DEPARTMENT OF THE NAVY
FY 1998/1999 BUDGET ESTIMATES



JUSTIFICATION OF ESTIMATES

DTIC QUALITY INSPECTED 3

RESEARCH, DEVELOPMENT, TEST & EVALUATION BUDGET ACTIVITY 5

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FEBRUARY 1997

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

Exhibit R-1

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

DATE: February 1997

R-1 Line Number	Program Element Number	Item Nomenclature	Budget Activity	Millions of Dollars FY 1996	FY 1997	FY 1998	FY 1999	Security Classification
80	0603208N	Training System Aircraft	5	-	-	0.403	0.613	U
81	0603266N	AH-1T COMP ROTOR BLADE (Prior Year Only -- R2/R3 Not Required)	5	10.995	69.986	-	-	U
82	0604212N	ASW & Other Helo Development	5	75.685	62.674	73.354	219.570	U
83	0604214N	AV8B Aircraft (Eng)	5	25.479	16.089	11.034	11.230	U
84	0604215N	Standards Development	5	12.936	25.367	36.297	45.295	U
85	0604217N	S-3 Wpn System Improvement	5	12.013	9.553	4.735	24.049	U
86	0604218N	Air/Ocean Equipment Engineering	5	5.868	5.376	6.129	7.759	U
87	0604221N	P-3 Modernization Program	5	16.045	7.703	3.191	3.023	U
88	0604231N	Tactical Command System	5	24.194	28.654	31.518	53.116	U
89	0604245N	USMC H-1 Upgrades	5	-	-	80.735	90.264	U
90	0604261N	Acoustic Search Sensors	5	9.219	13.981	16.947	30.147	U
91	0604262N	V-22	5	717.336	552.082	529.495	272.716	U
92	0604264N	Air Crew Systems Development	5	16.725	26.083	12.111	14.126	U
93	0604270N	EW Development (R2/R3 Materials provided in Classified Budget Book)	5	87.436	121.431	101.803	127.853	U
94	0604307N	AEGIS Combat System Engineering	5	87.999	88.367	87.934	115.643	U
95	0604310N	Arsenal Ship	5	-	-	102.994	139.499	U
96	0604311N	LPD-17 Development	5	-	4.098	0.471	1.662	U
97	0604312N	Tri-Service Standoff Attack Missile	5	-	-	9.644	17.730	U
98	0604366N	Standard Missile Improvements (R2/R3 Materials included in Classified Budget Book)	5	21.404	9.240	0.549	1.329	U
99	0604373N	Airborne MCM	5	30.462	31.141	16.503	19.937	U
100	0604503N	Submarine System Equipment Development	5	66.191	58.638	42.294	47.914	U
101	0604504N	Air Control	5	7.438	10.294	9.298	6.417	U
102	0604507N	Enhanced Modular Signal Processor	5	14.076	21.740	3.462	3.224	U
103	0604512N	Shipboard Aviation Systems	5	10.938	6.285	9.225	10.494	U
104	0604516N	Ship Survivability	5	4.712	3.883	6.081	7.088	U
105	0604518N	CIC Conversion	5	15.154	9.848	11.325	9.781	U

106	0604524N	Submarine Combat System	5	40.906	17.828	23.701	18.584	U
107	0604558N	New Design SSN Development	5	324.302	372.217	311.076	210.363	U
108	0604561N	SSN-21 Development	5	79.411	87.524	49.542	27.731	U
109	0604562N	Submarine Tactical Warfare System	5	35.457	21.837	45.663	32.376	U
110	0604567N	Ship Contract Design/Live Fire T&E	5	20.881	6.804	75.713	125.904	U
111	0604574N	Navy Tactical Computer Resources	5	13.501	28.961	4.794	5.026	U
112	0604601N	Mine Development	5	2.946	2.381	2.815	3.650	U
113	0604603N	Unguided Conventional Air-launched Weapons	5	50.826	30.991	28.890	5.167	U
114	0604610N	Lightweight Torpedo Development	5	19.947	10.832	17.290	8.129	U
115	0604612M	MC Mine Countermeasures (Eng)	5	1.317	3.588	0.950	3.907	U
116	0604618N	Joint Direct Attack Munition	5	27.873	33.461	12.714	11.853	U
117	0604654N	Jt Serv Explosive Ordnance Dev	5	5.213	5.609	6.613	6.975	U
118	0604703N	Personnel, Trng, Simulation & Human Factors	5	1.002	0.972	1.022	1.252	U
119	0604710N	Navy Energy Program	5	2.518	1.903	2.088	2.535	U
120	0604719M	MC Command/Control/Communications Sys (Prior Year Only -- R2/R3 Not Required)	5	10.812	-	-	-	U
121	0604721N	Battle Group Passive Horizon Extension System	5	7.860	4.478	4.531	5.975	U
122	0604727N	Joint Standoff Weapon Systems	5	79.901	82.488	71.526	78.828	U
123	0604755N	Ship Self Defense	5	194.715	144.144	132.270	102.790	U
124	0604771N	Medical Development (Engineering)	5	3.258	3.021	3.620	4.397	U
125	0604777N	Navigation/ID System	5	52.684	46.837	50.370	57.931	U
126	0604784N	Distributed Surveillance System	5	97.163	55.480	33.048	38.623	U
		Total Engineering and Manufacturing Development		2,344.798	2,143.869	2,085.768	2,032.475	

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

Exhibit R-1

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

DATE: February 1997

R-1 Line Number	Program Element Number	Item Nomenclature	Budget Activity	Millions of Dollars FY 1996	FY 1997	FY 1998	FY 1999	Security Classification
90	0604261N	Acoustic Search Sensors	5	9.219	13.981	16.947	30.147	U
94	0604307N	AEGIS Combat System Engineering	5	87.999	88.367	87.934	115.643	U
81	0603266N	AH-1T COMP ROTOR BLADE	5	10.995	69.986	-	-	U
		(Prior Year Only -- R2/R3 Not Required)						
99	0604373N	Airborne MCM	5	30.462	31.141	16.503	19.937	U
101	0604504N	Air Control	5	7.438	10.294	9.298	6.417	U
92	0604264N	Air Crew Systems Development	5	16.725	26.083	12.111	14.126	U
86	0604218N	Air/Ocean Equipment Engineering	5	5.868	5.376	6.129	7.759	U
95	0604310N	Arsenal Ship	5	-	-	102.994	139.499	U
82	0604212N	ASW & Other Helo Development	5	75.685	62.674	73.354	219.570	U
83	0604214N	AV8B Aircraft (Eng)	5	25.479	16.089	11.034	11.230	U
121	0604721N	Battle Group Passive Horizon Extension System	5	7.860	4.478	4.531	5.975	U
105	0604518N	CIC Conversion	5	15.154	9.848	11.325	9.781	U
126	0604784N	Distributed Surveillance System	5	97.163	55.480	33.048	38.623	U
102	0604507N	Enhanced Modular Signal Processor	5	14.076	21.740	3.462	3.224	U
93	0604270N	EW Development	5	87.436	121.431	101.803	127.853	U
		(R2/R3 Materials provided in Classified Budget Book)						
116	0604618N	Joint Direct Attack Munition	5	27.873	33.461	12.714	11.853	U
122	0604727N	Joint Standoff Weapon Systems	5	79.901	82.488	71.526	78.828	U
117	0604654N	Jt Serv Explosive Ordnance Dev	5	5.213	5.609	6.613	6.975	U
114	0604610N	Lightweight Torpedo Development	5	19.947	10.832	17.290	8.129	U
96	0604311N	LPD-17 Development	5	-	4.098	0.471	1.662	U
120	0604719M	MC Command/Control/Communications Sys	5	10.812	-	-	-	U
		(Prior Year Only -- R2/R3 Not Required)						
115	0604612M	MC Mine Countermeasures (Eng)	5	1.317	3.588	0.950	3.907	U
124	0604771N	Medical Development (Engineering)	5	3.258	3.021	3.620	4.397	U
112	0604601N	Mine Development	5	2.946	2.381	2.815	3.650	U
125	0604777N	Navigation/ID System	5	52.684	46.837	50.370	57.931	U

119	0604710N	Navy Energy Program	5	2.518	1.903	2.088	2.535	U
111	0604574N	Navy Tactical Computer Resources	5	13.501	28.961	4.794	5.026	U
107	0604558N	New Design SSN Development	5	324.302	372.217	311.076	210.363	U
87	0604221N	P-3 Modernization Program	5	16.045	7.703	3.191	3.023	U
118	0604703N	Personnel, Trng, Simulation & Human Factors	5	1.002	0.972	1.022	1.252	U
85	0604217N	S-3 Wpn System Improvement	5	12.013	9.553	4.735	24.049	U
110	0604567N	Ship Contract Design/Live Fire T&E	5	20.881	6.804	75.713	125.904	U
123	0604755N	Ship Self Defense	5	194.715	144.144	132.270	102.790	U
104	0604516N	Ship Survivability	5	4.712	3.883	6.081	7.088	U
103	0604512N	Shipboard Aviation Systems	5	10.938	6.285	9.225	10.494	U
108	0604561N	SSN-21 Development	5	79.411	87.524	49.542	27.731	U
98	0604366N	Standard Missile Improvements	5	21.404	9.240	0.549	1.329	U
		(R2/R3 Materials Included in Classified Budget Book)						
84	0604215N	Standards Development	5	12.936	25.367	36.297	45.295	U
106	0604524N	Submarine Combat System	5	40.906	17.828	23.701	18.584	U
100	0604503N	Submarine System Equipment Development	5	66.191	58.638	42.294	47.914	U
109	0604562N	Submarine Tactical Warfare System	5	35.457	21.837	45.663	32.376	U
88	0604231N	Tactical Command System	5	24.194	28.654	31.518	53.116	U
80	0603208N	Training System Aircraft	5	-	-	0.403	0.613	U
97	0604312N	Tri-Service Standoff Attack Missile	5	-	-	9.644	17.730	U
113	0604603N	Unguided Conventional Air-launched Weapons	5	50.826	30.991	28.890	5.167	U
89	0604245N	USMC H-1 Upgrades	5	-	-	80.735	90.264	U
91	0604262N	V-22	5	717.336	552.082	529.495	272.716	U
		Total Engineering and Manufacturing Development		2,344.798	2,143.869	2,085.768	2,032.475	

RDT&E, Navy

Program and Financing (in Thousands of dollars) SUMMARY

Identification code 17-1319-0-1-051		Budget Plan (amounts for RESEARCH, DEV, TEST & EVAL actions programed)			
		1996 actual	1997 est.	1998 est.	1999 est.
	Program by activities:				
	Direct program:				
00.0101	Basic research	371,517	352,146	382,117	399,633
00.0201	Applied Research	537,711	534,805	490,273	539,070
00.0301	Advanced technology development	472,113	501,133	433,305	470,528
00.0401	Demonstration/validation	1,712,323	1,930,143	2,135,069	2,233,510
00.0501	Engineering and manufacturing development	2,347,827	2,143,869	2,085,768	2,032,475
00.0601	Management support	684,815	538,596	595,265	613,180
00.0701	Operational system development	2,345,195	1,855,062	1,489,225	1,467,918
00.9101	Total direct program	8,471,501	7,855,754	7,611,022	7,756,314
01.0101	Reimbursable program	123,806	121,831	125,000	125,000
10.0001	Total	8,595,307	7,977,585	7,736,022	7,881,314
	Financing:				
	Offsetting collections from:				
11.0001	Federal funds(-)	-121,737	-121,831	-125,000	-125,000
14.0001	Non-Federal sources(-)	-2,069			
17.0001	Recovery of prior year obligations				
	Unobligated balance available, start of year:				
21.4002	For completion of prior year budget plans				
21.4003	Available to finance new budget plans	-11,600	-4,500		
21.4009	Reprograming from/to prior year budget plans	-22,369	4,590		
22.1001	Unobligated balance transferred to other accounts	1,000			
22.2001	Unobligated balance transferred from other accounts (-)	-2,500	-4,590		
	Unobligated balance available, end of year:				
24.4002	For completion of prior year budget plans				
24.4003	Available to finance subsequent year budget plans	4,500			
25.0001	Unobligated balance expiring	2,915			
39.0001	Budget authority	8,443,447	7,851,254	7,611,022	7,756,314
	Budget authority:				
40.0001	Appropriation	8,508,970	8,044,767	7,611,022	7,756,314
40.3601	Appropriation rescinded (unob bal)		-4,500		
40.7501	Reduction pursuant to P.L. 104-208 (-), 8037(e)		-24,834		

41.0001	Transferred to other accounts (-)	-95,788	-164,179		
42.0001	Transferred from other accounts	30,265			
43.0001	Appropriation (adjusted)	8,443,447	7,851,254	7,611,022	7,756,314

RDT&E, Navy

Program and Financing (in Thousands of dollars) SUMMARY

Identification code 17-1319-0-1-051		Obligations			
		1996 actual	1997 est.	1998 est.	1999 est.
	Program by activities:				
	Direct program:				
00.0101	Basic research	376,671	338,287	380,319	398,581
00.0201	Applied Research	516,813	574,559	492,946	536,141
00.0301	Advanced technology development	454,795	547,033	437,377	468,293
00.0401	Demonstration/validation	1,717,965	1,904,811	2,122,576	2,227,616
00.0501	Engineering and manufacturing development	2,349,662	2,134,153	2,089,256	2,035,669
00.0601	Management support	744,549	528,098	591,864	612,105
00.0701	Operational system development	2,265,328	1,956,980	1,511,178	1,469,191
00.9101	Total direct program	8,425,783	7,983,921	7,625,516	7,747,596
01.0101	Reimbursable program	129,842	125,000	125,000	125,000
10.0001	Total	8,555,625	8,108,921	7,750,516	7,872,596
	Financing:				
	Offsetting collections from:				
11.0001	Federal funds(-)	-122,295	-121,831	-125,000	-125,000
14.0001	Non-Federal sources(-)	-2,057			
17.0001	Recovery of prior year obligations	-18,694			
	Unobligated balance available, start of year:				
21.4002	For completion of prior year budget plans	-568,848	-605,401	-478,655	-464,161
21.4003	Available to finance new budget plans	-11,600	-4,500		
21.4009	Reprograming from/to prior year budget plans				
22.1001	Unobligated balance transferred to other accounts	1,000			
22.2001	Unobligated balance transferred from other accounts (-)	-2,500	-4,590		
	Unobligated balance available, end of year:				
24.4002	For completion of prior year budget plans	605,401	478,655	464,161	472,879
24.4003	Available to finance subsequent year budget plans	4,500			
25.0001	Unobligated balance expiring	2,915			
39.0001	Budget authority	8,443,447	7,851,254	7,611,022	7,756,314
	Budget authority:				
40.0001	Appropriation	8,508,970	8,044,767	7,611,022	7,756,314
40.3601	Appropriation rescinded (unob bal)		-4,500		
40.7501	Reduction pursuant to P.L. 104-208 (-), 8037(e)		-24,834		

41.0001	Transferred to other accounts (-)	-95,788	-164,179		
42.0001	Transferred from other accounts	30,265			
43.0001	Appropriation (adjusted)	8,443,447	7,851,254	7,611,022	7,756,314

RDT&E, Navy

Program and Financing (in Thousands of dollars) SUMMARY

Identification code 17-1319-0-1-051	Obligations			
	1996 actual	1997 est.	1998 est.	1999 est.
Relation of obligations to outlays:				
71.0001 Obligations incurred	8,431,273	7,987,090	7,625,516	7,747,596
72.1001 Orders on hand, SOY	-142,908	-161,573	-161,573	-161,573
72.4001 Obligated balance, start of year	5,155,440	4,313,313	4,509,333	4,896,362
74.1001 Orders on hand, EOY	161,573	161,573	161,573	161,573
74.4001 Obligated balance, end of year	-4,313,313	-4,509,333	-4,896,362	-5,052,077
77.0001 Adjustments in expired accounts (net)	130,748			
78.0001 Adjustments in unexpired accounts	-18,694			
90.0001 Outlays (net)	9,404,119	7,791,070	7,238,487	7,591,881

RDT&E, Navy
Object Classification (in Thousands of dollars) SUMMARY

Identification code 17-1319-0-1-051		1996 actual	1997 est.	1998 est.	1999 est.
	Direct obligations:				
	Personnel compensation:				
111.101	Full-time permanent	43,493	43,735	42,937	41,311
111.301	Other than full-time permanent	3,501	2,480	2,390	2,437
111.501	Other personnel compensation	1,515	1,475	1,521	1,492
111.801	Special personal services payments	28	27	27	28
111.901	Total personnel compensation	48,537	47,717	46,875	45,268
112.101	Personnel Benefits: Civilian personnel	9,048	10,476	10,454	10,144
113.001	Benefits for former personnel	310	630	482	438
121.001	Travel and transportation of persons	20,199	20,623	21,056	21,498
122.001	Transportation of things	1,289	1,316	1,344	1,372
123.101	Rental payments to GSA	2,784	2,842	2,902	2,963
123.201	Rental payments to others	1,682	1,717	1,753	1,790
123.301	Communications, utilities, and miscellaneous charges	5,706	5,826	5,948	6,073
124.001	Printing and reproduction	412	421	430	439
125.101	Advisory and assistance services	246,995	238,054	224,235	220,989
125.201	Other services with the private sector	5,014,086	4,867,664	4,337,807	4,503,249
	Purchases goods/services (inter/intra) Fed accounts				
125.301	Purchase of goods/services from other Fed agencies	660,632	675,166	690,020	691,000
125.303	Purchases from revolving funds	2,152,752	1,843,022	2,005,149	1,959,183
126.001	Supplies and materials	7,607	7,767	7,930	8,097
131.001	Equipment	8,710	8,893	9,097	9,270
132.001	Land and structures	1,604	1,638	1,673	1,708
141.001	Grants, subsidies, and contributions	243,430	250,149	258,361	264,115
199.001	Total Direct obligations	8,425,783	7,983,921	7,625,516	7,747,596
	Reimbursable obligations:				
	Personnel Compensation:				
211.101	Full-time permanent	33,284	41,446	35,817	36,545
211.301	Other than full-time permanent	1,237	2,884	3,125	3,192
211.501	Other personnel compensation	551	800	785	807
211.801	Special personal services payments	7			
211.901	Total personnel compensation	35,079	45,130	39,727	40,544

212.101	Personnel Benefits: Civilian Personnel	7,150	8,500	7,400	7,537
213.001	Benefits for former personnel	201			
221.001	Travel and transportation of persons	3,404	3,475	3,548	3,623
222.001	Transportation of things	450	459	469	479
223.101	Rental payments to GSA	77	79	80	82
223.201	Rental payments to others	691	706	720	735
223.301	Communications, utilities, and miscellaneous charges	1,317	1,345	1,373	1,402
224.001	Printing and reproduction	196	200	204	209

RDT&E, Navy
Object Classification (in Thousands of dollars) SUMMARY

Identification code 17-1319-0-1-051		1996 actual	1997 est.	1998 est.	1999 est.
225.201	Other services with the private sector	40,631	35,495	36,065	36,662
	Purchases goods/services (inter/intra) Fed accounts				
225.303	Purchases from revolving funds	20,248	8,778	14,151	12,017
226.001	Supplies and materials	10,729	10,965	11,184	11,419
231.001	Equipment	5,684	5,803	5,925	6,050
241.001	Grants, subsidies, and contributions	3,985	4,065	4,154	4,241
299.001	Total Reimbursable obligations	129,842	125,000	125,000	125,000
999.901	Total obligations	8,555,625	8,108,921	7,750,516	7,872,596

Comparison of FY 1996 Financing as reflected in FY 1997 Budget with 1996 Financing as Shown in the FY 1998 Budget

($ in Thousands)

	Financing per FY 1997 Budget	Financing Per FY 1998 Budget	Increase (+) or Decrease (-)
Program Requirements (Total)	8,494,534	8,471,501	-23,033
Program Requirements (Service Account)	(8,494,534)	(8,471,501)	(-23,033)
Program Requirements (Reimbursable)	110,000	123,806	+13,806
Appropriation (Adjusted)	8,604,534	8,595,307	-9,227

Explanation of Changes in Financing
($ in Thousands)

The Fiscal Year 1996 program has changed since the presentation of the FY 1997 budget as noted below:

1. Program Requirements (Total). There has been a net decrease to the appropriation (adjusted) of $9,227, as a result of changes in program requirements as noted below.

2. Program Requirements (Service Account). There has been a net increase to the appropriation (adjusted) of $23,033. This net change is comprised of an increase in program requirements ($23,033). These changes included a rescission to the FY 1996 program approved in the FY 1997 DoD Appropriations Act (-$4,500), a rescission for Administrative and Personal Services (-$6,739), a rescission to finance F-16 sales to Jordan (-$45,000) based on reduced inflation rates, reductions reflected on the FY 1996 DoD Omnibus Reprogramming Action to specific programs (-$10,600) and a general reduction based on lower inflation rates (-$2,506), a Supplemental Appropriation added funds to the Shallow Water MCM Demonstrations program (+$10,100), four transfers into the appropriation from a DoD central transfer account were effected to support the RDT&E Counter Drug program added funds (+$30,265), a transfer to consolidated the Non-Lethal Weapons Technology added funds (+$4,590), and the withdrawal of proposed rescissions to specific programs.

3. Program Requirements (Reimbursable). There has been a net increase to the appropriation of $13,808, as a result of changes in reimbursable program requirements ($13,806).

Comparison of FY 1996 Program Requirements as reflected in the FY 1997 Budget with FY 1996 Program Requirements as shown in the FY 1998 Budget

Summary of Requirements ($ In Thousands)

	Total Program Requirements per FY 1997 Budget	Total Program Requirements per FY 1998 Budget	Increase (+) or Decrease (-)
01 - Basic Research	377,362	371,516	-5,846
02 - Applied Research	541,372	537,711	-3,661
03 - Advanced Technology Development	444,655	472,184	+27,529
04 - Demonstration and Validation (DEM/VAL)	1,718,754	1,712,926	-5,828
05 - Engineering and Manufacturing Development (EMD)	2,396,003	2,344,798	-51,205
06 - RDTE Management Support	571,115	684,676	+113,561
07 - Operational Systems Development	2,370,501	2,347,690	-22,811
Total Fiscal Year Program	**8,494,534**	**8,471,501**	**-23,033**

Explanation by Budget Activity

($ In Thousands)

01. Basic Research (-$5,846) - Changes to this budget activity resulted from a rescission for Administrative and Personal Services (-$1,262), a rescission to finance F-16 sales to Jordan (-$2,004) based on reduced inflation rates, a transfer to support the Small Business Innovative Research (SBIR) program (-$1,935), and other changes in program requirements which required minor reprogrammings (-$645).

02. Applied Research (-$3,661) - Changes to this budget activity resulted from a rescission for Administrative and Personal Services (-$353), a rescission to finance F-16 sales to Jordan (-$2,945) based on reduced inflation rates, a

transfer to support the Small Business Innovative Research (SBIR) program (-$8,371), and other changes in program requirements which required minor reprogrammings (+$8,008).

03. Advanced Technology Development (+$27,529) - Changes to this budget activity resulted from a rescission for Administrative and Personal Services (-$1,844), a rescission to finance F-16 sales to Jordan (-$2,528) based on reduced inflation rates, a transfer to support the Small Business Innovative Research (SBIR) program (-$5,291), two reductions reflected on the FY 1996 DoD Omnibus Reprogramming Action against the Advanced Technology Transition program (-$4,800) and a general reduction based on lower inflation rates (-$1,200), and other changes in program requirements which required minor reprogrammings (-$3,108). Additionally, a Supplemental Appropriation added funds to the Shallow Water MCM Demonstrations program (+$10,100) and a proposed rescission to the AARGM program was withdrawn (+$36,300).

04. Demonstration and Validation (DEM/VAL) (-$5,828) - Changes to this budget activity resulted from a rescission for Administrative and Personal Services (-$1,587), a rescission to finance F-16 sales to Jordan (-$9,144) based on reduced inflation rates, a transfer to support the Small Business Innovative Research (SBIR) program (-$15,807), a reduction reflected on the FY 1996 DoD Omnibus Reprogramming Action based on lower inflation rates (-$343), and other changes in program requirements which required minor reprogrammings (+$16,463). Additionally, a transfer to consolidated the Non-Lethal Weapons Technology added funds (+$4,590).

05. Engineering and Manufacturing Development (EMD) (-$51,205) - Changes to this budget activity resulted from a rescission for Administrative and Personal Services (-$517), a rescission to finance F-16 sales to Jordan (-$12,682) based on reduced inflation rates, a transfer to support the Small Business Innovative Research (SBIR) program (-$42,566), a reduction reflected on the FY 1996 DoD Omnibus Reprogramming Action against the New Design SSN Development program (-$5,800), and other changes in program requirements which required minor reprogrammings (+$10,360).

06. RDTE Management Support (+$113,561) - Changes to this budget activity resulted from a rescission for Administrative and Personal Services (-$273), a rescission to finance F-16 sales to Jordan (-$3,063) based on reduced inflation rates, a transfer to support the Small Business Innovative Research (SBIR) program (+$109,696), and other changes in program requirements which required minor reprogrammings (+$7,201).

07. Operational Systems Development (-$22,811) - Changes to this budget activity resulted from a rescission for Administrative and Personal Services (-$903), a rescission to finance F-16 sales to Jordan (-$12,634) based on reduced inflation rates, a transfer to support the Small Business Innovative Research (SBIR) program (-$32,250), and other changes in program requirements which required minor reprogrammings (-$2,789). Additionally, four transfers into the appropriation from a DoD central transfer account were effected to support the RDT&E Counter Drug program added funds (+$30,265). Additionally, a rescission was effected in the FY 1997 DoD Appropriations Act (-$4,500).

Comparison of FY 1997 Financing as reflected in FY 1997 Budget with 1997 Financing as Shown in the FY 1998 Budget

($ In Thousands)

	Financing per FY 1997 Budget	Financing Per FY 1998 Budget	Increase (+) or Decrease (-)
Program Requirements (Total)	7,334,734	7,855,754	+521,020
Program Requirements (Service Account)	(7,334,734)	(7,855,754)	(+521,020)
Program Requirements (Reimbursable)	110,000	121,831	+11,831
Appropriation (Adjusted)	**7,444,734**	**7,977,585**	**+532,851**

Explanation of Changes in Financing

($ in Thousands)

The Fiscal Year 1997 program has changed since the presentation of the FY 1997 budget as noted below:

1. Program Requirements (Total). There has been a net increase to the appropriation (adjusted) of $532,851, as a result of changes in program requirements as noted below.

2. Program Requirements (Service Account). There has been a net increase to the appropriation (adjusted) of $521,020, resulting from changes in program requirements as a result of Congressional appropriation changes in the FY 1997 DoD Appropriations Act. These changes included a general undistributed RDT&E reduction of 2 percent (-$164,179)(Section 8136), a general undistributed reduction of 2 percent (-$164,179) to finance Defense Business Operating Fund (DBOF) operating shortfalls (Section 8120), an undistributed reduction for Federally Financed Research and Development Centers (FFRDC)(-$3,822)(Section 8037(e)), an undistributed reduction for non-Federally Financed Research and Development Centers (non-FFRDC)(-$13,299)(Section 8037(h)), a rescission to finance force protection requirements
(-$7,713)(Section 8138), and net changes to specific program changes (+$874,212).

3. Program Requirements (Reimbursable). There has been a net increase to the appropriation of $11,831, as a result of changes in reimbursable program requirements ($11,831).

Comparison of FY 1997 Program Requirements as reflected in the FY 1997 Budget with FY 1997 Program Requirements as shown in the FY 1998 Budget

Summary of Requirements ($ in Thousands)

	Total Program Requirements per FY 1997 Budget	Total Program Requirements per FY 1998 Budget	Increase (+) or Decrease (-)
01 - Basic Research	387,213	352,146	-35,067
02 - Applied Research	463,465	534,805	+71,340
03 - Advanced Technology Development	449,342	501,133	+51,791
04 - Demonstration and Validation (DEM/VAL)	1,740,955	1,930,143	+189,188
05 - Engineering and Manufacturing Development (EMD)	2,048,657	2,143,869	+95,212
06 - RDTE Management Support	558,440	538,596	-19,844
07 - Operational Systems Development	1,686,662	1,855,062	+168,400
Total Fiscal Year Program	**7,334,734**	**7,855,754**	**+521,020**

Explanation by Budget Activity
($ in Thousands)

01. Basic Research (-$35,067) - Changes to this budget activity resulted from the following Congressional undistributed reductions reflected in the FY 1997 DoD Appropriations Act. These changes included a general undistributed RDT&E reduction of 2 percent (-$7,344)(Section 8136), a general undistributed reduction of 2 percent (-$7,344) to finance Defense Business Operating Fund (DBOF) operating shortfalls (Section 8120), an undistributed reduction for Federally

Financed Research and Development Centers (FFRDC)(-$34)(Section 8037(e)), a rescission to finance force protection requirements (-$345)(Section 8138). Congress also specifically reduced the Defense Research Sciences program (-$20,000).

02. Applied Research (+$71,340) - Changes to this budget activity resulted from the following Congressional undistributed reductions reflected in the FY 1997 DoD Appropriations Act. These changes included a general undistributed RDT&E reduction of 2 percent (-$11,155)(Section 8136), a general undistributed reduction of 2 percent (-$11,155) to finance Defense Business Operating Fund (DBOF) operating shortfalls (Section 8120), an undistributed reduction for Federally Financed Research and Development Centers (FFRDC)(-$214)(Section 8037(e)), an undistributed reduction for non-Federally Financed Research and Development Centers (non-FFRDC)(-$212)(Section 8037(h)), a rescission to finance force protection requirements (-$524)(Section 8138). Congress also specifically added funds to start or continue 26 specific initiatives (+$94,600).

03. Advanced Technology Development (+$51,791) - Changes to this budget activity resulted from the following Congressional undistributed reductions reflected in the FY 1997 DoD Appropriations Act. These changes included a general undistributed RDT&E reduction of 2 percent (-$10,450)(Section 8136), a general undistributed reduction of 2 percent (-$10,450) to finance Defense Business Operating Fund (DBOF) operating shortfalls (Section 8120), an undistributed reduction for Federally Financed Research and Development Centers (FFRDC)(-$272)(Section 8037(e)), an undistributed reduction for non-Federally Financed Research and Development Centers (non-FFRDC)(-$348)(Section 8037(h)), a rescission to finance force protection requirements (-$491)(Section 8138). Congress also specifically added funds to start or continue 15 specific initiatives (+$106,400), while reducing one program (-$34,424). Additionally, changes in program requirements required minor reprogrammings (+$1,826).

04. Demonstration and Validation (DEM/VAL) (+$189,188) - Changes to this budget activity resulted from the following Congressional undistributed reductions reflected in the FY 1997 DoD Appropriations Act. These changes included a general undistributed RDT&E reduction of 2 percent (-$40,282)(Section 8136), a general undistributed reduction of 2 percent (-$40,282) to finance Defense Business Operating Fund (DBOF) operating shortfalls (Section 8120), an undistributed reduction for Federally Financed Research and Development Centers (FFRDC)(-$859)(Section 8037(e)), an undistributed reduction for non-Federally Financed Research and Development Centers (non-FFRDC)(-$1,546)(Section 8037(h)), a rescission to finance force protection requirements (-$1,891)(Section 8138). Congress also specifically added funds to start or continue 20 specific initiatives (+$270,551), while reducing three programs (-$6,144).

Additionally, funds were increased in support of the Near Term Mine Warfare Plan (+$6,285), as well as other changes in program requirements which required minor reprogrammings (+$3,356).

05. Engineering and Manufacturing Development (EMD) (+$95,212) - Changes to this budget activity resulted from the following Congressional undistributed reductions reflected in the FY 1997 DoD Appropriations Act. These changes included a general undistributed RDT&E reduction of 2 percent (-$44,947)(Section 8136), a general undistributed reduction of 2 percent (-$44,947) to finance Defense Business Operating Fund (DBOF) operating shortfalls (Section 8120), an undistributed reduction for Federally Financed Research and Development Centers (FFRDC)(-$282)(Section 8037(e)), an undistributed reduction for non-Federally Financed Research and Development Centers (non-FFRDC) (-$6,522)(Section 8037(h)), a rescission to finance force protection requirements (-$2,116)(Section 8138). Congress also specifically added funds to start or continue 35 specific initiatives (+$243,700), while realigning one program (-$25,000) and reducing two programs (-$11,700). Additionally, funds were decreased in support of the Near Term Mine Warfare Plan (-$6,285), as well as other changes in program requirements which required minor reprogrammings (-$6,689).

06. RDTE Management Support (-$19,844) - Changes to this budget activity resulted from the following Congressional undistributed reductions reflected in the FY 1997 DoD Appropriations Act. These changes included a general undistributed RDT&E reduction of 2 percent (-$11,274)(Section 8136), a general undistributed reduction of 2 percent (-$11,274) to finance Defense Business Operating Fund (DBOF) operating shortfalls (Section 8120), an undistributed reduction for Federally Financed Research and Development Centers (FFRDC)(-$1,956)(Section 8037(e)), an undistributed reduction for non-Federally Financed Research and Development Centers (non-FFRDC) (-$1,111)(Section 8037(h)), a rescission to finance force protection requirements (-$528)(Section 8138). Congress also specifically added funds to start or continue 3 specific initiatives (+$4,500). Additionally, changes in program requirements required minor reprogrammings (+$1,799).

07. Operational Systems Development (+$168,400) - Changes to this budget activity resulted from the following Congressional undistributed reductions reflected in the FY 1997 DoD Appropriations Act. These changes included a general undistributed RDT&E reduction of 2 percent (-$38,727)(Section 8136), a general undistributed reduction of 2 percent (-$38,727) to finance Defense Business Operating Fund (DBOF) operating shortfalls (Section 8120), an undistributed reduction for Federally Financed Research and Development Centers (FFRDC)(-$205)(Section 8037(e)), an undistributed reduction for non-Federally Financed Research and Development Centers (non-FFRDC)(-$3,560)(Section 8037(h)), a rescission to finance force protection requirements (-$1,817)(Section 8138). Congress also

specifically added funds to start or continue 19 specific initiatives (+$257,929), while reducing two programs (-$5,700). Additionally, changes in program requirements required minor reprogrammings (-$793).

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
H1150 Joint Primary Aircraft Trainer System	0	0	403	613	324	0	0	0	0	1,340

NOTE: JPATS FY96 and 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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996 ACCOMPLISHMENTS: NOT APPLICABLE

2. (U) FY 1997 PLAN: NOT APPLICABLE

3. (U) FY 1998 PLAN:

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

4. (U) FY 1999 PLAN:

   (U) ($613) Continue strike lead-in courseware development and courseware conversion.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	0	0
(U) Appropriated Value:		0		
(U) Adjustments from Pres Budget:	0	0	+403	+613
(U) FY 1998 President s Budget Submit:	0	0	403	613

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 and FY 1997 JPATS program is funded under Budget Activity 4. The FY 1998 and FY 1999 adjustments are required for Navy unique requirements.

(U) Schedule: OA and MOT&E changed to reflect revised contractor schedule. 4Q/99 GBTS CDR, 4Q/03 USN IOC, and award for LOTS V through VII were added to the schedule.

(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) APN-3 JPATS	0	0	0	0	34,221	82,720	84,287	86,567	1,123,100	1,410,895
(U) APN-6 JPATS	0	0	0	0	0	0	0	24,263	97,700	121,963

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) RELATED RDT&E:

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

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	N/A	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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H0485, ALFS	17,941	14,004	0	0	0	0	0	0	cont	167,226
H1109, CH/MH-53	9,896	1,052	1,235	639	946	951	3,938	4,966	cont	cont
H1378, AH-1 A/C	1,160	0	0	0	0	0	0	0	cont	120,200
H1707, LAMPS III IMP	47,292	40,425	72,119	218,931	125,889	33,877	7,606	6,259	cont	723,199
H1709, CH-60 VERTREP	0	7,193	0	0	0	0	0	0	cont	7,193
TOTAL RDT&E Articles	76,289	62,674 (1)	73,354 (2)	219,570	126,835	34,828 (2)	11,544 (2)	11,225	cont	1,017,818

(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.

(U) H1378 - The mission of the AH-1W attack helicopter is to provide close-in-fire support and fire support coordination in aerial ground escort operations during the ship-to-shore phase in amphibious operations and during subsequent operations ashore. The AH-1 Integrated Weapons System (IWS) competition was terminated in FY 1995. Fire control wiring and algorithm implementation is developed in the Stores Management System (SMS) program, providing the AH-1 with an advanced rocket delivery capability.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

(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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H0485 ALFS	17,941	14,004	0	0	0	0	0	0	0	167,226

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 1996 ACCOMPLISHMENTS:

- (U) ($7,422) Conducted developmental testing (DT)-IIA at lake Seneca and commenced flight testing. Conducted combined developmental/operational tests (DT/OT) (contractor effort). Continued contractor preparation of MSIII logistics support requirements.

- (U) ($6,626) Provided support for DT-IIA and OT-IIA testing (contractor effort). Conducted integrated system lab verification. Incorporated human factors lessons learned during flight test period. Commenced system level SH-60R/ALFS integration.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

- (U) ($2,779) Continued government MSIII logistics requirements. Conducted field activity portion of DT-IIA lake and flight testing . Continued program support.

- (U) ($1,114) Conduct field activity portion of OT-IIA flight testing.

2. (U) FY 1997 PLAN:

- (U) ($5,265) Logistics Support Analysis-depot analysis, test program sets and provisioning. DT/OT Support - Complete DT/OT; analyze test data and implement fixes identified during DT-IIA and OT-IIA in preparation for system technical evaluation (TECHEVAL) and operational evaluation (OPEVAL). Conduct Program Readiness Review. (contractor effort)

- (U) ($4,110) Complete SH-60R/ALFS system integration development. Complete government logistics requirements. Analyze test data and implement fixes identified during DT-IIA and OT-IIA in preparation for system TECHEVAL and OPEVAL (government effort). Complete program support.

- (U) ($4,389) Begin system integration studies and initial design efforts in preparation for helicopter flight demonstration of Parametric Airborne Dipping Sonar (PADS) in FY 98.

- (U) ($240) Portion of program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

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

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: H0485
PROJECT TITLE: ALFS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	16,080	3,615	0	0
(U) Appropriated Value:		14,615		
(U) Adjustments from 1997 Pres Budget:	+1,861	+10,389		
(U) FY 1998 President s Budget Submit:	17,941	14,004	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net increase of +1,861 thousand in FY 96 reflects a reprogramming action to support OT-IIA flight testing originally scheduled for 4Q FY 96 ($+2,167 thousand), a reduction for Jordanian rescission ($-96 thousand), a reduction for SBIR ($-266 thousand), a minor program adjustment of $-10 thousand and a minor pricing adjustment of ($+66 thousand). The net increase of $+10,389 thousand in FY 97 reflects a Congressional plus-up for Parametric Airborne Dipping Sonar (PADS) ($+5,000 thousand) and additional Airborne Low Frequency Sonar (ALFS) efforts ($+6,000 thousand), and reductions for FFRDC adjustments ($-13 thousand), Navy Working Capital Fund (NWCF) surcharge ($-292 thousand), and pricing adjustments ($-306 thousand).

(U) Schedule: OT-IIA delayed from 4Q/96 to 3Q/97 due to immature Reeling Machine Control System (RMCS) software, acoustics and technical problem resolution.

(U) Technical: Not Applicable

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: H0485
PROJECT TITLE: ALFS

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

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones				2Q MS III	
Engineering Milestones					
T&E Milestones	DTIIA/ 1Q96-2Q97	OTIIA/ 3Q-4Q97	TECHEVAL/ 2Q-3Q98 OPEVAL/4Q98		
Contract Milestones					

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H1109 CH/MH-53										
	9,896	1,052	1,235	639	946	951	3,938	4,966	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 Extension Program (SLEP) Phase II efforts commence to develop corrective actions to address deficiencies in aircraft dynamic components and mission systems, such as the drive train, main rotor head and wiring. The results of these efforts will be used to justify APN-5 funding of Phase II of the 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.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($6,696) SLAP - Incremental contract payment for completion of FY 1995 SLAP study. Preliminary Report (PRPT) delivered 8 Feb 96. Cost/Schedule Status Report (C/SSR) Obligation Feb 97-Mar 97.
- (U) ($ 137) SLAP - Repair of Repairables (ROR) for items broken during Contractor test flights - Aug 96. Complete all necessary repairs by Nov 96.
- (U) ($ 300) SLAP - Funding for unscheduled maintenance for SLAP. Materials and services to repair, modify and return to ready for issue against SLAP aircraft Buno Number 162497 with completion Jun 97. Obligations Oct 96-Mar 97.
- (U) ($ 633) SLAP - Funding to determine the service life of the swashplate duplex bearing.
- (U) ($1,024) IMD-EOA - Awarded IMD-EOA contract.
- (U) ($ 500) IMD - Awarded Feasibility Analysis Study for IMD Early Operational Assessment.
- (U) ($ 606) In-house travel and field activities funding to support IMD and SLAP program.

2. (U) FY 1997 PLAN:

- (U) ($ 298) IMD-EOA - Continue incremental contract payments and award option II IMD-EOA. Conduct first In-Process Review (IPR) and commence EOA Flight Testing (EOAT).
- (U) ($ 728) In-house travel and field activities funding to support IMD program.
- (U) ($ 26) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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

3. (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.

4. (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.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	10,224	1,106	5,448	646
(U) Appropriated Value:		1,106		
(U) Adjustments from 1997 Pres Budget:	-328	-54	-4,213	-7
(U) FY 1998 President s Budget:	9,896	1,052	1,235	639

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: A net reduction of $-328 thousand in FY 1996 is due to $-12 thousand Jordanian rescission, $-90 thousand for various program adjustments, and $-226 thousand SBIR assessment. The net reduction of $-54 thousand in FY 1997 reflects $-22 thousand for Navy Working Capital Fund (NWCF) and $-32 thousand for minor pricing adjustments. The net reduction of $-4,213 in FY 1998 reflects $-4,100 thousand for the reprioritization of efforts within the Department of the Navy; $-89 thousand for (NWCF) adjustments and $-24 thousand for minor pricing adjustments. The net reduction of $-7 thousand in FY 1999 reflects $-4 thousand for NWCF and $-3 thousand for minor pricing adjustments.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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

(U) Schedule: Start of Phase II SLEP was delayed from FY-98 to FY-99 due to realignment of funds from RDT&E,N funding to the Aircraft Procurement Navy (BA-5) appropriation. This funding adjustment was to meet urgent safety of flight requirements for procurement and installation of a Swashplate Monitor System on the H-53E. MAT/Maint SLAP (1Q/97 - 3Q/97) was added to perform unscheduled maintenance resulting from SLAP flight testing. The IMD-EOA IPR scheduled for 4Q/96 slipped to 2Q/97 due to the IMD-EOA contract award slippage from 2Q/96 to 3Q/96 which occurred because of extended Best and Final Offers. SLAP contractor test flight is currently scheduled to commence 2Q/97. IMD feasibility study 3Q/96 to 4Q/97 was added to validate that future investments in this technology are justified. SLAP Analysis Assessment of the service life of the swashplate duplex bearing (awarded 4Q/96-4Q/97) was added because of compelling safety issues as a result of the 9 May 1996 CH-53E mishap which temporarily grounded the H-53 fleet. IMD EOAT slipped from 2Q/97 to 3Q/98 and IMD EOA II 1Q/97 to 2Q/97 due to delayed contract award. Initiate IMD Open Architecture Study 1Q/98 - 4Q/98.

(U) Technical: Not applicable

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	2Q SLAP PRPT	2Q IMD-EOA IPR			
Engineering Milestones		1Q-3Q MAT/MAINT SLAP			
T&E Milestones		2Q-3Q SLAP CONTR TESTFLT	3Q-3Q98 IMD EOAT		
Contract Milestones	4Q-3Q97 IMD FEAS 3Q-4Q98 IMD-EOA 4Q-4Q97 SLAP BEARING	2Q-2Q98 IMD EOAII	1Q-4Q ARCH STY	1Q-4Q SLEP	

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 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 1996	FY 1997	FY 1998	FY 1999
a. Travel	163	106	130	75
b. Miscellaneous	0	0	0	0
c. Reliability, Maintainability and Availability	7,766	0	0	398
d. Tech Engineering Support	195	175	180	0
e. Program Management Support	125	140	95	48
f Engineering Development	1,524	324	372	0
g. Operational Flight Test Sup	123	281	458	118
h. SBIR Assessment		26		
Total	9,896	1,052	1,235	639

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 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 1995 & Prior	FY 1996 Budget	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	13,210	13,210	5,581	7,629					13,210
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	2,220	2,220		1,524	324	372			2,220
Miscellaneous (less than 2 million)											
		VARIOUS	VARIOUS	TBD	26,441	495	281	310	75	Con t	Con t
Support and Management											
Miscellaneous (less than 2 million)											
		VARIOUS	VARIOUS	TBD	3,704	125	140	95	48	Con t	Con t

FY 1998 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 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

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
Test and Evaluation											
Miscellaneous (less than 2 million)											
	VARIOUS	VARIOUS		TBD	1,213	123	281	458	118	Con t	Con t

GOVERNMENT FURNISHED PROPERTY

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				54,786	9,648	605	682	473	Con t	Con t
Support and Management				3,704	125	140	95	48	Con t	Con t
Test and Evaluation				1,213	123	281	458	118	Con t	Con t
SBIR Assessment						26				26
Total Project				59,703	9,896	1,052	1,235	639	Con t	Con t

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H1707 LAMPS III IMP	47,292	40,425	72,119	218,931	125,889	33,877	7,606	6,259	0	723,199
RDT&E Articles			(2)			(2)	(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 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 1996 ACCOMPLISHMENTS:

- (U) ($44,723) Completed system Preliminary Design Review (PDR), began installation and integration of prototype data handling equipment in lab, continued laboratory simulation/stimulation, commenced air vehicle modifications, prepared documentation to support a system Critical Design Review (CDR), initiated high level software coding and test.

- (U) ($2,032) Provided Navy system engineering support in preparation for CDR, software requirement definition, and program management and travel.

- (U) ($537) Supported aircraft developmental testing (DT) preparations, hardware design support, and ALFS DTIIA test support.

2. (U) FY 1997 PLAN:

- (U) ($35,164) Conduct system 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.

- (U) ($3,251) Provide Navy system engineering support during CDR, limited Integrated Test Team planning, program management and travel.

- (U) ($990) Complete DT-IIA and continue plan for DTIIB.

- (U) ($1,020) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($45,000) Continue systems integration and test, continue radar development, complete Phase I air vehicle development, complete system software development and conduct first flights of prototype aircraft.

- (U) ($13,669) Begin Contractor non-recurring effort associated with LRIP Test Articles. Effort includes tooling, technical directive drawings, deconfiguration of aircraft, and engineering for unique kit remanufacture.

- (U) ($6,500) Procurement of ALFS systems for LRIP Test Articles.

- (U) ($6,950) Provide Navy systems engineering and test support, plan for Phase II, trainer specification preparation, program management and travel.

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

4. (U) FY 1999 PLAN:

- (U) ($63,500) Start ESM development, initiate design of operator/tactical assistance software programs and integrated self defense suite, support DT-IIB/OT-IIA. Conduct Test Readiness Review (TRR).
- (U) ($59,837) 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) ($56,100) Procurement of Contractor Furnished Equipment (CFE) and labor required for remanufacture kit build and SLEP.
- (U) ($32,100) Begin procurement of support requirements for LRIP test articles including Avionics Peculiar Ground Support Equipment, Training Equipment, Technical Publications, and Integrated Logistics Support. Field support for test program sets and trainer systems development.
- (U) ($4,294) Complete documentation and processing requirements for a LRIP review. Continue Navy systems engineering and test support, trainer development support, update Naval Training Plan documentation, program management and travel.
- (U) ($3,100) DT-IIB/OT-IIA testing for SH-60R and ALFS subsystem operational evaluation (OPEVAL). Conduct data reduction and analysis, and prepare test report.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	45,893	35,411	52,605	71,953
(U) Appropriated Value:		42,211		
(U) Adjustments from 1997 Pres Budget:	+1,399	+5,014	+19,514	+146,978
(U) FY 1998/99 President s Budget Submit:	47,292	40,425	72,119	218,931

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net increase of $+1,399 thousand in FY 96 reflects a reprogramming action to provide funding to support the Block II Critical Design Review ($+2,000 thousand), an MRTFB adjustment ($+44 thousand), a Jordanian rescission adjustment ($-254 thousand), minor pricing adjustment of $+190, an SBIR assessment of

($-940 thousand) and various reprogramming adjustments of $+359 thousand. The net increase of $+5,014 in FY 97 reflects a Congressional plus-up for SH-60R contract and field support efforts ($+6,800 thousand), FFRDC adjustments ($-58 thousand), Navy Working Captial Fund (NWCF) surcharge ($-844 thousand), Congressional general reductions ($-844 thousand) and pricing adjustments of ($-40 thousand). FY 98 reflects funding for the Test Articles ($+20,169 thousand), NWCF carryover and rates ($-920 thousand), inflation ($-178 thousand), AVDLR Redistribution ($+561 thousand), Acquisition Internship Program ($-25 thousand), Acquisition Center for Excellence ($-19 thousand), Desk Book ($-15 thousand), and a repricing adjustment ($-59 thousand). FY 99 reflects procurement of LRIP Test Articles and associated support ($+148,500 thousand), Navy Working Capital Fund (NWCF) carryover and rates ($-883 thousand), a repricing adjustment ($-290 thousand), Acquisition Internship Program ($-104 thousand), Acquisition Center for Excellence ($-30 thousand), AVDLR Redistribution ($+643 thousand), Desk Book ($-50 thousand), and inflation adjustments ($-808 thousand).

Schedule: LAMPS DT-IIA support for ALFS moved from 1Q/96 to 1Q/97 as a result of ALFS DT-IIA testing continuing into FY97 vice completion in FY96 as reported in the FY97 President s Budget.

