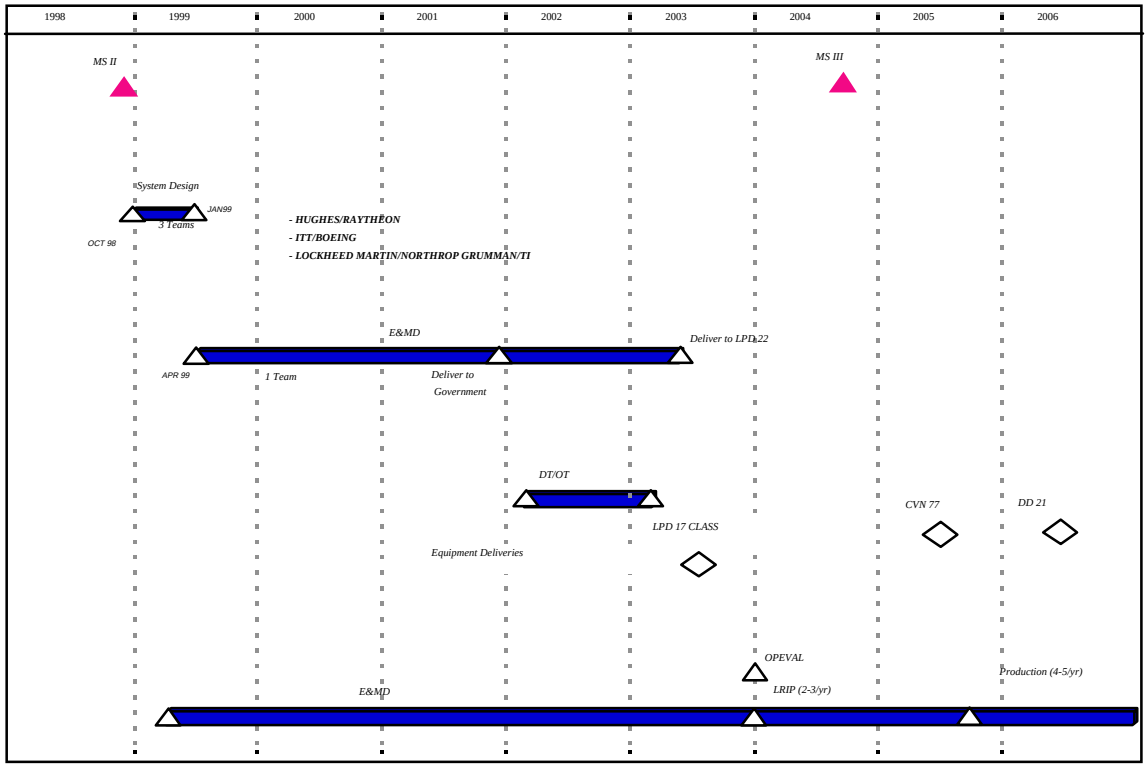
(U) RELATED RDT&E: Not applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2348
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Multi Function Radar (MFR)

D. (U) SCHEDULE PROFILE:

MFR PROGRAM PLAN (FY)



FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2348
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Multi Function Radar (MFR)

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. E&MD Design, Fabrication, and Analysis	0	0	36,200
Total	0	0	36,200

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 FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
3 Teams	FP/LOE	11/98	TBD	TBD	0	0	0	6,000	0	6,000
H&R Co. (Hughes-Raytheon/Joint Venture)										
Lockheed Martin, Northrop Grumman & Texas Instruments										
ITT/Boeing North America										
1 Team - TBD	CPAF/IF	4/99	TBD	TBD	0	0	0	23,000	CONT.	CONT.
Field Activities & Laboratories										
NAVSURFWARCENDIV Dahlgren, VA	WR	10/98	TBD	TBD	0		0	0	2,400	CONT. CONT.
NAVAIRWARCENWPNDIV China Lake	WR	10/98	TBD	TBD	0	0	0	300	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2348
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Multi Function Radar (MFR)

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development (cont)										
NAVAIRWARCENWPNDIV Pt Mugu	WR	10/98	TBD	TBD	0	0	0	100	CONT.	CONT.
NAVSURFWARCENDIV Port Hueneme, CA	WR	10/98	TBD	TBD	0	0	0	700	CONT.	CONT.
NWAD Corona, CA	WR	10/98	TBD	TBD	0	0	0	200	CONT.	CONT.
Naval Research Lab. Washington, DC	WR	10/98	TBD	TBD	0	0	0	400	CONT.	CONT.
Johns Hopkins Univ/ Applied Physics Lab.	S/CPFF	11/98	TBD	TBD	0	0	0	1,500	CONT.	CONT.
Georgia Tech Research Inst.	S/CPFF	11/98	TBD	TBD	0	0	0	500	CONT.	CONT.
Lincoln Lab./ Massachusetts Institute Tech. (LL/MIT)	S/CPFF	11/98	TBD	TBD	0	0	0	100	CONT.	CONT.
Support and Management										
Support Contractor - TBD	C/CPFF	11/98	TBD	TBD	0	0	0	900	CONT.	CONT.
Travel & Miscellaneous	Various	Various	TBD	TBD	0	0	0	100	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2348

PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Multi Function Radar (MFR)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1996 &Prior	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program

Test and Evaluation: Not Applicable

Government Furnished Property: Not Applicable

	FY1996	FY1997 & Prior	FY1998 Budget	FY1999 Budget	To Budget	Total Complete	Program
Subtotal Product Development	0	0	0	35,200	CONT.	CONT.	
Subtotal Support and Management	0	0	0	1,000	CONT.	CONT.	
Subtotal Test and Evaluation		0	0	0	0	CONT.	CONT.
Total Project	0	0	0	36,200	CONT.	CONT.	

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2349
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Ship Self Defense (SSD) Launcher

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
U2349 Ship Self Defense (SSD) Launcher	0	0	7,500	12,200	15,300	7,000	2,600	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Ship Defense Launcher System (SDLS) will provide designated ships, not having a Vertical Launching System (VLS), with an affordable, light weight means of employing the Evolved Sea Sparrow Missile (ESSM). Ships employing the SDLS/ESSM will achieve a level of force protection that employs a nearly "puncture proof" ship defense capability against all varieties of threats envisioned in a littoral environment.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

- 1. (U) FY 1997 ACCOMPLISHMENTS:
  - Not Applicable.

2. (U) FY 1998 PLAN:
  - Not Applicable.

3. (U) FY 1999 PLAN:
  - (U) ($7,500) Startup of Ship Defense Launcher System (SDLS) development program: perform required design trade studies; begin development of deck mounted, fixed angle launcher utilizing the MK 25 canister and initiate the program design review phase.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	0	0	0
(U) Appropriated Value	0	0	0
(U) Adjustments from FY 1997Appropriated Value/ FY 1998 President's Budget	0	0	+7,500
(U) FY 1999 OSD/OMB Submit:	0	0	7,500

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 increase due to startup of program.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

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

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2349
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Ship Self Defense (SSD) Launcher

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Design and Analysis	0	0	7,500
Total	0	0	7,500

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2349
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Ship Self Defense (SSD)

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ FundType Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development											
NAVSURFWARCENDIV Dahlgren, VA	WR	Various	CONT.	CONT.	0	0	0	0	1,500	CONT.	CONT.
Competitive	CPAF	TBD	CONT.	CONT.	0	0	0	0	6,000	CONT.	CONT.

Support and Management - Not applicable
Test and Evaluation - Not applicable

	FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	0	0	7,500	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	CONT.	CONT.
Total Project	**0**	**0**	**0**	**7,500**	**CONT.**	**CONT.**

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604771N
PROGRAM ELEMENT TITLE: Medical Engineering Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROG
M0933 Medical/Dental Equipment Development	2,829	3,620	4,395	4,425	4,556	4,687	4,827	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The purpose is to develop biomedical equipment and related techniques to reduce morbidity, to enhance the logistic feasibility of modern medical care for combat casualties, to sustain casualties for evacuation to fixed medical facilities for definitive care, 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 biotechnology firms/industry participation in the projects.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 PLAN:

(U) ($215) ENHANCED HEARING PROTECTION: Continue transition and testing of developed passive hearing protection material to Navy/Marine Corps application. Continue refinement of development items.

(U) ($1268) ADVANCED FROZEN RED CELL WASHER: Continue advanced development and testing of automated red cell washer to deglycerolize (remove cryoprotectant) the thawed blood and resuspend the red cells for transfusion. Finalize prototype based on testing and updated FDA requirements for approval of the prototype system.

(U) ($325) SPATIAL DISORIENTATION: Complete development of clinical testing of aviator spatial disorientation. Begin demonstration to the operational forces and initial implementation into standard testing procedures with any necessary protocol and equipment refinement.

(U) ($195) ACTIVE NOISE CANCELLING STETHESCOPE: Continue development of medical stethescope device for cardiac monitoring in high noise shipboard and combat environments.

(U) ($336)POTABLE WATER TESTING: Initiate development of simple, portable device for testing potable water quality for use in combat environments.

(U) ($340) UNDERWATER SOUND PROTECTION: Protection from bioeffcts for divers exposed to intense underwater sound. There is no means to monitor Low Frequency Acoustic active sonar exposure on submerged divers.

(U) ($150) MEDICAL WARGAMING: Continue development of medical wargaming models to interface with line wargaming for readiness, planning, training, rehearsal, and assessment.

3. (U) FY 1998 PLAN:

(U) ($276) ENHANCED HEARING PROTECTION: Complete transition and testing of developed passive hearing protection material to Navy/Marine Corps application. Continue refinement of development items.

(U) ($200) FREEZE-DRIED BLOOD AND BLOOD SUBSTITUTES (LIPOSOME ENCAPSULATED HEMOGLOBIN): Continue the advanced efficacy/safety testing of liposome encapsulated hemoglobin using product prepared in the Navy/Army production facility by Good Manufacturing Practices. Test liquid and freeze-dried products for field use.

(U) ($1260) ADVANCED FROZEN RED CELL WASHER: Continue advanced development and testing of automated red cell washer to remove cryoprotectant fro the thawed blood and resuspend the red cells for transfusion. Continue prototype testing and FDA approvals for industry manufacturing and use by military blood banks.

(U) ($400) SPATIAL DISORIENTATION: Complete demonstration to the operational forces of system effectiveness and complete implementation into standard procedures with continued monitoring of utilization and effectiveness.

(U) ($230) ACTIVE NOISE CANCELLING STETHESCOPE: Continue development of medical stethescope device for cardiac monitoring in high noise shipboard and combat environments.

(U) ($350) POTABLE WATER TESTING: Continue development of simple, portable device for testing potable water quality for use in combat environments.

(U) ($500) UNDERWATER SOUND PROTECTION: Continue development of protection from bioeffects for divers exposed to intense underwater sound.

(U) ($150) MEDICAL WARGAMING: Continue development of medical wargaming models to interface with line wargaming for readiness, planning, training, rehearsal, and assessment.

(U) ($204) AUTOMATED CLOSED-LOOPED BLOOD COMPONENT PROCESSOR: Initiate advanced development and testing of an automated blood component processing unit to produce red cells, platelets, and plasma from whole blood without manual manipulations or the use of rotating seals that potentially limit refrigerated storage shelf life of blood component because of contamination. Assess FDA requirements for approval of the device to guide development refinements.

(U) ($50) CARBON DIOXIDE SENSOR: Begin development of a sensor/alarm system to warn of hazardous CO_2 levels in the closed-circuit rebreathers worn by the divers on SPECWAR, EOD and mine countermeasure missions.

4. (U) FY 1999 PLAN:

(U) ($200) FREEZE-DRIED BLOOD AND BLOOD SUBSTITUTES (LIPOSOME ENCAPSULATED HEMOGLOBIN): Complete the advanced efficacy/safety testing of liposome encapsulated hemoglobin using product prepared in the Navy/Army production facility by Good Manufacturing Practices. Continue teting and transition of liquid and freeze-dried blood and blood substitue products to pharmaceuticalindustry for FDA approvals for field use.

(U) ($394) ADVANCED FROZEN CELL WASHER: Complete advanced development and testing of automated red cell washer to remove cryoprotectant from the thawed blood and resuspend the red cells for transfusion. Complete prototype testing and FDA approvals for industry manufacturing and use by military Blood Banks.

(U) ($300) SPATIAL DISORIENTATION: Monitor the continued implementation of testing system effectiveness for any necessary refinements to the procedures.

(U) ($325) ACTIVE NOISE CANCELLING STETHESCOPE: Complete development of medical stethescope device for cardiac monitoring in high noise shipboard and combat environments.

(U) ($500) POTABLE WATER TESTING: Continue development of simple, portable device for testing potable water quality for use in combat environments. Begin transition to fleet, test and evaluation.

(U) ($950) AUTOMATED CLOSED LOOP BLOOD COMPONENT PROCESSOR: Continue advanced development and testing of an automated blood component processing unit to produce red cells, platelets, and plasma from whole blood without manual manipulations or the use of rotating seals that potentially limit refrigerated storage shel life of blood component because of contamination. Assess FDA needs for approval of device to guide development refinements.

(U) ($200) UNDERWATER SOUND PROTECTION: Continue development of protection from bioeffects for divers exposed to intense underwater sound.

(U) ($150) MEDICAL WARGAMING: Continue development of medical wargaming models to interface with time wargaming for readiness, planning, training, rehearsal, and assessment.

(U) ($200) CARBON DIOXIDE SENSOR: Continue development of a sensor/alarm system to warn of hazardous CO_2 levels in the closed-circuit rebreathers worn by the divers on SPECWAR, EOD and mine countermeasure missions.

(U) ($190) TEST AND EVALUATION OF OPTICAL MEDIA: Begin development of testing and evaluation of optical and trasmittance properties of eye protective devices such as helmet visors, sun glasses, dive masks, OBA’s and other special purpose goggles and shields worn by it’s personnel.

(U) ($275) OPERATOR PERFORMANCE TACTICAL MISSION AID: Initiate development of integrated computer based tactical mission aid for aviators based on functional and capability requirements of warfighters to provide all parameters for mission knowledge base and performance assessment.

(U) ($250) VOICE INTERFACE SYSTEMS TESTING AND EVALUATION: Begin test and evaluation of a system that will interface with the developing telemedicine infrastructure for field use on shore and at sea.

(U) ($300) OCCUPATIONAL MEDICINE SYSTEM: Initiate development of occupational medicine computer based system for providing technical expertise and information necessary to evaluate workplace chemicals and physical hazards that may be encountred and associate the hazards with health signs and symptoms.

(U) ($160) INSTRUMENTED FIRE FIGHTING ENSEMBLE: Begin development of a firefighting suit with temperature and heat flux sensors imbedded in it which will allow monitoring of personnel during firefighting and indicate when their safety is jeopardized due to heat exposure.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998/1999 President’s Budget:	3,148	3,620	4,397
(U) Adjustments from PRESBUDG:	-319		-2
(U) FY 1999 OSD/OMB Submit:	2,829	3,620	4,395

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY97: Congressional undistributed reductions (-$319K).
FY99: Congressional undistributed reductions, DBOF, and minor repricing adjustments (-2K).

(U) Schedule: One new start is planned for FY97: underwater sound protection.

(U) Technical: The technical approach and objectives remain unchanged.

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

(U) RELATED RDT&E:

PE 0603706N (Medical Development)

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	(1Q) Underwater sound protection contract	(1Q) CO_2 sensor contract	(1Q) Begin testing & evaluation voice interface system	
Engineering Milestones	(1Q) Potable water project continued work			
T&E Milestones			(2Q) T&E of potable water	
Contract Milestones			(4Q) Underwater sound protection device delivered to Fleet	
		(3Q) Monitor implementation of spatial disorientation system in Fleet		