The Block II program is being restructured; new Milestone dates are shown below:

TRR:	from 2Q FY98 to 1Q FY99
DT-IIB:	from 2Q FY98 to 2Q FY99
OT-IIA:	from 4Q FY98 to 3Q FY99
TECHEVAL:	from 2Q FY00 to 3Q FY01
OPEVAL:	from 1Q FY01 to 1Q FY02
LRIP:	from 1Q FY99 to 1Q FY00
MS III:	from 1Q FY02 to 4Q FY02
IOC:	from 4Q FY01 to 4Q FY02

(U) Technical: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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) APN-1 Line 9	0	0	0	0	360,670	378,040	442,077	486,056	2,835,225	4,502,068
(U) APN-6 Line 46	0	0	0	0	21,030	14,833	18,099	20,258	CONT	CONT

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

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					4Q/02 MS III 4Q/02 IOC
Engineering Milestones	1Q PDR	CDR/1Q-3Q		1Q TRR	
T&E Milestones		DT-IIA/ 1Q-3Q		DT-IIB/ 2Q-3Q OT-IIA/ 3Q-4Q	TECHEVAL/3Q-4Q01 OPEVAL/1Q-3Q02
Contract Milestones					1Q/00 LRIP

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Hardware/Software Development	44,723	35,164	65,169	179,437
b. Program Management Support	2,032	3,251	5,950	36,394
c. Development Test & Evaluation	537	990	1,000	3,100
d. Small Business Innovation Research		1,020		
Total	47,292	40,425	72,119	218,931

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604212N PROJECT NUMBER: H1707
PROGRAM ELEMENT TITLE: ASW & Other Helo Developments 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Lockheed Martin Owego, NY	SS/CPFF	Aug 93	333,736	333,736	92,749	44,723	35,164	45,000	63,500	52,600	333,736
Hughes Fullerton, CA	C/CPIF	Dec 91	13,305	13,305	6,805	0	0	6,500	0	0	13,305
TBD	TBD	Oct 97	223,427	223,427	0	0	0	13,669	115,937	93,821	223,427
Support and Management											
NAWCADWARMINSTER			13,435	13,435	13,435	0	0	0	0	0	13,435
MISC In-house		Oct 97	66,687	66,687	9,531	1,398	2,620	5,525	35,894	11,719	66,687
MISC Contracts		Oct 97	4,072	4,072	532	634	631	425	500	1,350	4,072
Test and Evaluation											
NAWCADPAX (WX)		Oct 97	20,024	20,024	256	537	990	1,000	3,100	14,141	20,024

GOVERNMENT FURNISHED PROPERTY

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		Not Applicable								
Support and Management		Not Applicable								
Test and Evaluation		Not Applicable								

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: H1707
PROJECT TITLE: LAMPS III IMP

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	99,554	44,723	35,164	65,169	179,437	146,421	570,468
Subtotal Support and Management	23,498	2,032	3,251	5,950	36,394	13,069	84,194
Subtotal Test and Evaluation	256	537	990	1,000	3,100	14,141	20,024
Other FY93 and Prior Costs	47,413						47,413
SBIR Assessment			1,020				1,020
Total Project	170,721	47,292	40,425	72,119	218,931	173,631	723,119

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H1709 CH-60 Vertical Replenishment	0	7,193	0	0	0	0	0	0	0	7,193

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 1996 ACCOMPLISHMENTS: Not Applicable

2. (U) FY 1997 PLAN:

- (U) ($6,600) Initiate 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 its SAR mission capability.

- (U) ($319) Commence Navy systems engineering and test support, trainer specification preparation, program management and travel.

- (U) ($274) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

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

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

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	0	0	0	0
(U) Appropriated Value:		7,500		
(U) Adjustments from FY 1997 Pres Budget:	0	+7,193	0	0
(U) FY 1998 President s Budget Submit:	0	7,193	0	0

(U) CHANGE SUMMARY EXPLANATION:

Funding: A Congressional increase of $+7,500 thousand in FY 1997 to fund a demonstration of the vertical replenishment (VERTREP) capabilities of the CH-60 helicopter as a replacement for the CH-46 was adjusted to a net increase of $+7,193 due to a Navy Working Capital Fund (NWCF) surcharge ($-150 thousand) and pricing adjustments ($-157 thousand).

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
Line 12/13 APN-2	0	31,837	163,417	317,537	335,216	326,483	322,210	1,074,441	2,571,121	
Line 48 APN-6	0	0	5,088	6,295	5,025	3,939	10,914	44,153	77,388	

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 Award			

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: H1709
PROJECT TITLE: Vert Rep

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H0652 AV-8B	25,479	16,089	11,034	11,230	5,887	219	217	220	0	1,551,001

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. C2.0 OFP will take advantage of MIL-STD-1760B armament wiring development funded under the program by integrating the Joint Direct Attack Munition (JDAM) 1000 lb variant. 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.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($250) Continued engineering studies/weapons projects.
- (U) ($312) Conducted engine inlet guide vane controller studies.
- (U) ($421) Conducted flight performance testing of various modifications, including engine modifications.
- (U) ($5,722) Continued development and began testing of common integrated Night Attack/Radar software (C1.0).
- (U) ($300) Commenced second version of common integrated Night Attack/Radar software (C2.0).
- (U) ($1,384) Continued aircraft handling investigations.
- (U) ($1,450) Continued Survivability and Vulnerability (S&V) studies to determine most cost effective approaches/alernatives.
- (U) ($15,640) Conducted preliminary airframe installation/integration development of MIL-STD-1760B armament wiring.

2. (U) FY 1997 PLAN:

- (U) ($136) Continue engineering studies/advanced weapons to define AV8B capabilities and limitations of upgrades and interface requirements.
- (U) ($150) Complete engine inlet guide vane controller development.
- (U) ($780) Complete DT/OT testing and release of common integrated Night Attack/Radar Software (C1.0).
- (U) ($1,925) Continue software requirements development for common integrated Night Attack/Radar software (C2.0).

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

- (U) ($1,599) Continue aircraft handling and performance investigations to improve safety and increase operational performance.
- (U) ($33) Termination of all Survivability & Vulnerability (S&V) studies.
- (U) ($11,200) Complete airframe installation/integration development of MIL-STD-1760B armament wiring.
- (U) ($266) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C 638.

3. (U) FY 1998 PLAN:

- (U) ($9,500) Continue development of common integrated Night Attack/Radar software (C2.0) 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.

4. (U) FY 1999 PLAN:

- (U) ($9,800) Continue integration of the 1000 pound JDAM weapon into the Night Attack/C2.0 Radar software.
- (U) ($1,430) Continue aircraft handling and performance investigations to improve safety and increase operational performance.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	26,063	16,874	11,132	11,024
(U) Appropriated Value:		16,874		
(U) Adjustments from Pres Budget:	-584	-785	-98	+206
(U) FY 1998/99 President s Budget Submit:	25,479	16,089	11,034	11,230

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net reduction from PRESBUD in FY 1996 reflects $-28 thousand for minor pricing adjustments, $-173 thousand for program adjustments and $-383 thousand for SBIR assessments. The FY 1997 net reduction reflects $-337 thousand for Navy Working Capital Fund (NWCF) reductions and $-448 thousand for Congressional adjustments. The FY 1998 reduction of $-98 thousand reflects NWCF rate adjustments. The FY 1999 net increase of $+206 thousand reflects a $+229 thousand AVDLR redistribution, $+71 thousand for NWCF rate adjustments and $-94 thousand for minor pricing adjustments.

(U) Schedule: FY 1997 C1.0 DT/OT slipped one quarter (4Q/96 to 1Q/97) due to crash of test aircraft. FY 1999 Milestones for C2.0 on the PRESBUDG were displayed in error. C2.0 DT/OT will complete in 3Q/00 and C2.0 software release to fleet 4Q/00.

(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) APN-1/Line 1/2/AV-8B									
245,106	359,714	296,562	334,928	318,444	282,561	1,439	1,606		1,840,360
(U) QTY									
8	12	11	12	12	9	0	0		
(U) APN-5/Line 20/AV-8 Series									
14,130	22,374	32,647	50,530	56,807	37,431	41,920	40,956	CONT	CONT
(U) APN-6/Spares									
10,911	5,076	23,982	24,541	12,569	8,598	34	39		85,750

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) RELATED RDT&E: Not Applicable

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					
Engineering Milestones		1Q-2Q C1.0 DT/OT Complete			2Q-3Q/00 C2.0 DT/OT Complete
T&E Milestones		2Q C1.0 S/W RTF			4Q/00 C2.0 S/W RTF
Contract Milestones					

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

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. CONTRACTS	143	157	177	177
CS (NON-ADD)	143	157	177	177
b. TECHNICAL SUPPORT	23,511	12,726	7,517	9,213
c. TRAVEL	312	340	340	340
d. T&E	1,513	2,600	3,000	1,500
e. SBIR Assessment		266		
Total	25,479	16,089	11,034	11,230

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

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NAWC-WD, CHINA LAKE, CA	WX	11/97	41,647	41,647	24,174	3,147	2,910	2,766	3,450	5,200	41,647
NAWC-AD PATUXENT RIVER, MD	WX	10/97	4,535	4,535	2,732	574	300	264	265	400	4,535
MISC/CONTRACTS	Var	10/97	10,146	10,146	152	5,666	1,298	1,490	1,540	0	10,146
CONTRACTS/MDA	Var	10/97	27,387	27,387	0	13,214	7,944	2,546	3,683	0	27,387
MISC/In-house	WX	10/97	7,305	7,305	3,407	1,222	614	791	615	656	7,305
Support	WX	N/A	43,538	43,538	43,538	0	0	0	0	0	43,538
and Management MISC/Contracts	Var	Var	1,639	1,639	985	143	157	177	177	0	1,639
MISC/In-House	Var	Var	1,000	1,000	1,000	0	0	0	0	0	1,000
Test and Evaluation											
NAWC-WD CHINA LAKE,CA	WX	10/97	15,970	15,970	8,516	1,077	2,115	2,675	1,300	287	15,970
NAWC-AD,PATUXENT RIVER,MD	WX	10/97	3,991	3,991	3,281	110	200	200	200	0	3,991

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

GOVERNMENT FURNISHED PROPERTY

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 Misc	WX	10/97	12/97	37,682	326	285	125	0	0	38,418

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	30,465	23,823	13,066	7,857	9,553	6,256	91,020
Subtotal Support and Management	45,523	143	157	177	177	0	46,177
Subtotal Test and Evaluation	49,479	1,513	2,600	3,000	1,500	287	58,379
Other FY-95 and Prior Costs	1,355,159	0	0	0	0	0	1,355,159
SBIR Assessment			266				266
Total Project	1,480,626	25,479	16,089	11,034	11,230	6,543	1,551,001

DATE: February 1997

1998 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 1996 ESTIMATE	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
S1857 Calibration Standards	2,956	1,939	1,962	2,662	2,253	2,306	2,371	2,424	CONT	CONT
W0572 Joint Services/Navy Standard Avionics Components and Subsystems	9,980	23,428	26,358	30,183	26,891	21,101	15,696	5,427	CONT	CONT
W2310 Flight Polynomials	0	0	298	297	298	0	0	0	0	893
W2311 Stores Planning and Weaponeering Module	0	0	7,679	7,212	7,131	7,458	8,122	0	0	37,602
W2312 Common Helicopters	0	0	0	4,941	0	0	0	0	0	4,941
TOTAL	12,931	25,367	36,297	45,295	36,573	30,865	26,189	7,851	CONT	CONT
RDT&E Articles		9	29	33	110	31				212

(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.

(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.

DATE: February 1997

1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
S1857 CALIBRATION STANDARDS	2,956	1,939	1,962	2,662	2,253	2,306	2,371	2,424	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 1996 ACCOMPLISHMENTS:

- (U) ($1,028) Completed development (to 100%) of 8 calibration standards (hardware) in support of missile hydraulic systems, fiber optic communication systems, screw thread gauges, long line hydrophones, radar systems, chemical and biological warfare sensors and laser targeting systems.
- (U) ($1,522) Continued development (to 66% completion) of 8 calibration standards (hardware) in support of infrared dynamic scene generators, polarization based target identifiers/trackers, fiber optic communications, infrared target illuminators, radar systems, and night vision goggles.
- (U) ($ 406) Began development (to 33% completion) of 4 calibration standards in support of mines and mine sweepers, Joint Service Automation, ship temperature gage calibration, and MILSTAR hazard probes.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT

PROJECT NUMBER: S1857
PROJECT TITLE: CALIBRATION STANDARDS

2. (U) FY 1997 PLAN:

- (U) ($ 68) Begin development (to 50% completion) of 1 calibration standards (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) ($1,755) Complete development of 11 calibration standards (hardware) in support of dynamic scene generators, polarization based target identifiers/trackers, fiber optic communications, infrared target illuminators, radar systems, mines and mine sweepers, ship temperature gage calibration, night vision goggles, and MILSTAR hazard probes.
- (U) ($ 1) Portion of extramural program reserved for Small Business Innovative Research (SBIR) assessment in accordance with 15USC638.

3. (U) FY 1998 PLAN:

- (U) ($ 251) Complete the development of 2 calibration standards (hardware) in support of Joint Service Automation and radars (2 GHz to millimeter-wave).
- (U) ($1,711) Begin development (to 50% completion) of 7 calibration standards (hardware)in support of weapon system component dimension verification, fleet vector and scalar automatic network analyzers, underwater acoustic simulation, radar cross section measurements, high field electromagnetic environmental measurements, Cathode Ray Tube (CRT)/flat panel tactical displays, and ship and aircraft fire control systems.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT

PROJECT NUMBER: S1857
PROJECT TITLE: CALIBRATION STANDARDS

4. (U) FY 1999 PLAN:

- (U) ($1,725) Continue development (to 66% completion) of 7 calibration standards (hardware) in support of weapon system component dimension verification, underwater acoustic simulation, radar cross section measurements, high field electromagnetic environmental measurements, fleet vector and scalar automatic network analyzers, CRT/flat panel tactical displays, and ship and aircraft fire control systems.
- (U) ($ 937) Begin development (to 33% completion) of 6 calibration standards (hardware) in support of high density electronics, nose cones for infrared guiding missiles, space based surveillance and communication systems, radar tubes and infrared sensor dewars, vacuum gages, multifunction electrical test equipment, electromagnetic guns, fiber optic cable acceptance testing, and fiber tether torpedo.

B. (U) PROGRAM CHANGE SUMMARY:

			FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:			2,959	2,021	2,072	2,614
(U) Appropriated Value				2,021		
(U) Adjustments from FY 1997 PRESBUDG:	-3	-82		-110	+48	
(U) FY 1998/1999 PRESBUDG Submit:			2,956	1,939	1,962	2,662

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

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 1996 reduction of $3K is due to minor pricing adjustment. FY 1997 reduction of $82K is due to Congressional undistributed reductions. FY 1998 reduction of $110K is due to minor pricing adjustments. FY 1999 increase of $48K is due to minor pricing 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.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
a. Program Management Support	242	200	200	236
b. Government Engineering Support	347	205	235	270
c. Primary Hardware Development	2,155	1,360	1,353	1,918
d. Travel	30	26	26	30
e. Misc.	182	147	148	208
f. SBIR	0	1	0	0
Total	2,956	1,939	1,962	2,662

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT

PROJECT NUMBER: S1857
PROJECT TITLE: CALIBRATION STANDARDS

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

Not applicable.

1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

DATE: February 1997

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ESTIMATE	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
W0572 Joint Services/Navy Standard Avionics Components and Subsystems										
	9,980	23,428	26,358	30,183	26,891	21,101	15,696	5,427	CONT	CONT
RDT&E Articles		9	29	33	110	31				212

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 Improved Digital Communications Capability (IDCC). FAD and FAD P3I have been restructured into a singly family of displays program.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($ 250) Continued risk assessment for GGP.
- (U) ($ 810) Continued GPWS CAT II missionization for AV-8B, and F/A-18 aircraft.
- (U) ($2,860) Awarded Engineering and Manufacturing Development (EMD) contract LPIA.
- (U) ($ 526) Conducted risk reduction for FAD.
- (U) ($1,700) Released request for proposal (RFP) for TAMMAC EMD contract.

- (U) ($1,065) Participated in Joint Services Review Committee (JSRC) tri-service coordination to promote commonality and joint programs.
- (U) ($2,769) Completed Operational Evaluation (OPEVAL) testing of the GPWS CAT III for CH-53E and begin integration/testing of GPWS CAT III into MH-53 and CH-46D/F.

2. (U) FY 1997 PLAN:

- (U) ($1,860) Continue integration and testing of GPWS CAT III into H-53/H-46 series aircraft and achieve MS III.
- (U) ($ 297) Continue development of the generic GPWS CAT II, including incorporation of advanced sensors; conduct Operational Testing (OT) on the F-18 and AV-8B.
- (U) ($3,406) Conduct Preliminary Design Review (PDR) and Critical Design Review (CDR), begin development/integration efforts for LPIA.
- (U) ($ 615) Release Request for Information (RFI) for GGP.
- (U) ($ 855) Begin requirements definition, prepare the RFP, and develop the acquisition strategy for FAD.
- (U) ($13,230) Achieve Milestone II and award EMD contract for TAMMAC (This project now includes efforts formerly performed under Common Tactical Mission Recorder). Conduct PDR and CDR.
- (U) ($1,489) Participate in JSRC tri-service coordination to promote commonality and joint programs.
- (U) ($ 385) Correct deficiencies found during the baseline integration of GPWS CAT II into the F/A-18 C/D "11C+" Operational Flight Program (OFP).
- (U) ($ 422) Correct deficiencies found during the baseline integration of GPWS CAT II into the F/A-18 C/D "15C" OFP.
- (U) ($ 350) Modify the F/A-18 GPWS CAT II algorithm to incorporate aerodynamic differences for the F/A-18 E/F.
- (U) ($ 125) Complete the installation of GPWS CAT II into the AV-8B C-1 OFP.
- (U) ($ 394) Portion of program reserved for small business innovation research (SBIR) assessment in accordance with 15 U.S.C. 638.

1998 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

3. (U) FY 1998 PLAN:

- (U) ($6,125) Continue development of the LPIA program. conduct Test Analyze And Fix (TAAF) testing, conduct design approval testing (DAT), continue qualification testing, and conduct combined Developmental Testing (DT)/OT.
- (U) ($4,495) Continue with the deficiency corrections for the GPWS CAT II installed in the F/A-18 A/B/C/D/E/F.
- (U) ($4,498) Develop acquisition documentation, achieve Milestone II decision, award EMD contract, and complete PDR and CDR for FAD.
- (U) ($8,540) Continue development effort; receive first asset deliveries, begin qualification testing and continue F/A-18, AV-8B and TAMPS integration efforts for the TAMMAC program.
- (U) ($1,133) Generate acquisition documentation required for development of the GGP program.
- (U) ($1,567) Participate in JSRC tri-service coordination to promote commonality and joint programs.

4. (U) FY 1999 PLAN:

- (U) ($2,129) Complete the deficiency corrections for the F/A-18 A/B/C/D/E/F for GPWS CAT II.
- (U) ($1,794) Complete combined DT/OT and attain Milestone III decision for LPIA program.
- (U) ($10,627) Continue development and integration of FAD for F/A-18 E/F.
- (U) ($3,708) Release RFP, evaluate test bid samples and conduct source selection for the GGP program.
- (U) 2,052) Participate in JSRC tri-service coordination to promote commonality and joint programs.
- (U) ($6,870) Complete qualification testing, continue F/A-18, AV-8B and TAMPS integration efforts and conduct operational assessments and TECHEVAL on the TAMMAC program.

DATE: February 1997

1998 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) ($3,003) Begin development of the IDCC which will build on the Digital Communication System (DCS) by allowing growth capabilities for DCS, including embedded Single Channel Ground Airborne Radio Set (SINCGARS) Improvement Program (SIP), Saturn 8.33 Mhz, Downed Aircraft Locator System, intelligence reception and imagery.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	7,253	22,677	27,081	32,066
(U) Appropriated Value		24,677		
(U) Adjustments from Pres Budget:	+2,727	+751	-723	-1883
(U) FY 1998/99 President's Budget Submit:	9,980	23,428	26,358	30,183

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 reflects an increase of $2,820 thousand for a below threshold reprogramming for GPWS CAT III, and an increase of $5 thousand due to minor pricing adjustments. These increases are partially offset by a reduction of $23 thousand for the F-16 Jordanian rescission, and a reduction of $75 thousand for the Small Business Innovative Research (SBIR) assessment. FY 1997 reflects an increase of $2,000 thousand for GPWS CAT III, and a reduction of $1,249 thousand for Congressional undistributed reductions. FY 1998 reflects a reduction of $164 thousand for minor pricing adjustments, a reduction of $182 thousand resulting from Base Realignment and Closure (BRAC) savings, and a $377 thousand reduction due to Navy Working Capital Funds (NWCF) carryover and rate adjustments. FY 1999 reflects a reduction of $244 thousand for minor pricing adjustments, a reduction of $1,625 thousand resulting from BRAC savings, and a reduction of $14 thousand resulting from NWCF rate adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: Not applicable.

DATE: February 1997

1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

Components and Subsystems

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W0572
PROJECT TITLE: Joint Services/Navy Standard Avionics

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	4Q LPIA MS II (8/96)	1Q MS II TAMMAC (1/97) 3Q MS III GPWS CAT III (5/97)	2Q MS II FAD (2/98) LPIA MS III (4/99)		
Engineering Milestones		2Q LPIA PDR (3/97) 4Q LPIA CDR (7/97) 2Q TAMMAC PDR (3/97) 4Q TAMMAC CDR (8/97)	2Q FAD PDR (3/98) 4Q FAD CDR (9/98)		
T&E Milestones	2Q GPWS CAT II DT (4/96-9/96) 3Q GPWS CAT III DT (2/96-4/96) 3Q GPWS CAT III OT (6/96-9/96)	1Q GPWS CAT II OT (10/96-3/97)	3Q LPIA DT/OT (6/98-3/99)	4Q TAMMAC DT/OT (8/99-3/00) 3Q TAMMAC TECHEVAL (5/99-10/99)	
Contract Milestones	4Q LPIA EMD AWD (8/96)	1Q TAMMAC EMD AWD (1/97)	2Q FAD EMD AWD (2/98)		

DATE: February 1997

1998 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 1996	FY 1997	FY 1998	FY 1999
a. Program Planning	575	590	450	700
b. Technical Program Mgmt Support	240	250	480	500
c. Prime Eqpmt/E&MD Prime Contract	2,257	14,445	16,000	17,053
d. System T&E/OT&E	1,447	1,542	1,550	2,000
e. System Engineering	2,897	2,752	4,236	6,186
f. Travel	130	225	250	250
g. Contract Services	2,434	3,230	3,392	3,494
h. SBIR		394		
Total	9,980	23,428	26,358	30,183

DATE: February 1997

1998 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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	FY 1999 Complete	To Program	Total
Product Development												
McDonnell Douglas		12/96	22,750	22,750	0	0	10,900	5,900	3,950	2,000	22,750	
Miscellaneous		10/97	TBD	TBD	28,254	6,099	7,362	15,516	20,739	CONT	CONT	
Support and Management												
Miscellaneous		10-97	TBD	TBD	5,010	2,434	3,230	3,392	3,494	CONT	CONT	
Test and Evaluation												
Miscellaneous	10-97	TBD	TBD	7,271	1,447	1,542	1,550	2,000	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 Production Development	28,254	6,094	18,262	21,416	24,689	CONT.	CONT.
Subtotal Support and Management	5,010	2,434	3,230	3,392	3,494	CONT.	CONT.
Subtotal Test and Evaluation	7,271	1,447	1,542	1,550	2,000	CONT.	CONT.
SBIR			394				
Total Project	40,535	9,975	23,428	26,358	30,183	CONT.	CONT.

*FY 95 & prior includes program information from FY 90 through FY 95 on programs still remaining in the FYDP years.

DATE: February 1997

FY 1998 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 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 COMPLETE	TO PROGRAM	TOTAL
W2310 Flight Polynomials	0	0	298	297	298	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 1996 ACCOMPLISHMENTS: Not Applicable.

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

3. (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.

4. (U) FY 1999 PLAN:

- (U) ($297) 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: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	0	0
(U) Adjustments from FY 1997 PRESBUDG:	0	0	298	297
(U) FY 1998 President's Budget Submit:	0	0	298	297

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY98: New program start.

FY99: New program start.

(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: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 COMPLETE	TO PROGRAM	TOTAL
W2311 Stores Planning and Weaponeering Module	0	0	7,679	7,212	7,131	7,458	8,122	0	0	37,602

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.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Not Applicable.

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

3. (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.

DATE: February 1997

FY 1998 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

4. (U) FY 1999 PLAN:

- (U) ($7,212) 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.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	0	0
(U) Adjustments from FY 1997 PRESBUDG:	0	0	7,679	7,212
(U) FY 1998 President's Budget Submit:	0	0	7,679	7,212

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY98: New program start.

FY99: New program start.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: PE 0604231N Mission Planning (E2213)

D. (U) SCHEDULE PROFILE: Not Applicable.

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
a. Software Development	0	0	7,679	7,212
Total	0	0	7,679	7,212

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 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NAWC WX 11/97 Patuxent River		37,602	37,602	0	0	0	7,679	7,212	22,711	37,602	

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable

	Total FY 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	0	0	7,679	7,212	22,711	37,602
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	0	0	7,679	7,212	22,711	37,602

DATE: February 1997

FY 1998 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 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
W2312 Common Helicopters	0	0	0	4,941	0	0	0	0	0	4,941

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 1996 ACCOMPLISHMENTS: Not Applicable.

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

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

4. (U) FY 1999 PLAN:

•(U) ($4,941) The implementation of Common Helicopter Mission Planning requirements will commence as part of the TAMPS version 6.4. The following functionality will be implemented: Flight Route Generation, Curved Leg Route Planning, Moving Map and chart and imagery scanning capabilities. These capabilities will support the Amphibious Warfare community.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604215N PROJECT NUMBER: W2312
PROGRAM ELEMENT TITLE: Standards Development PROJECT TITLE: Common Helicopters

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	0	0
(U) Adjustments from FY 1997 PRESBUDG:	0	0	0	4,941
(U) FY 1998 President's Budget Submit:	0	0	0	4,941

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY98: Not applicable.

FY99: New program start.

(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.

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DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Stardards Development

PROJECT NUMBER: W2312
PROJECT TITLE: Common Helicopters

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	0	0	0	4,941
Total	0	0	0	4,941

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 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development NAWC Pt Mugu	WX	11/98			0	0	0	0	4,941	0	4,941

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not Applicable

DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N
PROGRAM ELEMENT TITLE: Standards Development

PROJECT NUMBER: W2312
PROJECT TITLE: Common Helicopters

	Total FY 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	0	0	0	4,941	0	4,941
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	0	0	0	4,941	0	4,941

DATE: February 1997

FY 1998 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 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
H0489 S-3 WSIP	12,013	9,553	930	6,413	2,155	451	445	447	0	304,180
W2217 Common Support Aircraft (CSA) - Proposed)	0	0	3,805	17,636	24,455	56,072	49,406	249,588	CONT	CONT
TOTAL	12,013	9,553	4,735	24,049	26,610	56,523	49,851	250,035	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: February 1997

FY 1998 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 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
H0489 S-3 WSIP	12,013	9,553	930	6,413	2,155	451	445	447	0	304,180

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 1996 ACCOMPLISHMENTS:

- (U) ($10,763) Continued Ada software development for the CPMU.
- (U) ($ 1,100) Continued hardware and software development and integration.
- (U) ($ 150) Performed Follow on Test and Evaluation (FOT&E) of CPMU.

DATE: February 1997

FY 1998 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 1997 PLAN:

(U) ($2,911) Continue Ada software development for the CPMU.

- (U) ($ 909) Continue hardware and software development and integration.
- (U) ($ 503) Perform Navy combined developmental and operational (DT/OT) testing of CPMU.
- (U) ($ 230) Portion of program reserved for Small Business Innovation Research Assessment in accordance with 15 U.S.C.638.
- (U) ($5,000) Begin SAR/MTI develpment and system integration.

3. (U) FY 1998 PLAN

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

4. (U) FY 1999 PLAN:

- (U) ($5,613) Continue Ada software development for the CPMU.
- (U) ($ 491) Continue hardware and software integration.
- (U) ($ 309) Begin preliminary qualification testing of hardware and software.

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	12,469	4,979	3,872	4,312
(U) FY 1997 Appropriated Value:		9,979		
(U) Adjustments from PRESBUDG:	-456	+4,574	-2,942	+2,101
(U) FY 1998/99 President s Budget Submit:	12,013	9,553	930	6,413

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 net reduction of -$456 thousand reflects minor pricing reductions. FY97 adjustment of +$5,000 thousand reflects SAR/MTI addition and -$426 thousand reduction reflects Congressional general reductions, Navy Working Capital Funds (NWCF) and minor pricing adjustments. FY 1998 net reduction is comprised of -$2,584 thousand for Ada rewrite acquistion restructure and -$358 thousand for minor pricing reductions. FY 1999 net increase consists of +$1,700 thousand for Ada rewrite acquisition restructure and +$401 thousand for minor pricing adjustments.

(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) APN S-3* (OSIP 04-96) Co-Processor Memory Unit	4,293	5,006	6,752	8,278	9,241	7,280	7,506	12,776	21,689	82,814

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

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	LRIP Program Review		2Q/CPMU MS III		3Q/00 CPMU FLEET INTRODUCTION
Engineering Milestones				3Q/CPMU FQT	
T&E Milestones		2Q-4Q CPMU DT II	1Q-3Q CPMU OT II		
Contract Milestones					

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
a. Developmental Testing	150	503	0	309
b. Travel	35	40	15	30
c. Technical Support (CS)	200	250	100	100
d. Software Development	11,628	8,530	815	5,974
e. SBIR Assessment		230		
Total	12,013	9,553	930	6,413

DATE: February 1997

FY 1998 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	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	0	2,183
*Includes NUNN Amendment funding (RDT&E), Defense Agencies, P.E. 0603700N) and Canadian funding (joint venture)											
Loral/LMAS Egan,MN	CPAF/ Sole Source	1/95	29,617	29,617	8,097	10,763	2,911	406	5,613	1,827	29,617
LMAS Texas	SAR/MTI Sole Source	3/97	5,000	5,000	0		5,000	0	0	0	5,000
Other Contracts less than $2.0M		Var	6,321	6,321	6,321	0	0	0	0	0	6,321
Miscellaneous		Var	3,208	3,208	0	865	619	409	361	780	3,034
Support and Management											
Other Contracts less than $2.0M											
Miscellaneous		Var	1,653	1,653	883	235	290	115	130	0	1,653
Test and Evaluation											
Other Contracts less than $2.0M											
Miscellaneous		Var	3,127	3,127	1,274	150	503	0	309	891	3,127

GOVERNMENT FURNISHED PROPERTY:

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

Not Applicable

DATE: February 1997

FY 1998 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	16,601	11,628	8,530	815	5,974	2,607	46,155
Subtotal Support and Management	883	235	290	115	130	0	1,653
Subtotal Test and Evaluation	1,274	150	503	0	309	891	3,127
Subtotal SBIR Assessment			230				230
Other FY95 and Prior Costs	253,015						253,015
Total Project	271,773	12,013	9,553	930	6,413	3,498	304,180

DATE: February 1997

FY 1998 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 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
W2217 Common Support Aircraft (CSA) - Proposed)	0	0	3,805	17,636	24,455	56,072	49,406	249,588	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) 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 1996 ACCOMPLISHMENTS:

   - (U) Initiated Common Support Aircraft (CSA) study under Program Element #0605152N, Project Element W2092.

2. (U) FY 1997 PLAN:

   - (U) Continue CSA study under PE #0605152N.

DATE: February 1997

FY 1998 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

3. (U) FY 1998 PLAN:

- (U) ($ 1,546) Program Team Stand-Up Initiate In-House Studies.
- (U) ($ 2,259) Initiate Concept/Analysis/Trade Studies.

4. (U) FY 1999 PLAN:

- (U) ($ 5,964) Continue Program Team Stand-Up In-House Studies.
- (U) ($11,672) Continue Concept/Analysis/Trade Studies.

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	0	0	3,865	23,855
(U) Adjustments from PRESBUDG:	0	0	-60	-6,219
(U) FY 1998/99 Presidents Budget Submit:	0	0	3,805	17,636

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1998 net reduction of -$60 thousand reflects minor pricing reductions. FY 1999 reduction of -$6,219 thousand reflects a -$6,000 thousand reduction as a result of Resource Sponsor reprioritization of requirements and -$219 thousand for minor pricing reductions.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

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

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones			1Q/MS 0		1Q/00 MS I 1Q/03 MS II
Engineering Milestones					
T&E Milestones					
Contract Milestones					

DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Travel	0	0	50	200
b. Technical Support (CS)	0	0	1,219	2,798
c. Product Development	0	0	2,536	14,638
Total	0	0	3,805	17,636

DATE: February 1997

FY 1998 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
TBD	TBD	TBD				0	0	2,536	14,638	CONT	CONT
Other Contracts less than $2.0M		TBD				0	0	0	2,798	CONT	CONT
Miscellaneous						0	0	1,219	0	CONT	CONT
Support and Management											
Other Contracts less than $2.0M		TBD				0	0	0	0	CONT	CONT
Miscellaneous						0	0	50	200	CONT	CONT
Test and Evaluation											
Other Contracts less than $2.0M						0	0	0	0	0	0

GOVERNMENT FURNISHED PROPERTY: Not Applicable

DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	0	0	3,755	17,436	CONT	CONT
Subtotal Support and Management	0	0	0	50	200	CONT	CONT
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	0	0	3,805	17,636	CONT	CONT

DATE: February 1997

FY 1998 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

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & Title	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
X0532 FLEET AIR OCEAN EQUIPMENT	2,450	1,575	2,063	3,225	3,106	3,095	3,100	3,164	CONT.	CONT.
R1740 AIR/OCEAN SURVEY ENGINEERING	1,203	1,725	1,864	1,886	1,688	1,619	1,603	1,633	CONT.	CONT.
X1752 TACTICAL ENVIRONMENTAL SUPPORT SYSTEM - TESS (ENG)	2,215	2,076	2,202	2,648	2,619	2,659	2,699	2,760	CONT.	CONT.
TOTAL	5,868	5,376	6,129	7,759	7,413	7,373	7,402	7,557	CONT.	CONT.

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

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

PROJECT NUMBER & Title	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
X0532 FLEET AIR OCEAN EQUIPMENT	2,450	1,575	2,063	3,225	3,106	3,095	3,100	3,164	CONT.	CONT.

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

(U) PROGRAM ACCOMPLISMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($600) Continued test, evaluation and adaptation of non-developmental items (NDI) development in support of data connectivity, interfaces and C2 systems.
- (U) ($600) Continued engineering development of the Navy Tactical Applications Computer Version 4 (TAC-4) Tactical Environmental Support System (TESS(3)) Upgrade/NITES workstation.
- (U) ($490) Continued system engineering of AN/SMQ-11.
- (U) ($600) Continued system engineering of METMF (Replacement).
- (U) ($160) Completed system development for weather radar.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

2. (U) FY 1997 PLAN:

- (U) ($446) Continue test, evaluation and adaptation of NDI in support of data connectivity, interfaces and C2 systems. FY 97 funding was reduced ($108K) due to poor expenditures in FY 95.
- (U) ($215) Continue engineering development of the TAC-4 TESS(3) Upgrade/NITES workstation.
- (U) ($409) Continue system engineering of AN/SMQ-11.
- (U) ($500) Continue system engineering of METMF (Replacement).
- (U) ($5) Portion of extramural program reserved for Small Business Innovation research assessment in accordance with 15 U.S.C.638.

3. (U) FY 1998 PLAN:

- (U) ($275) Continue test, evaluation and adaptation of NDI in support of data connectivity, interfaces and C2 systems.
- (U) ($265) Complete engineering development of the TAC-4 TESS(3) Upgrade/NITES workstation.
- (U) ($257) Begin engineering development of electro-optical profiler.
- (U) ($244) Begin engineering development of the Small Combatant In-situ METOC Sensors (SCIMS).
- (U) ($522) Continue system engineering of AN/SMQ-11.
- (U) ($500) Complete systems engineering of METMF (Replacement).

4. (U) FY 1999 PLAN:

- (U) ($457) Continue test, evaluation and adaptation of NDI in support of data connectivity, interfaces and C2 systems.
- (U) ($400) Continue engineering development of electro-optical profiler.
- (U) ($640) Continue engineering development of SCIMS.
- (U) ($550) Continue system engineering of AN/SMQ-11.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

- (U) ($650) Begin engineering development of the TAC-5 NITES.
- (U) ($528) Begin system engineering of next generation sensors for the Shipboard Measurement and Oceanographic Observing System (SMOOS).

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	2,477	1,661	2,114	3,519
(U) Adjustments from FY 1997 PRESBUDG:	-27	-86	-51	-294
(U) FY 1998 President s Budget Submission:	2,450	1,575	2,063	3,225

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996: Reprogrammed to fund the Joint Service deskbook initiative (-$1K). Jordan F-16 financinf rescission (-$3K). (-$6K) reflects reduction for administrative and personal services rescission. (-$26K) for SBIR assessment. (+$9K) reflects other minor Navy fiscal adjustments.

FY 1997: (-$33K) Congressional NWCF adjustment. (-$53K) Congressional undistributed general adjustments.

FY 1998: Minor POM adjustment (-$2K). BRAC savings adjustment (-$28K). Navy NWCF adjustment (-$16K). Inflation adjustment (-$5K).

FY 1999: Minor POM adjustment (-$4K). NWCF adjustment (-$24K). BRAC savings adjustment (-$254K). DoD Inflation adjustment (-$12K).

(U) Schedule: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(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 line 4226	7,448	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 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Sensor Development	896	320	421	721
b. System Engineering	1,237	905	1,252	2,004
c. Contractor Engineering Support	272	300	340	450
d. Travel	45	50	50	50
Total	2,450	1,575	2,063	3,225

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

C. (U) FUNDING PROFILE: Not Applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: February 1997

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

(U) COST (Dollars in Thousands)

PROJECT NUMBER & Title	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
R1740 AIR/OCEAN SURVEY ENGINEERING	1,203	1,725	1,864	1,886	1,688	1,619	1,603	1,633	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: R1740, Air/Ocean Survey Engineering: The project engineering development for fleet transition of potential 6.4 sponsored projects of highly specialized ultra-high resolution instrumentation systems and measurement techniques for near real-time In-situ Meteorology and Oceanography (METOC) Data in support of the Chief of Naval Operations endorsed requirements. The objectives are to ruggedize and package systems, sensors and instruments to survive the harsh and demanding requirements of fleet operational use. Engineering is accomplished in the Research, Development Test and Evaluation (RDT&E) phase to meet requirements for 1) air and safety certification for deployment from fleet aircraft or ships, and 2) proper data formats for integration into existing or planned communications and displays. The end products are ruggedized sensors and systems that will 1) provide the military near real-time, in-situ METOC assessment capability in littoral regions 2) field a capability to provide the regional commander with continuous METOC data for operational use, and 3) provide baseline data for predictive models in areas of potential interest.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($888) AN/WSQ-6 Buoy Sensors. Transitioned XAN1 meteorological variant to the Naval Oceanographic Office (NAVOCEANO). Continued development of XAN-3 variant, 120m thermistor chain.

- (U) ($315) Initiated Budget Activity 6.5 development of wave/wind sensor package for AN/WSQ-6 buoys.

2. (U) FY 1997 PLAN:

- (U) ($1,100) Continue sensor development/transition plans on AN/WSQ-6 buoys. Continue wind/wave buoy sensor development for AN/WSQ-6, XAN-5 and XAN-6 variants.
- (U) ($602) 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.
- (U) ($23) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (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.

4. (U) FY 1999 PLAN:

- (U) ($873) Complete AN/WSQ-6 buoy development/transition to NAVOCEANO.
- (U) ($919) 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) ($94) 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)

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: February 1997

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

technology.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	1,218	1,797	1,930	2,134
(U) Adjustments from FY 1997 PRESBUDG:	-15	-72	-66	-248
(U) FY 1998/1999 President s Budget Submission:	1,203	1,725	1,864	1,886

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996 funding decreased due to Jordan rescission of (-1) and SBIR assessment (-14). FY 1997 funding decreased due to Congressional undistributed reductions (-72). FY 1998 funding decreased due to inflation reduction (-5) and NWCF and minor adjustments (-61). FY 1999 funding decreased due to BRAC savings (NAWCAD Indianapolis) adjustment (-230), inflation (-7), NWCF and minor adjustments (-11).

(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 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: February 1997

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

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	1,178	1,700	1,834	1,856
b. Travel	25	25	30	30
Total	1,203	1,725	1,864	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.	9,568	1,203	1,725	1,864	1,886	CONT.	CONT.
Support and Management											
Test and Evaluation											
GOVERNMENT FURNISHED PROPERTY											

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604218N PROJECT NUMBER: R1740
PROGRAM ELEMENT TITLE: Air/Ocean Equipment Engineering PROJECT TITLE: Air/Ocean Survey 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				9,568	1,203	1,725	1,864	1,886	CONT.	CONT.
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project				9,568	1,203	1,725	1,864	1,886	CONT.	CONT.

C. (U) FUNDING PROFILE: Not Applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) COST (Dollars in thousands)

PROJECT NUMBER & Title	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
X1752 TACTICAL ENVIRONMENTAL SUPPORT SYSTEM - TESS (ENG)										
	2,215	2,076	2,202	2,648	2,619	2,659	2,699	2,760	CONT.	CONT.

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

(U) PROGRAM ACCOMPLISMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($685) Continued NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) ($348) Completed integration of X-Windows software build in accordance with the TESS(3) SIP
- (U) ($632) Began integration of TAC-4 (C-01) software build in accordance with the TESS(3) SIP.
- (U) ($550) Began convergence of TESS(3) and NITES software.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

2. (U) FY 1997 PLAN:

- (U) ($790) Continue NRL Lead Laboratory tasks of software integration, assisting model developers and providing technical assistance to other activities.
- (U) ($695) Continue integration of TAC-4 (C-01) software build in accordance with the TESS(3) SIP.
- (U) ($570) Continue convergence of TESS(3) and NITES software.
- (U) ($21) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C.638.

3. (U) FY 1998 PLAN:

- (U) ($724) 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 (C-01) software build in accordance with the TESS (3) SIP.
- (U) ($500) Begin integration of TAC-5 (D-01) software build in accordance with TESS (3) SIP.
- (U) ($550) Continue convergence of TESS (3) and NITES software.
- (U) ($178) Begin integration of advanced data base and visualization tools.

4. (U) FY 1999 PLAN:

- (U) ($849) 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 (D-01) software build in accordance with the TESS(3) SIP.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

- (U) ($575) Complete convergence of TESS(3) and NITES software.
- (U) ($659) Begin integration of converged TESS/NITES software.
- (U) ($251) Continue integration of advanced data base and visualization tools.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	2,233	2,173	2,273	2,746
(U) Adjustments from FY 1997 PRESBUDG:	-18	-97	-71	-98
(U) FY 1998 President s Budget Submission:	2,215	2,076	2,202	2,648

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996: Reprogrammed to fund the Joint Service deskbook initiative (-$1K). Jordan Rescission (-$2K). (-$6K) reflects reduction for administrative and personal services rescission. (-$17K) for SBIR assessment. (+$8K) reflects other minor Navy fiscal adjustments.

FY 1997: (-$43K) Congressional NWCF adjustment. (-$54K) Congressional undistributed general adjustments.

FY 1998: Minor POM adjustment (-$3K). BRAC savings adjustment (-$8K). Navy NWCF adjustment (-$54K). (-$6K) inflation adjustment.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

FY 1999: Minor POM adjustment (-$3K). Navy NWCF adjustment (-$16K). BRAC savings adjustment (-$69K). (-$10K) DoD inflation adjustment.

(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 line 4226	8,376	7,392	7,166	10,640	8,476	7,761	11,025	13,955	CONT.	CONT.

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

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. System Engineering	2,115	1,967	2,102	2,523
b. Travel	100	109	100	125
Total	2,215	2,076	2,202	2,648

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

C. (U) FUNDING PROFILE: Not Applicable.

DATE: February 1997

FY 1998 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 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
H1152 P-3 Sensor Integration	16,045	7,703	3,191	3,023	3,077	3,124	3,161	3,227	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 1996 ACCOMPLISHMENTS:

- (U) ($1,045) Completed integration of Type Model Series (TMS)/Broadband (software version A4.8/C4.8).
- (U) ($1,115) Exercised option for P-3C Update III Product Team System Engineering support for proper integration of new sensors.
- (U) ($200) Began Developmental Testing of TMS/Broadband (software version A4.8/C4.8).
- (U) ($2,825) Began Improved Extended Echo Ranging (IEER) integration.
- (U) ($3,000) Identified for Stores Management System (SMS) initial design and Integration efforts.

DATE: February 1997

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

- (U) ($7,860) Began Antisurface Warfare Improvement Program (AIP) acceleration.

2. (U) FY 1997 PLAN:

- (U) ($3,835) Continue developmental testing of TMS/Broadband (software version A4.8/C4.8). Continue IEER integration.
- (U) ($2,000) Continue AIP Workload Sharing.
- (U) ($1,000) Continue Programmable Entry Panel development (PEP).
- (U) ($700) Continue system engineering support for proper integration of new sensors.
- (U) ($168) Portion of program reserved for Small Business Innovation Research Assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($500) Continue system engineering support for proper integration of new sensors.
- (U) ($2,691) Complete developmental and operational testing of TMS/Broadband. Continue IEER integration.

4. (U) FY 1999 PLAN:

- (U) ($500) Continue system engineering support for proper integration of new sensors.
- (U) ($2,523) Continue IEER integration.

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	16,414	2,074	0	2,344
(U) Appropriation Value:		8,074		
(U) Adjustments from PRESBUDG:	-369	5,629	3,191	679
(U) FY 1998/99 Presidents Budget Submit:	16,045	7,703	3,191	3,023

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY96 decrease reflects $20 thousand for the F-16 Jordanian rescission and minor pricing adjustments, and $349 thousand for the SBIR assessment. FY97 net increase reflects $6000 thousand for the ASW Improvement Program. This increase is partially offset by a decrease of $371 thousand for Congressional undistributed reductions. FY98 net increase consists of $2,700 thousand for restoration of the IEER program and $629 thousand for the Aviation Depot Level Repair (AVDLR) redistribution. These increases are partially offset by decreases of $70 thousand for Navy Working Capital Fund (NWCF) carryover and rate adjustments and $68 thousand for minor pricing reductions. FY99 net increase is the result of increases of $720 thousand for AVDLR redistribution and $6 thousand for minor pricing adjustments. These increases are partially offset by a decrease $47 thousand for NWCF rate adjustments.

(U) Schedule: TMS/BROADBAND OT/DT III slipped from FY97 to FY98.

(U) Technical: Not Applicable

C. (U) OTHER PROGRAM FUNDING SUMMARY: None

DATE:February 1997

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 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					
Engineering Milestones				3Q/IEER CDR	
T&E Milestones			2Q/TMS Broadband 4Q/DT III/OT III		2Q/01 IEER DT III 4Q/01 IEER OT III
Contract Milestones					

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering Support	14,670	5,141	2,281	2,463
b. Technical Support (CS)	1,115	700	500	500
c. Travel	60	180	60	60
d. Test and Evaluation	200	1,514	350	0
e. SBIR Assessment		168		
Total	16,045	7,703	3,191	3,023

DATE: February 1997

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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	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	0	4,894
RBC (Arl, VA)	C/FFP	11/94	5,865	5,865	1,050	1,115	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		1,000	1,000			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 $2.0M		Var			6,388	0	0	0	0	0	6,388
NAWC/AD		10/98			7,818	3,820	2,141	2,281	2,463	CONT	CONT
Support and Management less than $2.0M	NAWC/AD	10/98			0	0	0	0	0	CONT	CONT
Miscellaneous					209	50	180	60	60		
Test and Evaluation less than $2.0M	NAWC/AD	10/98			0	0	0	0	0	CONT	CONT
Miscellaneous					0	200	1,514	350	0		

GOVERNMENT FURNISHED PROPERTY: Not Applicable

DATE: February 1997

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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	20,150	15,795	5,841	2,781	2,963	CONT	CONT
Subtotal Support and Management	209	50	180	60	60	CONT	CONT
Subtotal Test and Evaluation	0	200	1,514	350	0	CONT	CONT
Subtotal SBIR Assessment	0	0	168	0	0	0	168
Total Project	20,359	16,045	7,703	3,191	3,023	CONT	CONT

DATE: February 1997

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

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY:5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	ACTUAL	FY 1996 ESTIMATE	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 COMPLETE	TO PROGRAM	TOTAL
E2213 Mission Planning	3,863	2,226	2,412	9,061	10,323	17,072	17,447	17,922	CONT.	CONT.	
R2295 JDISS	0	2,508	0	0	0	0	0	0	0	2,508	
X0486 JMCIS Tactical/Mobile	2,875	2,896	3,032	3,299	3,191	3,372	3,447	3,520	CONT.	CONT.	
X0709 JMCIS Afloat	7,088	7,365	6,568	9,525	9,084	10,299	11,108	10,442	CONT.	CONT.	
X2009 JMCIS OED	2,392	1,226	2,065	2,414	2,211	2,265	2,315	2,369	CONT.	CONT.	
X2041 JMCIS Ashore	5,501	6,116	6,521	6,959	6,499	6,869	7,024	7,886	CONT.	CONT.	
X0521 Shipboard Tactical Intelligence Processing (STIP)	2,475	6,317	5,069	6,153	6,279	6,436	6,577	6,729	CONT.	CONT.	
X2215 Joint Interoperability	0	0	0	3,552	3,821	3,816	4,397	4,978	CONT.	CONT.	
X2216 C4I for Joint Littoral Warfare (JLW)	0	0	0	6,215	7,887	11,630	12,384	14,928	CONT.	CONT.	
X2305 Navy Common Operating Environment (COE)	0	0	1,984	2,027	2,080	2,135	2,188	2,245	CONT.	CONT.	
X2306 Naval Simulation System	0	0	3,369	3,416	3,428	3,491	3,553	3,621	CONT.	CONT.	
X2307 Shipboard LAN/WAN	0	0	498	495	497	995	994	995	CONT.	CONT.	
TOTAL	24,194	28,654	31,518	53,116	55,300	68,380	71,434	75,635	CONT.	CONT.	