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F0253 Navigation and Electro-optical Support	11,688	4,005	5,353	3,172	1,628	1,349	1,706	CONT.	CONT.
W0676 Improved ID Developments	1,175	0	0	0	0	0	0	0	91,627
W1253 Combat ID System	4,000	0	0	0	0	0	0	0	98,008
W2212 All Service Combat Identification Evaluation Test (ASCIET)	3,008	1,552	4,118	4,185	4,265	4,340	4,418	CONT.	CONT.
X0921 NAVSTAR GPS Equipment	28,405	26,495	26,657	10,256	10,034	10,320	21,883	CONT.	CONT.
X2303 Combat Survivor Evader Locator (CSEL)	450	475	0	0	0	0	0	0	1305
X2313 Situational Awareness BEacon with Reply (SABER)	0	8,129	7,285	3,532	1,107	1,062	1,062	CONT.	CONT.
TOTAL	48,726	40,656	43,413	21,145	17,034	17,071	29,069	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 lead of a MK XII Waveform definition for future Aircraft IFF (AIFF) and NATO interoperability. AIFF supersedes Cooperative Aircraft Identification (CAI) per June 95 direction. The All Service Combat Identification Evaluation Team (ASCIET) project (W2212) covers the Navy portion of a new joint service sponsored test and evaluation team effort, formerly the OSD sponsored Joint Air Defense Organization-Joint Engagement Zone (JADO-JEZ) program. The program is designed to evaluate 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. Per OSD direction, NATO participation is encouraged and performance data is exchanged to ensure the opportunity for interoperability with allied identification systems is maximized. The Improved Identification Developments project (W0676) develops Non-Cooperative Target Recognition (NCTR) and integration techniques. The Photonics Mast (F0253) is a non-hull penetrating imaging mast 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 Support Measures (ESM). The Combat Survivor Evader locator (CSEL), project (X2303), covers the Navy portion of a joint service program to develop and procure an improved Combat Search And Rescue (CSAR) radio. The Situational Awareness Beacon with Reply (SABER) system, project (X2313), system provides critical battlefield/operating area situational awareness and friendly ID capabilities by uniting GPS and UHF/SATCOM technologies. The SABER system consists of a GPS receiver and two-way UHF radio capable of Over-The-Horizon (OTH) and Line-Of-Sight (LOS) communications.

(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 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM NUMBER: F0253
ROGRAM ELEMENT TITLE: Navigation/ID Systems PROGRAM TITLE: Navigation & E-O Support

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
F0253 Navigation & E-O Support	11,688	4,005	5,353	3,172	1,628	1,349	1,706	CONT.	CONT.
Quantity of RDT&E Articles			1 EDM						

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. The non-hull penetrating design provides freedom in ship design as well as space savings for future design submarines. The system has been designed to satisfy Operational Requirement #365-87-94. The Photonics system, mounted on the Universal Modular Mast, on the New Attack Submarine and has been designed for backfit on the earlier ship classes, SSN-688 and SEAWOLF class submarines.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($11,558) Continued Photonics Program EMD Phase.
- (U) ($20) Completed Photonics Program Critical Design Review.
- (U) ($50) Perform Photonics Program Test Readiness Review.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM NUMBER: F0253
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROGRAM TITLE: Navigation & E-O Support

- (U) ($25) Perform Universal Modular Mast Functional Configuration Audit (FCA).

- (U) ($35) Perform Universal Modular Mast Program Physical Configuration Audit (PCA).

2. (U) FY 1998 PLAN:

- (U) ($3,806) Continue Photonics Program Engineering and Manufacturing Development Phase.
- (U) ($75) Perform Photonics Program FCA and PCA.
- (U) ($124) Perform Photonics Program/Universal Modular Mast DT IIA testing.

3. (U) FY 1999 PLAN:

- (U) ($2,730) Continue Program EMD Phase.
- (U) ($623) Perform Photonics System/Universal Modular Mast DT IIB testing.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM NUMBER: F0253
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROGRAM TITLE: Navigation & E-O Support

- (U) ($2,000) Commence On-Board Team Trainer Development.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	11,976	4,005	3,326
(U) Appropriated Value:	12,505	0	0
(U) Adjustments to FY 1997 Appropriated Value/FY 1998 President's Budget:			
a. SBIR	-273		
b. Undistributed Reductions	-544		
c. Photonics On-Board Team Trainer			2,000
d. NWCF Restoral			27
(U) FY 1999 OSD/OMB Budget Submit:	11,688	4,005	5,353

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 97 decrease of $817K is a result of a Small Business Innovative Research Assessment (-$273K) and undistributed reductions (-$544K). The FY-99 increase of $2,027K is for the development of on-board team training, test and integration (+2,000K) and NWCF Centers (+$27K).

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROGRAM NUMBER: F0253
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROGRAM TITLE: Navigation & E-O Support

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN line 201300	0	19,976	15,368	0	16,169	16,537	0	CONT.	CONT.

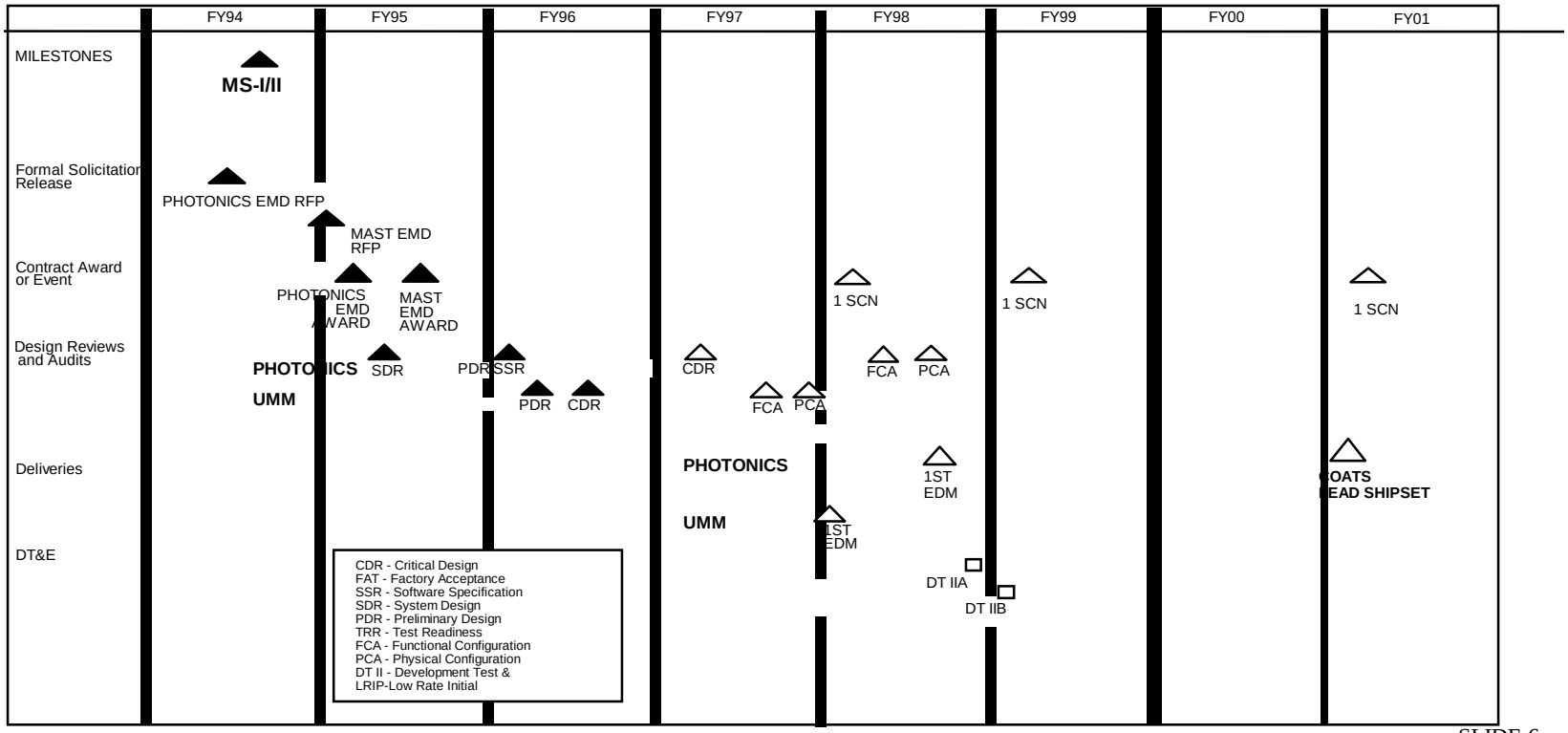
(U) Related RDT&E

(U) PE 0603226E (Experimental Evaluation of Innovative Technology)
(U) PE 0604558N (New Design SSN Development)

D. (U) SCHEDULE PROFILE: See attached.

0604777N/F0253

PROGRAM SCHEDULE



SLIDE 6

FY 1999 RDT&E,N BUDGET PROGRAM ELEMENT\PROJECT COST BREAKDOWN Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: F0253
PROGRAM ELEMENT TITLE: Navigation/ID System PROJECT TITLE: Navigation & E-O Support

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Hardware/Computers	5,434	1,672	4,086
b. Project Management/Systems Engineering	1,739	925	734
c. Integrated Logistics Support	3,035	316	176
d. Installation and Test	1,480	1,092	357
Total	11,688	4,005	5,353

B. BUDGET ACQUISITION HISTORY AND PLANNING: Not Applicable.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W0676
PROJECT TITLE: Improved ID Developments

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W0676 Improved ID Developments	1,175	0	0	0	0	0	0	0	91,627

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for the development and integration of NCTR techniques for Improved Identification (IID). Project is developing an upgraded AN/SLQ-20 system (SLQ-20B).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

· (U) ($1,175) Performed operational testing, passed Milestone III and transitioned AN/SLQ-20 Upgrade to production.

2. (U) FY 1998 PLAN:

· (U) N/A

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W0676
PROJECT TITLE: Improved ID Developments

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	1,195	2,094	0
(U) Appropriated Value:	1,254		
(U) Adjustments from President's Budget:	-20	-2,094	0
(U) FY 1999 OSD/OMB Budget Submit:	1,175	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 decrease $19K resulted from Small Business Innovation Research Assessment 60965 in accordance with 15 U.S.C. 638. Decrease $1K resulted from 61129 FY97 Supp'l - Revised Eco.
FY 1998 decrease $2,094 resulted from 62017 Completed Program Mark.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Surface ID Systems	330	0	5,452	3,001	1,719	1,739	1,735	Cont.	Cont.

(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.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W0676
PROJECT TITLE: Improved ID Developments

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	2Q SLQ-20 MS III			
Engineering Milestones				
T&E Milestones	1Q SLQ-20 OT			
Contract Milestones	3Q SLQ-20B production			

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W1253
PROJECT TITLE: Combat ID Systems

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W1253 Combat ID Systems	4,000	0	0	0	0	0	0	0	98,808

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: USN has the requirement for a Cooperative Aircraft Identification (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) was underway to investigate options to be presented at DAB I; the Naval Research lab (NRL) was directing COEA studies. Events were overtaken by a DOD blue-ribbon Combat ID Task Force in FY 95 examining larger combat identification architectures. Their 4/95 DOD position and 5/95 report reduced the CAI focus to a new waveform mode for MK XII and NATO STANAG revision by the end of FY 97.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($2,700) Performed lab fabrication/test, assembled flyable hardware, drafted STANAG refinements; presented test reports and initial drafted STANAG to DOD.
- (U) ($1,300) Completed STANAG for Level 1 Mode 5 development. Completed assembly and test of flyable hardware. Completed simulation and modeling efforts for waveform defination phase.

2. (U) FY 1998 PLAN: N/A.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W1253
PROJECT TITLE: Combat ID Systems

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
· (U) FY 1998 President's Budget:	0	0	0
. (U) Appropriated Value:		0	
· (U) Adjustments from Pres Budget:	4,000	0	0
· (U) FY 1999 OSD/OMB Budget Submit:	4,000	0	0

(U) CHANGE SUMMARY EXPLANATION:

· (U) Funding: FY 1997 increase $3,200 increase resulted from 61029 BTR NO. 97-2 OF 12/04/96. Decrease $500K resulted from 60965 (64438) FY97 SBIR Transfer. Increase $500K resulted from 61234 DD 1002: March 1997 Update. Increase $800K resulted from 62149 DD 1002: July 1997 Update
· (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 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: Not applicable.

FY 1999 RDT&E,N BUDGET JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W2212
PROJECT TITLE: All Services Combat ID Evaluation Test (ASCIET)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W2212 All Service Combat Identification Evaluation Test	3,008	1,552	4,118	4,185	4,265	4,340	4,418	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: 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 service test program whose operations have been proportionally assumed by the four Services under the 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. Per OSD direction, NATO participation is encouraged and performance data is exchanged to ensure the opportunity for interoperability with allied identification systems is maximized.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

· (U) ($3,008) Conducted test and evaluation of combat identification platforms and systems in the air-to-air and ground-to-air mission areas.

FY 1999 RDT&E,N BUDGET JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W2212
PROJECT TITLE: All Services Combat ID Evaluation Test (ASCIET)

2. (U) FY 1998 PLAN:

· (U) ($1,552) Conduct test and evaluation of combat identification platforms and systems in the air-to-ground and ground-to-ground mission areas. An additional $1,525 thousand is forward financing with FY 1997 carryover due to low expenditures in the STARS accounting system for fiscal year 1996.

3. (U) FY 1999 PLAN:

· (U) ($4,118) 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 1997	FY 1998	FY 1999
· (U) FY 1998 President's Budget:	2,960	1,552	3,205
. (U) Appropriated Value:	3,085		
· (U) Adjustments from Pres Budget:	+48	0	+913
· (U) FY 1999 OSD/OMB Budget Submit:	3,008	1,552	4,118

(U) CHANGE SUMMARY EXPLANATION:

· (U)Funding: FY 1997 decrease of $78K resulted from the Small Business Innovation Research Assessment. Decrease $3K resulted from 61129 FY97 Supp'l - Revised Economy. Decrease $1K resulted from 61129 FY97 Supp'l - Revised Economy. Increase $130K resulted from 62149 DD 1002: July 1997 Update. . FY 1999 increase $900K for 17003 Funding for ASCIET. Increase for $13K 61034 issue 60875 DBOF surcharge.
· (U) Schedule: Not applicable.
· (U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands) Not applicable.
(U) RELATED RDT&E: Not applicable.
D. (U) SCHEDULE PROFILE: Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date:SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: W2212
PROJECT TITLE: All Services Combat ID Evaluation Test (ASCIET)

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Fleet Test and Evaluation	2,956	1,428	3,992
b. Miscellaneous	40	100	100
b. Travel	12	24	26
Total	3,008	1,552	4,118

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date:SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W2212
PROJECT TITLE: All Services Combat ID Evaluation Test (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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 To Budget	Complete	Total Program
Product Development					0	0	0	0	Cont.	Cont.
Support and Management		Various	-	-	0	0	0	0	Cont.	Cont.
Test and Evaluation Miscellaneous		Various	-	-	2,730	3,008	1,552	4,118	Cont.	Cont.

GOVERNMENT FURNISHED PROPERTY : Not applicable.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date:SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: W2212
PROJECT TITLE: All Services Combat ID Evaluation Test (ASCIET)

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	0	0	0	Cont.	Cont.
Subtotal Support and Management	0	0	0	0	Cont.	Cont.
Subtotal Test and Evaluation	2,730	3,008	1,552	4,118	Cont.	Cont.
Total Project	2,730	3,008	1,552	4,118	Cont.	Cont.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS Equipment

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0921 NAVSTAR Global Positioning System (GPS) Equipment	28,405	26,495	26,657	10,256	10,034	10,320	21,883	0	816648

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: RDT&E funds are used to perform all the non-recurring Global Positioning System (GPS) Aircraft Integration efforts required for 86 different configurations of Navy, Marine Corps and Coast Guard aircraft in response to the CNO GPS Integration Guidance (GIG) and the FY94 Authorization Act. The GIG directs GPS design functional characteristics for the aircraft and the FY94 Authorization Act directs the schedule for completion of all installations by 1 Oct 2000. The NAVSTAR 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. PMW-187 is the central office responsible for funding all GPS aircraft integration RDT&E efforts performed by over 20 NAVAIR program offices, dozens of DoD/Navy field activities and laboratories, and dozens of contractors. The aircraft installation recurring efforts are funded separately by PMW-187 and the platform program offices with APN dollars. The primary tasks to be accomplished for each of the 86 aircraft configurations include: GPS integration design studies; procurement of aircraft and lab RDT&E assets; modifications to test aircraft hardware and/or software designs; development of Integrated Logistics Support (ILS) elements to support test (operator and maintenance manuals); and Formal Navy Test and Evaluation (Development and Operational Test). Other tasks include the development of new hardware systems to meet GIG requirements when existing systems are unsuitable (GINA for the T-45A; EGI for the AH-1W, F-14A/B, and F/A-18; the Digital Data Set (DDS); the Control Display Navigation Unit (CDNU) and associated software for many different aircraft) and the development of and modifications to the GPS Mission Planning Module for the Tactical Aircraft Mission Planning System (TAMPS). PMW-187 is also responsible for the building and fielding of the Navigation Sensor System Interface (NAVSSI). NAVSSI is a surface and submarine based system that accepts and processes navigation inputs and distributes the processed output to user systems. NAVSSI provides position, velocity, time and almanac data to on-board command and control systems in real time with NAVSTAR GPS as the primary source of navigation data. NAVSSI is being fielded on 299 surface and subsurface platforms. All of the above efforts are directed by, tasked by and funded by PMW-187.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS Equipment

(U) COST: (Dollars in thousands)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

2. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($17,456) Continued integration engineering on RC-12M, UC-12M, F-14A/B, HH-1N, VH-3D, VH-60, S-3B, EA-6B, F/A-18A, F-5, AH-1W, P-3A, C-20D, C-20G, T-34, CH-53D, RH-53D, E-2C, UH-3H, P-3C, AV-8B, C-9, F-14D, CH-53D, TH-57C, SH-60R, HC-130H aircraft.