(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. Included among these C3I

systems are: the unified command centers of CINCPAC and CINCLANT, the Navy Command Center, the fleet command centers of CINCLANTFLT, CINCUSNAVEUR, the Submarine Operating Authority (SUBOPAUTH), command centers supporting the Ashore Sector Commander, the Joint Intelligence Center (JIC) and a Fleet Ocean Surveillance Information Facility (FOSIF), Tactical Flag Command Center (TFCC) afloat, the Naval Tactical Command Support System (NTCSS) Shipboard LAN/WAN, Naval Simulation System, the command and control suites of various combatant ship classes, and software development/integration programs to support Joint Interoperability, Joint Littoral Warfare, and the Navy Common Operating Environment. The TFCC and ship command and control suites have been consolidated in the JMCIS Afloat program. C^{4}I of Naval aircraft operations afloat and shore are supported by the TCS program. Mission planning capabilities will be implemented for air control and attack operations using TCS components in the TAMPS program. All these projects develop information processing and display systems for afloat and ashore commanders providing decision makers the ability to make rapid, informed tactical decisions. JMCIS Tactical/Mobile develops systems which fuse tactical data between shipboard organic sensors and ashore and space-based non-organic sensors. The Shipboard LAN/WAN develops and integrates multi-level security capabilities on unclassified networks used by/managed by NTCSS. TCS provides the ashore and afloat pillars of the Copernicus architecture, the interoperability tenants of "C^{4}I for the warrior" and supports the Global Command and Control System (GCCS) architecture. Additionally, TCS supports the Joint Maritime Command Information System (JMCIS) acquisition and development strategy for providing a standard/common operating environment to standardize operational and logistical support. Further, data from the Joint Tactical Information Distribution System (JTIDS), Joint Defense Intelligence Support Services (JDISS) and systems employing the Department of Defense Intelligence Information System (DODIIS) standards are used for the exchange of data with joint and combined forces. The Tactical Aircraft Mission Planning System (TAMPS) is the Naval standard unit level aircraft mission planning system and provides data loading capabilities for all aviation platforms and subsystems. TAMPS is interoperable with and uses TCS components for data feed.

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY:5

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

PROJECT NUMBER: E2213
PROJECT TITLE: Mission Planning

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
E2213 Mission Planning	3,863	2,226	2,412	9,061	10,323	17,072	17,447	17,922	CONT.	CONT.

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, EA-6B, AV-8B, AH-1, SH-60, MH-53, HH-60, CH-46, UH-1, VH-1, E-6, ES-3A, T-45, S-3B, P-3C, High-speed Anti Radiation Missile (HARM), Joint Stand-Off Weapon (JSOW), Joint Directed Attack Munitions (JDAM), Stand-off Land Attack Missile (SLAM), 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 drives 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 PLAN:

- (U) ($2,226) Develop and integrate TAMPS version 6.2. Efforts will include the integration of the following modules and functionalities: TAMMAC, H-1 mission planning module, Naval Special Warfare Automated Mission Planning System (SWAMPS), Tactical Strike Coordination Module (TSCM), and Tactical Operational Scene (TOPSCENE). This release will also include improvements to the following modules and functionalities: E-2C module and SLAM module. The inclusion of the following requirements will be part of TAMPS version 6.2: full duplex security, Local Area Network (LAN), drop-in polynomials, 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 will be conducted to 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.

3. (U) FY 1998 PLAN:

- (U) ($2,412) Develop and integrate TAMPS Version 6.3. Efforts will include initial development of Force Level compatibility and the migration of the following mission planning systems: CHAMPS, TEAMS and TERPES. This release will also upgrade the following functionalities: TAMMAC, LAN, Stores Planning and Weaponeering Module (SPWM), SWAMPS and F/A-18 module. The V-22 Module and the H-60 platform requirements will be implemented. The inclusion of the following requirements will be part of TAMPS version 6.3: Defense Mapping Agency (DMA) vector products; Digital Aeronautical Flight Information File (DAFIF 5) and a new route structure.

4. (U) FY 1999 PLAN:

- (U) ($9,061) Develop and integrate TAMPS version 6.4. Continue Force Level development and migration. The following requirements will be implemented or completed: TAMMAC, Common Helo, MOMS, TEAMS and MH-53.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 PRESIDENT S BUDGET:	2,554	2,360	2,350	9,138
(U) ADJUSTMENTS FROM FY 1997 PRESBUDG:	+1,309	-134	+62	-77
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	3,863	2,226	2,412	9,061

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 increase reflects $1,326 thousand for a Below Threshold Reprogramming-96-38 adjustment. The increase is partially offset by decreases of $3 thousand for the F-16 Jordanian rescission and $14 thousand for the Small Business Innovation Research assessment. FY 1997 decrease consists of $134 thousand for Congressional undistributed reductions. FY 1998 net increase consists of $78 thousand for the ATHENA/Global Broadcasting System offset, which is partially offset by decreases of $6 thousand for Navy Working Capital Fund (NWCF) rate adjustments and $10 thousand for minor pricing adjustments. FY 1999 net decrease consists of $53 thousand for DBOF rate adjustments and $57 thousand for minor pricing adjustments. These decreases are partially offset by an increase of $34 thousand for the ATHENA/GBS OFFSET.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

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	4,789	6,972	15,722	24,248	23,722	17,051	15,323	15,424	CONT	CONT
(U) O&MN	1,995	1,980	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 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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	9,061
Total	3,863	2,226	2,412	9,061

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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	8,316	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	8,528	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	9,061	Cont	Cont

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 COMPLETE	TO PROGRAM	TOTAL
X0486 JMCIS Tactical/Mobile (JTM)	2,875	2,896	3,032	3,299	3,191	3,372	3,447	3,520	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The JMCIS Tactical/Mobile (JTM) Systems are nodes of the Navy Command and Control System (NCCS) Ashore, and 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 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 C4I systems (based on the Joint Maritime Command Information System (JMCIS) common architecture) which will evolve to the Navy's 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 C4I system which can be transported in two fleet-configured P-3 aircraft for contingency operations. MAST and MICFAC are miniaturized mobile facilities designed to support a theater commander or naval liaison element ashore. MAST provides a deployable basic C3 capability, and MICFAC provides a deployable complete C4I capability (less special compartmented information elements). The ongoing TSC C^3 Modernization (TMS) Program will: support expeditionary warfare requirements; replace a centralized computer system with Navy-standard desktop computers and a distributed data base on a local area network to provide a fused, all-source tactical data display with detailed source data and relevant tactical decision/planning aids; provide ELINT, imagery and ACINT sensor analysis capabilities; automate communications functions/interfaces and facilitate rapid data exchange with key Navy, joint, other service and allied forces ashore, afloat and airborne with connectivity to the Secret Internet Protocol Routing Network (SIPRNET); and develop automated interfaces to evolving tactical weapons/sensor/avionics systems and additional USN/USAF/allied aircraft. This program assures the existing TSC system remains interoperable with updated aircraft, sensors and weapons systems while following the Copernicus Forward Architecture.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(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 as required.
- (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 PLAN:

- (U) ($20) Support Milestone IIIB decision (Q1) for Fleet Release of TMS 2.0.
- (U) ($174) Update common JMCIS/DII software, in conjunction with other programs.
- (U) ($470) Continue to upgrade data server to operate on standard tactical computer workstations; include additional USMTF, Link 11 message data, technical data (ESM, acoustic, NPS) and utilize the JMCIS/DII core software.
- (U) ($202) Capture/integrate tactical decision aids and imagery segment updates with maximum utilization of existing segments.
- (U) ($84) Continue to investigate and apply available trusted software technology.
- (U) ($283) Update TMS LAN/WAN interface to the NCCS Ashore system and SIPRNET.
- (U) ($209) Update tape operating system, imagery and ESM Analysis Workstation functionality in TMS software.
- (U) ($698) Conduct system integration, testing, documentation, training for Increment III (Incremental Fleet Release 3.0) 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. Support the P-3C Anti-Surface Warfare Improvement Program (AIP) interoperability requirements. Continue TSC migration to multi TADIL interfaces.
- (U) ($232) Adapt a TADIXS B interface to the TSC software for use by the ESM workstation.
- (U) ($307) Develop measures for system achievement of major effectiveness parameters of the OR in areas of mission-supported and communications system performance for Increment III. Migrate toDII COE.
- (U) ($65) Complete security certification and support security accreditation for Incremental Release 3.0.

- (U) ($130) Continue progress to DTIIC and update the TSC at Brunswick to an operational test configuration; support OT IIC (FY98) leading to a Milestone IIIC (FY98) decision for Fleet Release of TMS 3.0 which will be DII compliant. Capture and incorporate additional WAN capabilities into TSC/MOCC for interface to other JMCIS/DII systems.

- (U) ($22) Portion of extramural program provided for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($1,639) Complete system integration, testing, documentation, and training for Increment III (Incremental Fleet Release 3.0 which will be DII-compliant) to incorporate updated mission planning, communications, and post-mission analysis capabilities specified in the approved Operational Requirements Document (ORD). This will support both the TSC and MOCC hardware variants (i.e. MAST and MICFAC).

- (U) ($306) Support an OT IIC (Q2) leading to a Milestone IIIC decision (Q3) for fleet release and installation of TMS 3.0.

- (U) ($867) Provide support for new aircraft sensor capabilities, such as the Advanced Digital Active Receiver (ADAR), long-range imagery, Synthetic Aperture Radar (SAR), shallow water acoustic analysis, Advanced ESM and other roll-on-roll-off sensors.

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

4. (U) FY 1999 PLAN:

- (U) ($1,559) Initiate system integration, testing, documentation and training for Increment IV (Incremental Fleet Release 4.0) to incorporate updated mission planning, communications 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 variants.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

- (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 NCCS network to 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 NCCS connectivity to SIPRNET and available WAN/WEB technology for insertion into fixed and mobile TSC variants.
- (U) ($360) Support an OT IID (Q2) leading to a Milestone IIID decision (Q3) for fleet release and installation of TMS 4.0.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 PRESIDENT S BUDGET:	2,907	3,033	3,224	3,442
(U) ADJUSTMENTS FROM FY 1997 PRESBUDG:	-32	-137	-192	-143
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	2,875	2,896	3,032	3,299

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996: -$1K reduction for Joint Service deskbook initiative; -$3K reflects Jordan Rescission; -$7K reflects reduction for administrative and personal services rescission; -$22K reflects FY 1996 SBIR transfer; +$1K reflects other minor Navy fiscal adjustments

FY 1997: -$137K reflects Congressional Undistributed General Adjustments

FY 1998: -$180K transferred to Project X2305, Navy COE; +$72K reflects consolidation of MAST/MICFAC and TSC Programs; -$73K NWCF rate adjustments; -$8K DoD Inflation adjustment; -$3K minor Navy adjustments

FY 1999: -$185K transferred to Project X2305, Navy COE; +$110K reflects consolidation of MAST/MICFAC and TSC Programs; -$49K NWCF rate adjustments; -$4K minor Navy adjustments; -$12K DoD Inflation adjustment; -$3K Redistribution adjustment

(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 TMS 3.0.

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

(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 2246	8,109	9,898	5,255	7,717	8,444	8,621	8,785	9,022	CONT.	CONT.
• (U) OPN LI 2906 (TSC and MAST/MICFAC)	3,246	2,125	2,888	5,736	3,682	5,724	6,171	6,874	CONT.	CONT.
• (U) OMN	10,981	13,173	13,143	11,922	11,656	12,144	12,558	12,631	CONT.	CONT.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(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.

(U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones		Q1 IIIB	Q3 IIIC	Q3 IIID
Engineering Milestones	Q4 TMS REL2.0	Q1 TMS REL3.0 CDR	Q2 TMS REL3.0 / Q4 TMS REL4.0 CDR	Q2 TMS REL 4.0
T&E Milestones	Q2 DTIIB / Q4 OTIIB		Q1 DTIIC / Q2 OTIIC	Q1 DTIID / Q2 OTIID
Contract Milestones				

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FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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	405	420	453
b. Software Engineering	1,590	1,596	1,666	1,779
c. Hardware Analysis/Design	295	300	324	360
d. Hardware/Software Integration	549	552	560	629
e. Test & Evaluation	40	43	62	78
Total	2,875	2,896	3,032	3,299

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 ESTIMATE	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	7,365	6,568	9,525	9,084	10,299	11,108	10,442	CONT.	CONT.

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), including nodal analysis. It also integrates both joint and service-unique command and control projects in order to support joint task force and Navy afloat requirements. Efforts include design, integration, and test of Tactical Decision Aids (TDAs) and Tactical Intelligence Analytical Aids (TIAAs) to provide the Battle Group/Force Commanders with warfighting Command and Control capabilities.

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 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 PLAN:

- (U) ($854) Develop, integrate and test FY 1997 software enhancements. Integrate and test Fleet release to meet Increment III ORD requirements.

- (U) ($616) Continue 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) ($1,418) Continue 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.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

- (U) ($350) Continue development of DNS which will allow JMCIS Afloat connection to the JWICS, SIPRNET and other intelligence networks.
- (U) ($309) Implement and test required Joint Mission Applications including hardware and software interfaces with JMCIS Afloat including incorporation of Asynchronous Transfer Mode (ATM) technology.
- (U) ($700) Continue integration and test of implemented Internet related security capabilities in JMCIS Afloat.
- (U) ($783) Continue to develop 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) Procure development hardware and COTS software to support hardware evaluation and software development.
- (U) ($509) Continue migration of the TEOB, MIDB, GALE, and JDISS.
- (U) ($300) Implement technology upgrade to TAC-x computer including, porting and integration of application/segment software.
- (U) ($1,000) Continue to develop, procure and integrate two-way Link 16 efforts associated with JMCIS DII COE compliant software applications.
- (U) ($89) Portion of extramural program provided for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($925) Develop, integrate and test FY 1998 software enhancements. Continue to integrate and test Fleet release to meet Increment III ORD requirements.

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

- (U) ($1,457) Continue development and testing of segment applications software in a GCCS/DII compliant open system architecture to include integration of joint C4I requirements working toward a COP. Initiate development of interfaces for the Joint Service Imagery Processing System-Navy (JSIPS-N), Joint/Global Broadcast System (JBS/GBS), two-way LINK 16, and Imagery Product Library/Archive (IPL/IPA).

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

- (U) ($773) Implement and test upgraded required 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 in JMCIS Afloat.

- (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. Initiate development of interfaces with the Common High Bandwidth Data Link (CHBDL) plus the display, processing and exploitation of UAV video and digital imagery products.

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

- (U) ($508) Develop enhancements to maintain interoperability with TEOB, MIDB, GALE, and JDISS.

4. (U) FY 1999 PLAN:

- (U) ($826) Develop, integrate and test FY 1999 software enhancements. Initiate development of Fleet release to meet Increment IV ORD requirements.

- (U) ($900) Continue development and integration of intelligence analysis tools for incorporation into GENSER and SCI software for analyst workstations.

- (U) ($2,955) Continue development/implementation and begin integration/testing of segment applications software in a GCCS/DII compliant open system architecture to include integration of joint C4I requirements 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 intelligence and data exchange 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 to include interfaces with the CHBDL plus the display, processing and exploitation of UAV video and digital imagery products.

- (U) ($629) Procure development hardware and COTS software to support hardware evaluation and software development.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X0709
PROJECT TITLE: JMCIS Afloat

- (U) ($733) Continue migration of the TEOB, MIDB, GALE, and JDISS.
- (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) FY1997 PRESIDENT S BUDGET:	7,598	6,699	6,793	10,496
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	-510	+666	-225	-971
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	7,088	7,365	6,568	9,525

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996: -$3K reduction for Joint Service deskbook initiative; -$9K reduction for Jordanian Rescission; -$22K reflects reduction for administrative and personal services rescission; -$90K for SBIR assessment; +$8K other minor Navy fiscal adjustments; -$394K for Below Threshold Reprogramming to X2009.

FY 1997: +1,000K Add for Link 16 Integration; -$153K for NWCF rate adjustments; -$181K for Congressional undistributed general adjustments.

FY 1998: -$100K reduction for Navy COE; +$40K for NWCF rate adjustments; reduced -$8K for minor Navy adjustment; -$140K for NWCF rate adjustments; -$17K for DoD Inflation adjustment.

FY 1999: -$840K reduction for Navy COE; reduced -$73K for NWCF rate adjustments; reduced -$14K for minor Navy adjustments; -$35K for DoD Inflation adjustment; and -$9K for Redistribution adjustment.

(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#2608	13,261	25,608	22,403	23,534	21,880	22,576	25,219	25,623	CONT.	CONT.
(U) OMN	10,194	10,494	11,728	11,985	12,178	12,342	13,589	13,844	CONT.	CONT.

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

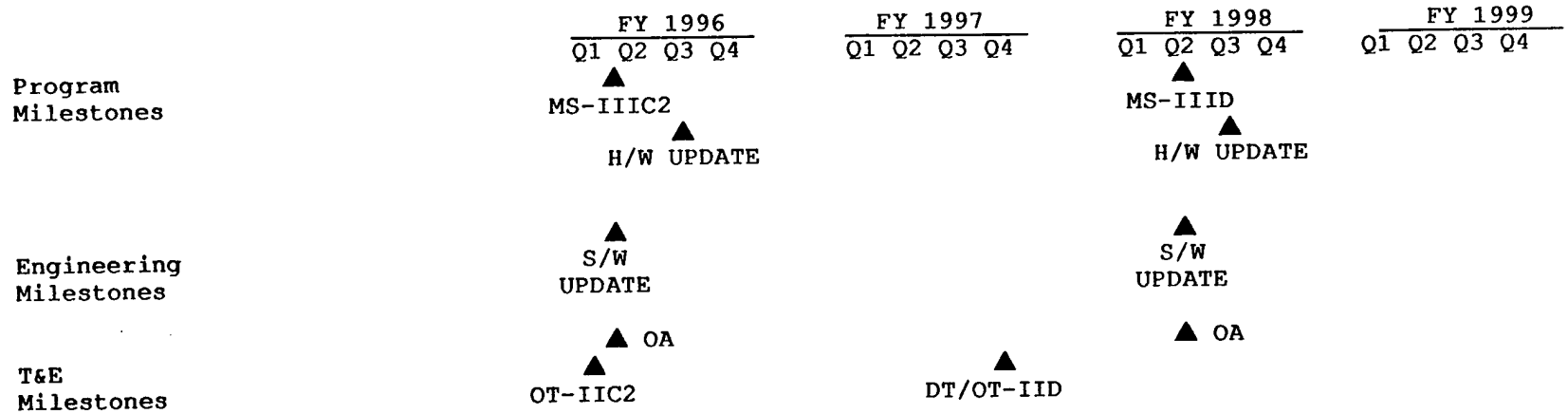
DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X0709
PROJECT TITLE: JMCIS Afloat

D. (U) SCHEDULE PROFILE:



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FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N

PROGRAM ELEMENT TITLE: Tactical Command System

PROJECT NUMBER: X0709

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	5,107	4,475	6,169
d. HARDWARE DEVELOPMENT	622	428	439	1,106
e. SYSTEM TEST & EVALUATION	600	600	600	600
Total	7,088	7,365	6,568	9,525

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 COMPLETE	TO PROGRAM TOTAL
X2009	JMCIS OBU Evolutionary Development	2,392	1,226	2,065	2,414	2,211	2,265	2,315	2,369	CONT.	CONT.

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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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 PLAN:

- (U) ($350) Accredit multi-level record communications with SCI/Genser Newsdealer and CSP record message systems.
- (U) ($756) Complete software development, perform TECHEVAL and support OPEVAL of MLS OED migration system.
- (U) ($100) Integrate and accredit NCSC B1-certified multi-level secure operating system (CMW) into OED software baseline, with mirrored system backup and restoration over a trusted network.

- (U) ($20) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($400) Integrate key JMCIS warfare components (Waterspace Management, EW segments) into OED MLS software baseline.
- (U) ($725) 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.

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) ($806) 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.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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

- (U) ($250) Upgrade system capabilities for providing tailored MLS support for moving areas of interest.
- (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) FY1997 PRESIDENT S BUDGET:	2,006	1,283	2,092	2,449
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	+386	-57	-27	-35
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	2,392	1,226	2,065	2,414

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY96 was reduced -$1K for Joint Service deskbook initiative and -2K for Jordan Rescission; -$7K reflects reduction for administrative and personal services rescission +2K reflects other minor Navy fiscal adjustments; +394K Below Threshold Reprogramming increase from X0709

FY97 was reduced -57K due to Congressional Undistributed General Adjustments

FY98 was reduced -$2K due to a minor Navy adjustment and decreased -$20K for NWCF rate adjustment; -5K for DoD Inflation adjustment

FY99 was reduced -$3K due to a minor Navy adjustment; -21K for NWCF rate adjustment; -9K for DoD Inflation adjustment; and -$2K for Redistribution adjustment

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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 ESTIMATE	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	LI#2805	LI#2805
OPN LI#2805 (JMCIS OED)	0	0	343	419	516	569	582	596	CONT.	CONT.
OMN 1C1C/4B7N	2,517	2,329	2,052	1,560	1,258	1,240	1,271	1,294	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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 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							NPDM								NPDM	
Engineering Milestones				SDR				SDR				SDR				SDR
T&E Milestones						DT-IIE						DT-IIF				
							OT-IIE								OT-IIF	
Contract Milestones																

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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	666	1,505	1,784
c. SYSTEM TEST AND EVALUATION	30	30	30	30
Total	2,392	1,226	2,065	2,414

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 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 ESTIMATE	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 (formerly Operations Support System (OSS))	5,501	6,116	6,521	6,959	6,499	6,869	7,024	7,886	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Chief of Naval Operations (CNO), Fleet Commanders in Chief (CINCs) and Unified Commanders (USCINCLANT and USCINCPAC) require a single, integrated command and control system at the Navy Command Center (NCC), Fleet Command Centers (FCC), and the Unified Command Centers, respectively, to receive, process, display and assess the readiness and disposition of own, neutral, and potentially hostile forces. TheJMCIS 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 transition Shore Targeting Terminal (STT) and Force High Level Terminal (FHLT) functionality to JMCIS Ashore and will incorporate Employment Scheduling System (ESS) and Information Presentation and Distribution System (IPDS) capabilities. Increment IV (FY 96-99) will continue the evolutionary development of JMCIS Ashore in response to emergent Joint and Navy C^4I requirements, the changing threat and new technology. Multi-Level Security (MLS) features will be incorporated as they become commercially available. International, as well as intra and inter-service Command, Control, Communication and Computer integration, will be established and achieved through the implementation of 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.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2041
PROJECT TITLE: JMCIS Ashore

(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) ($1,112) Maintained OSS/JMCIS architectural compatibility with GCCS, C^{4}I For the Warrior (C^{4}IFTW) 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.

2. (U) FY 1997 PLAN:

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

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

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

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

- (U) ($950) Continue implementation of appropriate MLS features.

- (U) ($300) 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) ($520) Continue enhancing UB software to satisfy JMCIS Ashore requirements; integrate successive JMCIS Ashore releases into JMCIS Ashore/JMCIS baseline.

- (U) ($250) Maintain JMCIS Ashore architectural compatibility with GCCS, CIFTW and JMCIS.
- (U) ($300) Implement Navy unique USMTF SORTS and MOVREP Messages.
- (U) ($300) Plan, develop and begin implementation of USMTF CASREP and EMPSKD Messages.
- (U) ($400) Continue interfacing/integrating with readiness data from other Navy sources. Complete system integration and review of USN message and data flow.
- (U) ($350) Complete and field PC EMPSKD message capability to assist units to create error free CASREP, SORTS and MOVREP messages.
- (U) ($150) Continue efforts to incorporate super computer and/or parallel processor solutions into JMCIS Ashore to improve system performance.
- (U) ($150) Continue systems engineering and prototype development on AI/Expert System driven decision aids to provide real time decision making support to operational commanders.
- (U) ($144) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($256) 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) ($150) Continue interfacing/integrating with readiness data from other Navy sources.
- (U) ($300) Plan, conduct systems engineering and prototype development of object oriented/design solution into JMCIS Ashore to improve system performance.

- (U) ($700) 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) ($300) Develop capability to integrate IUSS data into JMCIS Ashore command center databases to support mission planning efforts.

- (U) ($250) Update JMCIS Ashore software and databases to accommodate Navy Warfare Publication (NWP) message format changes.

- (U) ($700) Maintain architectural compatibility with DoD mandated standards (i.e., Defense Information Infrastructure (DII).

- (U) ($200) Plan, develop, and begin implementation of Human Computer Interface Standards for software development and data retrieval.

- (U) ($250) Incorporate unique decision aids, data elements, message text types and report formats required by Type Commanders (TYCOMs).

- (U) ($450) Conduct developmental testing and beta testing on JMCIS Ashore software.

- (U) ($461) Modify JMCIS Ashore system and configuration to accommodate Radiant Mercury (RM) and other TENCAP sanitization products, support RM port to TAC-5 platform and support RM evolutionary software upgrades. Implement commercially available MLS.

- (U) ($500) 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) ($550) Port JMCIS Ashore software to run on current GCCS and Navy TAC-series computer platforms. Integrate JMCIS Ashore/GCCS LANs.

- (U) ($500) Complete migration of SORTS, CASREP, MOVREP, and EMPSKD to USMTF format.

- (U) ($450) 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) ($350) 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) ($154) Maintain compatibility with Defense Messaging System (DMS)/Automated Message Handling System software requirements.

4. (U) FY 1999 PLAN:

- (U) ($300) 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) ($250) Continue to incorporate state-of-the-art technologies such as distributed data bases and WEB technology.

- (U) ($150) 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) ($200) Continue development of database modules to support WAN access by JMCIS Ashore remote users, i.e., distributed databases and data standardization.

- (U) ($500) Integrate capability to integrate IUSS data into JMCIS Ashore command center databases to support mission planning efforts.

- (U) ($250) Update JMCIS Ashore software and databases to accommodate Navy Warfare Publication (NWP) message format changes.

- (U) ($700) Maintain architectural compatibility with DoD mandated standards (i.e., Defense Information Infrastructure (DII).

- (U) ($313) 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) ($200) Continue development and implementation of Human Computer Interface Standards for software development and data retrieval.

- (U) ($450) Conduct developmental testing and beta testing on JMCIS Ashore software.

- (U) ($465) Modify JMCIS Ashore system and configuration to accommodate Radiant Mercury (RM) and other TENCAP sanitization products, support RM port to TAC-5 platform and support RM evolutionary software upgrades. Implement commercially available MLS.

- (U) ($400) Continue extension of full JMCIS Ashore access and functionality into PC domain consistent with FLTCINC and TYCOM requirements.

- (U) ($250) Port JMCIS Ashore software to run on current GCCS and Navy TAC-series computer platforms.

- (U) ($650) 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) ($400) 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) ($950) 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) ($231) Maintain compatibility with Defense Messaging System (DMS)/Automated Message Handling System software requirements.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY1997 PRESIDENT S BUDGET:	5,625	6,402	7,681	7,665
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	-124	-286	-1,160	-706
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	5,501	6,116	6,521	6,959

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996: -2K reduction for Joint Service deskbook initiative; -6K reduction to fund Jordan Rescission; -18K reflects reduction for administrative and personal services rescission; -102K reflects SBIR adjustment; +4K reflects other minor Navy fiscal adjustments.

FY 1997: -286K Congressional undistributed general adjustment.

FY 1998: -500K Navy reduction for partial Challenge Athena/GBS offset - plus SABRE/SPAWAR manning; -100K Navy reduction for offsets and plus-ups to fund GCCS, JMCIS, CTAPS, C4I interoperability; -520K Navy reduction for offsets and plus-ups for Navy COE; -17K reduction to fund NWCF rate adjustments; -7K reduction to fund minor adjustments; -16K for DoD Inflation adjustment.

FY 1999: -100K Navy reduction for offsets and plus-ups to fund GCCS, JMCIS, CTAPS, C4I interoperability; -530K Navy reduction for offsets and plus-ups for Navy COE; -7K to fund NWCF rate adjustments; -7K to fund minor adjustments; -29K to fund NWCF surcharge; -26K for DoD Inflation adjustment; -7K for Redistribution adjustment.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) Schedule: Increment IV will deliver on schedule but will rely on the Joint COE program to provide Unified Build Core software.

(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 2906(OSS only)	5,139	3,834	0	0	0	0	0	0	LI#2804	LI#2804
(U) OPN 2804	0	0	3,393	4,897	7,854	7,919	7,837	9,054	CONT.	CONT.
(U) OMN	14,031	12,560	10,930	11,518	11,230	10,542	10,759	11,983	CONT.	CONT.

(U) RELATED RDT&E:

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2041
PROJECT TITLE: JMCIS Ashore

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							NPDM M/S IIIC									NPDM M/S IIID
Engineering Milestones			INC III/IV PDR/CDR				INC III/IV PDR/CDR									
T&E Milestones							DTIIC OTIIC									DTIID OTIID
Contract Milestones			INC IV Contract Awards													

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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	4,052	4,420	4,686	5,011
c. Systems Engineering	939	1,126	1,205	1,248
d. Test and Evaluation	100	100	100	110
Total	5,501	6,116	6,521	6,959

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 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
SAIC McLean,VA	RADIUS	12/92	24,765	24,765	16,015	2,000	2,000	2,250	2,250	CONT.	CONT.
FGM Herndon, VA	RADIUS	6/94	9,264	9,264	2,094	1,622	1,714	1,661	1,715	CONT.	CONT.
NRAD	WX	11/96	12,411	12,411	10,286	580	500	515	530	CONT.	CONT.
Various					27,699	789	1,332	1,465	1,514	CONT.	CONT.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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

Support and Management:								
Travel		452	40	70	60	60	CONT.	CONT.
Various		775	370	400	470	530	CONT.	CONT.
Test and Evaluation OPTEVFOR	VAR	650	100	100	100	110	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

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				56,094	4,991	5,546	5,891	6,259	CONT.	CONT.
Subtotal Support and Management				1,227	410	470	530	590	CONT.	CONT.
Subtotal Test and Evaluation				650	100	100	100	110	CONT.	CONT.
Total Project				57,971	5,501	6,116	6,521	6,959	CONT.	CONT.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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
X0521 STIP	2,475	6,317	5,069	6,153	6,279	6,436	6,577	6,729	CONT.	CONT.

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 data base for the Tactical Flag Command Center (TFCC), 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 Data Base (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.

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,337) Developed, integrated and tested 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.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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

2. (U) FY 1997 PLAN:

- (U) ($1,040) Develop, integrate and test an MIDB based CDBS/AMH and associated intelligence applications to support C2WC and other Warfare Commander functions.
- (U) ($ 838) Develop, integrate and test advanced digital imagery applications to keep pace with CIO and DARO evolving imagery architectures.
- (U) ($500) Continue 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) Continue to develop data base support for TDAs.
- (U) ($575) Continue object oriented data base development.
- (U) ($327) Continue 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) Begin integration of CDBS (providing automated tactical updates) with the Target Development Models for Target Nomination List modules/applications.
- (U) ($2,000) Continue to develop, procure, test and integrate intelligence applications efforts associated with the fielding of Radiant Mercury capabilities on JMCIS platforms.
- (U) ($43K) Portion of extramural program provided for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($1,015) 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 developments.

- (U) ($1,053) 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) ($564) 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) ($782) 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) ($648) Continue object-oriented data base exploratory development.

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

- (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.

4. (U) FY 1999 PLAN:

- (U) ($1,374) 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) ($1,362) 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) ($431) 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) ($838) 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) ($783) Continue object-oriented data base exploratory development.

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

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY1997 PRESIDENT S BUDGET:	2,695	4,598	5,182	6,261
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	-220	+1,719	-113	-108
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	2,475	6,317	5,069	6,153

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996: -$1K for Joint Service deskbook initiative; -$3K to fund Jordan Rescission; -$7K reflects reduction for administrative and personal services rescission; -$11K SBIR assessment; -$198K Below Threshold Reprogramming to X0921

FY 1997: +$2,000K for Radiant Mercury; -$281K for Congressional undistributed general adjustments

FY 1998: -$94K for NWCF rate adjustments; -$6K for minor Navy adjustments; -$13K for DoD Inflation adjustment

FY 1999: -$72K for NWCF rate adjustments; -$7K for minor Navy adjustments; -$23K for DoD Inflation adjustment; -$6K for Redistribution adjustment.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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

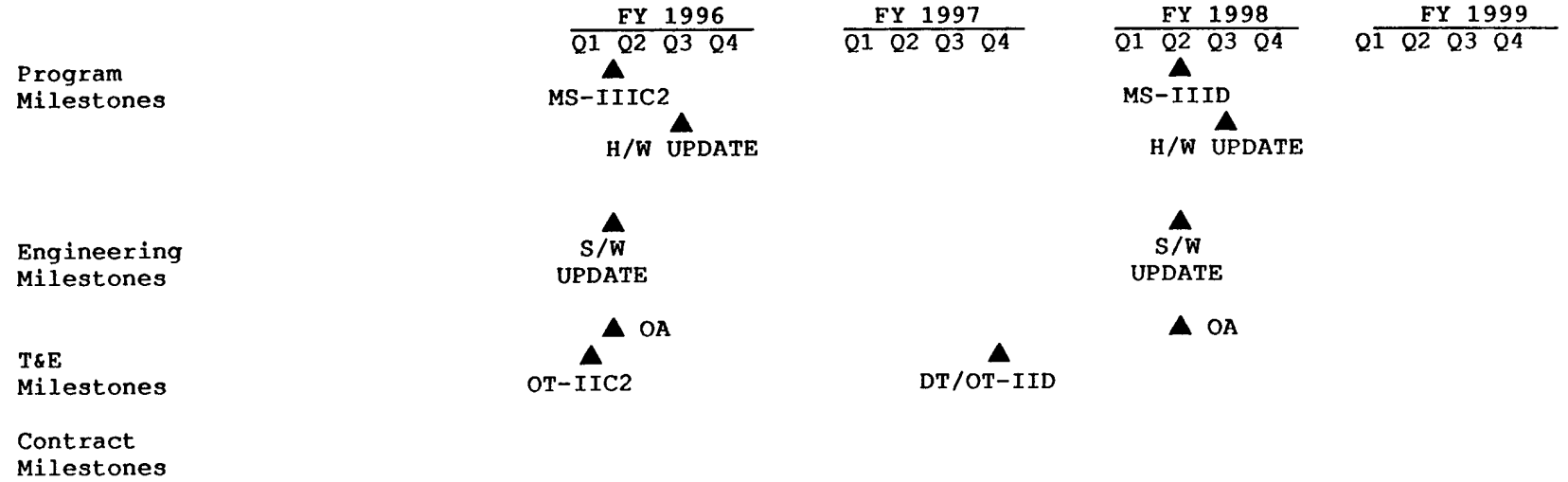
C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

	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#2608	13,261	25,608	22,403	23,534	21,880	22,576	25,219	25,623	CONT.	CONT.
(U) OMN	10,194	10,494	11,728	11,985	12,178	12,342	13,589	13,844	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:



000174

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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
Project Management	202	215	250	250
Systems Engineering	700	1,364	1,671	2,303
Software Development	1,057	4,030	2,348	2,690
Hardware Development	166	358	450	560
System Test & Evaluation	350	350	350	350
Total	2,475	6,317	5.069	6,153

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 ESTIMATE	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	3,552	3,821	3,816	4,397	4,978	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Joint Interoperability. This program will develop updates to the current library of JMCIS software applications to satisify joint interoperability requirements for sharing of C4I data and for software application reuse. It will provide and implement applications algorithms and interfaces updated for joint interoperability. It will produce Naval software products compliant with DII COE software engineering standards and conventions. 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.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 PLAN:

   - (U) Not Applicable.

2. (U) FY 1997 PLAN:

   - (U) Not Applicable.

3. (U) FY 1998 PLAN:

   - (U) Not Applicable.

4. (U) FY 1999 PLAN:

   - (U) ($353) Revise JMCIS architecture to be compatible with DoD requirements in DII. Produce requirements engineering data and documentation.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

- (U) ($820) 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) ($450) Implement plan for migration of data to common data link.
- (U) ($500) Procure Joint standard hardware for developers and testers.
- (U) ($200) Develop and implement processes to support development and integration of Joint warfare applications.
- (U) ($325) Provide training and technical services for segment developers.
- (U) ($350) Plan and conduct integration and development testing.
- (U) ($204) Develop program documentation and data.
- (U) ($350) Develop improvements to two-way data exchange capabilities to ensure system interoperability.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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) FY1997 PRESIDENT S BUDGET:	0	0	0	5,100
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	0	0	0	-1,548
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	0	0	0	3,552

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1999: -$1,500K offsets for partial Chal Athena/GBS plus Sabre/SPAWAR manning; reduction for NWCF rate adjustments/surcharges (-$27K); reduction for minor Navy adjustments (-$4K); reduction for DoD Inflation adjustment (-$13K); reduction for Redistribution adjustment (-$4K).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

Not Applicable

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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																
Engineering Milestones													▲ SRR		▲ TRR	
T&E Milestones																▲ DT&E
Contract Milestones																

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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				878
Software Development				1,620
Hardware Development				500
System Test & Evaluation				350
Total				3,552

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							2,120	CONT.	CONT.
NRAD	WR	10/98							878	CONT.	CONT.
Support and Management											
XYZ	CPFF	10/98							204	CONT.	CONT.
Test and Evaluation											
NRAD	WR	10/98							350	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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								2,998	CONT.	CONT.
Subtotal Support and Management								204	CONT.	CONT.
Subtotal Test and Evaluation								350	CONT.	CONT.
Total Project								3,552	CONT.	CONT.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 ESTIMATE	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	6,215	7,887	11,630	12,384	14,928	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. JLW systems 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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 PLAN:

   - (U) Not Applicable.

2. (U) FY 1997 PLAN:

   - (U) Not Applicable.

3. (U) FY 1998 PLAN:

   - (U) Not Applicable.

4. (U) FY 1999 PLAN:

   - (U) ($ 300) Develop program documentation and data.
   - (U) ($ 520) System requirements analysis and systems design.
   - (U) ($ 476) Transition to TAC-n technology to achieve a field deployable JLW capability.
   - (U) ($ 675) Develop new Application Program Interface to support new JLW mission capabilities.
   - (U) ($1,444) Update JMCIS C4I systems architecture and update/integrate JMCIS software segments to provide Tactical Data Link (TADIL) improvement, improved navigational and environmental data for Tactical Decision Aids and Theater Ballistic Missile Defense.
   - (U) ($ 520) Procure components of the DII Software Development Environment for use by JMCIS/DII developers.
   - (U) ($1,125) Develop/integrate JLW Application Software Segments supporting mine warfare and countermeasures, and amphibious assault.

- (U) ($ 455) Complete initial phase of JLW/JMCIS Systems Integration.
- (U) ($ 500) 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) FY1997 PRESIDENT S BUDGET:	0	0	0	10,894
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	0	0	0	-4,679
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	0	0	0	6,215

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1999: -$4,600K offsets for partial Chal Athena/GBS plus Sabre/SPAWAR manning; reduction for NWCF rate adjustments/surcharges (-43K); reduction for minor Navy adjustments (-7K); reduction for DoD Inflation adjustment (-23K); reduction for Redistribution adjustment (-6K).

(U) Schedule: Not applicable.

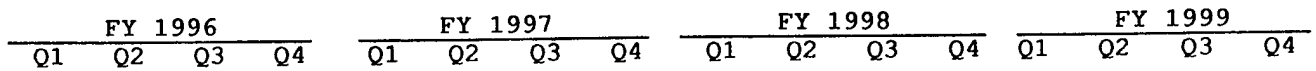
(U) Technical: Not applicable.

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

D. (U) SCHEDULE PROFILE:



FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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				300
Systems Engineering				975
Software Development				3,720
Hardware Development				520
System Test & Evaluation				700
Total				6,215

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							4,240	CONT.	CONT.
NRAD	WR	10/98							975	CONT.	CONT.
Support and Management											
XYZ	CPFF	10/98							300	CONT.	CONT.
Test and Evaluation											
NRAD	WR	10/98							700	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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								5,215	CONT.	CONT.
Subtotal Support and Management								300	CONT.	CONT.
Subtotal Test and Evaluation								700	CONT.	CONT.
Total Project								6,215	CONT.	CONT.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 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 ESTIMATE	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	2,027	2,080	2,135	2,188	2,245	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) 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 and marine forces through a combination of communications, intelligence and combat system interfaces. The future UB will be referred to as the Naval COE Extension because it will be an extension of the Defense Information Infrastructure (DII) COE and will require added maritime and marine unique core functions.

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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2305
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Navy COE

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 PLAN:

   - (U) Not Applicable.

2. (U) FY 1997 PLAN:

   - (U) Not Applicable.

3. (U) FY 1998 PLAN:

   - (U) ($ 200) Develop program documents and data.
   - (U) ($1,434) Integrate and transform Naval core services to be interoperable extensions of the DII COE. Develop updates to keep pace with new technology and commercial-off-the-shelf products. Upgrade Application Programmer Interfaces to improve the JMCIS systems integration process.
   - (U) ($ 350) Conduct Development Test and Evaluation of evolutionary COE products.

4. (U) FY 1999 PLAN:

   - (U) ($ 205) Continue development of program documents and data.
   - (U) ($1,463) Integrate and transform Naval core services to be interoperable extensions of the DII COE. Develop updates to keep pace with new technology and commercial-off-the-shelf products. Upgrade Application Programmer Interfaces to improve the JMCIS systems integration process.
   - (U) ($ 359) Continue Development Test and Evaluation of evolutionary COE products.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2305
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Navy COE

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY1997 PRESIDENT S BUDGET:	0	0	0	0
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	0	0	1,984	2,027
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	0	0	1,984	2,027

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1998: $2,000K Navy decision to fund Navy COE; -$9K for NWCF rate adjustments; -$2K forminor Navy adjustments; -$5K DoD Inflation adjustment.

FY 1999: $2,052K Navy decision to fund Navy COE; -$2K for minor Navy adjustments; -$14K for NWCF surcharges and rate adjustments; -$7K DoD Inflation adjustment; -$2K Redistribution adjustment.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

Not Applicable

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2305
PROGRAM ELEMENT TITLE: Tactical Command System 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																
Engineering Milestones										▲ SRR		▲ TRR	▲ SRR		▲ TRR	▲ SRR
T&E Milestones												▲ DT			▲ DT	
Contract Milestones																

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2305
PROGRAM ELEMENT TITLE: Tactical Command System 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	1,463
System Test & Evaluation			350	359
Total			1,984	2,027

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	1,463	CONT.	CONT.
Support and Management											
XYZ	CPFF	10/97,98						200	205	CONT.	CONT.
Test and Evaluation											
NRAD	WR	10/97,98						350	359	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2305
PROGRAM ELEMENT TITLE: Tactical Command System 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	1,463	CONT.	CONT.
Subtotal Support and Management							200	205	CONT.	CONT.
Subtotal Test and Evaluation							350	359	CONT.	CONT.
Total Project							1,984	2,027	CONT.	CONT.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 ESTIMATE	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	3,416	3,428	3,491	3,553	3,621	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).

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2306
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Naval Simulation System

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 PLAN:

   - (U) Not Applicable.

2. (U) FY 1997 PLAN:

   - (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) ($974) 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.

4. (U) FY 1999 PLAN:

- (U) ($626) Add/Improve Warfare Area representations in NSS as specified by the NSS Requirements Working Group and directed by the NSS Configuration Control Board.
- (U) ($350) 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) ($300) 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) ($800) 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) ($600) 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) ($740) 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 1997 PRESIDENT S BUDGET:	0	0	0	0
(U) ADJUSTMENTS FROM FY 1997 PRESBUDG:	0	0	3,369	3,416
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	0	0	3,369	3,416

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1998: $4,388K Navy decision to fund Naval Simulation System development; -$8K to fund NWCF rate adjustments; -$3K for minor Navy adjustments; -$8K for inflation adjustment; -$1,000K for 17135 - C4I Program Reduction.

FY 1999: $3,455K Navy decision to fund Naval Simulation System development; -$3K for minor Navy adjustments; -$20K for NWCF surcharge and rate adjustment; -$13K for DoD Inflation adjustment; -$3K for Redistribution adjustment.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

D. (U) SCHEDULE PROFILE: Not Applicable

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2306
PROGRAM ELEMENT TITLE: Tactical Command System 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				
b. Software Development			2,794	2,676
c. Systems Engineering				
d. Test and Evaluation			575	740
Total			3,369	3,416

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 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 ESTIMATE	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	495	497	995	994	995	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.

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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 PLAN:

   - (U) Not Applicable.

2. (U) FY 1997 PLAN:

   - (U) Not Applicable.

3. (U) FY 1998 PLAN:

   - (U) ($498) 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.

4. (U) FY 1999 PLAN:

   - (U) ($495) Continue to incorporate state-of-the-art technologies and business process improvements into interfaces with tactical systems.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604231N PROJECT NUMBER: X2307
PROGRAM ELEMENT TITLE: Tactical Command System PROJECT TITLE: Shipboard LAN/WAN

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY1997 PRESIDENT S BUDGET:	0	0	0	0
(U) ADJUSTMENTS FROM FY1997 PRESBUDG:	0	0	498	495
(U) FY 1998 PRESIDENT S BUDGET SUBMIT:	0	0	498	495

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1998: FY 1998 was increased by $500K due to a Navy decision to fund NTCSS Shipboard LAN/WAN and decreased by -$1K for minor Navy adjustments and -$1K for an inflation adjustment.

FY 1999: FY 1999 was increased by $500K due to a Navy decision to fund NTCSS Shipboard LAN/WAN and decreased by -$1K for minor Navy adjustments, -$2K reprogrammed for NWCF surcharge, and -$2K for an inflation adjustment.

(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)	30,704	31,822	49,710	58,423	30,432	29,249	36,858	36,882	CONT	CONT
(U) O&MN	38,876	38,237	39,479	39,353	39,172	39,302	40,299	41,744	CONT	CONT
(U) O&MNR	658	642	639	633	650	668	683	698	CONT	CONT

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: X2307
PROJECT TITLE: Shipboard LAN/WAN

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY1999
Site/Platform Integration	0	0	498	495
Total	0	0	498	495

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

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H2279/ 4BW/4BN UPGRADE RDT&E ARTICLES	10,995	69,986	80,735	90,264	151,979 2	108,286 2	51,026	19,963	CONT	CONT

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. Included is 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, and, in the case of the AH-1W, will phase a fully integrated cockpit 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 fold of the new composite rotor blades, a new performance matched transmission, a new 4-bladed tail rotor and drive system, a more effective elevator, upgraded landing gear, and pylon structural modifications. The 4BW will increase aircraft agility, maximum continuous speed, and payload (ordnance) capability. The fully integrated cockpit 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 the aircraft, pilot workload has progressively worsened.) The cockpit will include integration of on-board mission planning, communications, digital fire control, self navigation, night targeting, and weapons systems in near mirror image crew stations reducing training requirements. The 4BN effort will incorporate the 4BW rotor system into the UH-1N aircraft, 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 production approval decision.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: (Executed in PE 0604212N)

- (U) ($ 0) Conducted pre-Milestone II efforts.
- (U) ($10,995) Conducted engineering trade studies, focusing on design configurations, specifications, and Statements of Work. Conducted technical and management risk assessments and risk reduction efforts.

2. (U) FY 1997 PLAN: (Executed in PE 0603266N)

- (U) ($ 0) 4BW/4BN Milestone II decision and approval for Engineering and Manufacturing Development (E&MD) in first quarter.
- (U) ($67,564) Begin 4BW/4BN design efforts and conduct 4BW/4BN Preliminary Design Review (PDR). Begin design and fabrication of tooling. Begin detail parts fabrication and procurement of long lead hardware. Contractor will conduct a competition to select a cockpit integrator and a pilotage FLIR producer. Begin cockpit design.
- (U) ($ 550) Begin Live, Fire, Test and Evaluation (LFT&E) effort of aircraft subassemblies.
- (U) ($ 1,872) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C 638.

3. (U) FY 1998 PLAN:

- (U) ($80,096) Continue 4BW/4BN fabrication of tooling and procurement of long lead hardware. Conduct 4BW/4BN Critical Design Review (CDR). Begin initial fabrication of AH-1W/UH-1N aircraft. Continue cockpit design.
- (U) ($ 639) Continue LFT&E effort of aircraft subassemblies.

4. (U) FY 1999 PLAN:

- (U) ($89,409) Continue fabrication of AH-1W/UH-1N aircraft. Complete cockpit design and begin avionics bench testing. Deliver initial AH-1W/UH-1N aircraft to contractor.
- (U) ($ 855) Continue LFT&E effort of aircraft subassemblies.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	11,263	73,080	87,247	85,627
(U) Appropriated Value:		73,080		
(U) Adjustments from Pres Budget:	-268	-3,094	-6,512	+4,637
(U) FY 1998 President s Budget Submit:	10,995	69,986	80,735	90,264

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net reduction of $-268K in FY 1996 is due to Jordanian rescission ($-13K) and SBIR Transfer ($-255K). The net reduction of $-3,094K in FY 1997 reflects $-1,461K for Navy Working Capital Fund (NWCF) Surcharge; $-69K for minor program adjustment; $-103K for Non-FFRDC; and $-1,461K for Congressional general reductions. A decrease of $-5,900K in FY 1998 and an increase of $+5,900K in FY 1999 was made to align the current funding profile with the CAIG s program estimate. In addition, reductions of $-81K in FY 1998 and $-168K in FY 1999 reflect set asides for the Acquisition Center of Excellence (ACE); $-314K in FY 1998 and $-274K in FY 1999 for minor pricing adjustments; $-217K in FY 1998 $-355K in FY 1999 for desk book and inflation; and $-466K in FY 1999 for redistribution and NWCF Surcharge.

(U) Schedule: The Milestone II decision was delayed from 4Q/96 to 1Q/97 due to administrative scheduling by the DAB. During the pre-Milestone II decision process, the Working Integrated Product Team (WIPT) restructured the production strategy by changing the number of LRIP s for each aircraft without changing the production schedule or funding. The following schedule changes resulted: 4BN FRP from 2Q/03 to 2Q/04, 4BW FRP from 1Q/05 to 2Q/04, 4BN MSIII from 2Q/02 to 2Q/04, 4BW MSIII from 2Q/03 to 2Q/04, 4BN TECHEVAL from 3Q/01 to 4Q/02, 4BN OPEVAL from 3Q/02 to 3Q/03, 4BW TECHEVAL from 4Q/02 to 1Q/03. The 4BW LRIP #2 was incorrect, the effort should have been stated as 4BN LRIP #2. As a result of contract negotiations and associated alignment of 4BW/4BN work, the following adjustments were made to the program schedule: 4BW CDR from 4Q/97 to 4Q/98 and 4BN CDR from 4Q/97 to 4Q/98. Additionally, the following events were deleted from the program schedule: 4BW CU PDR, 4BW CU CDR and CU Award. In addition: FY 1997 President s Budget displayed two errors in the Schedule Profile in FY 1997. 1Q/05 4BW FRP was placed under the FY 1997 column vice To Complete and the 4Q/4BN CDR was ommitted under FY 1997.

(U) Technical: None.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 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 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
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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		1Q 4BW/4BN MSII			2Q/04 4BW/4BN MSIII
Engineering Milestones	2Q/96 - 2Q/97 Design Studies/ Risk Assessments	2Q-4Q 4BW PDR 2Q-4Q 4BN PDR	2Q-4Q 4BW CDR 2Q-4Q 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 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Hardware Development	7,793	59,071	75,559	79,000
b. Software Development	326	870	1,125	600
c. Test and Evaluation	0	550	639	855
d. Engineering & Technical Support	1,611	3,374	1,721	2,936
e. Gov t Furnished Equipment	0	2,623	0	5,441
f. Program Management	1,265	1,626	1,691	1,432
g. SBIR Assessment		1,872		
Total	10,995	69,986	80,735	90,264

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FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Budget	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	7,793	7,793	0	7,793	0	0	0	0	7,793
Bell Helicopter Ft. Worth, TX	SS CPAF	11/97	498,000	498,000	0	0	59,071	75,559	79,000	CONT	CONT
Gov t Furnished Equipment: Various	Various	Various	CONT	CONT	0	0	2,623	0	5,441	CONT	CONT
In-House Support: NAWC-AD, Patuxent Rv WX		10/97	CONT	CONT	0	729	2,092	1,054	946	CONT	CONT
Multiple Field Activities: Tech & Engr Spt WX		10/97	CONT	CONT	0	1,208	2,132	1,792	2,590	CONT	CONT
Support and Management											
In-House Support: (Travel)	Various				0	135	70	100	100	CONT	CONT
Misc. CS Contracts:	Various				0	1,130	1,576	1,591	1,332	CONT	CONT
Test and Evaluation:	Various				0	0	550	639	855	CONT	CONT

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	9,730	65,918	78,405	87,977	CONT	CONT
Subtotal Support and Management	0	1,265	1,646	1,691	1,432	CONT	CONT
Subtotal Test and Evaluation	0	0	550	639	855	CONT	CONT
SBIR Assessment	0	0	1,872	0			1,872
Total Project	0	10,995	69,986	80,735	90,264	CONT	CONT

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 05

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H0480 ASW Sensors & Processing	1,125	3,585	10,869	29,156	37,335	24,960	21,855	12,636	CONT	CONT
H2000 Air Deployed Active Receiver (ADAR)	8,094	10,396	6,078	991	0	0	0	0	0	97,750
TOTAL	9,219	13,981	16,947	30,147	37,335	24,960	21,855	12,636	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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 05

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
H0480 ASW Sensors & Processing	1,125	3,585	10,869	29,156	37,335	24,960	21,855	12,636	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 1996 ACCOMPLISHMENTS:
(U) GASS

- (U) ($ 395) Completed initial phase of EMD contract source selection.
- (U) ($ 570) Completed integration of GFE environmental software into the GASS prototype.
- (U) ($ 160) Provided other engineering support and contractor support services.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

2. (U) FY 1997 PLAN:
(U) GASS
- (U) ($2,107) Complete Milestone II, final source selection activities, and award EMD contract; initiate system design.
- (U) ($ 390) Continue GFE environmental software development to reduce EMD risk.
- (U) ($ 250) Provide engineering oversight of EMD contractor.
- (U) ($ 510) Provide other engineering support and contractor support services.

(U) AEER
- (U) ($ 250) Prepare EMD solicitation and system specification.
- (U) ($ 78) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:
(U) GASS
- (U) ($7,260) EMD contractor complete GASS system design and initiate software code and test.
- (U) ($ 334) Continue GFE environmental software development to reduce EMD risk.
- (U) ($ 449) Provide engineering oversight of EMD contractor.
- (U) ($ 947) Provide other engineering support and contractor support services.

(U) AEER
- (U) ($1,222) Complete Milestone II and award EMD contract.
- (U) ($ 451) Initiate system requirements documentation.
- (U) ($ 206) Provide other engineering support and contract support services.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

4. (U) FY 1999 PLAN:

(U) GASS

- (U) ($14,990) EMD contractor complete preliminary design review (PDR) for each of four trainer types, procure preproduction hardware and continue code and test.
- (U) ($ 310) Continue GFE environmental software improvements.
- (U) ($ 462) Provide engineering oversight of EMD contractor.
- (U) ($ 1,388) Provide other engineering support and contractor support services.

(U) AEER

- (U) ($ 9,557) Complete contractor system design review (SDR); initiate subassembly fabrication and test.
- (U) ($ 450) Complete Air Common Acoustic Processing (ACAP) SDR for implementation of AEER requirements.
- (U) ($ 450) Complete concept of operations for lead platform mission and display software.
- (U) ($ 1,549) Provide other engineering support and contractor support services.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	1,142	3,787	12,717	29,127
(U) Adjustments from Pres Budget:	-17	-202	-1,848	+29
(U) FY 1998/99 President s Budget:	1,125	3,585	10,869	29,156

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 net decrease of $-17 thousand reflects a reduction of $-2 thousand for the Jordanian Rescission, $-14 thousand for SBIR transfer and $-1 thousand for minor program adjustment. The 1997 net decrease of $202 thousand includes a $-75 thousand reduction for Navy Working Capital Fund (NWCF) and $-127 thousand program adjustments. The FY 1998 net decrease of $-1,848 thousand reflects a Department of the Navy decision to reduce AEER funding by $-1,294 thousand and to shift these funds to the ADAR program (H2000), $-554 thousand reduction for NWCF and minor program adjustments. The FY 1999 net increase of $+29 thousand represents a $-95 thousand decrease for NWCF reductions, $-106 thousand decrease for inflation adjustment, $-22 thousand for acquisition improvements decrease and AVDLR redistribution of $+229 thousand and programs adjustments of $+23 thousand.

(U) Schedule: AEER EMD contract award delayed from 2Q/98 to 3Q/98 and SDR from 4Q/98 to 1Q/99 due to the reduction in FY 1998 funding. SWALAS MS-II has been delayed from 4Q/00 to 4Q/01, the SWALAS EMD contract award from 1Q/01 to 1Q/02, and the GASS Milestone II and EMD contract award from 1Q/97 to 2Q/97 due to reprioritization of requirements.

(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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		2Q GASS Milestone II	1Q AEER MS-II		3Q/02 GASS MS-III 4Q/01 SWALAS MS-II
Engineering Milestones				1Q GASS PDR #1 2Q GASS PDR #2-4 1Q AEER SDR	1Q/00 GASS CDR #1 3Q/00 GASS CDR #2-4 4Q/00 AEER PDR 4Q/01 AEER CDR
T&E Milestones					3Q/01-2Q/02 GASS TTPRR 2Q/02-2Q/03 AEER TECHEVAL 4Q/02-4Q/03 AEER OPEVAL
Contract Milestones		2Q GASS EMD Contract Award	3Q AEER EMD Contract Award		1Q/02 SWALAS EMD Contract Award

FY 1998 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Hardware Development	0	0	600	5,000
b. Software Development	570	2,497	8,495	19,052
c. Systems Engineering	234	174	393	1,700
d. Government Engineering Support	161	516	328	1,019
e. Program Management Support	0	0	698	1,797
f. Contractor Support Services	160	320	355	588
g. SBIR Assessment		78		
Total	1,125	3,585	10,869	29,156

FY 1998 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
APLABS	C/CPFF	7/93	5,469	5,469	5,138	331	0	0	0	0	5,469
San Diego, CA											
SAIC	C/CPFF	6/91	6,637	6,637	4,610	0	250	294	270	1,213	6,637
McLean, VA											
GASS EMD Contr	TBD	2/97	TBD	57,521	0	0	2,185	7,260	14,990	33,086	57,521
SWALAS EMD Contr	TBD	6/98	TBD	18,900	0	0	0	600	5,000	13,300	18,900
MISC/In House	WX	10/97	TBD	TBD	13,237	634	752	1,662	6,511	CONT	CONT
Support and Management											
MISC/In House	WX	10/97	TBD	TBD	1,269	0	0	698	1,797	CONT	CONT
MISC/Contrs	C/CPFF	10/97	TBD	TBD	3,332	160	320	355	588	CONT	CONT

Test and Evaluation Not Applicable

GOVERNMENT FURNISHED PROPERTY

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	Not Applicable									
Support and Management	Not Applicable									
Test and Evaluation	Not Applicable									

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	22,985	965	3,187	9,816	26,771	CONT	CONT
Subtotal Support and Management	4,601	160	320	1,053	2,385	CONT	CONT
Subtotal Test and Evaluation	0	0	0	0	0	CONT	CONT
SBIR Assessment			78				78
Total Project	27,586	1,125	3,585	10,869	29,156	CONT	CONT

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
H2000 Air Deployed Active Receiver (ADAR)	8,094	10,396	6,078	991	0	0	0	0	0	97,750

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 1996 ACCOMPLISHMENTS:
- (U) ($4,165) Completed airdrop Contractor Demonstration Tests (CDTs). Completed EMD Contractor CDR and initiated build and delivery of TECHEVAL/OPEVAL test units.
- (U) ($1,881) Completed ACAP and S-3B subsystems and integrated ADAR/ACAP into the S-3B/ADAR system. Initiated S-3B/ADAR system test.
- (U) ($ 632) Initiated training materials and equipment for TECHEVAL/OPEVAL and for Fleet Introduction Team (FIT).
- (U) ($1,416) Provided other engineering support and contractor support services.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1997 PLAN:
- (U) ($3,629) Complete build and delivery of TECHEVAL and OPEVAL test units.
- (U) ($2,901) Complete S-3B/ADAR integration test and conduct system flight test.
- (U) ($ 570) Complete training materials and equipment for TECHEVAL/OPEVAL.
- (U) ($1,394) Conduct TECHEVAL of the IEER system.
- (U) ($1,736) Provide other engineering support and contractor support services.
- (U) ($ 166) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:
- (U) ($1,254) Provide system engineering support for completion of system integration test and TECHEVAL.
- (U) ($ 932) Complete TECHEVAL.
- (U) ($1,165) Complete OPEVAL.
- (U) ($1,370) Initiate Generic Acoustic Stimulator System (GASS) prototype integration into S-3B Weapon System Trainer (WST) for FIT training.
- (U) ($ 360) Complete FIT training materials.
- (U) ($ 997) Provide other engineering support and contractor support services.

4. (U) FY 1999 PLAN:
- (U) ($ 738) Complete GASS prototype/FIT trainer integration.
- (U) ($ 253) Provide other engineering support and contractor support services.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

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

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	8,211	8,354	3,260	0
(U) Adjustments from Pres Budget:	-117	+2,042	+2,818	+991
(U) FY 1998/99 President s Budget:	8,094	10,396	6,078	991

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 net decrease of $-117 thousand includes, $-97 thousand for SBIR, a $-9 thousand decrease for the Jordanian Rescission and $-11 thousand minor pricing adjustment. The FY 1997 net increase of $+2,042 thousand reflects a Congressional increase of $+2,500 thousand for modification and testing of ADAR software prior to start of Techeval, and a decrease of $-458 thousand for Navy Working Capital Fund (NWCF) and minor program adjustments. The FY 1998 net increase of $+2,818 thousand reflects a $+2,783 rephasing ($+1,370 thousand for development to initiate the GASS prototype/WST integration for FIT training and $+1,413 thousand for the rephasing of the ADAR/S-3B integration and tests, TECHEVAL and training from FY 1997 to FY 1998), and an increase of $+200 thousand for AVDLR redistribution, and a $-165 thousand decrease for NWCF and minor pricing adjustments. The FY 1999 net increase of $+991 thousand reflects $+1,000 thousand to correct deficiencies revealed in GASS prototype/WST integration testing and $-9 thousand minor pricing adjustment.

(U) Schedule EMD CDR has slipped from 3Q/96 to 4Q/96 due to corrective action activity during contractor demonstration tests.

(U) Technical Not applicable.

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

	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	(SSQ-101) 0	(403600) 0	0	22,624	29,439	38,284	42,454	42,920	CONT	CONT

(U) RELATED RDT&E:
(U) PE 0603254N (ASW Systems Development)

FY 1998 RDT&E,N BUDGET JUSTIFICATION SHEET DATE: February 1997

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

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones			3Q MS-III		
Engineering Milestones	4Q EMD CDR				
T&E Milestones		4Q/97-1Q/98 TECHEVAL 2Q-3Q/98 OPEVAL			
Contract Milestones					

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Hardware Development	1,200	1,924	0	0
b. Software Development	1,881	1,339	400	0
c. Systems Engineering	579	492	109	130
d. Development Test and Evaluation	1,686	1,866	932	0
e. Integrated Logistics Support	130	0	0	0
f. Training Equipment	632	1,140	1,360	608
g. Government Engineering Support	700	1,766	1,115	0
h. Program Management Support	1,026	1,468	797	178
i. Contractor Support Services	260	235	200	75
j. Operational Test and Evaluation	0	0	1,165	0
k. SBIR Assessment		166		
Total	8,094	10,396	6,078	991

000234

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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

B. ( ) 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											
ERAPSCO	C/CPIF	7/92	24,843	24,843	21,719	1,200	1,924	0	0	0	24,843
Fort Wayne, IN											
NAWC/AD PAX RV	WX	10/97	46,827	46,827	35,159	4,702	4,852	1,984	130	0	46,827
MISC/In House	WX	10/97	9,610	9,610	8,819	606	185	0	0	0	9,610
Trainer Integrtn	TBD	10/97	TBD	1,608	0	0	0	1,000	608	0	1,608
Support and Management											
MISC/In House	WX	10/97	4,885	4,885	1,931	1,026	1,468	797	178	0	5,400
MISC/Contrs	C/CPFF	10/97	2,468	2,468	1,698	260	235	200	75	0	2,468
Test and Evaluation											
Miscellaneous (Less than 2 Million)											
	Various	10/97	4,532	4,532	569	300	1,566	2,097	0	0	4,532

GOVERNMENT FURNISHED PROPERTY

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	Not Applicable									
Support and Management	Not Applicable									
Test and Evaluation										
NAWC/AD WAR	WX	N/A	N/A	2,296	0	0	0	0	0	2,296

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	65,697	6,508	6,961	2,984	738	0	82,888
Subtotal Support and Management	3,629	1,286	1,703	997	253	0	7,868
Subtotal Test and Evaluation	2,865	300	1,566	2,097	0	0	6,828
SBIR Assessment			166				166
Total Project	72,191	8,094	10,396	6,078	991	0	97,750

000226

DATE: February 1997

FY 1998 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 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
H1425 V-22	717,336	552,082	529,495	272,716	140,900	92,471	43,717	30,469	63,708	6,806,743
TOTAL	717,336	552,082	529,495	272,716	140,900	92,471	43,717	30,469	63,708	6,806,743
RDT&E Articles		4								4

(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.

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

DATE: February 1997

FY 1998 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) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($665,391) Continued contract efforts related to the EMD program, including the fabrication/assembly and ground testing of EMD aircraft and government furnished equipment (GFE) integration. Completed mating of aircraft 7, 8 and 9. Began CV-22 efforts. Development/procurement of organizational level equipment to support aircraft 7-10. Development of repair and damage limit data for inclusion in the logistic support analysis (LSA). Started static test article (STA) testing.

- (U) ($51,945) Continued in-house flight test activities, Integrated Test Teams (ITTs), Integrated Product Teams (IPTs), support equipment development, logistics and training activities, the manned flight simulator and numerous other development and test efforts at the government's in-house activities. Conducted CV-22 Systems Requirements Review (SRR).

2. (U) FY 1997 PLAN:

- (U) ($485,702) Continue MV-22 and CV-22 contract efforts related to the EMD program, including delivery and flight testing of EMD aircraft and GFE integration. Complete mating of aircraft 10. First flight of EMD aircraft. Complete aircraft 7 ferry flight to Patuxent River. Award maintenance trainer and operational flight trainer upgrade contracts. Continue LSA efforts. Complete STA testing.

- (U) ($53,186) 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. Train pilots for EMD testing. Conduct operational assessment (OT-IIC).

- (U) ($13,194) Portion of program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C.638.

DATE: February 1997

FY-1998 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

3. (U) FY 1998 PLAN:

- (U) ($473,583) Continue MV-22 and CV-22 contract efforts related to the EMD program. Continue LSA and training efforts. Complete Depot level LSA. Start drop test article (DTA) testing. Start STA test to failure.

- (U) ($55,912) 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 preliminary design review (PDR). Complete OT assessment (OT-IID).

4. (U) FY 1999 PLAN:

- (U) ($228,398) Continue MV-22 and CV-22 contract efforts related to the EMD program, including flight testing of EMD aircraft and GFE integration. Continue training efforts. LSA complete. Complete maintenance and pilot operational evaluation (OPEVAL) training. Complete DTA testing.

- (U) ($44,318) 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: February 1997

FY-1998 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

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	733,728	576,792	522,651	259,030
(U) Appropriated Value		576,792		
(U) Adjustments from PRESBUDG:	-16,392	-24,710	+6,844	+13,686
(U) FY 1998 President s Budget:	717,336	552,082	529,495	272,716

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 decrease reflects $844 thousand for the Jordanian Rescission, $15,471 thousand for the SBIR assessment, and $77 thousand for minor pricing adjustments. The FY 1997 decrease reflects $24,710 thousand for Congressional undistributed reductions. The FY 1998 increase of $6,844 thousand and the FY 1999 increase of $13,686 thousand reflect increases to CV-22 rephased as a result of FY 1996 Congressional undistributed reductions.

(U) Schedule: The low rate initial production (LRIP) 1 advanced acquisition contract (AAC) award slippedfrom 2nd quarter FY96 to 3rd quarter FY96 due to administrative and negotiation delays. The CV Definitization slipped from 4th quarter FY96 to 1st quarter FY 97 due to extended proposal/reproposal and negotiation efforts. The DAB LRIP Review and LRIP 1 definitization/full funding slipped from 2Q97 to 3Q97 due to administrative scheduling delays. CV PDR and CDR was delayed from 3Q97 to 2Q98 and 2Q98 to 1Q99 respectively. The OT Assessment scheduled for 4Q96 was delayed to 1Q97 due to administrative delays in defining the scope of activities to be conducted and due to EMD hardware availability for the Manned Flight Simulator. The OT assessment period is now 1Q97 through 4Q97.

(U) Technical: Not applicable.

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

	FY 1996 ESTIMATE	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
APN V-22 &	0	607,903	472,007	621,007	665,165	877,022	1,180,647	1,445,653	22,213,858	28,314,662[1]
Adv Proc	47,145	125,078	69,659	55,128	74,315	99,192	121,631	115,816	2,374,479	3,082,443
APN Spares	0	56,488	28,806	36,335	84,407	95,877	83,433	21,952	2,542,877	2,950,175
Total APN	47,145	789,469	570,472	712,470	823,887	1,072,091	1,385,711	1,583,421	27,131,214	34,347,280[1]

[1]Includes $231,400 of FY 1989 APN funds.

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		3Q97 DAB LRIP Review			
Engineering Milestones	4Q96 CV SRR		2Q98 CV PDR	1Q99 CV CDR	
T&E Milestones		1Q97-4Q97 OT Assess	3Q98 OT Assess	2Q99-3Q99 TECHEVAL 3Q99-1Q00 OPEVAL	
Contract Milestones	3Q96 LRIP 1 AAC	1Q97 CV Def 3Q97 LRIP 1 Def/Full Funding 3Q97 Maint Trainer contract award			

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DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
a. Prime Contractor Development	651,156	462,398	451,654	209,423
b. Contractor Engineering Support	14,235	23,304	21,929	18,975
c. Government Engineering Support	51,945	53,186	55,912	44,318
d. SBIR Assessment	0	13,194	0	0
Total	717,336	552,082	529,495	272,716

DATE: February 1997

FY 1998 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

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:											
Bell-Boeing Arlington, VA	CPAF	10/92	TBD	TBD	1,605,034	644,200	455,170	445,224	204,603	CONT.	CONT.
Allison Indianapolis, IN	CPIF	12/92	TBD	TBD	147,485	6,956	7,228	6,430	4,820	CONT.	CONT.
STI Rockville, MD	T&M	10/97	TBD	TBD	11,464	1,700	2,607	1,998	2,066	CONT.	CONT.
Hughes Indianapolis, IN	T&M	10/97	TBD	TBD	0	0	6,751	6,804	6,045	CONT.	CONT.**
NAWCADPAX	WX	10/97	TBD	TBD	*	22,374	42,636	43,750	33,311	CONT.	CONT.**
NAWCADWAR					*	7,725	0	0	0	0	CONT.
NAWCADIND			TBD	TBD	*	12,124	0	0	0	0	CONT.
NAD Ch Pt	WX	10/97	TBD	TBD	*	7,634	9,601	10,531	7,803	CONT.	CONT.
NAWCADLKE	WX	10/97	TBD	TBD	*	4,927	5,577	4,381	3,286	CONT.	CONT.
NAWCWDCHL	WX	10/97	TBD	TBD	*	2,223	1,484	1,222	710	CONT.	CONT.
OPTEVFOR	WX	10/97	TBD	TBD	*	282	155	1,543	4,660	CONT.	CONT.
MISC Gov t	various	various	TBD	TBD	5,536	7,191	7,679	7,612	5,412	CONT.	CONT.

* Total FY95 & Prior amounts are not available.
** Funding profile reflects BRAC merger of NAWCADWAR with NAWCADPAX and privatization of NAWCADIND.

Support and Management:

MISC Contr.	various	various	3,093	3,093	3,093	0	0	0	0	0	3,093

Test and Evaluation: Not applicable.

DATE: February 1997

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

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 Production Development	1,769,519	717,336	538,888	529,495	272,716	371,265	4,199,296
Subtotal Support and Management	3,093	0	0	0	0	0	3,093
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Other FY-95 and Prior Costs 1/	2,591,160	0	0	0	0	0	2,591,160
SBIR	0	0	13,194	0	0	0	13,194
Total Project	4,363,772	717,336	552,082	529,495	272,716	371,265	6,806,743

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

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Date: February 1997

FY 1998/99 RDT&E,N 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 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
W0606 Aircrew Systems Development										
TOTAL	16,725	26,083	12,111	14,126	13,635	13,189	13,426	13,765	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 PI), 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 PI, 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: February 1997

FY 1998/99 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($9,274) NACES P^3I: Awarded EMD contract H-53, initiated Phase I Development Test (DT). ACASS: Continued DT on helo crashworthy systems. IBAHRS: Obtained Milestone (MS) III and approved Engineering Change Proposal (ECP) for AH-1W. CEEDS: Completed qualification tests. CWTS: Commenced DT for H-53. Parachutes: Completed live jump testing for vacuum packed parachute.

- (U) ($2,633) ECWIP: Continued DT for cold weather clothing survival items. AMELIA: Continued DT for identified accommodation problems for female and small aviators. AAEP: Continued cockpit mapping, commenced DT.

- (U) ($2,881) Completed Helicopter Emergency Egress Device System (HEEDS) P^3I: Prepared and approved ECP. LEP: Continued joint Navy/Army Laser Protection DT, prepared ECP, and awarded EMD contract.

- (U) ($1,937) NVS: Supported replacement Night Vision Goggle (NVG) for the TACAIR Cats Eyes program. JHMCS: Supported joint development for MS I and risk reduction efforts. PNR Earcup: Commenced DT, established joint service plan to incorporate PNR technology. NDNAWH: Developed program plans and monitored 6.4 efforts.

2. (U) FY 1997 PLAN:

- (U) ($12,407) NACES P^3I: Continue Phase I DT, PDR, and verification of ECP. NACES Phase II, commence DT. Non-Naces and small occupant escape systems, commence DT. ACASS: Continue DT on helo crashworthy systems. JCABS: Commence DT. CWTS: Complete DT and ECP approval for H-53; and conduct source selection/contract award for H-1, H-3, and H-46 troop seats. Parachutes: Investigate vacuum pack applications for ejection seats.

- (U) ($2,389) ECWIP: Continue DT for cold weather clothing and survival items and prepare ECPs. AMELIA: Continue DT and Operational Test (OT) of modified equipment. AAEP: Continue cockpit mapping/DT. CSEL: Support Air Force DT and investigate non combat survival radio alternatives.

- (U) ($2,950) LEP: Continue fixed frequency protection DT, commence OT and prepare Laser Eye ECP. AILSS: Monitor Army EMD for rotary wing system. NCE: Complete OT efforts, obtain MS III decision.

- (U) ($7,885) NVS: Monitor Air Force NVS DT, flight test AN/AVS-9 DT/OT and complete ECP for AN/AVS-9.

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Date: February 1997

FY 1998/99 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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

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.

- (U) ($452) Portion of program reserved for Small Business Innovation Research Assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($4,229) NACES P^{3}I: 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 Systems: 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.

- (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^{3}I: Complete Phase I aircraft integration efforts and platform ECPs. ACASS: Continue DT and OT of helo crashworthy systems. JCABS: Complete prototype installations for other SH-60 models and other rotary/fixed wing platforms. 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) ($2,204) LEP: Complete fixed frequency OT and prepare ECPs, MS III. Commence agile frequency protection studies. AILSS: Commence DT.

FY 1998/99 RDT&E,N BUDGET ITEM JUSTIFICATION Date: February 1997

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

- (U) ($6,700) NVS: Monitor and participate in NVS Detachment DT/OT, Participate in USAF Panoramic NVG evaluation. JHMCS: Complete platform integration and software development. Commence OT. PNR: Conduct OT, approve design for production. NDNAWH: Conduct operational assessment.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	16,953	11,089	12,411	14,179
(U) Appropriated Value		27,489		
(U) Adjustments from PRESBUDG:	-228	+14,994	-300	-53
(U) FY 1998 President s Budget:	16,726	26,083	12,111	14,126

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease reflects $208 thousand for Small Business Innovation Research Assessment (SBIR), $19 thousand for the F-16 Jordanian rescission and $1 thousand for minor pricing adjustments. FY 1997 net increase consists of $16,400 thousand for Modular Helmet Mounted Display, Five Line Laser Visor, Small Occupant Escape Systems, NACES Phase II Ejection Seats, Troop Seats, and helmet development as stated in the FY 1997 DoD Appropration Bill. This increase is partially offset by a decrease of $1,406 thousand for Congressional undistributed reductions. FY 1998 decrease reflects $224 thousand for Navy Working Capital Fund (NWCF)carryover and rate adjustments and $76 thousand for minor pricing adjustments. FY 1999 net decrease reflects an increase of $58 thousand for NWCF rate adjustments. This increase is offset by a decrease of $111 thousand for minor pricing adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: 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)

Date: February 1997

FY 1998/99 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	2Q IBAHRS MSIII	3Q NCE MSII&III 1Q JHMCS MSII	4Q JCABS SH-60 ECP	3Q AODS MSII 2Q AOM MSII 2Q AILSS MSII 2Q LEP MSIII	AILSS MSIII JHMCS MSIII NACES P^3I PHASE II, MS III
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	1Q LEP SPECTACLE DT 3Q PARACHUTE QUAL	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 3Q AILSS DT 4Q JHMCS OT 2Q NDNAWH OT 4Q AODS DT	NACES P^3I PHASE II DT/OT
Contract Milestones	3Q CWTS/H-53 4Q LEP EMD 3Q NACES P^3I PHASE I	2Q JHMCS EMD 4Q CWTS/H-1,H-3 & H-46 2Q NACES P^3I PHASE I 4Q NACES P^3I PHASE II	2Q PNR EMD 2Q NACES P^3I PHASE II		NACES P^3I PHASE II/III

Date: February 1997

FY 1998/99 RDT&E,N 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 1996	FY 1997	FY 1998	FY 1999
a. System Engineering	5,422	10,069	3,698	4,306
b. Developmental T&E	6,003	9,000	4,450	5,400
c. Operational T&E	400	610	363	500
d. ILS	4,900	5,952	3,600	3,920
e. SBIR Assessments	0	452	0	0
Total	16,725	26,083	12,111	14,126

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/AD WAR	WX/RX	10/97			2,381	3,591				CONT	CONT
NAWC/AD PAX	WX/RX	10/97			1,200	2,150	10,521	3,518	4,047	CONT	CONT
Support and Management											
MISC (less than $1M)	WX/RX	10/97			4,350	4,373	5,952	3,493	4,129	CONT	CONT
Test and Evaluation											
MISC (less than $1M)		10/97			6,063	6,611	9,158	5,100	5,950	CONT	CONT

GOVERNMENT FURNISHED PROPERTY: NOT APPLICABLE

Date: February 1997

FY 1998/99 RDT&E,N 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	3,581	5,741	10,521	3,518	4,047	CONT	CONT
Subtotal Support and Management	4,350	4,373	5,952	3,493	4,129	CONT	
Subtotal Test and Evaluation	6,063	6,611	9,158	5,100	5,950	CONT	CONT
SBIR Assessments	0	0	452	0	0	0	208
Total Project	13,994	16,725	26,083	12,111	14,126	CONT	CONT

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Date: February 1997

FY 1998/99 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: W0606
PROJECT TITLE: Aircrew Systems Development

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
C1961 MEWSS	2,654	0	0	0	0	0	0	0	CONT.	CONT.
E0556 EW Counter Response	4,958	38,533	2,676	35,458	63,884	28,451	13,639	3,169	CONT.	CONT.
E2175 Tactical Air Electronic Warfare	76,909	80,308	97,027	89,722	46,061	43,269	28,990	29,489	CONT.	CONT.
R1742 EW Technical Development and Testing	730	678	677	878	894	912	933	953	CONT.	CONT.
R1882 Data Link Vulnerability Analysis	963	892	0	0	0	0	0	0	CONT.	CONT.
R2260 Specific Emmitter ID	1,222	1,020	1,423	1,795	2,010	1,998	2,041	2,088	CONT.	CONT.
TOTAL	87,436	121,431	101,803	127,853	112,849	70,630	45,603	35,699	CONT.	CONT.

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

(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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
E0556 EW Counter Response	4,958	38,533	2,676	35,458	63,884	28,451	13,639	3,169	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The EA-6B Weapon system is designed for jamming and destruction of enemy landbased, shipborne and airborne command, control and communications (C3) and radars associated with early warning, target acquisition surveillance, anti-aircraft artillery, air-to-surface, surface-to-surface, and surface-to-air missiles. In this capacity, it will support carrier based tactical aircraft, battle group operations, and Joint Forces, in dense radar controlled environments. The efforts under this PE provide for the electronic countermeasures response to these advanced threat weapon systems and C3 networks which are expanding in density and technical complexity. This PE funds the continuing development and integration of all EW systems for the EA-6B Electronic Support Aircraft.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

• (U) ($2,414) Continued software and techniques and test support for ongoing new threat development and testing in ICAP-II. Completed Universal Exciter Upgrade (UEU) Operational Evaluation (OPEVAL) and passed Milestone III. Production contract, Aircraft Procurement Navy - Budget Activity 5, to be awarded in September 1996. Continued Coherent Countermeasures (COCM) and Proforma Countermeasurers (PCM) programs for the EA-6B (level of effort commensurate with available funds). Monitored development of the Low Band Transmitter development program. Began development of the EA-6B ICAP-III program documentation. Efforts include source selection documentation, specification, and required documentation along with issuing an industry wide Request for Information.

• (U) ($2,544) Continued software/techniques and test support for ongoing new threat development and testing in ICAP-II. Continued COCM and PCM programs for the EA-6B (Level of effort commensurate with available funds).

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

Monitored development of the low band transmitter development program. Continued development of the EA-6B ICAP-III program documentation. Efforts include source selection documentation, specification, and required documentation. Obligation beginning October 96 and ending February 97.

3. (U) FY 1997 PLAN:

• (U) ($4,621) Continue software/techniques and test support for ongoing new threat development and testing in ICAP-II. Continue COCM and PCM programs for the EA-6B (level of effort commensurate with available funds). Monitor development of the Low Band Transmitter development program.

• (U) ($3,231) Develop test prototype for anti-jamming GPS demonstration system.

• (U) ($29,716) Continue development of the EA-6B ICAP-III program documentation. Efforts include source selection documentation, specification, and required documentation. Award ICAP-III development contract via a full and open competition. Program incorporates Connectivity, Upgraded USQ-113, and a replacement of the current Receiver System.

• (U) ($965) Portion of program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C 638.

4. (U) FY 1998 PLAN:

• (U) ($2,676) Continue software/techniques and test support for ongoing new threat development and testing in ICAP-II. Continue COCM and PCM programs for the EA-6B (level of effort commensurate with available funds). Monitor development and begin DT/OPEVAL of the Low Band Transmitter development program. Continue development of the EA-6B ICAP-III program documentation. Efforts include issuing a Request for Proposal and completing Milestone II.

5. (U) FY 1999 PLAN:

• (U) ($3,917) Continue software/techniques and test support for ongoing new threat development and testing in ICAP-II. Continue COCM and PCM programs for the EA-6B (level of effort commensurate with available funds). Complete development and DT/OPEVAL of the Low Band Transmitter. Monitor the EA-6B ICAP-III program.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

- (U) ($31,541) Continue development of ICAP III system via contract awarded in FY 97.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	5,022	0	2,529	55,035
(U) Appropriated Value:		40,500		
(U) Adjustments from PRESBUDG:	-64	+38,533	+147	-19,577
(U) FY 1998 President s Budget:	4,958	38,533	2,676	35,458

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 96 reduction of -$0.066 million reflects a -$0.006 million adjustment for the Jordanian rescission, a -$0.060 million reduction for FY96 SBIR transfer, and a +0.002 million program adjustment. The FY 97 increase of +$38.533 million reflects +$32.000 million for EA-6B Reactive Jamming; +$5.000 million for Jamming Techniques; +$3.500 million for Anti-Jam GPS; -$.962 million for Navy Working Capital Fund (NWCF) adjustments; -$.962 million for general redcutions and -$.043 million for miscellaneous balancing adjustments. The FY 98 increase of +$.147 million reflects +$.250 million for AVDLR redistribution; -$.058 million for NWCF adjustments; -$0.25 for modeling and simulation adjustments and -$.020 million for miscellaneous balancing adjustments. The FY 99 decrease of -$19.577 million reflects +$.286 million for AVDLR redistribution; -$18.497 million for use in suppression of Enemy Air Defenses (EA-6B 5th squadron); -$.573 million for modeling and simulation adjustments; -$.230 million for BRAC savings; -$.141 million for NWCF adjustments; -$.131 million for inflation adjustments and -$.291 million for miscellaneous balancing adjustments.

(U) Schedule: Milestones have been included to reflect the new ICAP-III beginning in FY 1997 due to acceleration of the ICAP III program. Low band transmitter award is 4Q/96 versus 3Q/96 due to having to release a Best and Final Request for Proposal to the Contractors. UEU Milestone III has been added since the President s budget. Additionally, Low Band Transmitter Milestones II & III have been added.

(U) Technical: None

000246

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

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
EA-6B P1	Line Item 19								
163,779	219,094	86,783	111,217	133,532	236,049	177,902	86,594	CONT	CONT

(U) RELATED RDT&E: Not Applicable

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	3Q UEU MILESTONE III 4Q LOW BAND TX MILESTONE II	4Q ICAP-III MILESTONE II		3Q LOW BAND TX MILESTONE III	4Q/01 ICAP-III MILESTONE III
Engineering Milestones					
T&E Milestone			4Q/98-3Q/99 LOW BAND TX DT/OT		3Q/00-1Q/01 ICAP III DT/OT
Contract Milestones	4Q LOW BAND TX AWARD	4Q ICAP-III CONTRACT AWARD			

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software, Techniques development & test, contract monitoring	4,458	0	2,426	3,917
b. Travel	500	250	250	250
c. Joint C2W Mission	0	0	0	0
d. Low Band Transmitter Contract	0	0	0	0
e. Follow-on & Upgrade Evaluation	0	0	0	0
f. ICAP-III development	0	29,466	0	31,291
g. Jamming Techniques	0	4,621	0	0
h. Anti-jamming GPS	0	3,231	0	0
i. SBIR Assessment		965		
Total	4,958	38,533	2,676	35,458

000248

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

B. (Y) 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											
Naval Research Labs	WX	Oct 97			4,866	550	0	2,426	3,917	CONT	CONT
NAWC WD Point Mugu, CA AD Indianapolis, IN AD Patuxent River, MD	WX	Oct 96	10,932	10,932	8,277	2,655	0	0	0	0	10,932
Sanders/PRB	SS/FFP	Mar 96	900	900	900	0	0	0	0	0	900
AIL, Deer Park NY	SS/ CPIF	Jun 92	52,025	52,025	52,025	0	0	0	0	0	52,025
AEL (Low Band TX)	CPIF	Sep 96	9,827	9,827	9,827	0	0	0	0	0	9,827
TBD (JATO)	Various	Feb 97	5,000	5,000	0	0	4,621	0	0	379	5,000
TBD (Anti-jam GPS)	CP	Feb 97	3,500	3,500	0	0	3,231	0	0	269	3,500
TBD (ICAP III)	CPIF	Aug 97	159,466	159,466	0	0	29,466	0	31,291	98,709	159,466
MISC (Efforts < $2M)	Various	Oct 97			38,437	1,753	250	250	250	CONT	CONT
SUPPORT AND MANAGEMENT											
JEWC TX	MIPR	Jul 94	5,000	5,000	5,000	0	0	0	0	0	5,000
Lockheed Sanders SS/FP Nashua, NH		Aug 94	5,845	5,845	5,845	0	0	0	0	0	5,845
MISC (Efforts < $2M)	Various	Jun 96			1,164	0	0	0	0	0	1,164
TEST AND EVALUATION											
NAWC WD Point Mugu, MISC (Efforts < $2M)	Various	Dec 95			1,459	0	0	0	0	0	1,459

GOVERNMENT FURNISHED PROPERTY: Not Applicable

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E0556
PROGRAM ELEMENT TITLE: ELECTRONIC WARFARE DEVELOPMENT PROJECT TITLE: EW COUNTER RESPONSE

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	114,332	4,958	37,568	2,676	35,458	CONT	CONT
Subtotal Support and Management	12,009	0	0	0	0	0	12,009
Subtotal Test and Evaluation	1,459	0	0	0	0	0	1,459
SBIR Assessment			965				965
Total Project	127,800	4,958	38,533	2,676	35,458	CONT	CONT

000230

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
E2175 Tactical Air Electronic Warfare	76,909	80,308	97,027	89,722	46,061	43,269	28,990	29,489	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: INTEGRATED DEFENSIVE ELECTRONIC COUNTERMEASURES (IDECM): This joint service subproject develops the new techniques generator and fiber optic towed decoy of the Radio Frequency Countermeasures (RFCM) Subsystem as well as the Navy-unique portions of the Common Missile Warning System (CMWS) and Advanced Strategic and Tactical Expendables (ASTE). It also integrates RFCM, CMWS and ASTE with Radar Warning Receiver (RWR), Countermeasures Dispensing Set (CMDS) and associated cockpit controls and displays to provide the lead aircraft (F/A-18E/F) with increased survivability against Infrared/Radio Frequency (IR/RF) threats.

(U) AN/ALR-67(V)3&4 RADAR WARNING RECEIVER: This subproject is developing the system which provides enhanced situational awareness by providing accurate azimuth display of all programmed threats, independent of aircraft attitude. This also acts as Electronic Warfare (EW) Bus Controller.

(U) JOINT EMITTER TARGETING SYSTEM (JETS): This Joint Service (with Air Force) subproject is developing a method to achieve Navy and Air Force Tactical Air's (TACAIR's) requirements for passive precision ranging/targeting of RF emitters. JETS will contribute to multi-sensor integration targeting solutions by providing air-to-ground target location for fixed and mobile emitters.

(U) AN/ALE-50 ADVANCED AIRBORNE EXPENDABLE DECOY (AAED): This Joint Service (with Air Force) subproject is developing the system which will decoy enemy radio frequency homing missiles away from friendly aircraft.

(U) FLEET ELECTRONIC WARFARE SUPPORT GROUP (FEWSG): This subproject develops new EW equipment and technology which is used to provide realistic hostile EW threat environment, and support the evaluation and development of tactics and training.

(U) EW SOFTWARE SUPPORT ACTIVITY (EWSSA): This subproject develops upgrades to lab facilities which provide software support to EW systems.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: E2175
PROJECT TITLE: TACAIR EW

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($44,458) IDECM: Awarded Engineering & Manfacturing Development (E&MD) contract for IDECM RFCM subsystem, and successfully completed Preliminary Design Review (PDR). Continued A-Kit design contract efforts for integration of IDECM RFCM subsystem onto the F/A-18E/F and CMWS/ASTE subsystems integration onto the AV-8B and F/A-18E/F. Provided funding to support Navy unique efforts in the Joint Service CMWS/ASTE programs.

   - (U) ($7,896) IDECM: Continued A-Kit design contract efforts forf integration of IDECM RFCM subsystem onto the F/A-18E/F and CMWS/ASTE subsystems integration onto the AV-8B and F/A-18E/F aircraft. Set up logistics support capability. Beginning obligation date is October 1996 and ending date is March 1997.

   - (U) ($12,263) ALR-67(V)3: Continued Developmental Testing (DT) in Patuxent River anechoic chamber, laboratory and flight. Continued user data file generator development. Started integration efforts with F/A-18E/F aircraft. Set up of logistics support capability.

   - (U) ($3,763) JETS: Completed JETS Cost & Operational Effectiveness Analysis (COEA). Began COEA final report and acquisition documentation in preparation for a milestone decision.

   - (U) ($5,934) AN/ALE-50/AAED: Continued Developmental Test for F/A-18E/F installation. Lot V contract will be awarded to buy needed test assets. Began Developmental Test for B-1B installation.

   - (U) ($2,395) FEWSG: Completed FEWSG Airborne Electronic Warfare Systems (FAEWS)/ALT-40 system upgrades. Completed AN/AST-6 dual mode transmit development. Completed AN/ALQ-167E/F Band deception technique development. Continued AN/ALQ-167 I-Band Digital RF Memory development. Initiated AN/ALQ-167 Pulse-to-Pulse Frequency Set-on Development. Continued equipment exploitation for AN/ALQ-167E/F. Initiated AN/ALQ-170 Performance Enhancement Program (PEP) effort. Tasked and funded AN/ALQ-170 PEP field support to initiate program related documentation including specification development, statement of work, etc.

   - (U) ($200) EWSSA: Continued software development and development of EWSSA lab facilities.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: E2175
PROJECT TITLE: TACAIR EW

2. (U) FY 1997 PLAN:

- (U) ($52,789) IDECM: Continue funding E&MD contract for the IDECM RFCM subsystem. Complete Critical Design Review (CDR). Continue A-Kit design contract efforts for integration of the RFCM subsystem onto the F/A-18E/F and CMWS/ASTE subsystems integration onto the AV-8B and F/A-18E/F. Provide funding to support Navy unique efforts in the Joint Service CMWS/ASTE programs.

- (U) ($1,652) JETS: Complete COEA final report and acquisition documentation in preparation for MS II.

- (U) ($12,054) ALR-67(V)3: Conduct DT/OT laboratory and flight testing. Award test and integration support contract. Complete logistics capability set up.

- (U) ($9,789) AN/ALE-50/AAED: Continue Development Test on F/A-18E/F and B-1B. Begin logistics development of CASS, Depot, and I-Level. Begin development of Multi-Platform Launch Control (MPLC) modification for IDECM.

- (U) ($2,127) FEWSG: Complete AN/ALQ-167 I-Band Digital RF Memory Development. Continue AN/ALQ-167 Pulse-to-Pulse Frequency Set-on Development. Continue AN/ALQ-170 PEP effort. Prepare for AN/ALQ-170 Milestone II. Continue equipment exploitation for AN/AST-6 and AN/ALQ-167.

- (U) ($187) EWSSA: Continue software development and development of EWSSA lab facilities.

- (U) ($1,710) Portion of program reserved for Small Business Innovation Research Assessment (SBIR) in accordance with 15 U.S.C. 638.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

3. (U) FY 1998 PLAN:

- (U) ($50,941) IDECM: Continue funding EMD contract for IDECM RFCM subsystem. Continue A-Kit design contract efforts for integration of the RFCM subsystem onto the F/A-18E/F and integration of CMWS/ASTE subsystems onto the AV-8B and F/A-18E/F. Provide funding to support Navy unique efforts in the Joint Service CMWS/ASTE programs. Initiate RFCM subsystem testing on the F/A-18 and CMWS/ASTE subsystems testing on the AV-8B.

- (U) ($3,719) JETS: Release Request for Proposal, conduct source selection for E&MD contract and receive MS II decision. Award in 4Q/98.

- (U) ($12,203) ALR-67(V)3: Conduct Technical Operational Assessment (OA) to support LRIP. Conduct Operational Evaluation (OPEVAL) to support full rate production. Begin set up of software support facility.

- (U) ($15,101) AN/ALE-50/AAED: Complete OA on F/A-18E/F. Complete logistics development of CASS, Depot, and I-Level. Complete OT on B-1B. Continue MPLC modifications for IDECM. Conduct modified MPLC quality testing.

- (U) ($14,866) FEWSG: Continue equipment exploitation by developing technique upgrades and simulation expansions for AN/AST-6 and AN/ALQ-167. Continue AN/ALQ-170 PEP effort. Initiate procurement of hardware/software for engineering development models for AN/ALQ-170. Continue preparation for MS II decision and EMD contract award for AN/ALQ-170 upgrade.

- (U) ($197) EWSSA: Continue software development and development of EWSSA lab facilities.

4. (U) FY 1999 PLAN:

- (U) ($56,477) IDECM: Continue funding E&MD contract for IDECM RFCM subsystem. Continue A-Kit design contract efforts for integration of the RFCM subsystem onto the F/A-18E/F and integration of CMWS/ASTE subsystems onto the AV-8B and F/A-18E/F. Provide funding to support Navy unique efforts in the Joint Service CMWS/ASTE programs. Continue RFCM subsystem testing on the F/A-18 and CMWS/ASTE subsystems testing on the AV-8B.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

- (U) ($19,648) JETS: Continue funding EMD efforts for JETS.
- (U) ($2,493) ALR-67(V)3: Complete all RDT&E,N efforts. Correct any deficiencies prior to full rate production.
- (U) ($4,139) AN/ALE-50/AAED: Support transition of MPLC to IDECM configuration. Conduct FOT&E on modified MPLC.
- (U) ($6,766) FEWSG: Continue equipment exploitation by developing technique upgrades and simulation expansions for AN/AST-6 and AN/ALQ-167. Continue AN/ALQ-170 PEP effort. Prepare AN/ALQ-170 for Milestone III. Initiate integration of hardware/software for PEP.
- (U) ($199) EWSSA: Continue software development and development of EWSSA lab facilities.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	81,109	76,049	97,632	86,439
(U) Appropriated Value:		84,049		
(U) Adjustments from PRESBUDG:	-4,200	+4,259	-605	+3,283
(U) FY 1998 President s Budget:	76,909	80,308	97,027	89,722

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease of -$4.200 million reflects -$1.179 million for Small Business Innovation Assessments, -$1.820 million for reprioritization of requirements within DoN, -$.422 million for the Jordanian Rescission adjustment, and program adjustments of -$.779 million for 30 Sep 96 update. FY 1997 net increase of +$4.259 million reflects an increase of +$8.000 million for ALR-67(V)3 realignment; -$1.681 million for Navy Working Capital Fund (NWCF) surcharges; -$1.681 million for general reductions; -$.298 million for non-FFRDC; and -$.081 million for various pricing adjustments. FY 1998 net decrease of -$.605 million reflects an increase of +$3.400 million for Resource Sponsor reprioritization of requirements; -$1.140 million for modeling and simulation; -$.415 million for NWCF adjustments; -$.958 million for NWCF carryover; -$.821 million for BRAC savings adjustment and -$.671 million for minor pricing adjustments. FY 1999 net increase of +$3.283 million provides +$2.500 million for the ALR-67(V)3 test program;

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

+$5.500 million reflects Resource Sponsor reprioritization of requirements; -$2.598 million for BRAC savings adjustment; -$.985 million for modeling and simulation adjustments; -$.301 million for NWCF surcharge and -$.833 million for minor pricing adjustments.

(U) Schedule: ALR-67(V)3: LRIP moved from 4Q/96 to 2Q/98, OPEVAL moved from 1Q/97 to 3Q/98, and MS III from 3Q/97 to 2Q/99 due to extension of the testing program to allow for ALR-67(V)3 system maturity. Hardware maturity is evident; the added time will allow software to be matured. JETS: All major milestones have changed as a result of Resource Sponsor reprioritization of requirements. ALE-50/AAED: Added Joint Program Review (JPR) in 3Q/97 to clarify Multi-Platform Launch Controller joint production decision. 2Q/97 Milestone III (F-16) moved to 1Q/97 to support 3Q/97 AAED MPLC JPR. The AAED System MS III (F-18) 1Q/00 was removed when the system received favorable Navy Program Decision Memorandum from ASN(RD&A 9DEC96. FEWSG: ALQ-170 Milestone II moved from 2Q/98 to 1Q/98 to support a 2Q/98 ALQ-170 EMD contract award to ensure funding availability. ALQ-170 MS III moved from 2Q/00 to 1Q/01 to support 3-year EMD.