- (U) ($3,200) Continued efforts in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis rates.

- (U) ($6,399) Continued NAVSSI upgraded and integration engineering with shipboard command and control.

- (U) ($850) Developed and updated Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementing guidance. Developed and updated Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conducted associated C4ISR analyses and studies.

- (U) ($500) NISE East and NRaD SABER supported JWID and MEU-13 Deployment

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS Equipment

(U) COST: (Dollars in thousands)

3. (U) FY 1998 PLAN:

- (U) ($10,494) Continue integration engineering on F-14A/B, F/A-18A, F/A-18B, EA-6B, SH-60R, HH-1N, F-5E/F, CT-39G, TC-130G, HC-130H aircraft.

- (U) ($8,000) Continue NAVSSI upgrade,integration engineering and testing with shipboard combat, weapons, navigation,and command and control systems. Evolutionary upgrades include GPS ephemeris and ionospheric corrections for gun and missile systems; NIMA data server for LAN capable ships; SPS-73 radar integration to meet Electronic Chart Display Information System (ECDIS) requirements; electronic navigation testing and certification;communication interface to support electronic corrections to NIMA databases; Year 2000 corrections; transition to IT 21.

- (U) ($3,000) Continue effort in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis.

- (U) ($1,000) Initiate effort to design, develop and test a suitable anti-jam GPS antenna for Navy tactical aircraft such as F/A-18 C/D/E/F, F-14, ES-3A, EA-6B, E-2C and selected helicopters. Anti-jam enhancements have been identified as a requirement in the Navigation Warfare (NAVWAR) Mission Need Statement (MNS) which has been validated by the JROC.

3. (U) FY 1998 PLAN (cont.):

- (U) ($1,500) Continue incorporation of National Air Space (NAS) Non-Precision Approach (NPA) sole/primary IFR navigation requirements into the CDNU-008 baseline demo version. (Effort started in FY 97 with funding from N88 RDT&E,N and APN-5). Perform flight tests on an actual HH-1N fully integrated helicopter. NPA GPS requirement has been identified in Federal Radio Navigation Plan (FRP), Chairman Joint Chiefs of Staff Master Navigation Plan (MNP), and CNO's Draft GPS Integration Guidance (GIG).

- (U) ($700) Begin software/hardware requirements definition and implementation of GPS based Terrain Avoidance and Awareness System (GTAAS) in CDNU based air platforms such as P-3, C-130 and selected helicopters. Define additional CDNU capabilities required to incorporate GTAAS and other requirements.

- (U) ($680) Initiate development of navigation prevention capabilities for use on selected Navy tactical aircraft, UAV's and ships. This requirement has been identified in the Navigation Warfare (NAVWAR) Mission Need Statement (MNS) and in the President's Decision Directive (PDD) on GPS policy (May 96).

- (U) ($500) Perform modeling and simulation to determine GPS vulnerability aspects of Navy surface and subsurface platforms as well as Navy command, control, communication and computer and intelligence (C4I) nodes. Identify requirements necessary for POM 00 preparations.

- (U) ($621) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Develop and update Naval C$ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS Equipment

4. (U) FY 1999 PLAN:

- (U) ($9,625) Continue integration engineering on F-14A/B, F-14D, F/A-18A, F/A-18B, EA-6B, SH-60R, F-5E/F, TC-130G.

- (U) ($7,000) Continue NAVSSI upgrade,integration engineering and testing with shipboard combat, weapons, navigation,and command and control systems. Evolutionary upgrades include GPS ephemeris and ionospheric corrections for gun and missile systems; NIMA data server for LAN capable ships; SPS-73 radar integration to meet Electronic Chart Display Information System (ECDIS) requirements; electronic navigation testing and certification;communication interface to support electronic corrections to NIMA databases;Year 2000 corrections;transitions to IT21.

- (U) ($3,000) Continue effort in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis.

- (U) ($1,500) Continue effort to design, develop and test a suitable anti-jam GPS antenna for Navy tactical aircraft such as F/A-18 C/D/E/F, F-14, ES-3A, EA-6B, E-2C and selected helicopters. Anti-jam enhancements have been identified as a requirement in the Navigation Warfare (NAVWAR) Mission Need Statement (MNS) which has been validated by the JROC.

- (U) ($1,500) Continue incorporation of National Air Space (NAS) Non-Precision Approach (NPA) sole/primary IFR navigation requirements into the CDNU-008 baseline demo version. Begin incorporating 008 S/W into Naval aviation platforms. NPA GPS requirement has been identified in Federal Radio Navigation Plan (FRP), Chairman Joint Chiefs of Staff Master Navigation Plan (MNP), and CNO’s Draft GPS Integration Guidance (GIG).

- (U) ($1,500) Continue software/hardware requirements definition and implementation of GPS based Terrain Avoidance and Awareness System (GTAAS) in CDNU based air platforms such as P-3, C-130 and selected helicopters. Implement additional CDNU capabilities required to incorporate GTAAS and other requirements.

- (U) ($1,532) Continue development of navigation prevention capabilities for use on selected Navy tactical aircraft, UAV’s and ships. This requirement has been identified in the Navigation Warfare (NAVWAR) Mission Need Statement (MNS) and in the President’s Decision Directive (PDD) on GPS policy (May 96).

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS Equipment

(U) COST: (Dollars in thousands)

4. (U) FY 1999 PLAN (cont.)

- (U) ($1,000) Continue modeling and simulation efforts to determine GPS vulnerability aspects of Navy surface and subsurface platforms as well as Navy command, control, communication and computer and intelligence (C4I) nodes. Identify requirements necessary for POM 00 preparations.

(U) COST: (Dollars in thousands)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	30,706	34,115	43,894
(U) Appropriated Value:	0	0	0
(U) Adjustments FY 1998 PRESBUDG:	-2,301	-7,620	-17,237
(U) FY 1999 OMB/OSD Budget Submit:	28,405	26,495	26,657

(U) CHANGE SUMMARY EXPLANATION:

(U)Funding: FY 1997: Decrease of $466 thousand is for Small Business Innovation Research assessment and a decrease of $1,835 thousand is for Below Threshold Reprogramming. FY 1998: Decrease of $7,620 to accommodate higher priority programs; Accelerated DSMP development and TAMPS. FY 1999: Decrease of $500 thousand redirected to develop and update overarching C4ISR mission requirements; decrease of $6,269 thousand to offset GPS shortfalls, decrease of $10,000 thousand to reflect level funded program and a decrease of $468 thousand for other minor Navy adjustments.

(U) Schedule: None.

(U) Technical: None.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS Equipment

(U) COST: (Dollars in thousands)

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) O&MN PE#: 0305164N	2,838	3,216	2,139	2,216	2,300	2,377	2,435	cont.	cont.
(U) OPN Line #26570	4,133	5,006	9,777	9,732	10,520	10,882	11,026	cont.	cont.
(U) APN-Common Avionics	34,947	59,089	30,969	9,715	13,487	9,979	17,590	cont.	cont.

(U) RELATED RDT&E: None

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: X0921
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: NAVSTAR GPS Equipment

(U) COST: (Dollars in thousands)

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Project Management	3,017	2,846	2,322
b. Systems Engineering	5,103	5,244	6,394
c. Software Development	4,794	4,122	4,064
d. Hardware Development	14,331	13,083	12,342
e. System Test & Evaluation	956	900	1200
f. Integrated Logistics Support	204	300	335
Total	28,405	26,495	26,657

Exhibit R-3

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Dev										
Major Contracts										
F-14/B Integ w/options Grumman Aero w/ options	SS	Aug-96	10415	10415	3330	2085	3000	2000		10415
F-18A/B Integ w/options McDonnel Douglas St. Louis, MO	SS	Jul-95	15000	15000	7404	0	4500	3096		15000
S-3B Lockheed Aero w/options Marietta, GA	SS	May-95	2524	2524	2524					2524
F-14D Grumman Aero Corp Bethpage, NY	SS	Jul-95	19084	19084	19084					19084
C-12	SS	Jul-97	2000	2000	1000	1000				2000

Exhibit R-3

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
All Other Contracts					202038	6455	1189	2173	26847	238702
Subtotal Contracts					235380	9540	8689	7269	26847	287725
In-House										
NRaD Code 31 San Diego, CA	WX	Dec-94			6668	3480	3300	4000		17448
NRaD Code 32 San Diego, CA	WX	Dec-94			10332	7100	6500	6500		30432
NAWC Indianapolis, IN	WX	Dec-94			7176	160				7336
NAWC China Lake, CA	WX	Dec-94			6170					6170
NAWC Patuxent River, MD	WX	Dec-94			6868	956	900	1200		9924
All Other less than $1m	WX				389661	6213	6206	6488	17758	426326

Exhibit R-3

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X0921
PROJECT TITLE: NAVSTAR GPS 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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal In-House					426825	17909	16906	18188	17758	497636
Support and Management					12710	0	0	0		12710
All Other Contracts (Aggregate Total)					235380	9540	8689	7269	26847	287725
Test and Evaluation All Other Field/Lab Activities					18575	956	900	1200		21631

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

	Total FY 1996 & Prior	FY 1997 Budget	FY 1988 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	662255	27449	25595	25457	44605	785361
Subtotal Support and Management	12710	0	0	0	0	12710
Subtotal Test and Evaluation	18585	956	900	1200	0	21631
Total Project	693540	28405	26495	26657	44605	819702

Exhibit R-3

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2303
PROJECT TITLE: Combat Survivor Evader Locator

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2303 Combat Survivor Evader Locator (CSEL)	450	475	0	0	0	0	0	0	1305

(U) A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In response to a Joint Memorandum of 21 Sept 95 from the Secretary of Defense and the Director, Intelligence Community, CSEL is being developed as a joint service program with RDT&E funding provided by the Air Force as the lead service. The memorandum directed the development and procurement of an improved Combat Search And Rescue (CSAR) system to fulfill the CSEL Mission Needs Statement (MNS)as validated by the Joint Requirements Oversight Council (JROC), to include providing GPS precision positioning service, dual frequency (Y Code) capability to the survivor and rescuers. The CSEL system consists of three segments: 1) the user segment, which includes a new self-locating hand-held survival radio with GPS and OTH data burst capability; 2) the Over-The-Horizon (OTH) Communications relay segment comprised of satellite-based data relays; and 3) the Ground segment made up of a communications distribution and display network. The OTH segment will rely on the use of existing DoD and other Agency assets to meet threshold requirements. Future improvements will evaluate use of mobile satellite commercial services for meeting objective OTH data communication requirements. The Ground segment will include the Navy UHF Base Stations, a GCCS communications segment and Joint Service Rescue Center (JSRC) for receipt and display of survivor OTH data and OTH transmissions to the survivor. Rescue Response Cells include primary locations where rescue activities are planned and coordinated, such as Joint Rescue Coordination Centers, ships and Command and Control nodes. The Navy effort consists of: (1) lead development of the ground system communications architecture; (2) acquire and install communications distribution equipment at four UHF Base Stations in Hawaii, Bahrain, Norfolk, VA, and Naples, IT; (3) develop Navy Joint Maritime Command Information System (JMCIS) segment; (4) test Air Force CSEL GCCS segment before submission to DISA; and (5) procure and plan support of Navy acquisition requirements.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2303
PROJECT TITLE: Combat Survivor Evader Locator

(U) COST: (Dollars in thousands)
(U) PROGRAM PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($ 50) Tested planning & operational assessment support.
- (U) ($100) Engineering support for hand held radio GPS receiver development & support equipment.
- (U) ($ 25) Developed Navy User Study Report.
- (U) ($ 25) Prepared ILS Plan.
- (U) ($ 25) Prepared base station Navy Training Plan.
- (U) ($ 50) Lead Joint Ground Segment Architecture IPT.
- (U) ($ 50) Supported equipment analyses for Navy requirements.
- (U) ($ 50) Tech Manual development, verification and validation.
- (U) ($ 25) Participated in Joint User Training Plan Development.
- (U) ($ 50) Developed base station maintenance requirements.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2303
PROJECT TITLE: Combat Survivor Evader Locator

1. (U) FY 1998 PLANS:

- (U) ($75) Conduct shipboard rescue center integration analysis.
- (U) ($125) EMD System assessment.
- (U) ($100) Support to command and control analysis.
- (U) ($75) Complete training requirements.
- (U) ($50) Develop & update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Develop & update Naval C4ISR mission to incorporate overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.
- (U) ($75) User survey and analysis of in-service requirements

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
• (U) FY 1998 President's Budget:	0	475	0
• (U) Appropriated Value:	0	0	0
• (U) Change from 1998 President's Budget	+450	0	0
• (U) FY 1999 OSD/OMB Budget Submit	450	475	0

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY 1997 reprogramming of $450K for continued level-of-effort Navy determination of ILS, training, and support requirements.

Exhibit R-2

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2303
PROJECT TITLE: Combat Survivor Evader Locator

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN PE: 0708017N	0	6,000	15,000	16,000	16,000	0	0	0	53,000
(U) O&MN PE: 0708017N	0	1,000	1,000	1,000	1,000	1,000	1,000	0	6,000

(U) RELATED RDT&E: None

D. (U) SCHEDULE PROFILE: *

	FY 1997	FY 1998	FY 1999
Program Milestones	4Q - MSIIIA	3Q - MSIII	3Q - MSIV
Engineering Milestones			
T&E Milestones	1Q - CDR	2Q - OA	3Q - IOT&E
Contract Milestones			3Q - Full Production

*The CSEL program is a joint service program with the Air Force as lead. The Air Force provided funds to initiate the program and accomplish the milestones prior to FY98.

Exhibit R-2

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2303
PROJECT TITLE: Combat Survivor Evader Locator

(U) COST: (Dollars in thousands)

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Systems Engineering	450	475	
b. Hardware Development			
c. System Test & Evaluation			
Total	450	475	

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X2313
PROJECT TITLE: Situational Awareness Beacon with Reply

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2313 Situational Awareness Beacon with Reply (SABER)	0	8,129	7,285	3,532	1,107	1,062	1,062	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The SABER system provides critical battlefield/operating area situational awareness and friendly ID capabilities by uniting GPS and UHF/SATCOM technologies. The SABER system consists of a GPS receiver and two-way UHF radio capable of Over-The-Horizon (OTH) and Line-Of-Sight (LOS) communications. The GPS receiver provides an accurate position of the user. When a correctly encoded interrogation signal is received by the SABER, it transmits a reply via the UHF radio of the users identification, position, time, heading, speed, altitude, GPS diagnostics, polling acknowledge and authorization codes. The interrogating system can be any member of the user’s command and control structure from a local commander using a LOS radio, to a global commander using geosynchronous satellite communications. Additionally, SABER-equipped units who are preparing to launch an attack will send an intent-to-shoot LOS transmission indicating the target position and a kill radius. All SABER units on the network will compare the area with their own position. If an overlap exists, a “Don’t Shoot” reply is sent to prevent fratricide. Two basic configurations will be developed and produced: self-contained (for small amphibious craft) and CDNU-integrated (for ships with installed GPS and UHF radios).

(U) PROGRAM PLANS:

1. (U) FY 1998 PLANS:
   - (U) ($4,550) Develop militarized self-contained SABER: P-coded GPS, add messaging capability, encrypted waveforms, second transceiver to SABER.
   - (U) ($2,850) Systems Engineering for CDNU-integrated SABER configuration.
   - (U) ($581) Procure technical data.

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems
PROJECT NUMBER: X2313
PROJECT TITLE: Situational Awareness Beacon with Reply

1. (U) FY 1998 PLANS cont:
   - (U) ($148) Develop and update Naval Command, Control, Communications, Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

2. (U) FY 1999 PLANS:

- (U) ($2,604) Develop and test software for CDNU-integrated SABER configuration.
- (U) ($2,045) Systems Engineering for Shipboard C4I integration
- (U) ($1,000) Conduct operational testing for militarized self-contained SABER.
- (U) ($1,181) Prototype development of CDNU-integrated configuration.
- (U) ($455) Procure associated technical data.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	0	8,129	7,506
(U) Appropriated Value:	0	0	0
(U) Change from President's Budget:	0	0	-221
(U) FY 1999 OSD/OMB Budget Submit:	0	8,129	7,285

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999: Decrease of $120 thousand redirected to develop and update overarching C4ISR mission requirements. Decrease of $101 thousand for Navy adjustment.
(U) Schedule: None.
(U) Technical: None.