(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) APN Line 46 - AN/ALR-67(V)3									
0	0	0	14,618	34,039	32,707	29,700	30,784	30,095	171,943
(Prior to FY 95 - $129,558)									
(U) APN Line 38 - FEWSG									
547	648	537	553	6,039	5,185	5,285	5,429	81,331	235,112
(U) APN Line 46 - IDECM									
0	0	0	9,806	13,650	48,086	49,155	49,505	26,650	196,852

(U) RELATED RDT&E:
(U) PE 0603270N (Advanced EW Technology)
(U) PE 0604256N (Threat Simulator Development)

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		1Q AAED DECOY MS III (F-16)	3Q JETS MS II		4Q/04 JETS MS III
			2Q/98 ALR-67(V)3 LRIP	2Q ALR-67(V)3 MS III	
		3Q AAED MPLC JPR (PRODUCTION DECISION)			
	1Q IDECM MS II			2Q/99-4Q/02 IDECM LRIP	3Q/02 IDECM MS III
			1Q ALQ-170 MS II		1Q/01 ALQ-170 MS III
			2Q ALQ-170 EMD CONTRACT AWARD		
Engineering Milestones					
T&E Milestones			3Q/98-1Q/99 ALR-67(V)3 OPEVAL		
					1Q-4Q/03 JETS DT
					1Q-3Q/04 JETS OT
	4Q/96 AAED DECOY OPEVAL (F-16)			3Q-4Q/99 AAED SYS OPEVAL (F-18)	3Q/00-1Q/01 AAED SYS FOT&E (F-18)
		1Q/97-2Q/99 AAED SYS DT (F-18)			
			3Q/98-2Q/99 IDECM DT IIA		2Q/00-2Q/01 IDECM OT IIA
			4Q/98-3Q/99 IDECM DT IIB		4Q/01-3Q/02 IDECM OT IIB
				3Q/99-2Q/00 IDECM DT IIC	
					2Q/01-3Q/02 IDECM DT IID
Contract Milestones			4Q JETS EMD CONTRACT AWARD		

000257

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	28,955	30,487	26,545	27,748
b. Software Development	13,847	15,499	23,692	29,154
c. Systems Engineering	14,019	15,592	15,355	9,699
d. Developmental Test & Evaluation	1,979	4,426	8,924	460
e. Operational Test & Evaluation	608	617	2,450	10,667
f. Developmental Support Equipment Acquisition	2,527	3,877	10,362	2,337
g. Integrated Logistics Support	6,256	3,360	4,747	3,725
h. Cost Analysis	408	246	449	355
i. Training	41	0	50	60
j. Quality Assurance	0	0	120	130
k. Configuration Management	75	75	243	257
l. Research Personnel	2,836	767	166	287
m. Reliability and Maintainability	974	939	844	663
n. Program Management Support	3,394	2,093	1,886	1,864

000258

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: E2175
PROJECT TITLE: TACAIR EW

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
o. Travel	761	620	793	748
p. Miscellaneous	229	0	401	1,568
q. SBIR Assessment		1,710		
Total	76,909	80,308	97,027	89,722

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: E2175
PROJECT TITLE: TACAIR EW

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
HUGHES EL SEGUNDO CA	C-FPI-MIPR	6/94	45,463	45,463	45,463	0	0	0	0	0	45,463
HUGHES EL SEGUNDO CA	SS-FFP-MIPR	8/89	65,299	65,299	58,831	6,468	0	0	0	0	65,299
HUGHES EL SEGUNDO CA	SS-CPFF-MIPR	11/96	11,064	11,064	0	0	6,800	4,264	0	0	11,064
TBD	TBD	TBD	105,000	105,000	0	0			14,561	90,439	105,000
RAYTHEON GOLETA CA	C-FFP-MIPR	7/88	28,036	28,036	26,506	1,530	0	0	0	0	28,036
RAYTHEON GOLETA CA	TBD	TBD	9,872	9,872	0	0	4,197	4,500	1,175	0	9,872
MCAIR ST LOUIS MO	SS-CP	6/95	116,454	116,454	6,892	11,178	11,076	27,405	31,438	28,465	116,454
SANDERS NASHUA NH	C-CPI&A	10/95	50,108	50,108	3,347	17,788	12,733	6,960	5,568	3,712	50,108
SANDERS NASHUA NH	CPAF	2/96	10,335	10,335	0	3,500	3,000	1,500	1,500	835	10,335
RAYTHEON GOLETA CA	TBD	TBD	5,565	5,565	0	1,963	3,602	0	0	0	5,565

000260

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: E2175
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: TACAIR EW

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
LITTON ATD SAN JOSE CA	TBD	TBD	4,673	4,673	0	963	2,710	1,000	0	0	4,673
HUGHES INDIANAPOLIS IN	TBD	TBD	36,985	36,985	0	0	0	13,845	6,229	16,911	36,985
NAWC-WD/PTM	WX	10/97			32,917	20,893	10,585	10,961	12,454	CONT.	CONT.
MISCELLANEOUS (EFFORTS < $2M EACH)			16,663	16,663	820	5,619	4,168	3,406	2,650	0	16,663
Support and Management											
RAVEN/PROGRAM MGMT SPPT			41,359	41,359	5,403	4,191	4,366	4,585	4,814	18,000	41,359
MISCELLANEOUS (EFFORTS < $2M EACH)			7,451	7,451	4,096	229	522	224	193	2,187	7,451

GOVERNMENT FURNISHED PROPERTY

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
Test and Evaluation										
NAWC-AD/PAX (DT)	WX	10/97		7,240	1,979	4,122	8,927	1,191	2,711	26,170
CHINA LAKE OPTEVFOR (OT)	WX	10/97		1,500	608	10,717	9,450	7,999	5,473	35,747

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: E2175
PROJECT TITLE: TACAIR EW

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	174,776	69,902	58,871	73,841	75,575	CONT.	CONT.
Subtotal Support and Management	9,499	4,420	4,888	4,809	5,007	20,187	48,810
Subtotal Test and Evaluation	8,740	2,587	14,839	18,377	9,190	8,184	61,917
SBIR Assessment			1,710				1,710
Total Project	193,015	76,909	80,308	97,027	89,772	CONT.	CONT.

0002652

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	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
R1742	Electronic Warfare (EW) Technical Development and Testing									
	730	678	677	878	894	912	933	953	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program, referred to as "Skunkworks", establishes a standing research group for developing and testing low cost, high payoff EW systems to meet warfighting requirements during crisis situations. The program typically produces a new product at the end of each 12 month period. This unique characteristic ensures that the team continually functions in a quick reaction mode, and is therefore well trained in all aspects of rapid response systems engineering and fabrication. Each year, in the absence of a critical situation, the team develops, demonstrates and tests a prototype EW system which meets a specific Navy requirement.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($582) Completed the system design and construction of an offboard [classified material deleted] jammer.
   - (U) ($148) Conducted testing of offboard communications in both the lab and the field.

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: R1742
PROJECT TITLE: EW Technical Development and Testing

2. (U) FY 1997 PLAN:
   - (U) ($300) Perform systems engineering and design of an Advanced Support Pod (ASP). [classified material deleted]
   - (U) ($300) Obtain AST-4 pod for aircraft interface. Procure long lead components and fabricate system for inclusion in AST-4 pod.
   - (U) ($78) Plan and conduct lab and field demonstration test of the ASP unit.

3. (U) FY 1998 PLAN:
   - (U) ($175) Perform a systems engineering analysis for a tactical deception capability against enemy radar systems.
   - (U) ($375) Design and fabricate a deception unit which will spoof enemy radars.
   - (U) ($127) Conduct field testing of the spoofer design.

4. (U) FY 1999 PLAN:
   - (U) ($300) Perform a systems engineering analysis [classified material deleted].
   - (U) ($455) Design and fabricate a jammer/spoofer.
   - (U) ($123) Conduct field testing of the jammer/spoofer design.

000264

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: R1742
PROJECT TITLE: EW Technical Development and Testing

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	732	707	732	887
(U) Appropriated Value:		707		
(U) Adjustments from FY 1997 PRESBUDG:	-2	-29	-55	-9
(U) FY 1998/1999 PRESBUDG Submission:	730	678	677	878

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 adjustment is due to administrative and personal services rescission (-2). FY 1997 adjustment is due to Congressional Undistributed Reductions (-29). FY 1998 adjustment is due to NWCF and other minor adjustments (-53) and inflation (-2). FY 1999 funding adjustment is due to NWCF and other minor adjustments (-8) and inflation (-1).

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

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

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: R1742
PROJECT TITLE: EW Technical

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Technical Development and Testing	730	678	677	878

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R2260
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: Specific Emitter ID

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R1742
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: EW Technical

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 Progra
Product Development											
Support and Management											
Test and Evaluation					UNK	730	678	677	878	CONT.	CONT

GOVERNMENT FURNISHED PROPERTY: Not applicable

000267

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R2260
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: Specific Emitter ID

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R1742
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: EW Technical

	Total FY 1995	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	0	0	0	0	0	0
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	UNK	730	678	677	878	CONT.	CONT.
Total Project	UNK	730	678	677	878	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

000268

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: R2260
PROJECT TITLE: Specific Emitter ID

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
R2260 Specific Emitter Identification	1,222	1,020	1,423	1,795	2,010	1,998	2,041	2,088	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project is for systems collection of Specific Emitter Identification (SEI) information from National Technical Means (NTM) and during choke point monitoring in order to track commercial ships over 200 gross registered tons world-wide. Research and development will cover improvements and enhancements to Electronic Intelligence technology. This will include improved/next generation SEI technology for: miniaturization and automatio of hardware, national collection systems, signal processing and analysis, and de-interleaving of signals. Propagation of loss an multi-path signal distortions will also be assessed. All work on this project will be undertaken in pursuit of goals stated by t Office of Naval Intelligence and the National Security Agency.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
(U) ($1,222) Work began on the fundamental problem of automatically extracting SEI information from received signals and transmitting the necessary information to the reporting center. Signals must be received with sufficient time resolution and precision to allow extraction of high resolution parameters and precise characteristics. Various concepts were assessed and an approach chosen for further development. The effect on emitter signature multipath and propagation and our ability to measure th signals with the required precision (signal to noise ratio) were analyzed and an assessment of feasibility was made.

2. (U) FY 1997 PLAN:

(U) ($1,020) Brassboard realization of the concepts for automated signal preparation and processing chosen in FY 1996 will be developed and tested using data collected during choke point monitoring. A report on the performance of the brassboards will be released by the end of the year. The analysis of the effects of multipath and propagation loss performed in FY 1996 will be tested in the field and a report extrapolating the test results to the orbits of the NTM will be written.

3. (U) FY 1998 PLAN:

(U) ($1,423) Work will address interoperability of SEI data in support of world wide efforts. Data formats and connectivity will be evaluated for fleet tactical requirements. Use of alternative data compression techniques will be pursued with automation.

4. (U) FY 1999 PLAN:

(U) ($1,795) Next generation SEI technology will be developed to provide miniature, high fidelity operation. Extended signal processing technology will be implemented optically for increased throughput and reduced size.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	$ 0	$ 1,255	$ 1,063	$ 1,538	$ 1,814
(U) Appropriated Value:			$ 1,063		
(U) Adjustments from FY 1997 PRESBUDG:	0	-$ 33	-$ 43	-$ 115	-$ 19
(U) FY 1998 PRESBUD Submission:	$ 0	$ 1,222	$ 1,020	$ 1,423	$ 1,795

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

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

PROJECT NUMBER: R2260
PROJECT TITLE: Specific Emitter ID

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 reduction reflects: Jordanian rescission (-$6); Small Business Innovative Research assessme (-$28) and Naval Working Capital Fund (NWCF) adjustment (+$1). The FY 1997 adjustments reflects Congressional undistributed reductions (-$43). The FY 1998 adjustment reflects NWCF and minor internal Navy redistributions (-$115

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0603217N (P-3 Specific Emitter and Small Ship SEI system)
(U) PE 0603270N (Advanced EW Technology)

D. SCHEDULE PROFILE: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604270N
PROGRAM ELEMENT TITLE: Electronic Warfare Development
PROJECT NUMBER: R2260
PROJECT TITLE: Specific Emitter ID

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Research Personnel	730	538	789	887
b. Primary Hardware Development	300	300	400	550
c. Contractor Engineering Support	167	157	204	308
d. Program Management	25	25	30	50
Total	1,222	1,020	1,423	1,795

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R2260
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: Specific Emitter ID

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Progra
Product Development											
AIL	FFP	10/96	2500	2500	0	300	300	400	550	950	2500
NRL	WX	10/96	cont.	cont.	0	600	413	609	682	cont.	cont.
Support and Management											
NRL	WX	10/96	cont.	cont.	0	50	50	60	80	cont.	cont.
Test and Evaluation											
KAMAN		10/96	1900	1900	0	167	157	204	308	1064	1900
NRL	WX	10/96	5649	5649	0	105	100	150	175	cont.	cont.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604270N PROJECT NUMBER: R2260
PROGRAM ELEMENT TITLE: Electronic Warfare Development PROJECT TITLE: Specific Emitter ID

GOVERNMENT FURNISHED PROPERTY

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Progra
No Government Furnished Equipment										

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Progra
Subtotal Product Development	0	900	713	1,009	1,232	cont.	cont.
Subtotal Support and Management	0	50	50	60	80	cont.	cont.
Subtotal Test and Evaluation	0	272	257	354	483	cont.	cont.
Total Project	0	1,222	1,020	1,423	1,795	cont.	cont.

000274

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
K1447	Surf Combatant Combat Sys Imp									
	73,182	79,022	80,842	102,708	135,416	93,341	95,433	97,533	CONT.	CONT.
K1776	Surf Combatant Weapon Sys Mod									
	4,468	2,114	6,123	7,325	4,369	4,480	4,577	4,683	CONT.	CONT.
K1937	Surf Combatant Weapons Dev									
	10,349	4,354	0	0	0	0	0	0	0	181,326
K2100	Test Integration Facility									
	0	2,877	0	0	0	0	0	0	0	2,877
K2308	Smart Ship Project									
	0	0	969	5,610	21	23	14	10	0	6,647
TOTAL	87,999	88,367	87,934	115,643	139,805	97,844	100,024	102,226	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.

(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 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

PROJECT NUMBER: K1447
PROJECT TITLE: Surf Combatant Combat Sys Imp

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
K1447 Surf Combatant Combat Sys Imp	73,182	79,022	80,842	102,708	135,416	93,341	95,433	97,533	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 (CG59-64) 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/SLQ32(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 II is planned for the first ship in FY 1997. 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, and Fire Control System upgrades. 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: 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, 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 for SC-21, CVX, LX and other future ship classes.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

000076

- (U) ($250) Completed Baseline 5 Phase III.
- (U) ($18,965) Conducted Baseline 6 Phase I Critical Design Review (CDR-1) and CDR-2. Started computer program coding, debugging and testing. Continue rehosting of AEGIS Combat Training System (ACTS) computer programs for BFTT Phase I and development of BFTT/ACTS interface. Continued rehosting ADS and C&D display and ID related computer programs into COTS based(Advanced Display System) architecture. Continued design of ID upgrade Phase I for Baseline 6 Phase I; continue engineering for advanced processing architecture.
- (U) ($14,950) Conducted system definition and System Design Review (SDR) for Baseline 6 Phase IIand continued system engineering for ESSM integration efforts.
- (U) ($4,900) Conducted rehost of SPY-1D(V) (radar upgrade) computer program control loop into COTS based adjunct processors.
- (U) ($9,216) Continued system engineering and development of an advanced processing EDM-5 to support implementation of an open system networked architecture in Baseline 7.
- (U) ($1,154) Continued SM-2 Block IIIB and Block IV capability enhancement engineering, and continued technical assessment and feasibility studies for cueing sensor upgrades.
- (U) ($5,700) 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) ($18,047) 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 1997 PLAN:

- (U) ($16,600) Continue Baseline 6 Phase I computer program coding, debugging and testing. Continue rehosting of ACTS computer programs for BFTT, and for C&D and ID related computer programs into COTS based architecture.
- (U) ($19,247) Conduct Preliminary Design Review (PDR) for integration of Baseline 6 Phase II upgrades including ESSM into the AEGIS Combat System.

- (U) ($5,100) Complete rehost of SPY-1D(V) radar control loop code into adjunct processors including interface simulation computer programs. Begin system definition for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I.

- (U) ($11,290) Conduct system definition and SDR to integrate Baseline 7 Phase I upgrades into the AEGIS Combat System. Start system engineering. Continue advanced processing EDM-5 development for open systems networked architecture in Baseline 7 Phase I ships.

- (U) ($834) Complete engineering of SM-2 Block IIIB and Block IV capability enhancements and continue technical assessment and feasibility studies for cueing sensor upgrades which will be integrated into Baseline 7.

- (U) ($7,200) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.

- (U) ($17,041) 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.

- (U) ($1,710) Portion of extramural program reserved for Small Business Innovation Research in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($8,300) Complete Baseline 6 Phase I computer program coding, debugging and testing. 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) ($20,900) Conduct Baseline 6 Phase II CDR. Begin computer program coding, debugging and testing.

- (U) ($15,051) 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.

- (U) ($10,965) Conduct Baseline 7 Phase I PDR for integration of upgrades into the AEGIS Combat System. Continue advanced processing EDM-5 development for open systems networked architecture in Baseline 7 Phase I 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) ($18,426) Continue to provide for the participation of Navy laboratories and field activities to perform the engineering and scientific services necessary to monitor and direct the baseline efforts.

4. (U) FY 1999 PLAN:

- (U) ($16,650) Complete Baseline 6 Phase II computer program code, debugging and testing. Start integration of Baseline 6 Phase II upgrades into the AEGIS Combat System at the CSED Site.
- (U) ($15,981) Continue system engineering for full integration of SPY-1D(V) into newconstruction AEGIS Combat System in Baseline 7 Phase I.
- (U) ($29,500) Conduct Baseline 7 Phase I CDR for integration of upgrades into the AEGIS Combat System. Start computer program coding, debugging, and testing. Continue advanced processing EDM-5 development for open systems networked architecture in Baseline 7 Phase I ships.
- (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) ($9,800) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (U) ($20,830) 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 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	76,291	82,537	74,198	114,874
(U) Adjustments from FY 1997 PRESBUDG:	-3,109	-3,515	+6,644	-12,166
(U) FY 1998/1999 PRESBUDG Submit:	73,182	79,022	80,842	102,708

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 (-$3,109): Changes due to transfer of SBIR (-$1,518), and reductions associated with program and other minor pricing adjustments (-$1,591). FY 1997 (-$3,515): Changes due to Congressional undistributed reductions associated with the NWCF - sec. 8120 (-$1,650), General undistributed - sec. 8136 (-$1,650), FFRDC and Non-FFRDC sec. 8037 (-$170), and other minor pricing adjustments (-$45). FY 1998 (+$6,644): Changes due to program restructure associated with Baseline 7, AADC, and Arsenal ship (+$11,000), reductions for NWCF rate adjustments/carryover and other minor pricing changes (-$4,356). FY 1999 (-$12,166): Changes due to program restructure associated with Baseline 7 and AADC as well as other minor pricing adjustments.

(U) Schedule: Development of RSCES (formerly BL 6 Phase II) and AIEWS (BL 7 Phase I) has been restructured in order to maintain the larger overall baseline schedule. In the aggregate only Baseline 7 Phase II has been deferred from the last ship of FY 2000 to the last ship of FY 2002.

(U) Technical: N/A

000289

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 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 LI2122									
2,231,560	3,530,568	2,823,573	2,676,796	2,745,101	2,771,916	1,097,316	2,203,065	CONT.	CONT.
(U) OPN LI5246									
61,860	32,701	26,813	46,548	72,006	67,519	76,794	77,637	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 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. System Engineering	54,068	64,542	65,266	85,482
b. Gov. Engineering Spt.	15,805	11,123	13,880	15,479
c. Pgm. Management Spt.	541	572	589	607
d. Development Test and Eval.	1,250	1,075	1,107	1,140
e. SBIR Assessments	1,518	1,710	0	0
Total	73,182	79,022	80,842	102,708

000282

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering
PROJECT NUMBER: K1447
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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Martin Marietta, Moorestown, NJ	SS/CPFF	03/93	389,135	389,135	133,489	50,886	62,252	61,016	81,492	CONT.	CONT.
Applied Physics Lab (APL), Baltimore, MD	SS/CPFF	02/94	24,118	24,118	8,368	4,500	2,750	4,000	4,500	CONT.	CONT.
McClellan AFB, CA	MIPR	01/94	18,664	18,664	16,964	1,700	0	0	0	0	18,664
Navy Surface Warfare Center, Dahlgren, VA	WR	10/93	43,396	43,396	14,025	7,420	6,160	7,601	8,190	CONT.	CONT.
Vitro Corp., Silver Spring, MD	C/CPFF	10/92	14,661	14,661	9,961	4,700	0	0	0	0	14,661
• 400 B Omnibus Contract	C/CPFF		12,750	12,750	0	0	4,000	4,250	4,500	CONT.	CONT.
			14,159	14,159	5,203	2,185	2,213	2,279	2,279	CONT.	CONT.
Miscellaneous											
Support and Management Miscellaneous			8,379	8,379	6,070	541	572	589	607	CONT.	CONT.
Test and Evaluation Miscellaneous			6,596	6,596	2,024	1,250	1,075	1,107	1,140	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

000283

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat Sys Engineering

PROJECT NUMBER: K1447
PROJECT TITLE: Surf Combatant Combat Sys Imp

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	188,010	71,391	77,375	79,146	100,961	CONT.	CONT.
Subtotal Support and Management	6,070	541	572	589	607	CONT.	CONT.
Subtotal Test and Evaluation	2,024	1,250	1,075	1,107	1,140	CONT.	CONT.
Total Project	196,104	73,182	79,022	80,842	102,708	CONT.	CONT.

000284

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
K1776	Surf Combatant Weapon Sys Mod									
	4,468	2,114	6,123	7,325	4,369	4,480	4,577	4,683	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 1996 ACCOMPLISHMENTS:

- (U) ($1,500) Completed ORTS MMI upgrade implementation.
- (U) ($300) Continued AN/SPY-1 radar system analysis support for Cruiser and Destroyer baseline upgrades and AN/SPY-1B/D radar system upgrades.
- (U) ($2,668) Began ORTS upgrade for Baselines 3, 4 and 5.

2. (U) FY 1997 PLAN:

- (U) ($300) Continue AN/SPY-1B/D upgrade analysis support.
- (U) ($1,265) Continue ORTS upgrade for Baselines 3, 4 and 5 design, development and engineering.
- (U) ($513) Begin AN/SPY-1B/B(V)/D Moving Target Indicator analysis, design, development and engineering for radar enhancements.

- (U) ($36) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (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.

4. (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) ($3,125) Continue design and engineering for RCSES for AN/SPY-1D(V) radar system.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	4,568	2,204	6,269	7,406
(U) Adjustments from FY 1997 PRESBUDG:	-100	-90	-146	-81
(U) FY 1998/1999 PRESBUD Submit:	4,468	2,114	6,123	7,325

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 funding decreased by $100K for FY 1996 SBIR transfer and other minor pricing adjustments. FY 1997 funding decreased by $90K for Navy Working Capital Fund (NWCF) carryover andother minor pricing adjustments. FY 1998 funding decreased by $146K for NWCF carryover and other minor pricing adjustments. FY 1999 funding decreased by $81K for respread GDIP/NFIP adjustments (inflation and NWCF charges) and other minor pricing adjustments.

(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 LI5246	61,860	32,701	26,813	46,548	72,006	67,519	76,794	77,637	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. SCHEDULE PROFILE: Not applicable.

000287

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering
PROJECT NUMBER: K1776
PROJECT TITLE: Surf Combatant Weapon Sys Mod

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering	3,486	1,255	5,274	6,450
b. Government Engineering Support	885	820	845	870
c. Program Management Support	3	3	4	5
d. SBIR Assessment	94	36	0	0
Total	4,468	2,114	6,123	7,325

FY 1998/FY 1999 RDT&E,NPROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Martin Marietta, Morriestown, NJ	SS/CPFF	03/91	25,819	25,819	9,318	3,486	1,291	5,274	6,450	CONT.	CONT.
Miscellaneous			4,633	4,633	1,213	885	820	845	870	CONT.	CONT.
Support and Management											
Miscellaneous			1,068	1,068	959	97	3	4	5	CONT.	CONT.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

000289

FY 1998/FY 1999 RDT&E,NPROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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)

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	10,531	4,371	2,111	6,119	7,320	CONT.	CONT.
Subtotal Support and Management	959	97	3	4	5	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	11,490	4,468	2,114	6,123	7,325	CONT.	CONT.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
K2308 Smart Ship Project	0	0	969	5,610	21	23	14	10	0	6,647

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 ships. Successful projects will be analyzed and packaged for wider application in the fleet.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Not Applicable.

2. (U) FY 1997 PLAN: Not Applicable.

3. (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.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship

- (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.

4. (U) FY 1999 PLAN:
- (U) ($2,997) Continue assessment of 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.
- (U) ($1,635) Continue 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) ($978) Continue installation and check out of equipment on board designated ships and conduct at-sea testing.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	0	0
(U) Adjustments from FY 1997 PRESBUDG:	0	0	+969	+5,610
(U) FY 1998/1999 PRESBUDG Submit:	0	0	969	5,610

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Smart Ship is an FY 1998 new start in PE 0604307N.

(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 LI5246									
61,860	32,701	26,813	46,548	72,006	67,519	76,794	77,637	CONT.	CONT.

(U) RELATED RDT&E: Not Applicable.

D. (U) SCHEDULE PROFILE: Not Applicable.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

PROJECT NUMBER: K2308
PROJECT TITLE: Smart Ship

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering	0	0	547	2,190
b. Government Engineering Support	0	0	250	1,460
c. Program Management Support	0	0	86	960
d. Developmental Test and Evaluation	0	0	86	1,000
Total	0	0	969	5,610

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Contingent Contractors	SS/CPAF	03/98	2,737	2,737	0	0	0	547	2,190	0	2,737
Support and Management Misc.			2,756	2,756	0	0	0	336	2,420	0	2,756
Test and Evaluation Misc.			1,154	1,154	0	0	0	86	1,000	68	1,154

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

PROJECT NUMBER: K2308
PROJECT TITLE: Smart Ship

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

	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	0	0	547	2,190	0	2,737
Subtotal Support and Management	0	0	0	336	2,420	0	2,756
Subtotal Test and Evaluation	0	0	0	86	1,000	68	1,154
Total Project	0	0	0	969	5,610	68	6,647

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEB 1997

BUDGET ACTIVITY: 5/4 PROGRAM ELEMENT: 0604310N/0603852N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
S2294 Arsenal Ship Development	0	23,977	102,994	139,499	79,680	11,287	0	0	0	357,437

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.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1995 ACCOMPLISHMENTS:
   - (U) Not Applicable

2. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) Not Applicable

3. (U) FY 1997 PLAN:
   - (U) ($23,347) Perform proposal evaluation of Concept Designs/source selection for Functional Designs. Perform Functional Designs. Develop detailed test plan. Products that will be 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. Funds to begin obligating on 1 Nov 96 and be fully obligated by 15 July 97.
   - (U) ($630) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 U.S.C. 638.

4. (U) FY 1998 PLAN:
   - (U) ($102,994) Perform proposal evaluation of Functional Designs, leading to selection of a single industry team to build the Arsenal Ship 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. Funds to begin obligating on 1 Nov 97 and be fully obligated by 1 July 98.

5. (U) FY 1999 PLAN:
   - (U) ($139,499) Continue construction of the Arsenal Ship 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. Funds to begin obligating on 1 Nov 98 and be fully obligated by 1 Nov 98.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEB 1997

BUDGET ACTIVITY: 5/4 PROGRAM ELEMENT: 0604310N/0603852N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	25,000	0	0
(U) Adjustments from FY 1997 PRESBUDG:	0	0	-1,023	+102,994	+139,499
(U) FY 1998/99 PRESBUDG Submission:	0	0	23,977	102,994	139,499

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: FY97 reflects undistributed general reductions. FY98 and out is the required program funding.
(U) Schedule: Not applicable.
(U) Technical: Not applicable

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

D. (U) SCHEDULE PROFILE:

	FY 1995	FY 1996	FY 1997	FY 1998	FY1999
Program Milestones	(Not Applicable - Non-Acquisition Program)				
Engineering Milestones			Compl Concept Studies - 1Q	Compl Func Designs - 1Q	
T&E Milestones			TBD	TBD	TBD
Contract Milestones			Award Functional Design Contracts - 2Q	Award Detail Design and Ship Construction - 2Q	Keel Laying - 2Q

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEB 1997

BUDGET ACTIVITY: 5/4 PROGRAM ELEMENT: 0604310N/0603852N
PROGRAM ELEMENT TITLE: Arsenal Ship

PROJECT NUMBER: S2294
PROJECT TITLE: Arsenal Ship Development

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	0	0	60,000	130,499
b. Systems Engineering	0	22,970	41,994	8,000
c. Government Engineering Support	0	377	1,000	1,000
d. SBIR	0	630	0	0
Total	0	23,977	102,994	139,499

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEB 1997

BUDGET ACTIVITY: 5/4 PROGRAM ELEMENT: 0604310N/0603852N PROJECT NUMBER: S2294
PROGRAM ELEMENT TITLE: Arsenal Ship PROJECT TITLE: Arsenal Ship Development

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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	Budget to Complete	Total Program
Product Development											
TBD	C/FFP	1/97	22,970	22,970	0	0	22,970	0	0	0	22,970
TBD	WR	1/97	3,000	3,000	0	0	0	1,000	1,000	1,000	3,000
TBD	C/CPIF	1/98	TBD	317,173	0	0	0	100,994	137,499	78,680	317,173
Support and Management											
TBD	WR	TBD	TBD	3,377	0	0	377	1,000	1,000	1,000	3,377
Test and Evaluation											
TBD	SS/CPIF	11/00	TBD	10,287	0	0	0	0	0	10,287	10,287
SBIR			TBD	630	0	0	630	0	0	0	630

GOVERNMENT FURNISHED PROPERTY - Not Applicable

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEB 1997

BUDGET ACTIVITY: 5/4 PROGRAM ELEMENT: 0604310N/0603852N
PROGRAM ELEMENT TITLE: Arsenal Ship

PROJECT NUMBER: S2294
PROJECT TITLE: Arsenal Ship Development

Subtotals ($ in thousands)	Total FY 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	Budget to Complete	Total Program
Subtotal Product Development	0	0	22,970	101,994	138,499	79,680	343,143
Subtotal Support and Management	0	0	377	1,000	1,000	1,000	3,377
Subtotal Test and Evaluation	0	0	0	0	0	10,287	10,287
Subtotal SBIR	0	0	630	0	0		630
Total Program	0	0	23,977	102,994	139,499	90,967	357,437

000302

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
S2283 LPD 17 Class Systems Integration	0	4,098	471	1,662	2,708	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. Planned 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 man power 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.

(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 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

PROJECT NUMBER: S2283
PROJECT TITLE: LPD 17 Class Systems Integration Integration

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Not Applicable

2. (U) FY 1997 PLANS:

(U) ($3,995) Conduct naval expeditionary warfare systems engineering efforts for composite masts, improved sensors, performance modeling and simulation, and reduced manpower. Integrate system configuration feedback from the operational forces through the Naval Expeditionary Warfare Centers in Quantico, Dahlgren, and Little Creek, Virginia.

(U) ($103) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLANS:

(U) ($471) Continue naval expeditionary warfare systems engineering efforts. Review latest operational requirements.

4. (U) FY 1999 PLANS:

(U) ($1,662) Conduct required vulnerability and operational test and evaluation efforts. Continue naval expeditionary warfare systems engineering efforts. Finalize update to the ship specifications for 1Q/FY00 follow ship contract award.

000304

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

PROJECT NUMBER: S2283
PROJECT TITLE: LPD 17 Class Systems Integration

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	4,272	773	576
(U) Adjustments from FY 1997 PRESBUDG:	0	-174	-302	+1,086
(U) FY 1998/1999 PRESBUDG Submit:	0	4,098	471	1,662

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 reduced due to general reductions. FY 1998 and FY 1999 changes due to undistributed general reductions and shifting of SC,N testing funds.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

FY 1998/FY1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

PROJECT NUMBER: S2283
PROJECT TITLE: LPD 17 Class Systems Integration

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

	FY 1996 ESTIMATE	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										
	953,600	0	0	762,264	1,659,509	1,571,479	1,610,635	1,651,996	1,745,500	9,964,483

(U) RELATED RDT&E:

(U) PE 0604567N Ship Contract Design/Live Fire T&E

000306

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

PROJECT NUMBER: S2283
PROJECT TITLE: LPD 17 Class Systems Integration

D. (U) SCHEDULE PROFILE:

	FY 1995	FY 1996	FY 1997	TO COMPLETE
Program Milestones		3Q MSII		2Q/99 Program Review 4Q/02 Deliver Lead Ship 4Q/07 MSIII
Engineering Milestones		2Q Complete Contract Design	1Q Initiate Detail Design 1Q Systems Integration Design Package	4Q/98 Complete Detail Design 4Q/98 Complete Systems Integ. Dsgn. Pkg.
T&E Milestones				4Q/98 DT-IIA 2Q/99 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 Contract Award 1Q/02 2nd Follow Ship Contract Award

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604311N
PROGRAM ELEMENT TITLE: LPD 17 Class Systems Integration

PROJECT NUMBER: S2283
PROJECT TITLE: LPD 17 Class Systems Integration

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
A2242 Joint Air to Surface Standoff Missile (JASSM)	0	0	9,644	17,730	16,845	7,256	6,256	10,534	CONT.	CONT.

(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. Initial integration efforts will be on the B-52, F-16 and F/A-18 E/F, which will be the threshold platforms for JASSM. This budget covers only the cost of Navy unique testing and integration.

(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 1996 ACCOMPLISHMENTS:

- (U) ($0 - Air Force funded) Preliminary Design Requirements Review (PDRR) contractor(s) selected for JASSM weapon system development.
- (U) ($0 - Air Force funded) Established Program Office.
- (U) ($0 - Air Force funded) Began aircraft integration, ground and flight tests preparation and planning.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604312N PROGRAM ELEMENT TITLE: TSSAM PROJECT NUMBER: A2242 PROJECT TITLE: JASSM

3. (U) FY 1997 PLAN:

- (U) ($0 - Air Force funded) Continue PDRR of JASSM weapons system development and hardware.
- (U) ($0 - Air Force funded) Continue Program Office Stand-Up.
- (U) ($0 - Air Force funded) Continue aircraft integration, ground and flight tests.

4. (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.

5. (U) FY 1999 PLAN:

- (U) ($9,047) Technical Support Requirements, support EMD contract.
- (U) ($1,069) Continue aircraft integration.
- (U) ($7,614) Continue ground and flight testing.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 05
PROGRAM ELEMENT: 0604312N
PROGRAM ELEMENT TITLE: TSSAM
PROJECT NUMBER: A2242
PROJECT TITLE: JASSM

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	0	0	0	0
(U) Adjustments from Pres Budget:	0	0	+9,644	+17,730
(U) FY 1998/99 President s Budget Submit:	0	0	9,644	17,730

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY98 increase of $9,644 thousand includes +$8,279 thousand for the establishment of the JASSM program within the Navy budget; and +$1,400 thousand to support F/A-18 integration. The FY99 increase of $17,730 thousand reflects +$11,176 thousand for the establishment of the JASSM program within the Navy budget; +$6,700 thousand to support F/A-18 integration; and -$146 thousand for minor program adjustments.

(U) Schedule N/A

(U) Technical N/A

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

(U) RELATED RDT&E:

(U) P.E. 0207325F (Joint Air to Surface Standoff Missile (JASSM))

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604312N PROGRAM ELEMENT TITLE: TSSAM PROJECT NUMBER: A2242 PROJECT TITLE: JASSM

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	3Q/MSI		4Q/MSII		
Engineering Milestones					
T&E Milestones					
Contract Milestones	3Q/96-4Q/98 PDRR		4Q/EMD		

000312

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Technical Support Requirements			3,066	9,047
b. Aircraft Integration			2,390	1,069
c. Ground and Flight Testing			4,188	7,614
Total	0	0	9,644	17,730

000313

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604312N PROGRAM ELEMENT TITLE: TSSAM PROJECT NUMBER: A2242 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
TBD								9,644	17,730	CONT.	CONT.
Support and Management											
Test and Evaluation											

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 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										

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 05 PROGRAM ELEMENT: 0604312N PROJECT NUMBER: A2242
PROGRAM ELEMENT TITLE: TSSAM PROJECT TITLE: JASSM

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development				9,644	17,730	CONT.	CONT.
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project	0	0	0	9,644	17,730	CONT.	CONT.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 05

PROGRAM ELEMENT: 0604312N
PROGRAM ELEMENT TITLE: TSSAM

PROJECT NUMBER: A2242
PROJECT TITLE: JASSM

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000316

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
U0439 Standard Missile Improvements	21,404	9,240	549	1,329	1,303	1,269	1,408	1,491	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: STANDARD MISSILE IMPROVEMENTS (Project U0439): STANDARD Missile fuze and guidance performance degrades when the target is in close proximity to the sea surface. The low altitude improvement program will improve performance against low and very low altitude targets. It will be implemented in two phases: Phase I added a fuze altimeter and trajectory shaping enabling improved target detection to [classified material deleted] altitude and reduced the effect of multipath on radar returns on guidance performance. Phase II added a moving target indicator (MTI), azimuth sensing fuze, and [classified material deleted] The [classified material deleted] improves lethality throughout the SM-2 Block III/IIIA/IIIB engagement envelope and will also improve lethality throughout the SM-2 Block IV engagement envelope. The SM-2 Block IIIB (MHIP) will add a dual mode (RF/IR) capability to engage existing threats in a severe RF countermeasures environment. This capability is currently being developed for AEGIS ships. Additionally, an effort will be started to improve performance of the MK 45 Target Detecting Device (TDD) against advanced threats. In addition, a development project to modify excess Terrier missiles to meet Navy requirement for Supersonic Sea-Skimming Targets (SSST) and Tactical Ballistic Missile Targets (TBMD) will commence.

(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 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements

PROJECT NUMBER: U0439
PROJECT TITLE: Standard Missile Improvements

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
U0439 Standard Missile Improvements	21,404	9,240	549	1,329	1,303	1,269	1,408	1,491	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: STANDARD MISSILE IMPROVEMENTS (Project U0439): STANDARD Missile fuze and guidance performance degrades when the target is in close proximity to the sea surface. The low altitude improvement program will improve performance against low and very low altitude targets. It will be implemented in two phases: Phase I added a fuze altimeter and trajectory shaping enabling improved target detection to [classified material deleted] and reducing the effect of multipath on radar returns on guidance performance. Phase II added a moving target indicator (MTI), azimuth sensing fuze, and [classified material deleted] The [classified material deleted] will improve lethality throughout the SM-2 Block III/IIIA/IIIB engagement envelope and will also improve lethality throughout the SM-2 Block IV. SM-2 will receive Phase I (Block III) and be upgraded by Phase II (Block IIIA), the importance of these improvements derive from the fact they address threats know to exist today. Additionally, the Missile Homing Improvement Program (MHIP) SM-2 Block IIIB will expand this effort by incorporating a dual mode (RF/IR) seeker to improve the missile's capability to resolve seeker ambiguities and engage targets in a severe RF countermeasures environment. These improvements are being developed in such a way that current systems in the fleet can be backfitted with this capability. Specific threats for SM-2 Block III/IIIA/IIIB are identified in Navy Decision Coordinating Paper (NDCP) and approved MNS and ORD Block IIIB. The current minimum target altitude capability of SM-2 Block II is 50 ft. Additionally, an effort will be started to improve the performance of the MK 45 Target Detection Device against advanced threats. In addition, a development project to modify excess Terrier Missiles to meet Navy requirement for Supersonic Sea-Skimming Targets (SSST) and Tactical Ballistic Missile Targets (TBMT) will commence.

000318

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N PROJECT NUMBER: U0439
PROGRAM ELEMENT TITLE: Standard Missile Improvements PROJECT TITLE: Standard Missile Improvements

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($2,787) Completed development and test of Mod 7/8 Blind In the Clear (BIC) improvement.
   - (U) ($3,096) Completed development and test of Mod 9/10 Blind In the Clear (BIC) improvement.
   - (U) ($1,522) Preliminary development activity on advanced version of MK 45 TDD.
   - (U) ($3,999) Completed MHIP DT/OT Testing.
   - (U) ($9,288) Began SSST/TBMT Program.
   - (U) ($712) Forward financing of FY 1997 requirements due to low execution rates.

2. (U) FY 1997 PLAN:
   - (U) ($298) Continue development on advanced version of MK 45 TDD.
   - (U) ($712) Forward financing of FY 1998 requirements due to low execution rates in FY 1996.
   - (U) ($230) Portion of extramural program reserved for Small Business Innovative Research (SBIR) assessment in accordance with U.S.C. 638.
   - (U) ($8,000) Continue SSST/TBMT Program.

3. (U) FY 1998 PLAN:
   - (U) ($549) Initiate development of TDD Land Attack Cruise Missile Defense Capability. This will improve target clutter discrimination for overland scenarios by implementing changes to MK45 MOD 12 TDD Design.

4. (U) FY 1999 PLAN:
   - (U) ($1,329) Continue development of Land Attack Cruise Missile Defense Capability for MK45 TDD. Begin build-up of integration hardware and planning for flight test in FY01.

000319

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements

PROJECT NUMBER: U0439
PROJECT TITLE: Standard Missile Improvements

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999	
(U) FY 1997 President's Budget:	21,865	1,637	1,372		1,405
(U) Adjustments from FY 1997 PRESBUDG:	-461	+7,603	-823	-76	
(U) FY 1998/1999 PRESBUDG Submit:	21,404	9,240	549		1,329

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease in FY 1996 is due to minor pricing adjustments. Increase in FY 1997 is due to increase Congressional increase for Aerial Target efforts (+8,000) and Congressional Undistributed General reductions (-397). Decrease in FY 1998 is due to forward financing of FY 1998 requirements due to low execution rates in FY 1996 (-712) and NWCF rate adjustments. Decrease in FY99 is due to NWCF rate adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1995 ACTUAL	FY 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
WPN 223400	0	0	80,328	85,687	91,657	82,316	82,438	0	1,054,200

NOTE: These are only the SM-2 BLK IIIB related WPN funds.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

000320

FY 1998/99 RDT&E,N .PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements

PROJECT NUMBER: U0439
PROJECT TITLE: Standard Missile Improvements

A. (U) PROJECT COST BREAKDOWN: ($ in thousands) (See Note 1)

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. System Development/Hardware Fabrication (See Note 2)	8,384	7,700	349	779
b. Software Development	2,308	300	100	200
c. Test and Evaluation	6,369	400	0	100
d. Engineering Support	2,400	650	0	100
e. Support Equipment Development	544	0	0	0
f. Project Management Support	600	140	50	100
g. Travel	175	50	50	50
h. Miscellaneous	624	0	0	0
Total	21,404	9,240	549	1,329

Note 1: MHIP project is also funded by PE 0603609N, Project U1821.
Note 2: Systems development, test, and hardware are not separately priced in development contract.

FY 1998/99 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604366N PROJECT NUMBER: U0439
PROGRAM ELEMENT TITLE: Standard Missile Improvements PROJECT TITLE: Standard Missile 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 FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development											
SMCo McLean, VA	CPAF	Various	CONT.	CONT.	0	8,066	6,100	289	679	CONT.	CONT.
Allied Signal Townsend, MD	CPAF	04/91	16,700	16,700	16,700	0	0	0	0	0	16,700
Motorola Scottsdale, AZ	CPAF	12/94	26,971	26,971	21,700	3,504	550	160	500	CONT.	CONT.
IRISS (Note 1, Section A) Bedford, MA/Tuscon, AZ	CPAF	12/89	102,367	102,367	102,367	0	0	0	0	0	102,367
NAVAIRWARCEN / WD China Lake, CA	WR	Various	11,907	11,907	11,307	200	0	0	0	0	11,507
JHU/APL Laurel, MD	PD	Various	13,465	13,465	13,003	100	100	0	0	0	13,203
Miscellaneous	Various	Various	13,760	13,760	11,697	960	0	0	0	0	12,657

000322

FY 1998/99 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements

PROJECT NUMBER: U0439
PROJECT TITLE: Standard Missile Improvements

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
Support and Management											
SMCo McLean, VA	CPAF	Various	CONT.	CONT.	0	0	1,500	0	0	0	1,500
NAVAIRWARCEN / WD China Lake, CA	WR	Various	CONT.	CONT.	550	0	440	0	0	CONT.	CONT.
JHU/APL Laurel, MD	PD	Various	CONT.	CONT.	1,025	0	150	0	0	CONT.	CONT.
Miscellaneous	Various	Various	CONT.	CONT.	2,439	2,205	200	100	150	CONT.	CONT.
Test and Evaluation											
NAVAIRWARCEN / WD China Lake, CA	WR	Various	CONT.	CONT.	4,799	200	100	0	0	CONT.	CONT.
COMOPTEVFOR Norfolk, VA	PD	Various	3,838	3,838	650	3,188	0	0	0	0	3,838
Miscellaneous	Various	Various	CONT.	CONT.	2,101	2,981	100	0	0	CONT.	CONT.

FY 1998/99 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604366N
PROGRAM ELEMENT TITLE: Standard Missile Improvements

PROJECT NUMBER: U0439
PROJECT TITLE: Standard Missile Improvements

GOVERNMENT FURNISHED PROPERTY : Not applicable.

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	176,774	12,830	6,750	449	1,179	CONT.	CONT.
Subtotal Support and Management	4,014	2,205	2,290	100	150	CONT.	CONT.
Subtotal Test and Evaluation	7,550	6,369	200	0	0	CONT.	CONT.
Total Project	188,338	21,404	9,240	549	1,329	CONT.	CONT.

0003324

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
Q0528 ADVANCED AIRBORNE MINE COUNTERMEASURES EQUIPMENT	1,142	1,275	0	0	0	0	0	0	0	40,163
Q0529 AIRBORNE MINE HUNT SYSTEMS	11,974	18,357	16,503	19,937	5,976	0	0	0	0	147,802
Q2047 AIRBORNE LASER MINE DETECTION SYSTEM (ALMDS)	17,346	11,509	0	0	0	0	0	0	0	100,983
TOTAL	30,462	31,141	16,503	19,937	5,976	0	0	0	0	288,903

(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

000325

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	FY 1997 ESTIMATE	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	11,974	18,357	16,503	19,937	5,976	0	0	0	0	147,802

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 AN/AQS-20 Sonar Mine Detecting Set is being developed for shallow and deep water minehunting and reconnaissance for both bottom and moored mines. 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

000325

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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. (U) FY 1996 ACCOMPLISHMENTS:

(U) ($7,343) Q-20 - Continued fabrication of EMD models.
(U) ($3,000) Q-20 - Started risk reduction analysis and testing.
(U) ($890) Q-20 - Started system qualification and environmental tests.
(U) ($468) Airborne Mine Neutralization System (AMNSYS) - Started initial draft procurement package (specification, statement of work, source selection plan) and program analysis and plans.
(U) ($273) Closeout of Lockheed Contract N00019-85-C-0358.

2. (U) FY 1997 PLAN:

(U) ($5,178) Q-20 - Complete fabrication of EMD models, qualification and environmental tests.
(U) ($8,652) Q-20 - Unpriced line items/spares options, Interactive Electronic Technical Manual (IETM), initial low tests.
(U) ($1,804) Q-20 - Complete risk analysis.
(U) ($2,357) AMNSYS - Release RFP, conduct test planning, award contracts, and perform COEA type analysis.
(U) ($366) Portion of extramural program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

Exhibit R-2

000327

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

PROJECT NUMBER: Q0529
PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

3. (U) FY 1998 PLAN:

(U) ($3,000) Q-20 - Complete contractor demonstration.
(U) ($5,422) Q-20 - Conduct TECHEVAL and fleet training for OPEVAL.
(U) ($3,000) AMNSYS - Deliver NDI prototype model.
(U) ($2,558) AMNSYS - Conduct fly off testing.
(U) ($2,523) AMNSYS - Procure and test the test equipment, data analysis.

4. (U) FY 1999 PLAN:

(U) ($8,083) Q-20 - Conduct OPEVAL.
(U) ($2,144) Q-20 - Obtain MS III.
(U) ($6,500) AMNSYS - Award EMD contracts for integration into the helicopter.
(U) ($3,210) AMNSYS - Perform system integration, data analysis, TECHEVAL preparations.

Exhibit R-2

000328

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604373N PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES PROJECT NUMBER: Q0529 PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	12,355	13,164	13,069	5,694
(U) Appropriated Value:	0	19,164	0	0
(U) Adjustments to the Appropriated Value:	-381	-807	+3,434	+14,243
(U) FY 1998/99 PRESBUDG Submit:	11,974	18,357	16,503	19,937

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY96 - (-$194) SBIR and (-$187) general reduction; FY97-reflects NWCF adjustments (-$807). FY98 reflects the funding necessary to cover cost growth due to estimation of the design complexity and requirements by the prime contractor of the AN/AQS-20 (+$4,500) and minor NWCF adjustments, (+80) and general reductions (-$46), TECHEVAL cost growth
(-$1,100). FY99 - reflects the funding necessary to cover the cost growth due to estimation of the design complexity and requirements by the prime contractor of the AN/AQS-20 (+$10,200); the restructuring of AMNSYS (+$4,200) and various NWCF adjustments (-$58) and general reductions (-$99).