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2313
PROJECT TITLE: Situational Awareness Beacon with Reply

(U) COST: (Dollars in thousands)

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN #285100:	0	0	1,052	4,375	5,546	5,526	3,511		20,010
(U) O&MN #AG/SAG 1A4A:	0	1,478	1,478	2,195	3,650	4,061	6,445	CONT.	CONT.

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999
Program Milestones		*1Q-Milestone II	1Q - Milestone III
Engineering Milestones		2Q - PDR 3Q - CDR	
T&E Milestones		4Q - FAT	1Q - OPEVAL
Contract Milestones	*4Q - Acquisition Package Comp.	1Q - Contract Award	1Q - Contract Award (Production)

- The SABER program is an ACTD program. The Navy has provided the funds for concept design, test, and milestone accomplishment prior to FY98 through reprogramming within Navy PE#: 0604777N, project X0921 in the amount of $700K in FY96 and $897K in FY97.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2313
PROJECT TITLE: Situational Awareness Beacon with Reply

(U) COST: (Dollars in thousands)

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

Project Cost Categories	FY 1997	FY 1998	FY 1999
a. Systems Engineering		2,998	2,045
b. Hardware Development		4,550	1,181
c. Software Development		0	2,604
d. System Test & Evaluation		0	1,000
e. Technical Data		581	455
Total		8,129	7,285

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Southwest Research Institute	SS	Dec-97					4,550	1,181	CONT.	CONT
NRaD San Diego	WX	Oct-97					0	2,604	CONT.	CONT.

FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: SEPTEMBER 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2313
PROJECT TITLE: Situational Awareness Beacon with Reply

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management										
NISE East Charleston, SC	WX	Oct-97					2,079	2,500	CONT.	CONT.
NRAD San Diego	WX	Oct-97					1,500	0	CONT.	CONT.
Test and Evaluation										
NISE East Charleston, SC	WX	Oct-98					0	1,000	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development			4,550	3,785	CONT.	CONT.
Subtotal Support and Management			3,579	2,500	CONT.	CONT.
Subtotal Test and Evaluation			0	1,000	CONT.	CONT.
Total Project			8,129	7,285	CONT.	CONT.

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Fixed Distributed System X1312	21,453	0	0	0	0	0	0	0	1,247,905
Advanced Deployable System X1300	33,006	33,048	42,733	43,779	41,886	26,283	5,465	CONT	CONT
TOTAL	54,459	33,048	42,733	43,779	41,886	26,283	5,465	CONT	CONT

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Distributed Surveillance Systems are part of the Integrated Undersea Surveillance System (IUSS) in the Intelligence, Surveillance & Reconnaissance (IS&R) directorate. IUSS provides the majority of the U.S. Navy's open ocean detection capability against quiet submarines, including third 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) FDS is a low frequency passive acoustic surveillance system using hydrophones densely distributed on the sea floor. FDS will provide cueing information vital to fleet and national command authorities.

(U) The Advanced Deployable System (ADS) RDT&E funds provide for the Concept Evaluation (CE),Program Definition & Risk Reduction (PD&RR) Phase of an ADS prototype and Engineering and Manufacturing Development (E&M,D) for production. ADS will provide a rapidly and covertly deployable undersea surveillance capability to operational forces involved in regional conflicts. ADS will provide timely target data to tactical platforms 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 Joint Maritime Command Information System (JMCIS) for reporting of submarine activity and other undersea 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, Surveillance Towed Array Sensor System (SURTASS) program, the Advanced Deployable Array (AdDA) Program, the Port Area Surveillance (PAS) Program, Navy Sonobuoy Programs, Office of Naval Research (ONR) Programs, and the ARIADNE Program.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under E&M,D because FDS project X1312 encompasses engineering and manufacturing development of a new end item prior to production approval.

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

(U) COST (Dollars in Thousand

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Advanced Deployable System X1300	33,006	33,048	42,733	43,779	41,886	26,283	5,465	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Distributed systems are part of the Integrated Undersea Surveillance System (IUSS) in the Intelligence, Surveillance & Reconnaissance (IS&R) directorate. 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 13 Mar 93 and the Operational Requirements Document (ORD) dated 28 Oct 94.

(U) ADS will be a deployable undersea surveillance system composed of distributed fields of sensors that can be rapidly and unobtrusively deployed in regional contingency areas for use against enemy submarines. 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 and nuclear submarines, and provide the capability for tracking surface ships.

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($20,745) Conducted Single Node Test (SNT), began assembly and integration of the system for the Integrated Article Test (IAT). Continued ADS risk reduction efforts for system survivability and alternate platform deployment capability.

- (U) ($180) Continued at-sea data collection effort. Initiated detailed planning, scheduling and resource allocation for the IAT effort. Continued EOA (OT-1A).

- (U) ($1,128) Continued to assess AODS 2 node system performance. Modified the prototype AODS as result of testing. Continued the development, assembly, and integration of the AODS eight-node system, incorporated lessons learned from 2 node test. Conducted comparative analysis of AODS and ADS UWS capabilities. Incorporated MANTECH initiatives into AODS manufacturing process during 8-node system development.

- (U) ($7,684) Continued to support the system engineering design effort through the IPD process.

- (U) ($2,481) Continued to manage the ADS program through the use of program EV monitoring and progress assessment.

- (U) ($788) Developed and updated Naval Command, Control, Communications , Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Developed and updated Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architecture. Conducted associated C4ISR analyses and studies.

2. (U) FY 1998 PLAN:

- (U) ($19,622) Conduct the IAT. Evaluate collected test data and incorporate lessons learned into development process. Continue cable survivability and the alternate platform deployment capability risk reduction efforts. Begin assembly and integration of the Multi-Node system for the Multi-Node Test (MNT). Evaluate system performance and determine operational performance and suitability. Complete the Fleet Exercise Test (FET) test plan.

- (U) ($596) Complete EOA (OT-1A). Initiate detailed planning of Operational Assessment (OT-1B).

- (U) ($9,500) Continue to support the system engineering design effort through continued IPD process and testing support. Complete the analysis of the IAT data and prepare the MNT test plan. Prepare for at-sea MNT testing. Initiate the Single Process Initiative (SPI) Study to assess current and future PAS alternatives.

- (U) ($2,729) Manage ADS program development through the monitoring of Contractor and Government efforts through technical, schedule and cost performance. Initiate Assessment of Alternatives (AOA) plan and MSII program documentation updates. Prepare E&M,D Phase Request For Proposal (RFP) package.

- (U) ($601) Develop and update Naval Command, Control, Communications , Computers, Intelligence, Sensors and Reconnaissance (C4ISR) implementation guidance. Develop and update Naval C4ISR mission to incorporate an overarching operational, systems, technical and information architectures. Conduct associated C4ISR analyses and studies.

3. (U) FY 1999 PLAN:

- (U) ($26,302) Conduct MNT. Complete system development, integrate UWS with PAS, conduct Test Readiness Review (TRR), and carry out FET. Perform analysis of collected FET data and perform post test system assessment.

- (U) ($2,285) Analyze data collected during MNT and FET. Conduct Operational Assessment Testing (OT-IB). Support additional developmental and operational testing.

- (U) ($11,996) Continue to support the system engineering design effort through continued IPD process and testing support.

- (U) ($2,150) Manage ADS program development through the monitoring of Contractor and Government efforts through technical, schedule and cost performance. Review requirements and exercise PD&RR Contract Option to procure a second UWS, if required. Issue E&M,D Phase RFP. Prepare and complete MSII documentation and conduct MSII review.

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

B. (U) PROGRAM CHANGE SUMMARY:

		FY 1997	FY 1998	FY 1999
(U)	FY 1998 President's Budget:	33,422	33,048	38,623
(U)	Appropriated Value:			
(U)	Adjustments from FY98 PRESBUDG:	(416)		4,110
(U)	FY 1999 OSD/OMB Budget Submit:	33,006	33,048	42,733

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 97 was reduced $416K: -$813K Small Business Innovative Research (SBIR) Transfer; +$397K adjustments for other Navy program priorities. FY 99 is increased by $4,110K: +$4,600K Unplanned expenses to maintain the ADS program baseline schedule and support essential command architecture, engineering and integration services; -$500K realignment to develop and update overarching C4ISR mission requirements; and +$10K NWCF adjustments.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY:

	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN# 2221	67,880	CONT	CONT

(U) RELATED RDT&E: Not applicable.