Exhibit R-2

000329

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

PROJECT NUMBER: Q0529
PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

(U) Schedule: AQS-20: Milestone III from 2Q/98 to 4Q/99 due to cost growth.
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 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
OPN 424800										
AN/AQS-20	0	0	0	0	24,600	27,600	37,000	45,300	CONT.	CONT.
AMNSYS	0	0	0	0	4,310	10,411	5,695	9,982	30,398	30,398

(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

000330

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	8,537	12,193	7,330	6,139
b. Software Development	2,580	2,614	0	0
c. Systems Engineering	0	0	2,196	1,490
d. Developmental Test & Evaluation	0	2,000	5,502	2,144
e. Operational Test & Evaluation	0	0	0	8,432
f. Travel	20	20	20	20
g. Miscellaneous	837	1,164	1,455	1,712
i. SBIR	0	366	0	0
Total	11,974	18,357	16,503	19,937

Exhibit R-3

000331

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

PROJECT NUMBER: Q0529
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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Raytheon Q20	C/CPFF	7/92	55,956	55,956	37,663	7,160	9,433	1,200	500	0	55,956
TBD (AMNSYS)	C/CPFF	05/97	10,500	10,500	0	0	1,000	3,000	6,500	0	10,500
CSS, Panama City	WR	10/97	44,468	44,468	30,668	3,191	1,198	4,292	2,565	2,554	44,468
NSWC, Carderock	WR	10/98	1,200	1,200	0	0	0	0	1,200	0	1,200
Miscellaneous	WR	10/97	19,701	19,701	6,525	1,198	4,446	3,799	2,311	1,422	19,701
Support and Management											
Miscellaneous	WR VARIOUS		1,764	1,764	199	425	280	430	430	0	1,764
Test and Evaluation											
OPTEVFOR, VA	WR	10/96	5,126	5,126	0	0	0	0	5,126	0	5,126
CSS, Panama City	WR	10/96	9,087	9,087	0	0	2,000	3,782	1,305	2,000	9,087

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

Exhibit R-3

0003132

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

PROJECT NUMBER: Q0529
PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	74,856	11,549	16,077	12,291	13,076	3,976	131,825
Subtotal Support and Management	199	425	280	430	430	0	1,764
Subtotal Test and Evaluation	0	0	2,000	3,782	6,431	2,000	14,213
Total Project	75,055	11,974	18,357	16,503	19,937	5,976	147,802

Exhibit R-3

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604373N
PROGRAM ELEMENT TITLE: AIRBORNE MINE COUNTERMEASURES

PROJECT NUMBER: Q0529
PROJECT TITLE: AIRBORNE MINE HUNT SYSTEMS

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000324

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
F0775 Submarine Support Equipment Program	16,105	11,522	0	0	0	0	0	0	0	73,791
S0219 Submarine Sonar Improvement	28,288	32,125	33,545	37,512	31,267	22,599	21,552	23,349	CONT.	CONT.
X0742 Submarine Integrated Antenna Systems	16,797	10,719	3,182	2,906	5,529	5,646	5,773	3,196	CONT.	CONT.
X1411 Submarine Tactical Communications System	5,001	4,272	5,567	7,496	4,999	5,046	9,745	6,780	CONT.	CONT.
TOTAL	66,191	58,638	42,294	47,914	41,795	33,291	37,070	33,325	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Submarine Support Equipment Program develops and improves submarine Electronic Warfare Support Measures (ESM) techniques and components, equipment, and systems that will increase submarine operational effectiveness in the increasingly dense and sophisticated electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for submarine ESM to be effective in conducting the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare and Intelligence Collection, Maritime Protection, and Joint Strike. The major efforts in this area are the Engineering and Manufacturing Development (EMD) of the Integrated ESM Mast (IEM), and the Periscope Monopulse Direction Finding (MDF) System for the Type 18 Periscope.

(U) The Submarine Sonar Improvement Program delivers block updates to Sonar Systems installed on SSN 688, 688I and TRIDENT Class Submarines 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 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) The Submarine Integrated Antenna Systems (SIAS) project develops the antennas needed to communicate in networks such as Ultra High Frequency Satellite Communications, Extremely Low Frequency (ELF), Extremely High Frequency (EHF) and Global Positioning System. Hardware developments include: (a) mast-mounted systems; (b) buoyant cable systems; and (c) expendable buoy systems.

(U) The Submarine Tactical Communications Systems project provides attack submarines with an exterior communications system which: (a) minimizes the time required at communications depth; (b) enhances operability, reducing errors and manpower requirements; and (c) provides flexibility for low impact growth and change throughout the life of the submarine. Design efforts will provide increased antenna signal distribution and interconnection subsystems to accommodate ELF, EHF, and Mini-Demand Assigned Multiple Access and a message storage and processing subsystem.

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

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
S0219 Submarine Sonar Improvement	28,288	32,125	33,545	37,512	31,267	22,599	21,552	23,349	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; these will provide quantum improvements in long-range detection and localization for SSN 688 and TRIDENT Class Submarines. Engineering Change Proposal (ECP) 7001 to AN/BQQ-5E will provide Low Frequency Active Interference Rejection, Dual Towed Array Processing and Full Spectrum Processing to SSN 688 and TRIDENT Class Submarines. The Onboard Trainer is being developed to provide pierside and at-sea operational and team training to improve operator efficiency. The AN/BSY-1 ECP 1000 and the AN/BQQ-5 Medium Frequency Active Improvement (MFAI) program 2nd Improved Control Display Concole Obsolete Equipment Replacement have been modified to become the basis of the Acoustics Rapid COTS Insertion (A-RCI) 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 HF Upgrade is a stand-alone program which will be introduced as A-RCI Phase IV for SSN 688I only. Towed array development will focus on (a) tow cable improvements for shallow water towing; (b) reliability improvements for couplings, connectors, strength members and hoses for all module types, (c) hydrophone and telemetry cost reduction alternatives; and (d) development of a TB-16 multi-line towed array for improved performance in littoral water operations.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1.(U) FY 1996 ACCOMPLISHMENTS:
(U) ($1,499) Completed development of AN/BQQ-5E ECP 7001.

000337

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: S0219
PROJECT TITLE: Submarine Sonar Improvement

(U) ($20,029) Restructured AN/BSY-1 ECP 1000 development into A-RCI Phases I and II and commenced development of A-RCI Phase III.
(U) ($4,515) Continued towed array development efforts to include initial at-sea testing and demonstrations of towed array/handling system improvements. Initiated technical demonstration efforts for designs prior to resuming TB-29 production.
(U) ($500) Continued development of Onboard Trainer.
(U) ($600) Continued development for Desk Top Calculator (DTC) Improvements.
(U) ($1,145) Developed specifications for AN/BSY-1 High Frequency (HF) Upgrade program and completed Cost and Operational Effectiveness Analysis (COEA).

2. (U) FY 1997 PLAN:
(U) ($21,892) Continue development of A-RCI Phases I, II and III. Conduct A-RCI Phase I and II Critical Design Review (CDR).
(U) ($5,832) Continue towed array development efforts. Conduct at-sea testing of improved towed array hardware. Continue technical demonstration efforts.
(U) ($439) Complete OPEVAL for TB-29 and AN/BQQ-5E.
(U) ($828) Continue development for DTC Improvements.
(U) ($2,510) Obtain MS II approval and begin transition of HF Upgrade Sensor and Transmit requirements to production for First Article Test.
(U) ($624) Portion of program reserved for Small Business Innovative Research (SBIR) assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:
(U) ($1,845) Conduct at-sea testing of A-RCI Phase I.
(U) ($20,653) Conduct A-RCI Phase III CDR.
(U) ($2,195) Continue First Article Test of HF Sensor and Transmit Equipment. Begin transition of NSSN C3I developed High Frequency Processing Software to A-RCI for system integration and test.
(U) ($7,952) Commence development of TB-16 multi-line towed array.
(U) ($900) Continue development for DTC Improvements.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development

PROJECT NUMBER: S0219 PROJECT TITLE: Submarine Sonar Improvement

4.(U) FY 1999 PLAN:

(U) ($1,902) Conduct at-sea testing of A-RCI Phases II.
(U) ($13,728) 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-16 multi-line towed array.
(U) ($900) Continue development for DTC Improvements.

B.(U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	29,060	33,562	34,306	38,750
(U) Adjustments from 1997 PRESBUDG:	-772	-1,437	-761	-1,238
(U) FY 1998/1999 PRESBUDG Submit:	28,288	32,125	33,545	37,512

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decreased $538K for SBIR and $234K for other minor pricing adjustments. FY 1997 decreased $1,437K for Congressional undistributed reductions. FY 1998 decreased $761K for NWCF carryover rates. FY 1999 decreased $1000 for Navy adjustments and $238K for NWCF carryover and rate adjustments.

(U) Schedule: This submit establishes A-RCI 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 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 Line 21470	42,711	44,186	77,953	116,310	150,374	159,952	131,522	144,761	CONT.	CONT.

000339

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: S0219
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.

000340

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: S0219
PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT TITLE: Submarine Sonar Improvement

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

PROJECT COST CATEGORIES	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	20,795	24,815	25,313	28,404
b. Systems Engineering	4,661	5,126	5,353	6,004
c. Program Management Support	628	642	658	672
d. Test & Evaluation	600	130	760	812
e. Travel	195	120	120	120
f. Miscellaneous	1,409	1,292	1,341	1,500
TOTAL	28,288	32,125	33,545	37,512

000341

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: S0219
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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Lockheed Martin Manassas, Virginia	SS/CPAF	8/93	22,703	22,703	21,632	1,071	0	0	0	0	22,703
Martin Marietta Glen Burnie, Maryland	C/CPIF	6/90	77,600	77,600	77,600	0	0	0	0	0	77,600
Lockheed Martin Manassas, Virginia	SS/CPAF	1/95	76,209	76,209	6,000	17,182	19,201	17,519	10,556	5,751	76,209
Lockheed Martin Manassas, Virginia	C/CPIF	10/93	7,779	7,779	7,279	500	0	0	0	0	7,779
Lockheed Martin Manassas, Virginia	SS/CPAF	10/97	13,592	13,592	0	0	0	250	8,842	4,500	13,592
NUWC Newport, Rhode Island	WR	Various	CONT.	CONT.	37,926	5,302	6,931	10,395	10,743	CONT.	CONT.
NSWC Carderock, Maryland	WR	Various	11,850	11,850	11,850	0	0	0	0	0	11,850
Misc	Various	Various	CONT.	CONT.	8,406	2,810	5,101	3,843	5,767	CONT.	CONT.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROJECT NUMBER: S0219
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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management											
Misc	Various	Various	CONT.	CONT.	3,595	823	762	778	792	CONT.	CONT.
Test and Evaluation											
Misc	Various	Various	CONT.	CONT.	1,746	600	130	760	812	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	170,693	26,865	31,233	32,007	35,908	CONT.	CONT.
Subtotal Support and Management	3,595	823	762	778	792	CONT.	CONT.
Subtotal Test and Evaluation	1,746	600	130	760	812	CONT.	CONT.
Total Project	176,034	28,288	32,125	33,545	37,512	CONT.	CONT.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
X0742 Submarine Integrated Antenna Systems	16,797	10,719	3,182	2,906	5,529	5,646	5,773	3,196	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), Conformal Array Antennas (CAAs).

(U) PROGRAM ACCOMPLISHMENTS:

1.(U)FY 1996 ACCOMPLISHMENTS:
(U) ($700) Communications Support Systems (CSS) Antenna Improvements - Developed changes resulting from analysis.
(U) ($1,660) OE-538/BRC - Conducted DTIIB/C and OTIIA/B as well as MSIII review.
(U) ($13,168) HDA - Finalized specifications for the EHF/SHF Antenna System, evaluated proposals, awarded contract to procure Rapid Prototype industry dual band systems.
(U) ($1,269) SADS - Continued with functional upgrades in support of CSS/TADIXS improvements.

2.(U)FY 1997 PLAN:
(U) ($8,133) HDA - Continue to manage Rapid Prototype(RP) contracts and conduct DT/OT. Downselect to one contract, conduct MS review and prepare for production.
(U) ($2,000) SADS - Complete full functional development and conduct MS III.
(U) ($107) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 U.S.C. 638.

000344

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X0742
PROJECT TITLE: Submarine Integrated Antenna System

(U) ($479) Analyze and prepare necessary changes from Antenna CSS/TADIXS Shipboard Automated Communications Control System (SACCS) compatibility. Investigate feasibility of including Global Broadcast System (GBS) into HDA System.

3.(U)FY 1998 PLAN:
(U) ($1,350) Conduct analysis to upgrade HDA to include Global Broadcast System (GBS).
(U) ($1,832) Upgrade & test SADS with P3I which provides for control of HDR RF and antenna control function.

4.(U)FY 1999 PLAN:
(U) ($2,906) Initiate multiband antenna engineering to develop broadband feeds and broadband power amplifiers which support not only MILSTAR and Defense Satellite Communications System SATCOM but also multiple commercial SATCOM networks.

B.(U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	17,064	11,251	3,276	4,383
(U) Adjustments from 1997 PRESBUDG:	-267	-532	-94	-1,477
(U) FY 1998/1999 PRESBUDG Submit:	16,797	10,719	3,182	2,906

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decreased $20 for Jordan F-16 Rescission and $44K reduction for Administrative and Personal Services Rescission. $96K for Congressional Undistributed General Adjustments and $107K for SBIR. FY 1997 decreased $532K for Congressional Undistributed General Adjustments. FY 1998 decreased $86K for DBOF rate adjustments and $8K for inflation. FY 1999 decreased $1,427K as a result of NAVY decisions and $50K as a result of undistributed adjustments for NWCF carryover and rates.

(U) Schedule: SADS program concept of operations was tied into SCSS Baseband Switch Operational Assessment testing at the Land-Based Submarine Radio Room. Due to delays in completion of that testing and the long lead times for critical materials, both contributed to the 6 month schedule slip.

(U) Technical: Not applicable.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X0742
PROJECT TITLE: Submarine Integrated Antenna System

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 Line 313000 (Partial)	1,892	8,070	15,819	29,747	36,569	45,030	47,139	51,054	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 Engineering Milestones	4Q OE-538/BRC MS III 4Q HDA MS II		2Q SADS MSIII 2Q HDA MSIIA(LRIP)	4Q HDR MSIII
T&E Milestones	2Q OE-538/BRC DT IIB/C 2Q OE-538/BRC OT IIA/B	4Q SADS DT/OT II	1Q HDA DT/OT II	3Q DTIII SADS P3I 4Q OTIII SADS P3I 3Q HDA DT/OT II
Contract Milestones	4Q HDA RP			

000346

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Project Management	1,500	1,500	500	300
b. Systems Engineering	500	500	200	394
c. Software Development	500	500	200	800
d. Hardware Development	12,072	6,019	906	762
e. System Test & Evaluation	1,200	1,300	1,226	500
f. Integrated Logistic Support	600	500	100	100
g. Site/Platform Integration	425	400	50	50
TOTAL	16,797	10,719	3,182	2,906

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X0742
PROJECT TITLE: Submarine Integrated Antenna System

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
TBD (HDA)	TBD	TBD	TBD	TBD	0	8,006	4,781	900	0	13,681	13,681
NAVUNSEAWARCEN New London, CT; Newport, Rhode Island	WX	10/95	CONT.	CONT.	0	5,931	4,369	1,382	1,962	CONT.	CONT.
Misc Contracts	Various	Various	CONT.	CONT.	0	1,531	350	250	444	CONT.	CONT.
Misc Labs	WX	Various	CONT.	CONT.	0	849	620	450	400	CONT.	CONT.
Support and Management											
Misc Contracts	Various	Various	CONT.	CONT.	0	480	599	200	100	CONT.	CONT.
Test and Evaluation		N/A									

GOVERNMENT FURNISHED PROPERTY - Not applicable.

	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	16,317	10,120	2,982	2,806	CONT.	CONT.
Subtotal Support and Management	0	480	599	200	100	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	16,797	10,719	3,182	2,906	CONT.	CONT.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N PROGRAM ELEMENT TITLE: Submarine System Equipment Development PROJECT NUMBER: X1411 PROJECT TITLE: Submarine Tactical Communication System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
X1411 Submarine Tactical Communications System	5,001	4,272	5,567	7,496	4,999	5,046	9,745	6,780	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. The CSS is envisioned to be the communications architecture of the Navy's future. Ships without CSS capability will be limited in their interoperability with the rest of the Navy. Lastly, this program provides funds to integrate Joint Tactical Information Distribution System (JTIDS) into the CSS.

(U)PROGRAM ACCOMPLISHMENTS AND PLANS:

1.(U)FY 1996 ACCOMPLISHMENTS:
- (U) ($1,917) Continued development of the Phase I CSS implementation.
- (U) ($1,919) Continued improved SMB P^3I development and began testing.
- (U) ($755) Began development of the component portion of the Hi Data Rate System.
- (U) ($410) Started Link 16 JTIDS integration with SCSS.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X1411
PROJECT TITLE: Submarine Tactical Communication System

2.(U)FY 1997 PLAN:
(U) ($950) Complete DT/Operational Testing (OT) testing of ISMB.
(U) ($275) Continue development of the Hi Data Rate System.
(U) ($1,639) Complete CSS Phase I Integration.
(U) ($450) Continue Integration and developmental testing for JTIDS.
(U) ($901) Systems engineering for SCSS on TRIDENT Integrated Radio Room (IRR).
(U) ($57) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 U.S.C. 638.

3.(U)FY 1998 PLAN:
(U) ($3,442) Begin CSS Phase II integration design.
(U) ($1,399) Continue integration and development testing for JTIDS.
(U) ($726) Continue engineering for SLVR/HIDAR and MINI-DAMA for TRIDENT IRR.

4.(U)FY 1999 PLAN:
(U) ($4,829) Complete CSS Phase II integration.
(U) ($812) Continue integration and development testing for JTIDS.
(U) ($1,855) Continue engineering for SLVR/HIDAR and MINI-DAMA for TRIDENT IRR.

B.(U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	5,093	4,476	5,310	6,014
(U) Adjustments from 1997 PRESBUDG:	-92	-204	+257	+1,482
(U) FY 1998/1999 PRESBUDG Submit:	5,001	4,272	5,567	7,496

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996, decreased $6K for Jordan F-16 Rescission, $12K for Administrative and Personal Services Rescission and $74K for SBIR reduction. FY 1997 decreased $204K for Congressional Undistributed General Adjustment. Fy 1998 increased $257K and FY 1999 increased $1,482K as a result of NAVY decision to accelerate CSS Phase II integration.
(U) Schedule: Not Applicable.
(U) Technical: Not Applicable.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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)

	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 Line 313000 (Partial)	15,532	21,338	18,869	20,085	20,827	17,698	16,914	34,380	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 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Project Management	798	722	1,000	1,500
b. Systems Engineering	610	546	738	563
c. Software Development	2,347	1,545	1,737	1,959
d. Hardware Development	1,246	1,459	2,092	3,474
TOTAL	5,001	4,272	5,567	7,496

000352

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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) 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											
Misc Contracts	Various	Various	CONT.	CONT.	0	938	1,126	1,444	2,291	CONT.	CONT.
NCCOSC NRaD San Diego, CA	WX	10/95	CONT.	CONT.	0	2,479	1,596	2,164	3,068	CONT.	CONT.
NAVUNSEAWARFCEN Newport, RI	WX	10/95	CONT.	CONT.	0	1,019	1,200	1,603	1,728	CONT.	CONT.
Misc Labs	Various	Various	CONT.	CONT.	0	165	246	250	300	CONT.	CONT.
Support and Management											
Misc Contracts	Various	Various	CONT.	CONT.	0	400	104	106	109	CONT.	CONT.
Test and Evaluation		N/A									

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604503N
PROGRAM ELEMENT TITLE: Submarine System Equipment Development
PROJECT NUMBER: X1411
PROJECT TITLE: Submarine Tactical Communication System

	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	4,601	4,168	5,461	7,387	CONT.	CONT
Subtotal Support and Management	0	400	104	106	109	CONT.	CONT
Subtotal Test and Evaluation	0	0	0	0	0	CONT.	CONT
Total Project	0	5,001	4,272	5,567	7,496	CONT.	CONT

DATE: February 1997

FY 1998 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 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
W0993 Carrier Air Traffic Control	3,980	5,865	6,741	1,972	1,865	1,907	1,941	1,991	Cont.	Cont.
W1657 Air Traffic Control (ATC) Improvements	2,109	3,231	1,297	2,830	3,289	3,587	3,652	3,745	Cont.	Cont.
X0718 Marine Air Traffic Control And Landing Systems (MATCALS)	1,349	0	0	0	0	0	0	0	Cont.	Cont.
W0718 Marine Air Traffic Control And Landing Systems (MATCALS)	0	1,198	1,260	1,615	1,622	3,123	3,178	3,258	Cont.	Cont.
TOTAL	7,438	10,294	9,298	6,417	6,776	8,617	8,771	8,994	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.

DATE: February 1997

FY 1998 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 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
W0993 Carrier Air Traffic Control	3,980	5,865	6,741	1,972	1,865	1,907	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 1996 ACCOMPLISHMENTS:

- (U) ($3,211) Continued engineering development of MTD for AN/SPN-46(V) and began Passive Point Development.
- (U) ($619) Provided engineering support, test, & evaluation for MTD and AN/SPN-46 (V).
- (U) ($150) Continued development of MTD for AN/SPN-43 radar.

2. (U) FY 1997 PLAN:

- (U) ($2,233) Complete MTD development for AN/SPN-46(V) and AN/SPN-43(V).
- (U) ($127) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

DATE: February 1997

FY 1998 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) ($700) Provide engineering support, test & evaluation for MTD.
- (U) ($700) Continue Passive Point development.
- (U) ($2,105) Begin development effort to upgrade AN/SPN-42T systems.

3. (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.

4. (U) FY 1999 PLAN:

- (U) ($1,022) Continue development effort to upgrade AN/SPN-42T systems.
- (U) ($750) Provide engineering support, test & evaluation for Passive Point and AN/SPN-42T systems.
- (U) ($200) Continue development of halyard protection for AN/SPN-43.

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s budget:	4,066	6,117	6,867	1,997
(U) Adjustments from PRESBUDG:	-86	-252	-126	-25
(U) FY 1998/99 President s budget submit:	3,980	5,865	6,741	1,972

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease of $86 thousand resulted from adjustments made for the F-16 Jordanian Rescission and the Small Business Innovation Research assessment. FY 1997 decrease of $252 thousand reflects Congressional undistributed reductions. FY 1998 ($126 thousand) and FY 1999 ($25 thousand) decreases are due to minor pricing and Navy Working Capital Fund adjustments.

(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 Automatic Carrier Landing System	5,148	15,658	13,200	12,921	12,861	12,843	12,549	12,956	Cont.	Cont.

(U) RELATED RDT&E:

(U) PE 0603512N (Carrier Systems Development)
(U) PE 0604512N (Shipboard Aviation Systems)

000358

DATE: February 1997

FY 1998 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

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	2Q-4Q SPN-42/46T System Design		2Q-4Q 43 Halyard Protective Dev.		
Engineering Milestones		4Q PP Prototype			
T&E Milestones	4Q MTD Testing	1Q-2Q MTD Testing	2Q-3Q MTD Testing 1Q-2Q PPS Testing	1Q-2Q PPS Testing	Cont.
Contract Milestones					

000359

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Dev	3,635	5,055	5,948	1,000
b. Systems Engineering Sup	200	503	544	820
c. T & E Support	50	50	154	100
d. Project Management Sup	75	100	75	25
e. Travel	20	30	20	27
f. SBIR Assessment	0	127	0	0
Total	3,980	5,865	6,741	1,972

000360

DATE: February 1997

FY 1998 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

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 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development Sierra Nevada Reno, NV	CPFF	5/93	11,174	11,174	5,304	3,635	2,235	0	0	0	11,174
Miscellaneous		Various	-	-	2,237	200	3,323	6,442	1,720	Cont.	Cont.
Support and Management Miscellaneous		Various	-	-	194	95	130	145	152	Cont.	Cont.
Test and Evaluation Miscellaneous		Various	-	-	485	50	50	154	100	Cont.	Cont.
SBIR Assessment		-	-	-	0	0	127	0	0	-	-

GOVERNMENT FURNISHED PROPERTY : Not applicable.

DATE: February 1997

FY 1998 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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	7,541	3,835	5,558	6,442	1,720	Cont.	Cont.
Subtotal Support and Management	194	95	130	145	152	Cont.	Cont.
Subtotal Test and Evaluation	485	50	50	154	100	Cont.	Cont.
Subtotal SBIR Assessment	0	0	127	0	0	0	127
Total Project	8,220	3,980	5,865	6,741	1,972	Cont.	Cont.

000362

DATE: February 1997

FY 1998 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 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
W1657 ATC Improvements	2,109	3,231	1,297	2,830	3,289	3,587	3,652	3,745	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 1996 ACCOMPLISHMENTS:

- (U) ($1,970) Continued GPS data link development efforts.
- (U) ($139) Provided in-house engineering support for GPS development.

2. (U) FY 1997 PLAN:

- (U) ($2,424) Continue GPS data link/landing system efforts.
- (U) ($330) Develop Performance Support System/Computer Based Training (PSS/CBT) framework for ATC.
- (U) ($450) Provide in-house engineering support for GPS and PSS/CBT.

(U) ($27) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C.638.

000363

DATE: February 1997

FY 1998 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

3. (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.

4. (U) FY 1999 PLAN:

- (U) ($2,000) Continue GPS data link/landing efforts.
- (U) ($500) Continue program management efforts.
- (U) ($330) Provide in-house engineering support for GPS and PSS/CBT efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s budget:	2,136	3,373	1,333	2,871
(U) Adjustments from PRESBUDG:	-27	-142	-36	-41
(U) FY 1998/99 President s budget submit:	2,109	3,231	1,297	2,830

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease of $27 thousand resulted from the Jordanian Rescission and Small Business Innovation Research adjustments. The FY 1997 decrease of $142 thousand resulted fromCongressional undistributed reductions. The FY 1998 decrease of $36 thousand and FY 1999 decrease of $41 thousand reflect pricing and Navy Working Capital Fund adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

000364

DATE: February 1997

FY 1998 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

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 National Air Space System	-	-	2,239	28,856	37,695	38,504	62,194	40,068	30,147	239,703

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					
Engineering Milestones					
T&E Milestones	2Q-4Q Test DCC/ GPS	1Q-2Q Evaluate GPS prototype	1Q-2Q Evaluate GPS prototype	1Q-2Q Evaluate GPS prototype	Cont.
Contract Milestones					

000365

DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604504N PROJECT NUMBER: W1657
PROGRAM ELEMENT TITLE: Air Control (Eng) PROJECT TITLE: ATC Improvements

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware	-	-	-	-
b. Ancillary Hardware Dev	-	-	-	-
c. Software Development	70	200	200	200
d. Systems Engineering	1,824	2,803	897	2,360
e. Training Development	50	50	50	50
f. ILS	25	40	30	70
g. T & E Support	50	60	70	100
d. Project Support	50	25	25	25
e. Travel	40	26	25	25
f. SBIR Assessment	0	27	0	0
Total	2,109	3,231	1,297	2,830

000366

DATE: February 1997

FY 1998 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NAWC AD St Inigoes	WX	10/1/97	-	-	19,805	550	1,095	170	320	Cont.	Cont.
NISE EAST Charleston	WX	10/1/97	-	-	2,825	780	473	0	0	Cont.	Cont.
NAWC Pax River	WX	10/1/97	-	-	1,780	489	1,510	990	2,300	Cont.	Cont.
Miscellaneous		Various	-	-	974	150	15	17	60	Cont.	Cont.
Support and Management											
Miscellaneous		Various	-	-	2,318	90	51	50	50	Cont.	Cont.
Test and Evaluation											
Miscellaneous		Various	-	-	1,911	50	60	70	100	Cont.	Cont.
SBIR Assessment		-	-	-	0	0	27	0	0	-	-

GOVERNMENT FURNISHED PROPERTY: Not applicable.

DATE: February 1997

FY 1998 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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	25,384	1,969	3,093	1,177	2,680	Cont.	Cont.
Subtotal Support and Management	2,318	90	51	50	50	Cont.	Cont.
Subtotal Test and Evaluation	1,911	50	60	70	100	Cont.	Cont.
Subtotal SBIR Assessment	0	0	27	0	0	0	27
Total Project	29,613	2,109	3,231	1,297	2,830	Cont.	Cont.

000368

DATE: February 1997

FY 1998 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 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
X0718 Marine Air Traffic Control And Landing System (MATCALS)	1,349	0	0	0	0	0	0	0	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 transfers to COMNAVAIRSYSCOM in fiscal year 1997.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,024) Developed software enhancements as an eventual replacement for the previous version of software required to accomodate control of new and/or modernized Fleet aircraft.
- (U) ($250) Tested and evaluated hardware for reliability/maintainability upgrades to MATCALS (e.g., TPN-22 Solid State Modulator, TPN-30 Central Radiator, and TACAN Bearing Mod Kits).
- (U) ($50) Commenced studies for requirements definition for migration of MATCALS software/C3 systems to Joint Maritime Command Information System (JMCIS) architecture.
- (U) ($25) Commenced study to define requirements for next-generation communications systems.

000369

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)
PROJECT NUMBER: X0718
PROJECT TITLE: Marine Air Traffic Control And Landing System

2. (U) FY 1997 PLAN:

- (U) ($0) Program transfer to COMNAVAIRSYSCOM P.E. 0604504N, Project W0718.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s budget:	1,375	1,260	1,286	1,637
(U) Adjustments from PRESBUDG:	-26	-1,260	-1,286	-1,637
(U) FY 1998/99 President s budget submit:	1,349	0	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease of $26 thousand was the result of the Jordanian Rescission and Small Business Innovation Research adjustments. FY 1997 decrease of $1260 thousand, FY 1998 decrease of $1,286 thousand and FY 1999 decrease of $1,637 thousand were due to PR 98 program transfer to COMNAVAIRSYSCOM.

(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 COMPLETE	TO PROGRAM	TOTAL EST
(U) OPN MATCALS	0	0	0	0	0	0	0	0	Cont.	Cont.

Note: PR-98 program transfer to COMNAVAIRSYSCOM P.E. 0604504N, Project W0718.

(U) RELATED RDT&E: Not applicable.

DATE: February 1997

FY 1998 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 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
W0718 Marine Air Traffic Control And Landing System (MATCALS)	1,349*	1,198	1,260	1,615	1,622	3,123	3,178	3,258	Cont.	Cont.

* Previously funded in project X0718.

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 transfers to COMNAVAIRSYSCOM in fiscal year 1997.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) FY 1996 accomplishments have been addressed within project X0718.

000371

DATE: February 1997

FY 1998 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

2. (U) FY 1997 PLAN:

- (U) ($650) Develop and test software enhancements required to improve safety of flight and accommodate control of new and/or modernized Fleet aircraft.
- (U) ($290) Test and evaluate Remote Landing Site Tower (RLST) and other reliability/maintainability upgrades
- (U) ($234) Define requirements and specifications for integration of Differential GPS with MATCALS and complete studies for requirements definition for migration to JMCIS architecture
- (U) ($24) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($635) Test and certify software improvements required to improve safety of flight and ensure integration with TADIL B/C systems.
- (U) ($355) Conduct studies to define requirements for Joint Precision Approach and Landing System (JPALS) for joint operations.
- (U) ($270) Test and evaluate First Articles of improved communication systems hardware

4. (U) FY 1999 PLAN:

- (U) ($515) Test and certify software improvements required to improve safety of flight and ensure integration with TADIL B/C systems.
- (U) ($1,100) Conduct studies to define requirements for Joint Precision Approach and Landing System (JPALS) for joint operations.

000372

DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s budget:	0	0	1,286	1,637
(U) Adjustments from PRESBUDG:	0	+1,198	-26	-22
(U) FY 1998/99 OSD/OMB budget submit:	0	1,198	1,260	1,615

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 increase of $1198 thousand reflects program transfer from SPAWAR Project X0718. FY 1998 ($26 thousand) and FY 1999 ($22 thousand) decreases are due to pricing and Navy Working Capital Fund adjustments.

(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 MATCALS	1,545*	4,066	9,726	14,961	11,822	12,523	12,735	13,036	Cont.	Cont.

Note: PR-98 program transfer to COMNAVAIRSYSCOM P.E. 0604504N, Project W0718.
*Previously reflected in project X0718.

(U) RELATED RDT&E: Not applicable.

DATE: February 1997

FY 1998 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					
T&E Milestones			1Q-2Q Evaluate SW Improvements	1Q-2Q Evaluate SW Improvements	Cont.
Contract Milestones					

000324

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604507N PROJECT NUMBER: V1440
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor PROJECT TITLE: EMSP

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
V1440 EMSP	14,076	21,740	3,462	3,224	1,374	1,466	1,498	1,533	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 1996 ACCOMPLISHMENTS:

- (U) ($727) Completed DT-III Testing (Reliability Demonstration).
- (U) ($5,280) Supported software development, integration, testing, and critical engineering design support for Development and Operational Testing (DT/OT) for Airborne Low Frequency Sonar (ALFS), SURTASS, AN/SQQ-89, P-3C, AN/BSY-2 and DDG 993 systems.
- (U) ($1,569) Continued risk mitigation Independent Verification and Validation (IV&V) testing.

- (U) ($5,500) Performed requirements review and developed a preliminary design to migrate UYS-2A Application Software from MIL proprietary closed systems to Commercial-Off-The-Shelf COTS) based Open Systems Architecture that reuses existing legacy AN/UYS-2A software.

- (U) ($500) Performed a COTS characterization study of enclosures to determine extent and amount of environmental protection the enclosure can provide for COTS boards.

- (U) ($500) Performed COTS Input Signal Conditioner (ISC) requirements review and developed a preliminary design.

2. (U) FY 1997 PLAN:

- (U) ($13,464) Develop and test prototype middleware software that migrates AN/UYS-2A application from MIL proprietary closed systems to Commercial-Off-The-Shelf (COTS) based Open System Architecture that reuses existing legacy
AN/UYS-2A software.

- (U) ($3,250) Develop and test prototype COTS Input Signal Conditioner (ISC) in support of the AN/UYS-2 COTS Variant (ACV) effort.

- (U) ($750) Build a prototype ALFS/SH-60 COTS enclosure that reduces environmental conditions at the board level.

000376

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604507N PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor PROJECT NUMBER: V1440 PROJECT TITLE: EMSP

- (U) ($3,718) Support software development, integration, testing, and critical engineering design support for the Development and Operational Testing (DT/OT) for ALFS, AN/SQQ-89, P-3C, AN/BSY-2 and DDG 993 systems.

- (U) ($558) Portion of extramural program reserved for Small Business Innovative Research (SBIR) assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($3,462) Support software changes for integration, testing, and critical engineering design support for Development and Operational Testing (DT/OT) for ALFS, AN/SQQ-89, P-3C, AN/BSY-2 and DDG 993 systems.

4. (U) FY 1999 PLAN:

- (U) ($3,224) Support software changes for integration, testing, and critical engineering design support for Development and Operational Testing (DT/OT) for ALFS, AN/SQQ-89, P-3C, AN/BSY-2 and DDG 993 systems.

(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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	14,377	3,718	3,481	3,257

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604507N PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor PROJECT NUMBER: V1440 PROJECT TITLE: EMSP

(U) Adjustments from FY 1997 PRESBUDG:	-301	+18,022	-19	-33
(U) FY 1998/1999 PRESBUDG Submit:	14,076	21,740	3,462	3,224

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease of $301K in FY 1996 is due to minor pricing adjustments (-$17K) and SBIR Transfer (-$284K). Increase of $18,022K in FY 1997 is the result of a Congressional Plus Up of $19,000K and a decrease for Congressional undistributed reductions of $978K. Reduction of $19K in FY 1998 is due to minor pricing adjustments. Decrease of $33K in FY 1999 is due to minor pricing adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

	FY 1996	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO ESTIMATE	TOTAL COMPLETE PROGRAM
(U) OPN Line 102	6,281	1,983	1,962	2,484	2,420	2,478	2,531	2,591	CONT.	CONT.
(U) OPN Line 76										

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604507N PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor PROJECT NUMBER: V1440 PROJECT TITLE: EMSP

26,100	0	0	0	0	0	0	0	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0204311N (Integrated Surveillance System) Provides funding for SURTASS unique interfaces.

(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:

See attached.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Software Development	6,582	13,632	600	500
b. Systems Engineering	4,541	5,160	1,197	1,194
c. Integrated Logistics Support	1,200	900	600	500
d. Configuration Management	150	100	60	50
e. Project Management Support	1,425	1,200	800	800
f. Travel	78	70	70	70
g. Miscellaneous	100	120	135	110
h. SBIR	0	558	0	0
TOTAL	14,076	21,740	3,462	3,224

000280

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program

Not applicable.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604507N
PROGRAM ELEMENT TITLE: Enhanced Modular Signal Processor

PROJECT NUMBER: V1440
PROJECT TITLE: EMSP

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DATE: February 1997

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 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
W2232 CV Launch and Recovery Systems	10,938	6,285	9,225	10,494	9,027	9,359	9,752	7,068	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Navy unique program addresses the Engineering and Manufacturing Development (E&MD) of all systems required to 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 the ship s company 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: February 1997

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 1996 ACCOMPLISHMENTS:

- (U) ($3,049) Conducted Milestone II decision to proceed to E&MD and award a contract for the ICOLS/LRLS Engineering Development Models (EDM).
- (U) ($4,565) Conducted Milestone II decision to proceed to E&MD and completed fabrication of ICOLS/IFLOLS EDMs and started Technical Evaluation (TECHEVAL)
- (U) ($1,070) Completed documentation to conduct a Milestone II decision to proceed to E&MD and initiate design and integration of the ISIS EDM.
- (U) (2,254) Completed documentation to conduct a Milestone II decision to proceed to E&MD and initiate design and integration of the ADMACS EDM.

2. (U) FY 1997 PLAN:

- (U) ($425) Award a contract to deliver of ICOLS/LRLS EDMs, perform critical design review (CDR), and conduct TECHEVAL.
- (U) ($3,358) Complete TECHEVAL and start Operational Evaluation (OPEVAL) of the ICOLS/IFLOLS EDM.
- (U) ($1,875) Conduct Milestone II decision to proceed to E&MD, complete design and integration of the ISIS EDM, conduct shorebased TECHEVAL and start installation of the ISIS EDM on USS THEODORE ROOSEVELT (CVN 71).
- (U) ($600) Conduct Milestone II decision to proceed to E&MD, continue design and integration of the ADMACS EDM.
- (U) ($27) Portion of program reserved for Small Business Innovation Research in accordance with 15 U.S.C. 638.

0384

DATE: February 1997

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

3. (U) FY 1998 PLAN:

- (U) ($910) Complete evaluation of the ICOLS/LRLS EDM and conduct Milestone III decision to proceed to production.
- (U) ($2,565) Complete OPEVAL of the ICOLS/IFLOLS EDM and prepare documentation for a Milestone III decision to proceed to production.
- (U) ($2,525) Complete installation of the ISIS EDM on CVN 71 and conduct shipboard TECHEVAL.
- (U) ($3,225) Complete design and integration of the ADMACS EDM, conduct shorebased TECHEVAL and start installation of the ADMACS EDM on USS GEORGE WASHINGTON (CVN 73).

4. (U) FY 1999 PLAN:

- (U) ($600) Conduct Milestone III decision for the IFLOLS to proceed production.
- (U) ($2,630) Complete installation of the ADMACS EDM on CVN 73, conduct shipboard TECHEVAL and OPEVAL and prepare documentation for a Milestone III decision to proceed to production.
- (U) ($1,540) Initiate design and integration of the ALRCS EDM.
- (U) ($3,724) Initiate design and integration of the VISUAL EDM.
- (U) ($2,000) Initiate design and integration of the ADMACS EDM variant for LHA/LHD class ships.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	10,988	6,571	9,331	11,254
(U) Appropriated Value		6,571		
(U) Adjustments from Pres Budget:	-50	-286	-106	-860
(U) FY 1998/99 President s Budget Submit	10,938	6,285	9,225	10,494

DATE: February 1997

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 1996 decrease of $50 thousand resulted from the F-16 Jordanian Rescission and the Small Business Innovation Research assessment. FY 1997 reflects a decrease of $286 thousand for Congressional undistributed reductions. FY 1998 reflects a decrease of $106 thousand for Navy Working Capital Fund (NWCF) and minor pricing adjustments. FY 1999 reflects a decrease of $800 thousand due to the decision to delay the start of the ALRCS program from FY 1998 to FY 1999, and an increase of $40 thousand due to NWCF and minor pricing adjustments.

(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 (PE 020416N, Aircraft Launch and Recovery Equipment)										
	0	0	2,850	17,500	20,200	16,200	16,200	16,200	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603512N (Carrier Systems Development)

000386

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Program Milestones	IFLOLS: 1Q MSII LRLS: 4Q MSII	ADMACS: 2Q MSII ISIS: 2Q MSII ALRCS: 2Q MSII	1Q LRLS: MSIII VISUAL: 2Q MSII	IFLOLS: 1Q MSIII ADMACS: 2Q MSIII
Engineering Milestones	IFLOLS: 2Q CDR	LRLS: 3Q CDR ADMACS: 4Q CDR ISIS: 4Q CDR		ALRCS : 3Q CDR VISUAL: 3Q CDR
T&E Milestones		IFLOLS: DT(03/97) IFLOLS: OT (8/97-01/98) ISIS: DT (9/97-12/97)	ADMACS: DT (06/98-09/98) LRLS: DT (11/97-01/98)	ADMACS: OT (08/99-11/99)
Contract Milestones		LRLS: 1Q EDM Award		

DATE: February 1997

FY 1997 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 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	6,203	3,718	4,285	5,250
b. Software Development	2,790	1,886	3,053	3,147
c. Integrated Logistics Support	1,347	279	938	838
d. Development Test & Evaluation	598	375	949	1,259
e. SBIR	0	27	0	0
Total	10,938	6,285	9,225	10,494

000388

DATE: February 1997

RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation System 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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Complete	To Program	Total
Product Development											
NAWCAD-LKE	WR	10/01/97	N/A	N/A	1,910	9,298	6,085	9,025	10,294	CONT.	CONT.
TBD	FP	12/30/96	1,460	1,460	0	1,460	0	0	0	0	1,460
Support and Management					0	180	200	200	200	CONT.	CONT.
Test and Evaluation					0	0	0	0	0	0	0

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

DATE: February 1997

RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N PROJECT NUMBER: W2232
PROGRAM ELEMENT TITLE: Shipboard Aviation System PROJECT TITLE: CV Launch & Recovery Sys

	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Complete	To Program	Total
Subtotal Production Development	10,758	6,058	9,025	10,294	CONT.	CONT.
Subtotal Support and Management	180	200	200	200	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0
SBIR Assessment	0	27	0	0	0	27
Total Project	10,938	6,285	9,225	10,494	CONT.	CONT.

000290

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
S1828 Combat Readiness & Sustainability	975	709	744	872	871	943	964	986	CONT.	CONT.
S2054 Integrated Fire Protection/Damage Control	3,737	3,174	5,337	6,216	6,232	6,373	6,511	6,662	CONT.	CONT.
TOTAL	4,712	3,883	6,081	7,088	7,103	7,316	7,475	7,648	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.

000391

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 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 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
S1828 Combat Readiness & Sustainability	975	709	744	872	871	943	964	986	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 1996 ACCOMPLISHMENTS:

- (U) ($250) Finalized Navy Standard Electronic Power supply (NSEPS) specification and handbook.
- (U) ($725) Continued engineering development of electrical device for rapidly clearing weapon-induced faults located on a main bus duct or feeders.

2. (U) FY 1997 PLAN:

- (U) ($704) Complete engineering development of electrical fault clearing device and conduct land-based acceptance testing. Complete planning for full scale weapon effects T&E employing a blast/fragmentation warhead, shipboard generators, distribution system, and equipment loads.

000392

- (U) ($5) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($374) Conduct full scale weapon effects T&E of electrical fault clearing device.

- (U) ($370) Initiate development of damage tolerant structural fabrication techniques that prevent premature hull girder collapse due to local failures under weapon effects loading, and post-damage hull girder breaking dueto crack growth under sea state loading. Initiate full scale element testing of alternative details that limit crack growth as a result of severe hull girder bending following an underwater explosion.

4. (U) FY 1999 PLAN:

- (U) ($350) 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) ($522) Complete full scale element tests of alternative structural details that limit crack growth as a result of severe hull girder bending; develop design standards.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	975	1,523	743	873
(U) Adjustments from FY 1997 PRESBUDG:	0	-814	+1	-1
(U) FY 1998/99 PRESBUDG Submit:	975	709	744	872

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S1828
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Combat Readiness & Sustainability

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997: Near Term Mine Warfare Plan and Congressional undistributed general reductions. FY 1998: Increase due to revised NWCF Rates. FY 1999: Decrease due to revised NWCF Rates.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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)

000394

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 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 1996	FY 1997	FY 1998	FY 1999
PROGRAM MILESTONES				
Engineering Milestones	4Q Electrical Fault Clearing Device Engineering Development Model		4Q Structural Detail 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 Detail Tests
Contracts Milestones (Not applicable)				

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROGRAM ELEMENT TITLE: Ship Survivability PROJECT NUMBER: S2054 PROJECT TITLE: Integrated Fire Protection/Damage Control

PROJECT NUMBER & TITLE	FY 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
S2054 Integrated Fire Protection/Damage Control	3,737	3,174	5,337	6,216	6,232	6,373	6,511	6,662	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 information management 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 1996 ACCOMPLISHMENTS:

- (U) ($405) Completed development of a Damage Control System (DCS) database/operating system compatible with DDG 51 FLT IIa computer hardware.
- (U) ($124) Completed DCS installation and system check-out aboard the ex-USS SHADWELL.
- (U) ($1,488) Completed development of doctrine for major machinery space fires. Conducted firefighting experiments based on fleet identified issues. Completed upgrade of the ex-USS SHADWELL.
- (U) ($250) Completed land-based Real Time Damage Tracking (RTDT) fire and smoke sensor system evaluations. Initiated planning for shipboard performance evaluations. Prepared preliminary performance specification.

000396

- (U) ($350) Initiated development of standardized human/computer interface (HCI) guidelines that support tailoring of DCS presentation formats and hardware for each responsible decision-making personnel.

- (U) ($405) Initiated development of a training course curriculum for DCS along with associated materials, including an embedded tutorial.

- (U) ($120) Installed water mist fire extinguishing system engineering development model aboard the ex-USS SHADWELL.

- (U) ($150) Continued development of recommended engineering solutions for MISHAP/JAG investigation deficiencies.

- (U) ($445) Installed DCS computer workstations aboard the CG 48 SMARTSHIP in support of demonstrating manpower reductions associated with networked communications and remote control of HM&E systems.

2. (U) FY 1997 PLAN:

- (U) ($850) Conduct 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) Conduct ship-based RTDT system evaluation and finalize specification.

- (U) ($100) Develop an interactive on-line reference implementation of NAVSEA Technical Manual (NSTM), Ch. 555, Shipboard Firefighting , that will enable firefighting personnel to effectively formulate and implement a plan-of-attack.

000397

- (U) ($250) Complete development of standardized HCI guidelines that support tailoring of DCS presentation formats and hardware.

- (U) ($465) Complete development of the training course curriculum for DCS. Incorporate modifications to DCS based on Fleet evaluations.

- (U) ($375) Initiate development of a DCS communications module that allows ships to transmit relief and restoration assistance requests/damage control data to accompanying ships in the battle group or shore locations. Identify software modeling approaches and offboard communication hardware integration options. Prepare software development plan.

- (U) ($490) Initiate 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. Identify combat system hardware integration approaches for transferring missile track and signature data to DCS. Prepare software development plan.

- (U) ($300) Conduct 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) ($ 44) Portion of extramural program reserved for Small Business Innovation Researach assessment in accordance with 15 U.S.C.638.

3. (U) FY 1998 PLAN:

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROJECT NUMBER: S2054
PROGRAM ELEMENT TITLE: Ship Survivability PROJECT TITLE: Integrated Fire Protection/Damage Control

- (U) ($866) Continue development of DCS communications module. Develop software requirements for a damage summary model that provides key information on damage location, available shipboard access routes and system status, and a DC attack plan model that identifies resource and damage control assistance requirements. Initiate software coding.

- (U) ($1,263) 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) ($1,250) Conduct fleet evaluations aboard the ex-USS SHADWELL to identify upgrades to DCS system displays to ensure rapid assimilation of data by the operator and effective system control.

- (U) ($350) Initiate evaluation of devices that reduce breathing inhalation temperatures during sustained high temperature firefighting operations enabling more efficient breathing and increased time on-station. Evaluate the suitability of thermoelectric cooling devices and phase change materials(PCMs) integrated with the open-circuit Self-Contained Breathing Apparatus (SCBA) to provide breathing air cooling.

- (U) ($122) Develop follow-on Emergency Escape Breathing Device (EEBD) procurement/ logistical documentation.

- (U) ($367) Initiate investigation of cold weather/ anti-exposure suits with heat retention capabilities to be utilized by DC personnel in the event of a flooding casualty.

- (U) ($169) Initiate survey to provide a firefighting/ damage control suit for boundary personnel that provides greater protection than coveralls, but less than firefighting ensembles.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROGRAM ELEMENT TITLE: Ship Survivability PROJECT NUMBER: S2054 PROJECT TITLE: Integrated Fire Protection/Damage Control

- (U) ($200) 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 and low voltage thermoelectric cooling devices inserted into firefighter s gloves, boots, socks, anti-flash hoods, and coveralls will be evaluated for suitability.

- (U) ($350) Initiate market survey of a high durability/ low maintenance, inherently buoyant, and inflatable life preserver to replace current life preservers to be used on flight deck and for all other shipboard evolutions.

- (U) ($200) Initiate evaluation of personnel monitoring systems integrated with DCS that will 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 track personnel location.

- (U) ($200) Initiate effort to provide improved Navy Laser Eye Protection (LEP) system for topside personnel.

4. (U) FY 1999 PLAN:

- (U) ($1,185) Continue development of DCS communications module. Continue software coding for damage summary model and DC attack plan. Initiate land-based T&E of selected offboard communication hardware; evaluate ability to transfer data between two sites.

- (U) ($1,548) Continue development of the pre-hit configuration module. Complete software coding. Initiate land-based T&E of selected CS integration hardware; evaluate ability to track missile and predict hit point using simulated missile flight profiles and signatures.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N PROGRAM ELEMENT TITLE: Ship Survivability PROJECT NUMBER: S2054 PROJECT TITLE: Integrated Fire Protection/Damage Control

- (U) ($1,240) Conduct fleet evaluations aboard the ex-USS SHADWELL utilizing a complete DC command structure in support of developing improved total-ship communication and coordination procedures for rapidly restoring combat mission capability.
- (U) ($400) Conduct shipboard evaluations of cold weather/ anti-exposure suits with body heat retention systems.
- (U) ($400) Continue evaluation of devices that reduce breathing inhalation temperatures during sustained high temperature firefighting operations.
- (U) ($151) Conduct shipboard evaluations of a firefighting/ damage control suit for boundary personnel.
- (U) ($250) Continue evaluation of conditioned firefighting clothing that increases the time firefighters can remain on-station during extreme environments.
- (U) ($442) Continue identification of a high durability/ low maintenance, inherently buoyant, and inflatable life preserver to replace current life preservers to be used on flight deck and for all other shipboard evolutions.
- (U) ($200) Continue evaluation of personnel monitoring systems that will 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 track personnel location.
- (U) ($400) Conduct full scale evaluation of improved Navy LEP system.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	3,780	5,309	3,226	3,737
(U) Adjustments from FY 1997 PRESBUDG:	-43	-2,135	+2,111	+2,479

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

(U) FY 1998/99 PRESBUDG Submit:	3,737	3,174	5,337	6,216

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease due to minor pricing adjustments.
FY 1997 decrease due to Near Term Mine Warfare Plan (-$2,000K) and minor pricing adjustments.
FY 1998 and FY 1999 increases due to program restructuring.

(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 Line BA1/81HB/0910/HB008									
0	0	7500	10500	4300	4100	TBD	TBD	TBD	
(U) OPN 1INE 902091 (Battle Dress)									
625	4000	8000	8075	8266	TBD	TBD	TBD	TBD	

(U) RELATED RDT&E:

(U) PE 0603514N, Project S1565 (Fire Protection/Damage Control Systems)

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

D. (U) SCHEDULE PROFILE:

PROGRAM MILESTONES	FY 1996	FY 1997	FY 1998	FY 1999
Engineering Milestones		4Q DCS Training Curriculum Materials		
		4Q DCS HCI Guidelines		
		4Q Interactive Firefighting Reference		
	4Q RTDT Performance Specification (Preliminary)	4Q RTDT Performance Specification (Final)		
		4Q DCS Communication Module Software Development Plan	4Q DCS Communication Module Software 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 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

	FY 1996	FY 1997	FY 1998	FY 1999
PROGRAM MILESTONES				
T&E Milestones	4Q Major Machinery Space Firefighting Tactics and Doctrine Evaluations 4Q RTDT System Land-based Evaluations		4Q DCS Fleet Evaluations	4Q Firefighting Breathing Coding System Evaluations (Preliminary) 4Q Conditioned Firefighting Clothing Evaluations (Preliminary) 4Q Life Preserver

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: Feb 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability

PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control Evaluations (Preliminary)

4Q Personnel Monitoring System Evaluations (Preliminary)

Contract Milestones: None

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: Feb 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604516N
PROGRAM ELEMENT TITLE: Ship Survivability
PROJECT NUMBER: S2054
PROJECT TITLE: Integrated Fire Protection/Damage Control

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

PROJECT COST CATEGORIES	FY 1996	FY 1997	FY 1998	FY 1999
a. Engineering Assessments/ Design Studies	150	200	625	362
b. Test and Evaluation	2,408	1,054	2,796	4,513
c. Software Development	1,160	1,350	1,896	1,321
d. Training Development	0	550	0	0
e. Travel	20	20	20	20
TOTAL	3,738	3,174	5,337	6,216

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

000405

1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 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 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
NTDS SOFTWARE IMPROVEMENTS										
U1604	15,154	9,848	11,325	9,781	8,735	4,271	4,354	4,444	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 Integrated Combat Defense System (ICDS) 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.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT NUMBER: U1604 PROJECT TITLE: NTDS SOFTWARE IMPROV.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($7,454) Completed coding of Level 2 functionality, software integration and Contractor Development Test and Evaluation (CDT&E).
   - (U) ($4,144) Began and completed all test procedures, Combat System Simulation (CSS) modifications, began ACDS Block 1 Level 2 Program Acceptance Test (PAT) and participated in the CV/CVN CSIT and CSIT of the LHD program.
   - (U) ($2,256) Completed curriculum and conducted training of the system to the lead ship (CVN 69) crew.
   - (U) ($502) Commenced CVN-69 system installation at Newport News Naval Shipyard and participated in the Cooperative Engagement Capability (CEC) Fleet introduction.
   - (U) ($798) Conducted initial DT/OA events for CVN-69. Conducted Developmental Tests (DT) at the Integrated Combat System Test Facility (ICSTF) (DT-IIB, B1-1 & B1-2) and at NSWC/PHD Dam Neck (DT-IIB2). Conducted Operational Assessments (OA) throughout FY 1996 (OT-IIB1 and 2).

2. (U) FY 1997 PLAN:

   - (U) ($5,115) Complete PAT and CSIT on the ACDS Block I Level 2 computer program. Deliver a certified program to CVN-69 for System Integration Test (SIT), fast cruise, sea trials, participate in CEC IOC events and continue to correct priority TRs reported from the fleet. (10/1/96 - 9/30/97)
   - (U) ($215) Complete LHD-1 system installation, on board training, and participate in the CEC IOT&E events.
   - (U) ($413) Complete crew training on the LHD-1 and follow on training on the CVN69 and LHD 1 in the spring.
   - (U) ($721) Continue to conduct DT/OT testing on the lead ship (CVN-69) and perform saftey certification, TECHEVAL (8/97) and OPEVAL (10/97) of the Level 2 computer program.
   - (U) ($575) Begin preparations and required documentation for ASN(RDA) Formal Review to achieve Milestone III.
   - (U) ($2,666) Begin and complete all new or modified code required to develop Level 2.1, which will implement Tactical Ballistic Missile Defense (TBMD) messages within ACDS Block I and will allow for ACDS Block I installation on the LHD ship class.
   - (U) ($143) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV.
PROJECT NUMBER: U1604
PROJECT TITLE: NTDS SOFTWARE IMPROV.

3. (U) FY 1998 PLAN:

- (U) ($4,304) Complete level 2 delivery, conduct a successful OPEVAL (10/29/97) and achieve Milestone III (4/98).
- (U) ($760) Begin the development of Interactive Courseware (ICW) for the ACDS Block training.
- (U) ($871) Complete required test events on the CVN-69 and complete MS III requirements.
- (U) ($1,000) Participate in formal CEC DT/OT events and OPEVAL testing.
- (U) ($1,090) Complete development and testing of Level 2.1 and continue to implement corrections against operational deficiencies.
- (U) ($3,300) Complete system development for ACDS Block I Level 3 which integrates the Ship Self Defense System (SSDS), complete test procedures, conduct Fleet Qualification Testing (FQT), correct program efficiencies and begin CSIT in anticipation for delivery in FY 1999.

4. (U) FY 1999 PLAN:

- (U) ($500) Test and implement the ICW capability at the Naval Training facilities and continue to update and change program in order to accommodate ACDS Block I program requirements.
- (U) ($6,908) Complete CSIT program certification of ACDS Block I Level 3 (SSDS integration), prepare for installation, and participate in the ACDS Block I Level 3 Follow On Test and Evaluation (FOT&E) and required test events on various hulls.
- (U) ($2,373) Continue to implement new improvements and upgrades/functionality to the ACDS Block I computer program to evolve with the demands of technology, including new sensor, weapon, and data/link interfaces.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	15,359	10,280	11,530	9,408
(U) Adjustments from FY 1997 Presidential Budget:	-205	-432	-205	+373
(U) FY 1998 / FY 1999 Presidential Budget Submit:	15,154	9,848	11,325	9,781

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604518N PROJECT NUMBER: U1604
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV. PROJECT TITLE: NTDS SOFTWARE IMPROV.

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: Funding decrease in FY 1996 is due to minor pricing adjustments. Decrease in FY 1997 Congressional Undistributed General adjustments. Decrease in FY 1998 is due to Interactive Course Ware (ICW) development (+760) and NWCF rate adjustments. Increase in FY 1999 is due to the ICW development effort and NWCF rate adjustments.
(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) O&M 0708017N/486N/46N80 Ship System Tactical	2,532	5,368	9,225	12,020	12,917	14,798	15,538	16,315	CONT.	CONT.
(U) SCN PMS-312 CVN-76	1,300	500	500	0	0	0	0	0	0	3,300
(U) SCN PMS-312 CVN-68	3,300	0	0	0	0	0	0	0	3,300	
(U) SCN PMS-317 LHD-7	3,300	0	0	0	0	0	0	0	3,300	

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)

000119

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604518N
PROGRAM ELEMENT TITLE: CIC CONVERSION/NTDS IMPROV.

PROJECT NUMBER: U1604
PROJECT TITLE: NTDS SOFTWARE IMPROV.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997		FY 1998	FY 1999
Program Milestones		1Q L2 FIS CVN-69	3Q MS III		
		2Q L2 FIS LHD-1		4Q FIS CVN-68	4Q FIS CVN-76
				4Q FIS LHD-7	4Q FIS LPD-17
Engineering Milestones	2Q L2 SRR	2Q L3 SRR			
		3Q L2.1 CDR/SDR		4Q L3 SDR/CDR	
T&E Milestones		1-4Q L2 PAT		1Q L2 CVN SIT	1Q L3 FQT
		2-4Q CSIT		2Q L2 LHD SIT	2Q L3 CSIT
		1-4Q L2 DT		2Q L2 IOT&E	
		4Q L2 OA		4Q L2 TECHEVAL	1Q L2 OPEVAL
				1-4Q L2 CSIT	
Contract Milestones	3Q LCM/SIM				
	CONTRACT AWARD				

000111

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604518N
PROGRAM ELEMENT TITLE: CIC Conversion/NTDS Improvement

PROJECT NUMBER: U1604
PROJECT TITLE: NTDS Software Improvements

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. S/W Development and Integration	8,401	5,272	7,912	7,076
b. TDA/PAT Conduct/Training/System Engineering	3,526	2,114	1,500	1,300
c.Operating System License/Technical Support	321	190	200	200
d. Integrated Logistics Support	150	270	150	100
e. Risk Assessment	30	20	0	0
f. Configuration Management	150	50	50	50
g. IV&V Agent / Test Support	1,137	698	400	300
h. DT/OT Efforts	797	571	453	385
I. Test Facilities / HDW and Development	100	200	200	200
j. Engineering / MSS Support	135	175	150	110
k. Installation Costs / ED Hardware	344	85	250	0
l. Travel	63	60	60	60
m. Miscellaneous /SBIR	0	143	0	0
Total	15,154	9,848	11,325	9,781

000112

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604518N
PROGRAM ELEMENT TITLE:CIC Conversion/NTDS Improvements

PROJECT NUMBER: U1604
PROJECT TITLE: NTDS Software 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 FY1995 &Prior	FY1996 Budget	FY1997 Budget	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	0	106,521
Hughes Aircraft Co. San Diego, CA	SS/CPFF	05/94	39,621	39,621	5,283	5,665	3,271	6,332	5,786	13,284	39,621
NCCOSC / RDTE DIV San Diego, CA	WR	Various	47,718	47,718	36,378	3,526	2,114	1,500	1,300	2,900	47,718
Miscellaneous Contractor	Various	Various	11,977	11,977	3,589	1,719	1,674	1,280	1,140	2,575	11,977
Misc Govt. Activities	Various	Various	3,305	3,305	1,765	360	630	160	160	230	3,305
Support and Management :											
Miscellaneous	Various	Various	953	953	158	135	175	150	110	225	953
Test and Evaluation :											
Miscellaneous	Various	Various	23,162	23,162	16,481	2,034	1,269	853	685	1,840	23,162

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604518N
PROGRAM ELEMENT TITLE:CIC Conversion/NTDS Improvements

PROJECT NUMBER: U1604
PROJECT TITLE: NTDS Software Improvements

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
Miscellaneous	Various	Various	Various	10,041	1,715	715	1,050	600	750	14,871

Support and Management : Not applicable.

Test and Evaluation : Not applicable.

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	163,577	12,985	8,404	10,322	8,986	19,739	224,013
Subtotal Support and Management	158	135	175	150	110	225	953
Subtotal Test and Evaluation	16,481	2,034	1,269	853	685	1,840	23,162
Total Project	180,216	15,154	9,848	11,325	9,781	21,804	248,128

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
F1941 AN/BSY-2	40,906	17,828	23,701	18,584	2548	0	0	0	0	1,813,531

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Chief of Naval Operations established the SSN 21 SEAWOLF and the AN/BSY-2 Combat System Top Level Requirements (TLR) in June 1986. The development objectives for AN/BSY-2 are: Meet the SEAWOLF combat system related TLR; develop an architecture which facilitates tactical improvements and future growth; and provide computer processes that improve response time from initial threat detection to weapon launch. AN/BSY-2 will provide new acoustic arrays which have improved self-noise characteristics and improved detection performance. It will provide computer aids to assist the operator in sensor, contact and weapon management, and will support employment of the most advanced submarine weapons from eight torpedo tubes. The system architecture has been partitioned to facilitate tactical improvements, future growth, and high availability. Software allowing for full system functionality is installed on board SEAWOLF and has been operating satisfactorily

(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 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996 ACCOMPLISHMENTS:

(U) ($10,199) Completed System Design Certification Test (SDCT) 2 integration. Completed all system integration necessary to install SDCT 2.
(U) ($12,691) Completed AN/BSY-2 SDCT 2. Completed all test readiness reviews certifying system ready to enter formal test. Completed final system acceptance by the Navy. Continued Joint Maritime Command Informatic Strategy (JMCIS)and Submarine Fleet Mission Program Library integration.
(U) ($12,097) Completed Combat System Installation Certification (CSIC) on the sea trial delivery system. Completed all Navy testing certifying the system is ready to go to sea trials.
(U) ($5,919) Delivered AN/BSY-2 system to Consolidated Shore Facility (CSF). The system was delivered in plac at the contractor facility and is fully operational supporting shipyard test problem correction of the firs system and its early at-sea testing/operation.

2. (U) FY 1997 PLAN:

(U) ($4,256) Complete integration and certification of JMCIS and Advanced Capability Torpedo (ADCAP) shallow water capability.
(U) ($4,252) Initiate CSIC II on the final delivery system. Initiate all Navy testing certifying the fina delivery system is ready to go to sea trials.
(U) ($4,274) Initiate Weapon System Accuracy Trial (WSAT) II. Initiate all combat system testing to certify tha the final delivery system and technical documentation fully support weapon firing.
(U) ($4,791) Initiate Post Shakedown Availability. Coordinate installation of JMCIS and resolution of system problems detected during shakedown.
(U) ($255) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

3. (U) FY 1998 PLAN:

(U) ($7,438) Program Operation and System Support (POSS) includes engineering services and support for designing and implementing system changes/fixes resulting from Technical Evaluation and Operational Evaluatic (TECH/OPEVAL). CSF operations provides a land based facility for fleet problem analysis and reconstruction, an software and hardware corrections of TECH/OPEVAL deficiencies; and verifies the system meets functiona requirements for acoustics and combat control.

(U) ($2,563) Technical Direction Agent (TDA) for AN/BQG-5A participates in the development Integrated Product Tea (IPT) and verifies the system meets functional requirements for the AN/BQG-5A(V)1 project at Lockheed Martin Corporation in Manassas.

(U) ($8,759) Test planning and conduct develops and directs shipyard testing and TECH/OPEVAL testing and provides analysis of the results. Also includes the procurement of TECH/OPEVAL assets and equipment necessary to complete testing.

(U) ($4,941) Engineering for the design and integration of a Commercial Off-the-Shelf technology replacement for the Enhanced Modular Signal Processor (EMSP) and related obsolete equipment.

4. (U) FY 1999 PLAN:

(U) ($8,378) Continuing POSS includes engineering services and support for designing and implementing system changes/fixes resulting from TECH/OPEVAL. Continuing CSF operations provides a land based facility fc training, repair testing, fleet problem analysis and reconstruction, and software and hardware corrections. Continuing verification that the system meets functional requirements for acoustics and combat control.

(U) ($1,319) Continuing TDA for AN/BQG-5A participation in the development IPT and verify the system meets functional requirements for the AN/BQG-5A(V)1 project at Lockheed Martin Corporation in Manassas.

(U) ($6,247) Continuing test planning and conduct develops and directs shipyard testing and TECH/OPEVAL testin and provides analysis of the results. Also includes the procurement of TECH/OPEVAL assets and equipmen necessary to complete testing.

(U) ($2,640) Continuing engineering for the integration and test of the Engineering Development Model common acoustic processor to support EMSP replacement in FY00.

000417

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	41,814	18,952	16,378	13,923
(U) Adjustments from FY 1997 PRESBUDG:	-908	-1,124	+7,323	+4,661
(U) FY 1998/1999 PRESBUDG Submit:	40,906	17,828	23,701	18,584

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 - The net funding decrease of $908 is due to $250 for minor pricing adjustments and $658 for SBI transfer. FY 1997 - The net funding decrease of $1,124 is due to $745 for Congressional undistributed reductions ar $379 for minor NWCF adjustments. FY 1998 - The net funding increase of $7,323 is based on approval of $8,944 ($4,0(for development and integration of the EMSP replacement and $4,937 for completion of AN/BSY-2 program requirements and a reduction of $1,529 for minor NWCF adjustments and $92 for inflation and other minor adjustments. FY 1999 - Th net funding increase of $4,661 is based on approval of $5,000 ($2,126 for development and integration of the EMS replacement, $2,000 for development of future weapons upgrade and $874 for TECH/OPEVAL support) and a reduction c $228 for minor NWCF adjustments and $111 for inflation and other minor adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

000118

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N
PROGRAM ELEMENT TITLE: Submarine Combat System
PROJECT NUMBER: F1941
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.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Full Scale Development/POSS	21,142	4,466	12,725	11,319
b. Technical Data Agent/In-Service Engineering Agent	14,424	10,131	8,546	6,033
c. Naval Surface Warfare Center	305	0	0	0
d. Program Assessment	356	0	0	0
e. Other In House	423	226	359	65
f. Contractor Support Services/ Management Support Services	3,805	2,605	1,771	1,067
g. Travel	451	400	300	100
Total	40,906	17,828	23,701	18,584

000120

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
LMC, Syracuse, NY	C/FPI	12/87	1,206,417	1,206,417	1,188,463	17,954	0	0	0	0	1,206,417
LMC, Syracuse, NY	C/FF	12/95	35,728	35,728	0	3,188	4,466	12,725	11,319	2,548	34,246
Raytheon, Portsmouth,RI	C/FPI	2/91	22,318	22,318	22,318	0	0	0	0	0	22,318
AT&T, Greensboro,NC	C/FPI	2/91	39,912	39,912	39,912	0	0	0	0	0	39,912
IBM Manassas, VA	FFP	3/86	16,800	16,800	16,800	0	0	0	0	0	16,800
NUWC Newport, RI	WR	11/96	297,473	297,473	274,783	9,891	6,255	3,966	2,578	0	297,473
NSWC Crane, IN	WR	11/96	15,650	15,650	15,345	305	0	0	0	0	15,650
NTSC Orlando, FL	WR	11/96	5,257	5,257	5,257	0	0	0	0	0	5,257
Miscellaneous	Various	Various			34,215	874	626	659	165	0	36,539
Support and Management											
EG&G, Rockville MD	C/CPAF	10/87	81,005	81,005	71,264	3,805	2,605	1,771	1,067	0	80,512
NUWC, Newport RI	WR/RC	11/96	38,697	38,697	31,133	3,533	2,876	700	455	0	38,697
MITRE, McLean VA	MIPR	11/96	7,094	7,094	6,738	356	0	0	0	0	7,094
Test and Evaluation			0	0	0	0	0	0	0	0	

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604524N PROJECT NUMBER: F1941
PROGRAM ELEMENT TITLE: Submarine Combat System PROJECT TITLE: AN/BSY-2

GOVERNMENT FURNISHED PROPERTY

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										
Miscellaneous	Various	Various	Various	3,236	0	0	0	0	0	3,236
Support and Management 0					0	0	0	0	0	0
Test and Evaluation										
Miscellaneous	Various	Various	Various	500	1,000	1,000	3,880	3,000	0	9,380

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FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604524N
PROGRAM ELEMENT TITLE: Submarine Combat System
PROJECT NUMBER: F1941
PROJECT TITLE: AN/BSY-2

	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	1,600,329	32,212	11,347	17,350	14,062	2,548	1,677,848
Subtotal Support and Management	109,135	7,694	5,481	2,471	1,522	0	126,303
Subtotal Test and Evaluation	500	1,000	1,000	3,880	3,000	0	9,380
Total Project	1,709,964	40,906	17,828	23,701	18,584	2,548	1,813,531

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604524N
PROGRAM ELEMENT TITLE: Submarine Combat System

PROJECT NUMBER: F1941
PROJECT TITLE: AN/BSY-2

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FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development

(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
F1947 New Design SSN HM&E	220,317	271,930	215,280	144,015	126,576	120,578	76,440	98,183	272,700	1,820,946
F1950 New Design SSN Combat System Development	103,985	100,287	95,796	66,348	62,330	69,179	51,499	58,049	125,659	899,467
TOTAL	324,302	372,217	311,076	210,363	188,906	189,757	127,939	156,232	398,359	2,720,413

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: A principal challenge to the U.S. Navy is to maintain the submarine fleet essential to defend American interests. The New Attack Submarine (New SSN) is being designed to meet the potential threats of the next century in a multi-mission capable submarine that has the ability to provide covert, sustained presence in denied waters. The primary goal of the program will be to develop an affordable yet capable submarine by evaluating a broad range of system and technology alternatives, and examining cost reduction, producibility improvement, and technical risk reduction. This Program Element (PE) provides the technology, prototype components, and systems to design and construct the New SSN and build in its Command, Control, Communications, and Intelligence (C4I) 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; (7) battle group support; and (8) 90 day basic functions.

(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.

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FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
F1947 New Design SSN HM&E	220,317	271,930	215,280	144,015	126,576	120,578	76,440	98,183	272,700	1,820,946

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project encompasses all the Hull, Mechanical and Electrical (HM&E) development efforts for the New SSN. The traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering process called Integrated Product and Process Development (IPPD). This serves to maintain the focus of multi-discipline teams consisting of Government, shipbuilder and suppliers. This process is essential to achieve the maximum cost reduction possible in a low rate production environment. The thrust of these efforts will be to develop and apply HM&E system technologies which enable design of an attack submarine system. This approach to technology innovation will enable advances in military capability, while proactively controlling development and acquisition costs, impacts on ship weight and volume, and technical risks. Leveraging and capitalizing on existing technologies and vendor bases for existing components from SSN 688I, TRIDENT, and SEAWOLF will minimize both cost and risk. Varying degrees of re-engineering of existing systems is required to adapt them to the new submarine's requirements and minimize vendor risks of constructing a new ship with overlapping technology development. Newly developing technologies will be transitioned from ongoing industry and Government research and development programs where doing so will offer substantial affordability payoffs, without sacrificing military capability. HM&E development will support a FY 1998 lead ship construction contract award.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

(U) ($188,458) Continued design and manufacturing of prototype and engineering development models for technologies and components such as: high speed diesel, main propulsion unit, ship service turbine generator, weapons stowage, handling and launch systems, propulsion shaft bearing, thrust bearing, electric power distribution components, electromagnetic signature reduction, air conditioning and refrigeration units, special hull treatments, interior communication (IC) systems, thin lined towed array handling system (TLTAHS), gas management (now integrated low pressure electrolyzer) system, and ship control system. Successfully installed and initiated at-sea evaluation of reverse osmosis desalination. Validated design and production processes for modular integrated decks and bow dome with detailed finite element models and small scale testing of constituent items. Continued to leverage the Office of Naval Research and Defense Advanced Research Projects Agency related research in stealth technologies and

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models to improve effectiveness of New SSN efforts. Continued design and development of propulsor including component evaluations on Large Scale Vehicle (LSV) evaluation. Continued system verification studies, tests, and analyses in support of ship design including signatures, survivability, and hydrodynamics analyses and testing. Successfully completed pressure hull confirmation model tests. Provided Design/Build Team program support at Navy labs, shipyards and in-house.

(U) ($2,669) Supported introduction of a second shipbuilder (Newport News) to promote competition as required by the 1996 Defense Authorization Act. Initiated development of tools, procedures and processes to transfer the New SSN design from the Design Agent (Electric Boat Corp.) to the follow shipbuilder. Initiated development of methods needed to execute the exchange of digital design information, making the data compatible with the follow shipbuilder systems/procedures.

(U) ($10,999) Conducted analysis in support of force effectiveness assessment and component performance trade-offs. Developed and maintained cost reducing approach to New SSN construction through use of IPPD's concurrent engineering and design/build philosophy. Conducted coordination of New SSN specifications at the shipbuilder. Provided cost estimating and validation of cost reduction ideas for New SSN overall design development. Continued Environmental Compliance and Pollution Prevention efforts. Received Chief of Naval Operations Award for Pollution Prevention.

(U) ($18,191) Continued development of: a New SSN logistic support concept, Reliability, Maintainability, and Availability (RM&A) modeling analyses of New SSN systems, concept definition and development of an Onboard Team Trainer, development of HM&E trainers, Operating and Support (O&S) cost research, and prototyping of an Integrated Weapons System Data Base environment that supports the Joint Continuous Acquisition Life Cycle Support (JCALS) concepts, evolving toward a "paperless ship." Developed plans for Live Fire Test and Evaluation (LFT&E) and Developmental Test (DT) and Operational Test (OT) efforts. Developed initial Vulnerability Assessment Report.

2. (U) FY 1997 PLAN:

(U) ($226,838) 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, IC systems, TLTAHS, bow dome, integrated low pressure electrolyzer system, ship control system, hydraulic actuators and valves and reverse osmosis desalination unit. Complete design and initiate testing of scaled prototype propulsor on LSV. Continue survivability (shock) qualification testing and analyses of various components. Continue system verification studies, tests, and analyses in support of ship design including signature,

hydrodynamics, and survivability analyses and tests. Provide Design/Build Team program support at Navy labs, shipyards and in-house.

(U) ($11,196) 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) ($21,972) Continue development of logistic support concept for Commercial-Off-The-Shelf (COTS) configuration items, conduct RM&A modeling analyses of New SSN systems, concept definition and development of an Onboard Team Trainer, development of HM&E trainers, O&S cost research, and prototyping of a digital data environment that supports the JCALS concepts. Prepare test plans associated with Developmental Testing. Conduct engineering evaluation of test results. Conduct LFT&E modeling and analysis.

(U) ($6,388) Extension of Digital Data Exchange of all data between the Navy and shipbuilder. Provide IPPD, Design/Build team program support at shipyards, Navy Labs and in-house. Conduct feasibility studies and engineering evaluation of the feasibility of incorporating late emergent technologies into later hulls of the New SSN. Conduct engineering review and analysis of shipyard and vendor proposed technology initiatives

(U) (5,536) Portion of extramural program reserved for Small Business Innovation Research (SBIR) Assessment in accordance with 15 U.S.C.638.

3. (U) FY 1998 PLAN:

(U) ($187,104) 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, TLTAHS, integrated low pressure electrolyzer system, ship control system, hydraulic actuators and valves and reverse osmosis desalination unit. Complete testing of scaled prototype propulsor on LSV 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, and survivability analyses and tests. Provide Design/Build Team program support at Navy labs, shipyards and in-house.

(U) ($5,798) 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 ideas for New SSN overall design development. Continue Environmental Compliance and Pollution Prevention efforts.

(U) ($22,378) Continue development of logistic support concept for COTS configuration items, conduct RM&A modeling analyses of New SSN systems, development of an Onboard Team Trainer, development of HM&E trainers, and prototyping of a digital data environment that supports the JCALS concepts. Prepare test plans associated with Developmental Testing. Conduct engineering evaluation of test results. Conduct LFT&E modeling and analysis. Continue the development of Test and Evaluation Master Plan in support of DT/OT IIB-DT/OT IIF.

4. (U) FY 1999 PLAN:

(U) ($115,784) 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, and survivability analyses and tests. Provide Design/Build Team program support at Navy labs, shipyards and in-house.

(U) ($5,898) 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) ($22,333) 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.

B. (U) PROGRAM CHANGE SUMMARY:

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	230,145	284,187	234,686	146,342
(U) Adjustments from FY 1997 PRESBUDG:	-9,828	-12,257	-19,406	-2,327
(U) FY 1998/1999 PRESBUDG Submit:	220,317	271,930	215,280	144,015

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY96 decrease of $9,828K is for a program adjustment (-5,800) and the Jordanian rescission (-265), and SBIR (-3,763). Decrease for FY1997 is attributable to NWCF adjustment (-5,683), general R&D adjustments (-5,683), undistributed reduction (-624), and canceled appropriations reduction (-267). Decrease in FY1998 and FY1999 are attributable to NWCF carryover and rates adjustment (-12,594/-652) minor POM adjustments (-150/-124) modeling and simulation adjustments (-996/-937) reductions due to funding constraints (-5,000/0) acquisition center forexcellence fa share adjustment (-127/-80) and inflation adjustment (-539/-534).

(U) Schedule: Not applicable

(U) Technical: Not applicable.

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FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1947 PROJECT TITLE: New Design SSN HM&E

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 Line 201300 PE: 0204281N	691,589	289,882	2,599,762	2,057,573	766,534	1,763,360	2,110,877	1,020,426	53,102,701	64,402,704
(U) SCN Line 201310 PE: 0204281N	98,706	490,511	0	0	0	0	0	0	0	589,21
(U) O&M,N Line BA-3 Subhead: 3B4K	0	0	0	303	312	321	331	341	352	1,96
(U) O&M,N Line BA-3 Subhead 3B1K	0	0	0	0	4,594	3,580	4,596	5,614	10,664	29,04
(U) OPN Line Item 1320 BA-1	0	0	0	0	0	0	14,255	1,744	15,978	31,97
(U) OPN Line Item 2762 BA-2	0	0	0	0	0	0	7,553	0	0	7,55
(U) OPN Line Item 5661 BA-4	0	0	0	0	0	0	5,952	2,728	20,328	29,00

(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)

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FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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:

Program Schedule

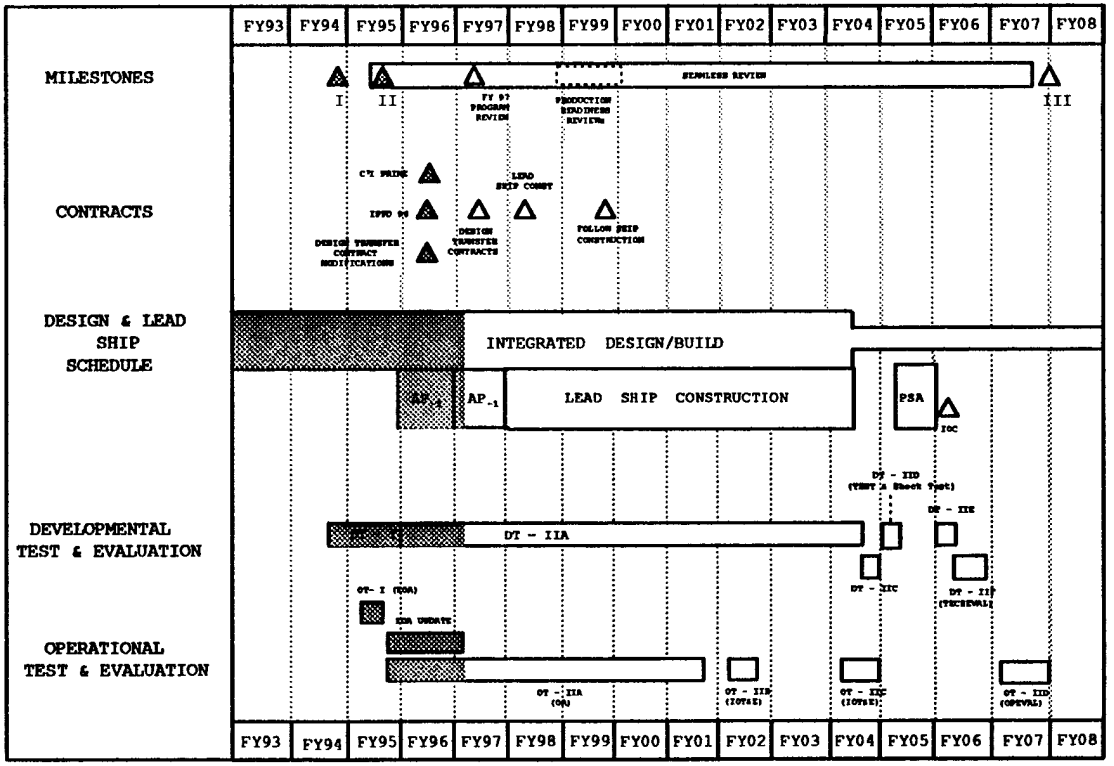


Exhibit R-

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FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Design/Management Support	1,686	1,218	1,240	1,260
b. On-Site Design Support	3,735	3,802	2,650	2,677
c. Mission Effectiveness	805	272	361	371
d. Subsafe/Safety	774	1,590	1,428	1,356
e. Environmental	5,991	5,641	5,107	4,555
f. Technical Specification Support	1,950	1,470	2,934	1,693
g. Cost Analysis	867	358	348	405
h. New SSN Ship & Module	0	33,897	11,263	1,005
i. Signature Reduction/Analysis	18,435	24,492	21,791	16,630
j. Survivability Engineering Development	7,756	14,914	26,746	20,215
k. Structural Engineering R&D	12,230	4,579	1,939	887
l. Main Propulsion Unit Development	29,657	26,324	22,878	11,035

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FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
m. Propulsion System Engineering Development	26,151	27,847	24,909	21,724
n. Electrical System Engineering Development	21,058	31,979	23,018	4,034
o. Auxiliary System Engineering Development	28,669	28,291	15,598	7,084
p. Materials/Coatings Engineering R&D	10,683	9,346	6,351	3,899
q. Weapons Launcher System Engineering R&D	17,176	13,394	9,177	9,707
r. Logistics	15,765	16,286	14,071	13,555
s. General Support	85	0	0	0
t. Test Support	1,735	0	0	0
u. Program Support	5,138	3,352	3,552	3,655
v. General Test Support	0	5,097	6,199	6,254
w. CFE Electronics Engineering Development	9,971	17,781	13,720	12,014
Total	220,317	271,930	215,280	144,015

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FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN SHEET DATE: February 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NSWC Carderock, MD	WR	VARIOUS	511,839	511,839	73,666	55,630	55,085	52,857	35,797	238,804	511,839
NSWC Carderock, MD	RC	VARIOUS	6,058	6,058	177	1,630	4,251	0	0	0	6,058
NUWC, Newport, RI	WR	VARIOUS	64,899	64,899	25,742	10,926	8,808	4,173	3,995	11,255	64,899
FISC, Norfolk, VA	RC	VARIOUS	4,504	4,504	0	2,254	2,250	0	0	0	4,504
SUPSHIP, Groton,CT	PD	VARIOUS	111,480	111,480	4,750	24,365	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	710	4,841	1,950	1,620	855	735	10,711
EB Corp., Groton, CT	SS/CPFF	10/93	72,121	72,121	72,121	0	0	0	0	0	72,121
EB Corp., Groton, CT	SS/CPFF	1/95	190,193	190,193	16,195	46,814	55,990	40,524	12,978	17,692	190,193
EB Corp., Groton, CT	SS/CPFF	1/95	43,418	43,418	43,418	0	0	0	0	0	43,418
EB Corp., Groton, CT	SS/CPFF	5/95	262,331	262,331	0	51,166	43,701	60,650	47,714	59,100	262,331
Newport News Shipbuilding, Newport News, VA	SS/CPFF	2/93	15,785	15,785	9,933	3,621	1,057	420	267	487	15,785
MISCELLANEOUS	VARIOUS	VARIOUS	173,036	173,036	18,032	10,910	57,353	21,140	21,500	44,101	173,036
Support and Management											
MISCELLANEOUS	VARIOUS	VARIOUS	60,308	60,308	7,820	6,053	6,901	7,238	7,452	24,844	60,308
Test and Evaluation											
MISCELLANEOUS	VARIOUS	VARIOUS	294,263	294,263	2,363	2,107	3,184	4,224	4,364	278,021	294,263

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROJECT NUMBER: F1947
PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT TITLE: New Design SSN HM&E

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	264,744	212,157	261,845	203,818	132,199	391,612	1,466,375
Subtotal Support and Management	7,820	6,053	6,901	7,238	7,452	24,844	60,308
Subtotal Test and Evaluation	2,363	2,107	3,184	4,224	4,364	278,021	294,263
Total Project	274,927	220,317	271,930	215,280	144,015	694,477	1,820,946

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FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

PROJECT NUMBER & TITLE	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
F1950 New Design SSN Combat System Development	103,985	100,287	95,796	66,348	62,330	69,179	51,499	58,049	125,659	899,467

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^{3}I 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 Integrated Product and Process Development (IPPD). This serves to maintain the focus of multi-discipline teams consisting of the Government, shipbuilder and suppliers. This process, which includes the C^{3}I 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 implementing an acquisition and implementation approach based on Open System, COTS Non-Developmental Items or subsystems; leveraging on-going subsystems developments; and developing new subsystems when needed to satisfy New SSN requirements. The recurring cost of future C^{3}I Systems are being reduced to meet the program's affordability goals. Modifications to many subsystems must be developed to: (1) reduce the shipbuilding and construction recurring costs through the use of COTS components; (2) use proven computer technologies to evolve to an Open System design; (3) enhance capabilities to support expanded operational requirements, reduced manning, and reduced shipboard 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^{3}I 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.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

(U) ($16,441) System level development activities continued in the following areas: development of test and integration plans for the C^{3}I System; Structurally Integrated Enclosure (SIE) interface development; conducted Phase II Open Critical Item Test; completed development of the Prime Item Development Specification (PIDS) for Simulation/Stimulation (SIM/STIM) equipment; development of C^{3}I System design data to support integration into the platform; and conducted system engineering functions such as requirements management, interface control, test and evaluation planning.

(U) ($1,300) Supported introduction of the follow-on shipbuilder (Newport News) to promote competition as required by the 1996 Defense Authorization Act. Initiated development of tools, procedures and processes to transfer the New SSN design from the Design Agent (Electric Boat Corporation) to the follow-on shipbuilder. Initiated development of methods needed to execute the exchange of digital design information, making the data compatible with the follow-on shipbuilder's systems/procedures.

(U) ($51,064) Received the Office of the Secretary of Defense (OSD) David M. Packard award for excellence in Acquisition Reform for the C^{3}I System Prime Contract. Conducted Source Selection and awarded New SSN C^{3}I Prime (Sonar, Combat Control and Architecture Subsystems) Engineering and Manufacturing Development and non-propulsion electronics integration contract to Lockheed Martin Federal Systems. Initiated Combat Control, Sonar and Architecture hardware design and development, software transition and development, and began development of logistics support.

(U) ($35,180) Continued development efforts to support unique requirements for other subsystems. Completed ESM and Imaging subsystem System Requirements Reviews and System Design Reviews, allocated systems requirements to each subsystem, and drafted interface specifications with other C^{3}I subsystems. Initiated development of design data to support platform integration.

2. (U) FY 1997 PLAN:

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

(U) ($13,352) System level development activities continue in the following areas: 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. Funds will be obligated beginning in Oct 1996 and ending Sept 1997.

(U) ($57,051) Continue Combat Control, Sonar and Architecture Subsystem development: continue detailed hardware design, software transition and development, development of logistics support, prepare for system integration and test, initiate procurement of test hardware and non-propulsion electronics systems integration. Complete Multi-purpose processor (MPP) software development for the New SSN C^3I Sonar Subsystem and the Navy s Acoustic Rapid COT: Insertion (A-RCI) effort. The MPP software will be developed and tested under the A-RCI development and incorporated into the New SSN C^3I System as a non-developmental item to minimize development risk to the New SSN C^3I program. Funds will be obligated beginning in Oct 1996 and ending Sept 1997.

(U) ($22,887) Continue development efforts to support unique requirements for other subsystems. Finalize ESM subsystem and Imaging interface definition with C^3I subsystems. Complete design level detail to support Preliminary and Critical Design Reviews. Funds will be obligated beginning in Oct 1996 and ending Sept 1997.

(U) ($5,000) Forward financing FY 98 requirements due to low FY 1996 execution rates.

(U) ($1,997) Portion of extramural program reserved for SBIR assessment in accordance with 15 U.S.C. 638.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

3. (U) FY 1998 PLAN:

(U) ($12,803) System level development activities continue 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. Funds will be obligated Beginning in Oct 1997 and ending Sept 1998.

(U) ($75,041) Continue Combat Control, Sonar, and Architecture subsystem development: complete Critical Design Review; continue detailed hardware/software development, logistics support, preparation for integration and test and procurement of test hardware and non-propulsion electronics intra-subsystem integration. Begin intersubsystem integration. Funds will be obligated begining in Oct 1997 and ending Sept 1998.

(U) ($7,952) 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. Funds will be obligated begining in Oct 1997 and ending Sept 1998.

000440

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

4. (U) FY 1999 PLAN:

(U) ($10,335) System level development activities continue in the following areas: SIE electronic 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. Funds will be obligated beginning in Oct 1998 and ending Sept 1999.

(U) ($50,740) Continue Combat Control, Sonar and Architecture subsystem development; complete hardware and software development; continue logistics support and the procurement of test hardware and non-propulsion electronics intra-subsystem integration. Continue intersubsystem integration. Funds will be obligated beginning in Oct 1998 and ending Sept 1999.

(U) ($5,273) Continue development efforts to support unique requirements for other subsystems. Deliver ESM and Imaging subsystem Engineering Development Model (EDM) to Technical Direction Agent for integration testing. Funds will be obligated beginning in Oct 1998 and ending Sept 1999.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	105,869	109,813	136,006	69,691
(U) Adjustments from FY 1997 PRESBUDG:	-1,884	-9,526	-40,210	-3,343
(U) FY 1998/1999 OSD/OMB Budget Submit	103,985	100,287	95,796	66,348

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 decrease of $1,884 is for the Jordanian Recission (-$121K) and the SBIR assessment (-$1,763K). The FY 1997 decrease of $9,526K is for undistributed reductions (-$2724K),NWCF adjustments (-$2,102K), C^3I contract savings (-$7,000K), GAO prior year savings (-$4,700K) and COTS MPP (+$7,000K). The FY 1998 decrease of (-$40,210K) is attributable to New SSN Combat System Restructuring and Realignment(-$10,217K), ASTECS Program restructuring (-$15,200K), NWCF rate and carryover adjustments (-$6,879K), reduction due to low expenditures (-$5,000K), reductions for Technical Training Equipment (-$2,077K), Modeling and Simulation reduction (-$460K), minor POM adjustments (-$121K) and Acquisition Center for Excellence (-$61K), and undistributed reductions (-$195K). The

FY 1999 decrease of $3,343K is also attributable to New SSN Combat System Restructuring and Realignment ($-5,470K), NWCF rate and carryover adjustments (-$731K), reductions for Technical Training Equipment (-$454K), Modeling and Simulation adjustment (-$402K), ASTECS Program restructuring (-5,549K), additional program adjustments (+$4,439K), adjustment due to low expenditures (+$5,100K), and Acquisition Center for Excellence (-$34K) and undistributed reductions (-$242K).

(U) Schedule: Not applicable.

(U) Technical: The sponsor directed a restructure of the ESM (formerly ASTECS) program. The restructure has reduced the technical scope and capability of the new ESM subsystem. The restructured ESM subsystem will meet the requirements of the New SSN Operational Requirements Document. The ND^3 functionality had previously been provided by the submarine Navigation Sensor System Interface (NAVSSI), a backfit program. The sponsor cancelled the submarine NAVSSI Backfit Program in FY 1996.

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) SCN Line 201300 PE: 0204281N	691,589	289,882	2,599,762	2,057,573	766,534	1,763,360	2,110,877	1,020,426	53,102,701	64,402,704
(U) SCN Line 201310 PE: 0204281N	98,706	490,511	0	0	0	0	0	0	0	589,217
(U) O&M,N Line BA-3 Subhead: 3B4K	0	0	0	303	312	321	331	341	352	1,960
(U) O&M,N Line BA-3 Subhead 3B1K	0	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	0	14,255	1,744	15,978	31,977
(U) OPN Line Item 2762 BA-2	0	0	0	0	0	0	7,553	0	0	7,553

000142

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

(U) OPN Line Item 5661 BA-4									
0	0	0	0	0	0	5,952	2,728	20,328	29,008
(U) OPN Line Item 256000									
0	0	0	0	14,543	17,947	21,509	21,454	0	76,740
(U) OPN Line Item 256005									
0	0	0	0	0	742	2,379	2,375	0	5,525

U) RELATED RDT&E:

(U) PE 0603504N (Advanced Submarine Combat Systems Development)
(U) PE 0603561N (Advanced Submarine System Development)
(U) PE 0603562N (Submarine Tactical Warfare Systems)
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)
(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0604503N (Submarine System Equipment Development)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)
(U) PE 0604574N (Navy Tactical Computer Resources)
(U) PE 0604777N (Navigation/ID Systems)

D. (U) SCHEDULE PROFILE:

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development

PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

Program Schedule

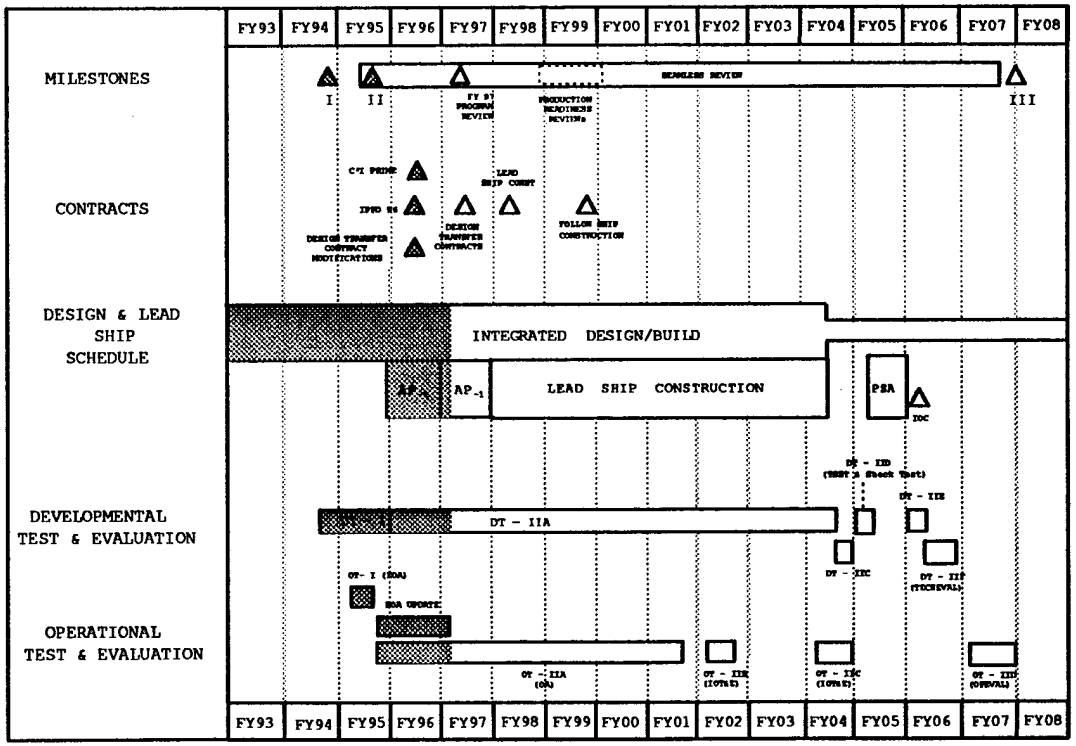


Exhibit R-2

000444

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. SONAR/COMBAT CONTROL/ARCHITECTURE	51,064	62,051	75,041	50,740
b. SYSTEM LEVEL	17,741	13,352	12,803	10,335
c. EXTERIOR COMMS	820	3,125	835	573
d. IMAGING	9,750	2,365	3,419	1,937
e. NAVIGATION	1,236	1,344	111	116
f. ND3	1,117	1,500	1,237	399
g. ESM	22,257	14,553	2,350	2,248
h. SBIR	0	1,997	0	0
Total	103,985	100,287	95,796	66,348

000445

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N PROGRAM ELEMENT TITLE: New Design SSN Development

PROJECT NUMBER: F1950 PROJECT TITLE: New Design SSN Combat System Development

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

PERFORMING ORGANIZATIONS Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	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	25,391	25,391	5,351	9,442	2,500	1,082	1,106	5,910	25,391
Digital Systems Resources, Fairfax, VA	SS/CPIF	3/94	43,203	43,203	28,403	7,800	7,000	0	0	0	43,203
Unisys Corp./ Loral, St. Paul, MN	SS/CPFF	4/94	2,500	2,500	2,500	0	0	0	0	0	2,500
Sperry Marine, Inc., Charlottsville, VA	SS/CPFF	12/93	2,598	2,598	2,598	0	0	0	0	0	2,598
EB Corp., Groton, CT	SS/CPFF	10/94	29,887	29,887	13,273	965	1,668	2,603	1,800	9,578	29,887
SPAWAR/ Applied Research Laboratory, Univ Texas	SS/CPIF	8/94	3,273	3,273	3,273	0	0	0	0	0	3,273
Lockheed Martin, Manassas, VA	SS/CPFF	8/94	5,158	5,158	5,158	0	0	0	0	0	5,158
NUWC, Newport, RI	VARIOUS	VARIOUS	210,909	210,909	64,502	23,972	16,676	8,520	13,735	83,504	210,909
Kollmorgen Northampton, MA	SS/FFP	1/94	4,840	4,840	4,840	0	0	0	0	0	4,840
Kollmorgen Northampton, MA	C/CPIF	1/95	22,032	22,032	4,500	9,500	1,665	3,606	2,761	0	22,032
Lockheed/ Martin, Syracuse, NY	C/FFP	7/95	35,881	35,881	3,350	18,526	12,980	500	500	25	35,881

PERFORMING ORGANIZATIONS Contractor/ Government	Contract Method/	Award/	Perform	Project	Total

000446

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN JUSTIFICATION SHEET DATE: February 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

Performing Activity	Fund Type Vehicle	Oblig Date	Activity EAC	Office EAC	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Lockheed/ Martin, Manassas, VA	C/CPAF	4/96	161,770	161,770	0	17,329	37,575	41,094	21,815	43,957	161,770
TBD	VARIOUS	VARIOUS	78,252	78,252	0	0	0	16,992	9,302	51,958	78,252
Miscellaneous	VARIOUS	VARIOUS	180,349	180,349	20,191	10,473	13,610	12,597	5,925	117,553	180,349
Support and Management											
NAVSUP/ SWL, Inc., Vienna, VA	C/CPFF	10/94	49,764	49,764	2,344	2,654	2,847	4,702	4,807	32,410	49,764
Miscellaneous	VARIOUS	VARIOUS	42,796	42,796	6,052	3,324	3,766	3,950	4,133	21,571	42,796
Test and Evaluation											
Miscellaneous	VARIOUS	VARIOUS	864	864	0	0	0	150	464	250	864

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604558N
PROGRAM ELEMENT TITLE: New Design SSN Development
PROJECT NUMBER: F1950
PROJECT TITLE: New Design SSN Combat System Development

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	157,939	98,007	93,674	86,994	56,944	312,485	806,043
Subtotal Support and Management	8,396	5,978	6,613	8,652	8,940	53,981	92,560
Subtotal Test and Evaluation	0	0	0	150	464	250	864
Total Project	166,335	103,985	100,287	95,796	66,348	366,716	899,467

000118

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
F1946 SSN 21 Development	79,411	87,524	49,542	27,731	9,247	4,755	28,280	2,297	0	1,683,976

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 1996 ACCOMPLISHMENTS:

- (U) ($20,497) Commenced and supported acoustic, noise, and deep submergence pre-Post Shakedown Availability (PSA) trials planning and analyses.
- (U) ($5,006) Completed Full Scale Shock (FSS-8) Test Vehicle overhaul and conducted A/B-1 shock test series.
- (U) ($14,985) Commenced emergent research, test and redesign program for titanium alloy forgings based on concerns raised over brittle fracture of weapons launch system hull closures.