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET

DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1300
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Advanced Deployable System

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones	MSII 4th Qtr			
Engineering Milestones	SRR 2nd Qtr Risk Reduction 4th Qtr	Start Prototype 4th Qtr	Complete SVT & IAT 2nd Qtr	ISR 2nd Qtr SDR 4th Qtr
T&E Milestones	Commence EOA (OT-1A) 2nd Qtr		Complete EOA (OT-1A) 2nd Qtr	TRR 2nd Qtr FET 3rd Qtr MNT 1st Qtr OT-1B 1st Qtr
Contract Milestones	PAC 1st Qtr IBR 3rd Qtr		Start EMD RFP 2nd Qtr	Complete EMD RFP 2nd Qtr

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997	FY 1998	FY 1999
a. Prime Mission Product	18,795	16,072	20,852
b. Processing & Analysis Segment (PAS)	1,950	3,550	5,450
c. Program Management	1,693	2,649	2,150
d. System Engineering	7,629	8,861	11,458
e. Test & Evaluation	180	596	2,285
f. Integrated Logistic Support	843	639	538
g. Technical Data	0	0	0
h. Special Purpose Support & Test Equipment	0	0	0
i. Operational Site Activation/Support	0	0	0
j. Special Projects	1,128	80	0
k. C4ISR Mission Requirements	788	601	0
Total	33,006	33,048	42,733

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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

Performing Activity	Contractor/ Government Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	Total Program
Product Development										
LMFS Manassas, VA	C/CPAF	9/95	78,887	78,887	1,785	12,703	18,795	16,072	20,852	CONT
AHA Rockville, MD	C/CPFF	3/97	2,600	2,600	0	0	450	1,100	1,000	CONT
APL/JHU Laurel, MD	SS/CPFF	11/94	3,220	3,220	175	0	1,050	1,230	1,018	CONT
ARL/UT Austin, TX	SS/CPFF	3/96	5,283	5,283	0	70	1,730	1,850	1,219	CONT
DSR Fairfax, VA	C/CPFF	6/93	4,236	4,236	0	0	1,050	2,450	1,550	CONT
OTHER CONTRACTS					3,103	1,016	945	840	3,470	CONT
NRL AODS Washington, D.C.	WX	10/96	7,456	7,456	3,360	1,600	951	0	0	CONT
NCCOSC San Diego, CA	WX	10/96	24,024	24,024	10,167	3,464	2,396	1,165	3,486	CONT
OTHER ACTIVITIES					3,455	1,043	2,556	3,877	4,712	CONT

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	Total Program
Support and Management										
AMRON Arlington, VA	C/CPFF	6/94	7,041	7,041	2,236	823	1,521	1,670	986	CONT
Other Contracts					8,741	4,849	769	818	659	CONT
Other Activities					2,275	532	613	1,380	1,495	CONT

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	Total Program
Test and Evaluation										
Other Contracts					5,221	1,293	88	60	209	CONT
NCCOSC San Diego, CA	WX	10/96	12,048	12,048	6,531	390	17	382	1,968	CONT
Other Activities					2,884	329	75	154	109	CONT

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET

DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N
PROGRAM ELEMENT TITLE: Distributed Surveillance System

PROJECT NUMBER:X1300
PROJECT TITLE: Advanced Deployable System

	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	Total Program
Subtotal Product Development	22,045	19,896	29,923	28,584	37,307	CONT
Subtotal Support and Management	13,252	6,204	2,903	3,868	3,140	CONT
Subtotal Test and Evaluation	14,636	2,012	180	596	2,286	CONT
Total Project	49,933	28,112	33,006	33,048	42,733	CONT

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1312
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Fixed Distributed System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Fixed Distributed System X1312	21,453	0	0	0	0	0	0	0	1,249,020

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Distributed systems are part of the Integrated Undersea Surveillance System (IUSS) in the Intelligence, Surveillance & Reconnaissance (IS&R) directorate. 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 13 Mar 93 and the Operational Requirements Document (ORD) dated 28 Oct 94.

(U) FDS is a low frequency passive acoustic surveillance system using hydrophones densely distributed on the sea floor. Cueing of mobile assets by IUSS Fixed surveillance systems provides essential information for the deployment of tactical systems in ASW and littoral operations and is vital to fleet and national command authorities. FY 97 funds provide for the U.S. share of design and development of a Fixed Distributed System, Commercial variant FDS-C. The system is a new low cost COTS/NDI variant of FDS that will provide critical new coverage in a high-interest ASW area and will be used in areas of the world requiring fixed surveillance ASW against current and next-generation threats. FDS funding for future production systems was eliminated in 1993, however an Engineering Development Model, FDS-1 was successfully fabricated and deployed and is currently an operational fee asset. FDS-C will also provide for replacement of older SOSUS arrays now reaching the end of their system life.

FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1312
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Fixed Distributed System

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) ($17,000) Developed the performance specification for the FDS-C system and awarded two Other Transaction Agreements (OTA) for design of FDS-C. After design effort is completed will award a follow-on contract to build and deploy the FDS-C system.
- (U) ($ 1,200) Collected acoustic information on the installation site and characterize the acoustic environment.
- (U) ($1,850) Transitioned the Shore Processing System to the next generation computers.
- (U) ($1,403) Conducted surveys on the candidate installation sites to characterize the ability to deploy a system.

2. (U) FY 1998 PLAN: Not applicable.

3. (U) FY 1999 PLAN: Not applicable

FY 1999 BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997	FY 1998	FY 1999
(U) FY 1998 President's Budget:	22,058	0	0
(U) Adjustments from FY 1998 PRESBUDG:	-605	0	0
(U) FY 1999 OSD Budget Submit:	21,453	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY 97 was increased $22,058; Congressional plus-up to initiate the development of a new low-cost COTS/NDI variant of FDS. FY 97 was decreased $580K SBIR Transfer and $25K Revised Economic Adjustment.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
OPN LI 222500				8,000	32,700	19,900		0	60,600

(U) RELATED RDT&E: Not applicable.

FY 1999 BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROJECT NUMBER:X1312
PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT TITLE: Fixed Distributed System

D. (U) SCHEDULE PROFILE:

	FY 1997	FY 1998	FY 1999
Program Milestones			
Engineering Milestones		SRR 1ST Qtr	PDR 1ST Qtr
T&E Prototype Milestones			Complete TEMP 2nd Qtr Testing 1st Qtr
Contract Milestones	Award of 2 OTA for Design 4th Qtr		

FY 1999 BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1997	FY 1998	FY 1999
a. Prime Mission Product	15,000	0	0
b. Processing & Analysis Segment (PAS)	1,850	0	0
c. Program Management	1,000	0	0
d. System Engineering	3,103	0	0
e. Test & Evaluation	300	0	0
f. Integrated Logistics Support	200	0	0
g. Technical Data	0	0	0
h. Special Purpose Support & Test Equip	0	0	0
i. Operational Site Activation/Support	0	0	0
j. Special Projects	0	0	0
Total	21,453	0	0

FY 1999 BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
SAIC McLean VA	FFP	8/97	7,500	7,500	0	7,500	0	0	0	7,500
Lockheed Martin Manassas VA	FFP	8/97	7,500	7,500	0	7,500	0	0	0	7,500
Support and Management										
TRW	CPAF	6/97	1,000	1,000	0	1,000	0	0	0	1,000
Lockheed Martin Manassas VA	CPAF	6/97	1,600	1,600	0	1,600	0	0	0	1,600
Various	WX	6/97	750	750	0	750	0	0	0	750
Test and Evaluation										
Various	WX	6/97	3,103	3,103	0	3,103	0	0	0	3,103

FY 1999 BUDGET ITEM JUSTIFICATION SHEET DATE: September 1997

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 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
GOVERNMENT FURNISHED PROPERTY Not Applicable.										
Subtotal Product Development					0	15,000	0	0	0	15,000
Subtotal Support and Management					0	3,350	0	0	0	3,350
Subtotal Test and Evaluation					0	3,103	0	0	0	3,103
Total Project					0	21,453	0	0	0	21,453

C. (U) FUNDING PROFILE:

--- Not Required ---