- (U) ($6,964) Continued development of Advanced Special Hull Treatment (ASHT) Mold In Place (MIP) installation technology and at-sea test patches.

- (U) ($14,271) Completed integration of Data Distribution System, interface testing of the Ship Control System, and system and component interface during ship construction.

- (U) ($17,688) Completed qualification and testing of various systems and components. Continue Engineering Integration Testing analysis and testing. Continued Integrated Product Team execution of Risk Management Plans in all high risk areas.

2. (U) FY 1997 PLAN:

- (U) ($19,879) Full Ship Shock Test execution, deferred to future year effort. Funds unexecuted, subject to pending Department reprogramming action.

- (U) ($4,465) Continue development of ASHT including system qualification and inspection. Commence planning for FY98 trial installation on SSN21 (PSA).

- (U) ($43,504) Commence pre-PSA trials, e.g., acoustic trials, target strength trial, weapons/sonar certification. Continue FSST planning and environmental assessments. Continue Integrated Product Team execution of Risk Management Plans in all high risk areas. Continue deficiency assessment and resolution in acoustic silencing including propulsor. Complete component shock qualification efforts.

- (U) ($8,616) Development and final software configuration for non propulsion electronics (i.e. ship control, Weapons, Stowage and Handling System (WSHS), Exterior Communications System (ECS), monitoring) including final certification and test.

- (U) ($7,000) Commmenced emergent research, test and redesign program for wide aperture array.

000450

- (U) ($2,758) Completed emergent research, test and redesign program for titanium alloy forgings based on concerns raised over brittle fracture of weapons launch system hull closures.

- (U) ($1,302) Portion of extramural program reserved for Small Business Innovation Research Assessment in accordance with 15 U.S.C.638.

3. (U) FY 1998 PLAN:

- (U) ($18,000) Commence PSA installation of ASHT on SSN21.

- (U) ($12,499) Continue deficiency assessment and resolution in acoustic silencing including propulsor.

- (U) ($12,081) Complete pre-PSA trials, e.g., electromagnetic silencing, performance/standardization, and analysis of pre-PSA acoustic and target strength trial data. Continue FSST planning and environmental assessments. Start Operational Test (OT) planning. Continue risk management efforts.

- (U) ($6,962) Complete development, certification and final software configuration of Non-Propulsion Electronics (NPE) systems (ship control, WSHS, etc.) and weapons launch.

4. (U) FY 1999 PLAN:

- (U) ($16,057) Commence post-PSA trials, e.g., acoustic trials, target strength trial, weapons/sonar certification. Continue FSST planning and environmental assessments. Continue risk management efforts in all high risk areas. Continue Operational Test (OT) planning only.

- (U) ($5,946) Re-engineering and correction of deficiencies in Non Propulsion Electronics (NPE) systems including ship control, WSHS, ECS, etc.

- (U) ($4,639) Re-engineering and design to correct acoustic deficiencies including propulsor.

- (U) ($1,089) Complete post-PSA analysis of ASHT installation on SSN21.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	80,819	91,931	32,350	23,893
(U) Adjustments from FY 1997 PRESBUDG:	-1,408	-4,407	+17,192	+3,838
(U) FY 1998/1999 PRESBUDG Submit:	79,411	87,524	49,542	27,731

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 96 decrease of $1,408K is a result of BTR 96-09 CNO PA&E (-$32K),Jordian Recission (-$125K), Program Adjustment (-494K) and FY1996 SBIR Transfer (-757K). The FY 97 decrease of $4,407K is a result of FFRDC/Non-FFRDC (-645K), Navy Working Capital Funds (-1,838K), General R&D (-1,838K) and Canceled Appropriation (-86K). The FY 98 increase of $17,192K is to complete post PSA trials, start DT/OT planning and test execution and analysis, complete development certification and final software configuration of NPE systems and complete PSA installation of ASHT, qualification and inspection. The FY 99 increase of $3,838K is to complete DT/OT planning and test execution and analysis, re-engineering and correction of opeval/techeval deficiencies in NPE systems, re-engineering and design to correct acoustic deficiencies, and complete final analysis of trial results.
(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) SCN #201200									
700,649	660,065	159,286	31,027	663	16,324	17,448	13,346	0	8,095,368

(U) MILCON P-398

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

0	0	0	0	0	0	0	0	0	27,300
(U) OPN #094900, #051000									
4,835	57,179	6,442	29,187	37,185	11,715	11,891	12,098	0	349,157
(U) OPN #098000, #144500									
0	0	0	0	0	0	0	0	0	2,254

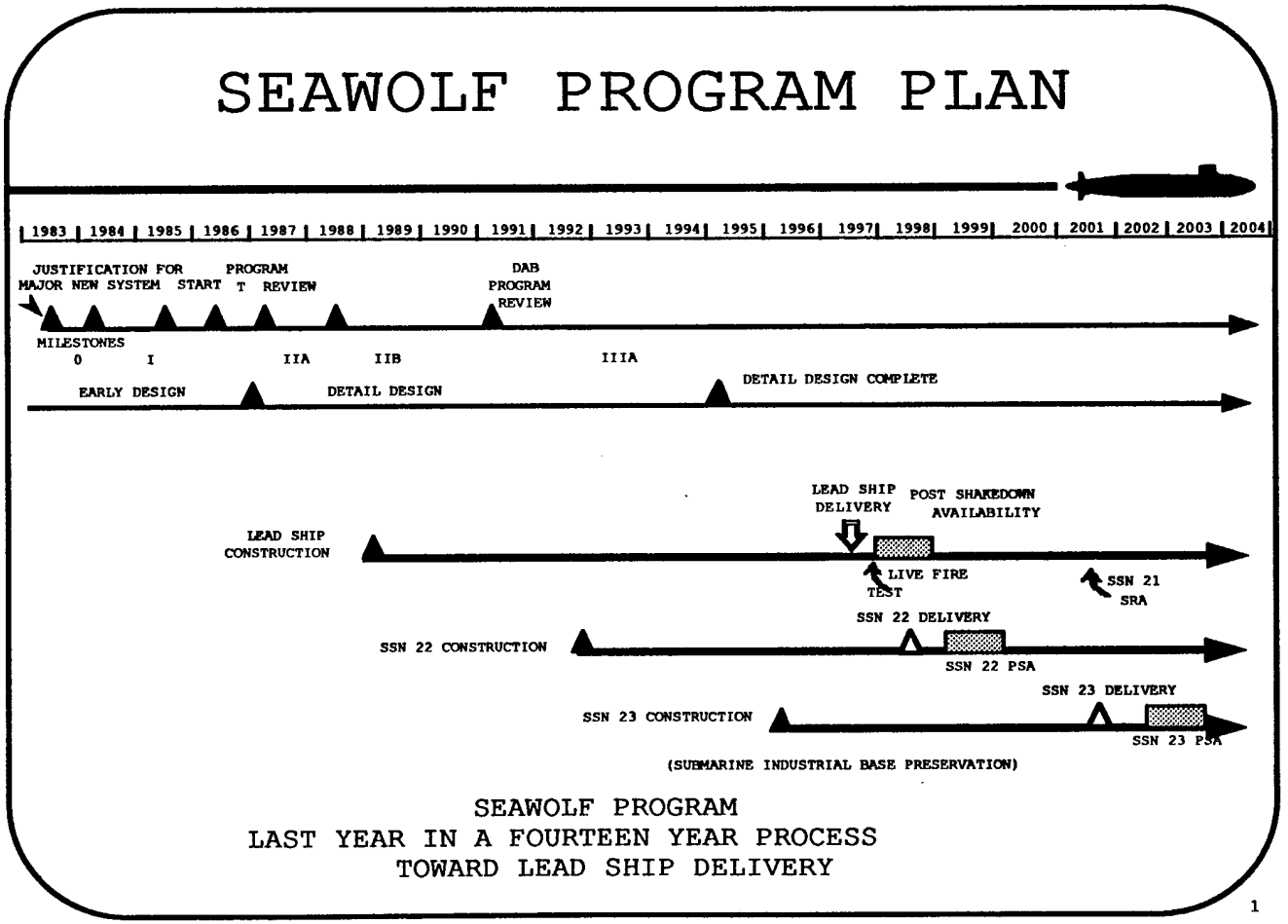
(U) RELATED RDT&E:

(U) PE 0603570N (Advanced Nuclear Power Systems)
(U) PE 0604524N (Submarine Combat Systems)
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)

000453

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT NUMBER: F1946 PROJECT TITLE: SSN 21 Development



30454

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Submarine Silencing	4,414	6,696	11,004	4,613
b. Advanced Ship Control	13,869	10,831	6,038	6,207
c. Improved Performance Machinery Program	1,187	493	50	0
d. Shock	14,111	2,251	0	0
e. Propulsor	3,553	2,715	995	26
f. Target Strength Reduction	6,768	18,301	4,203	1,089
g. Weapons, Stowage & Handling	1,159	1,490	2,924	219
h. Advanced Submarine Technology	9,022	5,435	2,816	1,493
i. Test & Evaluation	25,328	39,312	21,512	14,084
Total	79,411	87,524	49,542	27,731

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

PERFORMING ORGANIZATIONS

000455

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROJECT NUMBER: F1946
PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT TITLE: SSN 21 Development

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
General Dynamics											
Groton CT	SS/CPFF	7/83	345,875	345,875	306,432	11,150	20,333	4,979	849	2,132	345,875
Newport News Shipbuilding											
Newport News VA	SS/CPFF	4/87	116,384	116,384	109,336	2,412	1,594	2,621	421	0	116,384
NSWC											
Carderock MD	WR/RC	Various	324,621	324,621	281,314	10,140	12,294	12,583	5,602	2,688	324,621
Philadelphia Naval Shipyard											
PA	WR	10/93	13,058	13,058	13,058	0	0	0	0	0	13,058
NUWC											
Newport RI	WR	Various	51,178	51,178	30,977	6,451	5,160	3,626	2,982	1,982	51,178
NUWC											
Newport RI	RC	Various	17,323	17,323	16,811	249	263	0	0	0	17,323
Miscellaneous	Various	Various	429,083	429,083	412,798	7,049	3,903	2,297	1,020	2,016	429,083
Support and Management											
Miscellaneous	Various	Various	45,330	45,330	29,149	5,046	4,970	4,023	2,142	0	45,330
Test and Evaluation											
General Dynamics											
Groton CT	SS/CPFF	7/83	87,724	87,724	54,290	12,555	16,608	4,271	0	0	87,724
NSWC											
Carderock MD	WR	Various	87,216	87,216	48,762	14,998	10,621	8,594	1,881	2,360	87,216

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604561N PROGRAM ELEMENT TITLE: SSN 21 Development PROJECT NUMBER: F1946 PROJECT TITLE: SSN 21 Development

Miscellaneous	Various	Various	166,184	166,184	92,262	9,361	11,778	6,548	12,834	33,401	166,184

GOVERNMENT FURNISHED PROPERTY Not applicable

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604561N
PROGRAM ELEMENT TITLE: SSN 21 Development
PROJECT NUMBER: F1946
PROJECT TITLE: SSN 21 Development

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	1,170,726	37,451	43,547	26,106	10,874	8,818	1,297,522
Subtotal Support and Management	29,149	5,046	4,970	4,023	2,142	0	45,330
Subtotal Test and Evaluation	195,314	36,914	39,007	19,413	14,715	35,761	341,124
Total Project	1,395,189	79,411	87,524	49,542	27,731	44,579	1,683,976

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY:5 PROGRAM ELEMENT: 0604562N
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER TITLE	FY 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY2002 ESTIMATE	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S0236 SSN Combat System Improvement	35,457	21,837	45,663	32,376	18,304	8,726	16,649	26,053	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), Tomahawk Block IV, ADCAP torpedo improvements and several other miscellaneous enhancements. Navigation Sensor System Interface (NAVSSI) provides real-time, accurate positional and velocity information for distribution to Combat Control and other shipboard subsystems. CCS MK2 Program D0 Block 2 incorporates into submarine CCS anticipated upgrades to ADCAP, Tomahawk and Harpoon, and implements additional OER. Tomahawk Land Attack Missile - Nuclear (TLAM-N) Portable Launching System (PLS) provides SSN Submarines with a stand alone TLAM-N Missile launching capability.

000459

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY:5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
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 1996 ACCOMPLISHMENTS:
   (U) ($20,300) Completed System Design Certification Testing (SDCT) and Development Test (DT) for CCS MK2 Program D0 Block 1 A/B.

   (U) ($13,114) Obtained Milestone II and awarded contract for CCS MK2 Program D0 Block 1C development.

   (U) ($1,643) Specified and began development of NAVSSI for submarines.

   (U) ($400) Developed specifications for TLAM-N PLS.

2. (U) FY 1997 PLAN:
   (U) ($17,799) Continue development of CCS MK2 Program D0 Block 1C.

   (U) ($3,688) Obtain Milestone II and award contract for TLAM-N PLS.

   (U) ($350) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:
   (U) ($29,896) Commence SDCT for CCS MK2 Program DO Block 1C.

000460

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY:5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

(U) ($15,767) Continue development of TLAM-PLS.

4. (U) FY 1999 PLAN:
(U) ($22,531) Complete SDCT and begin DT for CCS MK2 Program DD Block 1C.

(U) ($9,845) Continue development of TLAM-PLS.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	37,269	22,899	41,054	34,235
(U) Adjustments from FY 1997 PRESBUDG:	-1,812	-1,062	+4,609	-1,859
(U) FY 1998/99 PRESBUDG Submit:	35,457	21,837	45,663	32,376

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 adjustments reflect minor pricing adjustments (-$43K), an SBIR transfer (-$619K), BTR 96-03 (-$900K) and BTR 96-28 (-$250K). FY 1997 adjustments are due to Congressional undistributed reductions (-$1,062K). FY 1998 adjustments are due to submarine combat restructuring (+$9,753K), cancel NAVSSI backfit (-$3,700K), various NWCF adjustments (-$993K), and other adjustments (-$451K). FY 1999 adjustments are due to submarine combat restructuring (+$4,830K), cancel NAVSSI backfit (-$3,900K), various NWCF adjustments (-$538K) and other adjustments (-$2,251K).

000461

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY:5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

(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	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN Line 54200										
	12,534	14,355	20,511	25,645	40,144	47,901	54,517	61,046	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.

000462

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY:5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	828	8,231	13,813	8,449
b. Software Development	15,345	5,545	16,087	8,771
c. Government Engineering Support/ Systems Engineering	14,662	6,938	8,786	3,689
d. Independent Software Nuclear Safety Analysis	0	0	1,275	0
e. Developmental Test and Evaluation	747	0	2,424	9,198
f. Program Management Support	2,035	703	2,100	1,102
g. Miscellaneous	1,840	420	1,178	1,167
Total	35,457	21,837	45,663	32,376

000463

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN February 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) 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											
Raytheon Portsmouth, RI	SS/FPI	Jun 94	18,916	18,916	10,195	8,721	0	0	0	0	18,916
Raytheon Portsmouth, RI	C/CPIF	Jun 96	46,000	46,000	0	7,243	9,847	16,213	9,019	3,678	46,000
TBD	C/CPFF	Jun 97	17,254	17,254	0	0	3,329	9,318	3,962	645	17,254
NUWC	WR	Oct 96	N/A	N/A	20,465	14,662	6,938	8,786	3,689	CONT.	CONT.
Cruise Missile Project Washington, DC	PD	Dec 96	N/A	N/A	2,730	228	300	5,334	3,924	CONT.	CONT.
Various	TBD	TBD	N/A	N/A	216,569	1,821	720	1,488	1,482	CONT.	CONT.

000464

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN February 1997

BUDGET ACTIVITY:5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management											
EG&G Rockville, MD	C/CPFF	Jun 90	13,668	13,668	13,668	0	0	0	0	0	13,668
EG&G Rockville, MD	C/CPFF	Sep 94	9,000	9,000	2,106	2,035	703	2,100	1,102	954	9,000
Test and Evaluation											
Various	TBD	TBD	N/A	N/A	2,290	747	0	2,424	9,198	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

000465

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN February 1997

BUDGET ACTIVITY:5 PROGRAM ELEMENT: 0604562N PROJECT NUMBER: S0236
PROGRAM ELEMENT TITLE: Submarine Tactical Warfare System PROJECT TITLE: SSN Combat System Improvement

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	249,959	32,675	21,134	41,139	22,076	CONT.	CONT.
Subtotal Support and Management	15,774	2,035	703	2,100	1,102	CONT.	CONT.
Subtotal Test and Evaluation	2,290	747	0	2,424	9,198	CONT.	CONT.
Total Project	268,023	35,457	21,837	45,663	32,376	CONT.	CONT.

0004SS

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
F2199 New Design SSN	9,053	0	0	0	0	0	0	0	0	138,831
S1803 Ship Contract Design	9,224	3,958	51,720	80,941	125,604	144,007	230,438	192,295	CONT.	CONT.
S2197 Ship Specifications	2,604	2,758	2,296	1,293	1,317	1,293	1,412	4,104	CONT.	CONT.
S2198 Live Fire Test and Evaluation	0	88	3,831	8,826	7,666	1,521	4,238	3,383	CONT.	CONT.
S2301 Carrier Contract Design	0	0	17,866	34,844	50,664	47,777	52,600	47,745	CONT.	CONT.
S2302 Carrier Live Fire Test and Evaluation	0	0	0	0	10,813	13,920	10,000	0	CONT.	34,733
TOTAL	20,881	6,804	75,713	125,904	196,064	208,518	298,688	247,527	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element (PE) directly supports the Navy's Shipbuilding Plan by providing for the development of all post Preliminary Design (through FY 1996) and all post Milestone (MS) I (FY 1997 and out) engineering, programmatic and acquisition documentation, including ship specifications and contractual documents, associated with the acquisition of Navy ships. Modern day ship design and acquisition processes do not separate Preliminary Design from Contract Design. These are seamless design activities and are both conducted between MS I and II. This line als supports the New Attack Submarine (New SSN) Contract Design and the Future Carrier (CVX) Integrated Product and Process Development (IPPD).

(U) Contract Design has traditionally been the engineering development of the technical and contractual definition of the shi design (including ship specifications and drawings) to a level of detail sufficient for prospective shipbuilders to make a

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEETDATE: DATE: February 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

000467

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 an ship conversions, and supports engineering planning and ship affordability studies. This PE also supports Live Fire Test and Evaluation (LFT&E) of new ship designs.

(U) Under Acquisition Reform for new design ships and submarines , traditional distinct phasing of the design process has bee 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.

(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.

000468

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
S1803 Ship Contract Design	9,224	3,958	51,720	80,941	125,604	144,007	230,438	192,295	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program supports the development of all technical, programmatic, and contractual documentation required after Preliminary Design (through FY 1996) and after MS I (FY 1997 and out) for the acquisition of the ships in the Navy's Shipbuilding Program. The major effort is the engineering development of the technical and contractual definition of the ship design (e.g., ship specifications and drawings), with sufficient details for the prospective shipbuilder to make a sound estimate of construction cost and schedule. It also serves as the contractual technical definition from which the selected builder develops the shipbuilding detail design and testing package required to build and deliver the ship.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

   - (U) ($9,224) Completed LPD 17 Contract Design.

2. (U) FY 1997 PLAN:

   - (U) ($ 340) Commence AOE SLE Contract Design. (10/96-7/97)

000469

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) ($3,618) BTR to PE 0603564, S0408 for SC 21/AOE(X) feasibility study efforts.

3. (U) FY 1998 PLAN:

- (U) ($ 550) Continue AOE SLE Contract Design. (10/97-7/98)

- (U) ($21,000) Begin implementation of an Integrated Product and Process Development (IPPD) structure and Integrated Product Teams (IPT) to incorporate a Total System Engineering (TSE) approach to the advanced design and development of SC 21 systems. The TSE approach will include efforts in the areas of development of hull form concepts, survivability, modeling and simulation, manning, integrated topside design, integrated logistics support and C4I design. (10/97-9/98)

- (U) ($10,000) Begin to develop system specifications to define the most cost effective approach for design of the 21st Century Surface Combatant (SC-21). Begin technology assessment efforts to determine system design impacts/flexibility required to enable future upgrades and cost effective enhancement of capabilities. (10/97-9/98)

- (U) ($11,000) Begin ship design and integration studies for SC-21 HM&E, main propulsion unit, integrated power systems, and other auxiliary propulsion plant components. (10/97-9/98)

- (U) ($9,170) Begin design and engineering development of a computational plant architecture testbed leading to the ships information system for the SC-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. (10/97-9/98)

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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

4. (U) FY 1999 PLAN:

- (U) ($ 2,300) Continue AOE SLE Contract Design. (10/98-7/99)
- (U) ($26,801) Continue implementation of IPPD structure and IPT s to support the Total Ship Engineering (TSE) approach to design and construction of SC 21. Continue TSE efforts for development and demonstration of hull form concepts, survivability, survivability, integrated topside design, integrated logistics support and C4I. (10/98-9/99)
- (U) ($12,000) Complete system specifications to support the design of the SC 21 lead ship. Review the system specification package in order to begin planning for an Request for Proposal (RFP) for the contract design of the lead ship. (10/98-9/99)
- (U) ($15,000) Complete ship design and integration studies for the SC 21 HM&E, main propulsion unit, integrated power systems, and other auxiliary propulsion plant components and begin demonstration and test to support the design effort. (10/98-9/99)
- (U) ($15,000) 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 SC-21. (10/98-9/99)
- (U) ($4,000) Begin technology transition and integration efforts for systems which will be incorporated into the SC 21 lead ship. Review development schedules and timelines to ensure that technical risk is properly managed and equipment will be tested prior to delivery to the shipbuilders. Begin industry involvement to assess Independent Research and Development (IRAD) efforts and emerging technologies in the commercial sector. (10/98-9/99)
- (U) ($ $5,840) Begin AOE(X) Contract Design. (10/98-9/99)

000471

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	5,347	4,256	30,254	42,124
(U) Adjustments from FY 1997 PRESBUDG:	+3,877	-298	+21,466	+38,817
(U) FY 1998/99 PRESBUDG Submit	9,224	3,958	51,720	80,941

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 increase reflects additional LPD 17 funding. FY 1997 decrease due to minor pricing adjustments. FY 1998 and FY 1999 increases due to SC 21 and AOE(X) requirements.

(U) Schedule: The current SCN Plan is as follows:

LPD 17	FY 1996
New Design SSN	FY 1998
AOE SLE	FY 2000
CVN 77	FY 2002
SC 21	FY 2003
AOE (X)	FY 2003
LHA/LH(X)	FY 2005
Command Ship	FY 2005
CV(X)	FY 2006
MCS(X)	FY 2007

(U) Technical: Not applicable.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S1803

000472

PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Contract Design

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

(U) RELATED RDT&E:

(U) PE 0603564N (Ship Preliminary Design/Feasibility Studies)

D. (U) SCHEDULE PROFILE:

	FY 1995	FY 1996	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 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering	8,994	312	21,000	33,500
b. Program Management Support	180	22	1,500	1,341
c. Travel	50	6	50	100
d. BTR to PE 0603564N	0	3,618	0	0
e. Technology Assessments/Integration	0	0	2,000	4,000
f. HM&E, Main Prop., Aux Sys Studies	0	0	11,000	15,000
g. Computational Plant Architecture	0	0	9,170	15,000
h. System Specifications/RFP Development	0	0	7,000	12,000
Total	9,224	3,958	51,720	80,941

080474

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
JJMA Arlington, Va.	C	3/95	Cont.	Cont.	1,652*	1,500	3,953***	1,345	2,718	Cont.	Cont.
AME Arlington, Va.	C	3/95	Cont.	Cont.	2,578*	2,570	0	0	2,636	Cont.	Cont.
CD-NSWC Carderock, MD.	WR	A.N.**	Cont.	Cont.	2,376*	500	0	6,500	8,000	Cont.	Cont.
PNSY Phila, PA.	WR	A.N.**	Cont.	Cont.	0*	0	0	0	0	Cont.	Cont.
NAVAIR Arlington, VA.	WR	A.N.**	Cont.	Cont.	550*	700	0	0	0	Cont.	Cont.
NNS&DDCo Newport News, VA.	SS/C	Var.	11,702	11,150	302*	0	0	250	0	0	11,702
SPAWAR Arlington, VA.	PD	Var.	Cont.	Cont.	800*	0	0	0	0	Cont.	Cont.
TRW Fairfax, VA.	C	3/91	Cont.	Cont.	884*	1091	0	0	0	0	Cont.
Gibbs&Cox Arlington, VA.	C	9/97	Cont.	Cont.	0	0	0	1,800	2,500	Cont.	Cont.
DD-NSWC Dahlgren, VA.	WR	A.N.	Cont.	Cont.	300	380	0	9,000	10,000	Cont.	Cont.
NRL Washington, DC.	WR	A.N.	Cont.	Cont.	0	0	0	3,300	2,500	Cont.	Cont.

000475

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
NCCOSC/NRAD San Diego, CA.	WR	A.N.	Cont.	Cont.	50	50	0	7,000	8,000	Cont.	Cont.
APL/JHU Laurel, MD.	C	9/97	Cont.	Cont.	0	0	0	1,000	1,500	Cont.	Cont.
Mitre Corp. Arlington, VA.	C	9/97	Cont.	Cont.	0	0	0	1,000	1,500	Cont.	Cont.
Bath Iron Works Bath, ME.	C	9/97	Cont.	Cont.	0	0	0	250	0	Cont.	Cont.
Ingalls Pascagoula, MS.	C	9/97	Cont.	Cont.	0	0	0	250	0	Cont.	Cont.
Avondale New Orleans, LA.	C	9/97	Cont.	Cont.	0	0	0	250	0	Cont.	Cont.
National Steel San Diego, CA.	C	9/97	Cont.	Cont.	0	0	0	250	0	Cont.	Cont.
C/S Integrators TBD	C	9/97	Cont.	Cont.	0	0	0	12,095	33,590	Cont.	Cont.
Misc. Support and Management	Var.	Var.	Cont.	Cont.	4,811	2,253	0	5,730	6,497	Cont.	Cont.
Misc.	Var.	Var.	Cont.	Cont.	668*	180	5	1,700	1,500	Cont.	Cont.

Test and Evaluation - None.
* Amounts reflected are FY 95 only. This project has been funded for an extended number of years and dollar amounts for FYs prior to FY 89 are unknown.
** As Needed
*** $3.618M planned for BTR to PE0603564N

000476

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
None											
Support and Management											
None											
Test and Evaluation											
None											

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	14,303*	9,044	3,953	50,020	79,441	Cont.	Cont.
Subtotal Support and Management	668*	180	5	1,700	1,500	Cont.	Cont.
Subtotal Test and Evaluation	0*	0	0	0	0	Cont.	Cont.
Total Project	14,971*	9,224	3,958	51,720	80,941	Cont.	Cont.

Amounts reflected are FY 95 only. This project has been funded for an extended number of years and dollar amounts for FYs prior to FY 89 are unknown.

000477

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
S2197 Ship Specifications	2,604	2,758	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 1996 ACCOMPLISHMENTS:

- (U) ($800) Continued to develop, improve and update NAVSEA cognizant acquisition specifications. Continued development of Specification data base and Open Systems Architecture.

- (U) ($1,804) Continued development of CAD II analysis programs and program integration. Continued development of CAD II ship design systems and modeling techniques for application on SC 21 and AOE(X).

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E PROJECT TITLE: Ship Specifications

000478

3. (U) FY 1997 PLAN:

- (U) ($ 300) Continue to develop, improve and update NAVSEA cognizant acquisition specifications. Continue development of Specification data base and Open Systems Architecture. (10/96-7/97)
- (U) ($1,713) Continue development of CAD II analysis programs, program integration and development of CAD II ship design systems and modeling techniques for application on SC 21 and AOE(X). (10/96-7/97)
- (U) ($ 675) Forward financing FY 1998 requirements due to low execution rates.
- (U) ($ 70) Portion of extramural program reserved for Small Business Innovative Research Assessment in accordance with 15 U.S.C 638.

4. (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. (10/97-7/98)
- (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 SC 21 and AOE(X). (10/97-7/98)
- (U) ($ 802) Commence development of Performance Based Ship Acquisition Specification Program. (10/97-7/98)

5. (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. (10/98-7/99)
- (U) ($ 793) Continue development of Performance Based Ship Acquisition Specification Program. (10/98-7/99)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	2,656	2,875	4,122	5,307
(U) Adjustments from FY 1997 PRESBUDG:	-52	-117	-1,826	-4,014
(U) FY 1998/FY 1999 PRESBUDG Submit	2,604	2,758	2,296	1,293

(U) CHANGE SUMMARY EXPLANATION:

Funding: Decrease in FY 1996/7 reflects minor pricing adjustments. FY 1998 decrease reflects incorporation of revised Program requirements and a reduction for low execution rate in FY 1996. FY 1999 decrease reflects incorporation of revised program requirements.

(U) Schedule: The current SCN Plan is as follows:

LPD 17(L(X))	FY 1996
New Design SSN	FY 1998
AOE SLE	FY 2000
CVN 77	FY 2002
SC 21	FY 2003
AOE(X)	FY 2003
LHA/LH(X),	FY 2005
Command Ship	FY 2005
CV(X)	FY 2006
MCS(X)	FY 2007

(U) Technical: Not applicable.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1995	FY 1996	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.				

000481

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT:0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E
PROJECT NUMBER: S2197
PROJECT TITLE: Ship Specifications

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. CAD Systems Engineering	1,804	1,888	1,296	400
b. CAD Software Development	500	500	500	100
c. Specification Improvements	300	300	500	793
d. SBIR Assessment	0	70	0	0
Total	2,604	2,758	2,296	1,293

000482

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
SPCC Mechanicsburg,Pa.	WR	A.N.*	Cont.	Cont.	1,540*	1,270	1,000	730	200	Cont.	Cont.
JJMA Arlington, Va.	C	2/95	Cont.	Cont.	1,075*	596	883	700	500	Cont.	Cont.
AME Arlington, Va.	C	2/95	Cont.	Cont.	2,187*	589	250	300	500	Cont.	Cont.
CD-NSWC WR Carderock, MD.	WR	A.N.**	Cont.	Cont.	210*	0	75	75	69	Cont.	Cont.
PSNSY Pudget Sound,WA	WR	A.N.**	Cont.	Cont.	480*	0	0	0	0		
Misc.	Var.	A.N.**	Cont.	Cont.	1,120*	149	550	491	24	Cont.	Cont.

Support and Management
None

Test and Evaluation
None

* Amounts reflected are FY 95 only. This project has been funded for an extended number of years and dollar amounts for FYs prior to FY 89 are unknown.
** As Needed

000483

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2197
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Ship Specifications

GOVERNMENT FURNISHED PROPERTY
None

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										
None										
Support and Management										
None										
Test and Evaluation										
None										

* As Needed

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	6,613*	2,604	2,758	2,296	1,293	Cont.	Cont.
Subtotal Support and Management	0*	0	0	0	0	Cont.	Cont.
Subtotal Test and Evaluation	0*	0	0	0	0	Cont.	Cont.
Total Project	6,613	2,604	2,758	2,296	1,293	Cont.	Cont.

* Amounts reflected are FY 95 only. This project has been funded for an extended number of years and dollar amounts for FYs prior to FY 89 are unknown.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199

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

000384

(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
S2198 Live Fire Test & Evaluation	0	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 1996 ACCOMPLISHMENTS: Not applicable.

2. (U) FY 1997 PLAN:

   - (U) ($ 88) BTR to PE 0603564 S0408 for SC 21 preliminary design efforts.

3. (U) FY 1998 PLAN:

   - (U) ($ 3,831) Commence SC 21 Live Fire Test and Evaluation. (10/97-9/98)

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 & Evaluatio

5. (U) FY 1999 PLAN:

- (U) ($ 7,876) Continue SC 21 Live Fire Test and Evaluation. (10/98-9/99)
- (U) ($ 950) Commence AOE(X) Live Fire Test and Evaluation. (10/98-9/99)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	90	3,848	7,884
(U) Adjustments from FY 1997 PRESBUDG:	0	-2	-17	+942
(U) FY 1998/99 PRESBUDG Submit	0	88	3,831	8,826

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Funding decreases in FY 1997/8 is due to minor program adjustments. Funding increases in FY 1999 is due to addition of AOE(X) testing.

(U) Schedule: The current SCN Plan is as follows:

LPD 17(L(X))	FY 1996
New Design SSN	FY 1998
AOE SLE	FY 2000
CVN 77	FY 2002
AOE(X)	FY 2003
SC 21	FY 2003
LHA/LH(X)	FY 2005
Command Ship	FY 2005
CV(X)	FY 2006
MCS(X)	FY 2007

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N PROJECT NUMBER: S2198

00486

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 1995	FY 1996	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 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2198
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE: Live Fire Test & Evaluatior

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Develop LFT&E Test Models	0	0	1,400	3,000
b. Threat Analysis Development	0	0	1,400	2,326
c. Test Procedure Development	0	0	831	3,000
d. Program Support	0	0	200	500
c. BTR	0	88	0	0
Total	0	88	3,831	8,826

030488

FY 199/FY 19999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

BUDGET ACTIVITY: 5 PROGRAM ELEMENT:0604567N PROJECT NUMBER:S2198
PROGRAM ELEMENT TITLE: Ship Contract Design/Live Fire T&E PROJECT TITLE:Live Fire Test & Evaluati

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
Test and Evaluation											
Misc.	Var.	A.N.*	Cont.	Cont.	990	0	88**	3,631	8,326	Cont.	Cont.
Support and Management											
TBD					0	0	0	200	500	Cont.	Cont.

Product Development
None

\+ FY 95 only, this is a continuing program.
* As Needed
**Planned for BTR to PE 0603564

000489

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

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 Evaluatic

GOVERNMENT FURNISHED PROPERTY
None

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										
None										
Support and Management										
None										
Test and Evaluation										
None										

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Test and Evaluation	990	0	88	3,631	8,326	Cont.	Cont.
Subtotal Support and Management	0	0	0	200	500	Cont.	Cont.
Subtotal Product Development	0	0	0	0	0	Cont.	Cont.
Total Project	990	0	88	3,831	8,826	Cont.	Cont.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
S2301 Carrier Contract Design	0	0	17,866	34,844	50,664	47,777	52,600	47,745	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 1996 ACCOMPLISHMENTS: Not applicable.

2. (U) FY 1997 PLAN: Not applicable.

3. (U) FY 1998 PLAN:

   - (U) ($17,866) Commence CVN 77 Contract Design. (10/97-6/98)

000491

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Ship Contract Design/ Live Fire T&E
PROJECT NUMBER: S2301
PROJECT TITLE: Carrier Contract Design

5. (U) FY 1999 PLAN:

- (U) ($34,844) Continue CVN 77 Contract Design. (10/98-6/99)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:*	0	0	5,000	10,000
(U) Adjustments from FY 1997 PRESBUDG:	0	0	+12,866	+24,844
(U) FY 1998/99 PRESBUDG Submission	0	0	17,866	34,844

* Was part of S1803

000492

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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: Funding added by Flag Board in FY 1998 and FY 1999 to commence CVN77 Contract Design.

(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:

	FY 1995	FY 1996	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 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Trade-off Analysis	0	0	4,963	5,359
b. Integration Assessments	0	0	12,903	12,509
c. Design and Integrate Selected Changes	0	0	0	14,297
d. Prepare Contract Package	0	0	0	2,679
Total	0	0	17,866	34,844

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Contract Design/Live Fire T&E
PROJECT NUMBER: S2301
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	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
ADVANCED MARINE ENTERPRISES	PR	Oct 97	Cont.	Cont.	0	0	0	1,637	3,085	Cont.	Cont.
GEORGE G. SHARP	PR	Oct 97	Cont.	Cont.	0	0	0	1,473	2,776	Cont.	Cont.
LOCKHEED MARTIN CORPORATION	PR	Oct 97	Cont.	Cont.	0	0	0	2,291	4,318	Cont.	Cont.
NSWC - CARDEROCK	WR	Oct 97	Cont.	Cont.	0	0	0	1,964	3,701	Cont.	Cont.
NEWPORT NEWS SHIPBUILDING	WR	Oct 97	Cont.	Cont.	0	0	0	7,529	14,188	Cont.	Cont.
NAWC - LAKEHURST	WR	Oct 97	Cont.	Cont.	0	0	0	1,472	2,776	Cont.	Cont.
Total					0	0	0	16,366	30,844	Cont.	Cont.
Support and Management											
Contractor (TBD)	Misc.	Oct 97	Cont.	Cont.	0	0	0	1,500	4,000	Cont.	Cont.
Test and Evaluation		Not Applicable									

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604567N
PROGRAM ELEMENT TITLE: Contract Design/Live Fire T&E
PROJECT NUMBER: S2301
PROJECT TITLE: CV Contract Design

GOVERNMENT FURNISHED PROPERTY

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		Not Applicable								
Support and Management		Not Applicable								
Test and Evaluation		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	0	0	16,366	30,844	Cont.	Cont.
Subtotal Support and Management	0	0	0	1,500	4,000	Cont.	Cont.
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	0	0	17,866	34,844	Cont.	Cont.

000496

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources

(U) COST: (Dollars in Thousands)

PROJECT NUMBER& TITLE	FY 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
S1353	Standard Hardware									
	9,413	26,540	2,224	2,157	2,442	2,514	3,077	3,158	CONT.	CONT.
WO845	AN/AYK-14									
	1,323	1,118	1,184	1,446	1,260	1,235	1,209	1,243	CONT.	CONT.
X1976	Next Generation Computer Resources									
	1,312	0	0	0	0	0	0	0	0	85,855
X2265	Naval Warfare Tactical Data Base									
	1,453**	1,303	1,386	1,423	1,461	1,499	1,532	1,566	CONT	CONT
TOTAL	13,501	28,961	4,794	5,026	5,163	5,248	5,818	5,967	CONT.	CONT.

X2265 Comparability transfer:
**FY96: Funded under X1976

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Standard Hardware includes computers, display systems, and peripherals, which are integral building blocks of larger weapons, sensor, and combat direction systems. This program provides the technical planning and engineering support for development and evolution of the Navy's high performance embedded computer resources for transition to an open system architecture, including development of the AN/UYQ-70 Advanced Display System and product improvement of current generation computers (AN/AYK-14) and the mass memory storage device (MMSD); and development of interconnects, interfaces, protocols, and standards (hardware and software) for the highly flexible architectures needed for the Navy's next generation of open systems, Commercial-Off-The-Shelf/Non-Developmental Item (COTS/NDI) shipboard computers, and development of naval standard C3I data elements and the subsequent development of candidate joint standard data elements.

(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 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

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 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
S1353 Standard Hardware	9,413	26,540	2,224	2,157	2,442	2,514	3,077	3,158	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 1996 ACCOMPLISHMENTS:
(U) ($9,413) Continued AN/UYQ-70(V) Advanced Display System Development; traveled to monitor COSIP and MMSD efforts funded in FY-95 and to assure that COSIP activities were prepared to undertake the assessment and certification of candidate technologies scheduled to begin in FY-97.

2. (U) FY 1997 PLAN:
(U) ($766) Update 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) ($24,677) Via the COSIP CRIB, investigate 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) ($469) Via COSIP, investigate requirements for common, ruggedized shipboard racks and enclosures.

(U) ($628) Portion of extramural program reserved for Small Business Innovation Research Assessment in accordance with 15 U.S.C. 638.

000298

3. (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.

4. (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) ($559) Continue Information Technology Electronic Commerce (ITEC) support.

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Standard Hardware

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 97 President s Budget:	9,751	2,690	2,815	2,998
(U) Adjustments from FY 97 PRESBUDG:	-338	+23,850	-591	-841
(U) FY 98/99 PRESBUDG Submit:	9,413	26,540	2,224	2,157

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: (-$338) FY96 Decrease results from Jordan rescission, SBIR, cost growth BTR, and other program adjustments.
(+$23,850) FY97 Increase results from congressional plus-up for AN/UYQ-70 variant development for NSSN and other undistributed adjustments.
(-$591) FY98 Decrease results from NWCF rate adjustments, C4I program reduction and respread adjustments
(-$841) FY99 Decrease results from NWCF rate adjustments, C4I program reduction and respread 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 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

000360

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE:FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources

PROJECT NUMBER: S1353
PROJECT TITLE: Std Hardware

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	7,058	23,825	0	0
b. Development Support Equipment Acq	1,200	0	0	0
c. Software Development	0	440	500	550
d. Contractor Engineering Support	380	0	0	0
e. Government Engineering Support	700	2,200	1,649	1,532
f. Travel	75	75	75	75
Total	9,413	26,540	2,224	2,157

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Std 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Loral/St. Paul	Various	Various	185,448	185,448	153,350	8,273	23,825	0	0	0	185,448
Misc	Various	Various	Cont	Cont	50,000	0	440	500	550	Cont	Cont
Support and Management											
Misc	Various	Various	Cont	Cont	5,950	440	75	75	75	Cont	Cont
Test and Evaluation											
Misc	Various	Various	Cont	Cont	8,094	300	250	305	296	Cont	Cont
NSWC Dahlgren	Various	Various	Cont	Cont	7,733	200	950	670	618	Cont	Cont
NUWC Newport	Various	Various	Cont	Cont	8,113	200	1,000	674	618	Cont	Cont

000502

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: S1353
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: Std Hardware

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

GOVERNMENT FURNISHED PROPERTY: Not Applicable

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 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										
Total										

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	203,350	8,273	24,265	500	550	Cont	Cont
Subtotal Support and Management	5,950	440	75	75	75	Cont	Cont
Subtotal Test and Evaluation	23,940	700	2,200	1649	1,532	Cont	Cont
Total Project	233,240	9,413	26,540	2,224	2,157	Cont	Cont

000503

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

(U) COST (Dollars in thousands)

PROJECT NUMBER& TITLE	FY 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
W0845 AN/AYK-14	1,323	1,118	1,184	1,446	1,260	1,235	1,209	1,243	CONT.	CONT.
RDT&E Articles				2	26	11				39

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Advanced AN/AYK-14 (AAYK-14) program has been redefined and is now titled the Advanced Mission Computer (AMC) program. The 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, development of input/output and other special function modules (voice recognition), (2) development of a backplane based on the commercial (open system) industry standards, (3) 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 1996 ACCOMPLISHMENTS:

(U) ($998) Initiated prototype and performed reliability development testing (RDT) on the critical AAYK-14 technology.

(U) ($125) Completed AMC technology transfer for EA-6B mission processing upgrade.

(U) ($200) Continued militarization of OSA commercial product (NDI/COTS) into the AMC family.

000504

2. (U) FY 1997 PLAN:

(U) ($449) Perform requirements definition to develop an AMC system consisting of commercial off-the-shelf (COTS)/Open Systems mission processors, high speed bus architecture, and a higher order language Operational Flight Program (OFP) for the F/A-18 E/F.

(U) ($655) Develop acquisition strategy and prepare and issue the request for proposal (RFP).

(U) ($14) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C 638.

3. (U) FY 1998 PLAN:

(U) ($362) Award contract, perform preliminary design review (PDR) and critical design review (CDR) to include integration of new functionality.

(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.

4. (U) FY 1999 PLAN:

(U) ($665) Continue development and integration of open systems AMC for F/A-18 E/F.

(U) ($581) Begin prototype/integration of new functionality into AMC.

(U) ($200) Coordinate the use of AMC on multi-service joint applications.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 97 President's Budget:	1,341	1,189	1,377	1,675
(U) Adjustments from FY 97 PRESBUDG:	-18	-71	-193	-229
(U) FY 98/FY 99 PRESBUDG Submit:	1,323	1,118	1,184	1,446

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 reflects a reduction of $2 thousand for the F-16 Jordanian rescission and a reduction of $16 thousand for the Small Business Innovative Research (SBIR) assessment. FY 1997 reflects a reduction of $71 thousand for Congressional undistributed reductions. FY 1998 reflects reductions of $24 thousand due to base realignment and closure (BRAC) savings, $19 thousand for Navy Working Capital Fund (NWCF) rate adjustments, $141 thousand due to low expenditures in FY 1996, and $9 thousand for minor pricing adjustments. FY 1999 reflects a reduction of $207 thousand for BRAC savings, $12 thousand for minor pricing adjustments, and $10 thousand due to NWCF rate adjustments.

(U) Schedule: Due to program restructuring, the schedule is revised to reflect the current AMC program.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:

(U) PE 0604270N EA-6B/EW Counter Response

080506

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: W0845
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: AN/AYK-14

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones			2Q MS II (2/98)	
Engineering Milestones			2Q PDR (3/98) 4Q CDR (9/98)	
T&E Milestones				
Contract Milestones			2Q EMD AWD II (2/98-12/00)	

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X2265
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: NWTDB

(U) COST (Dollars in thousands)

PROJECT NUMBER& TITLE	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
X2265 Naval Warfare Tactical Data Base	1,453**	1,303	1,386	1,423	1,461	1,499	1,532	1,566	CONT	CONT

**Comparability transfer: FY-96 funded under X1976
Program broken out into S2265 during PR-97 to provide visibility. Program funtionally transferred to SPAWARSYSCOM and project number changed to X2265 during Navy review of FY 98 budget submission

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Naval Warfare Tactical Data Base (NWTDB) provides the technical and engineering support required to develop Naval Command, Control, Communications, and Intelligence (C3I) standard data elements. These standard data elements will be published annually in a Navy standards manual for use by system developers when developing software applications and systems to ensure data element interoperability. The standard data elements are developed by registering existing tactical system's data elements using a reverse engineering methodology known as the NWTDB process. Additionally, NWTDB provides the support necessary to submit these Naval standard data elements for consideration as joint standard data elements in support of Command, Control, Communications, Computers and Intelligence (C4I) for the warrior and the Department of Defense mandated migration to Global Command and Control System (GCCS).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($150) Developed NWTDB Standards Manual - Version Four.
   - (U) ($200) Continued to register Naval tactical systems and changes to Version Three Manual.
   - (U) ($150) Developed six data element packages for submission to the DISA for joint consideration.
   - (U) ($360) Expanded Naval C3I Data Model.
   - (U) ($400) Developed OAML,IW, ASW M&S Data Models.
   - (U) ($193) Technical Support to implement DOD C3I Data Standardization Process.

000508

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604574N PROJECT NUMBER: X2265

PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources PROJECT TITLE: NWTDB

2. (U) FY 1997 PLAN:

(U) ($153) Develop NWTDB Standards Manual - Version Five.
(U) ($200) Continue to register Naval tactical systems and changes to Version Four Manual.
(U) ($150) Develop six data element packages for submission to the DISA for joint consideration.
(U) ($300) Expand Naval C3I Data Model.
(U) ($368) Develop OAML,IW, ASW M&S Data Models.
(U) ($110) Technical Support to implement DOD C3I Data Standardization Process.
(U) ($22) Portion of extramural program provided for Small Business Innovation Research assessment in accounting with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

(U) ($150) Develop NWTDB Standard Manual - Version Six.
(U) ($200) Continue to register Naval Tactical Systems and changes to Version Five Manual.
(U) ($150) Develop six data element packages for submission to the DISA for joint consideration.
(U) ($300) Expand Naval C3I Data Model.
(U) ($400) Develop OAML, IW, ASW M&S Data Models.
(U) ($186) Technical Support to implement DOD C3I Data Standardization Process.

4. (U) FY 1999 PLAN:

(U) ($160) Develop NWTDB Standards Manual - Version Seven.
(U) ($200) Continue to register Naval tactical systems and changes to Version Six Manual.
(U) ($150) Develop six data element packages for submission to the DISA for joint consideration.
(U) ($300) Expand Naval C3I Data Model.
(U) ($400) Develop OAML,IW, ASW M&S Data Models.
(U) ($213) Technical Support to implement DOD C3I Data Standardization Process.

000509

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604574N
PROGRAM ELEMENT TITLE: Navy Tactical Computer Resources

PROJECT NUMBER: X2265
PROJECT TITLE: NWTDB

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY1998	FY 1999
(U) FY 1997 President's Budget:	1,454	1,358	1,404	1,443
(U) Adjustments from FY 1997 PRESBUDG:	-1	-55	-18	-20
(U) FY 98/99 PRESBUDG SUBMIT:	1,453**	1,303	1,386	1,423

**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:
Reduction of $1K in FY-96 is for 95-29531 increase (+6K) and Jordanian Rescission (-$7K).
Reduction in FY-97 results from congressional undistributed general adjustments, and NWCF rate/surcharge adjustments, respread and carryover adjustments. FY 98/99 reductions reflect revised DOD inflation estimates and other minor 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.

090510

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604601N
PROGRAM ELEMENT TITLE: Mine Development

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
Q0267 Mine Improvements	2,946	2,381	2,815	3,650	3,660	3,741	3,824	3,911	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 Improved Submarine Launched Mobile Mine (SLMM).

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996 ACCOMPLISHMENTS:
(U) ($2,146) Completed design and final report of the Fast Patrol Boat algorithm for Quickstrike mines. Began development of an algorithm that specifically addresses Air Cushion Vehicles (ACV). Completed development and generation of actuation and damage operational data for fleet minefield planning for high priority targets identified by COMINEWARCOM. Continued development of a shallow water array for magnetic and pressure signatures.
(U) ($800) Continued development of batteries using the AA lithium cell. Completed development of the improved magnetic sensor. Continued development of the improved pressure sensor. Began development of improved test set for TDDs. Continued to conduct system analyses for the ISLMM and LSM.

2. (U) FY 1997 PLAN:
(U) ($1,219) Complete the preliminary design of the ACV algorithm. Begin the development of an algorithm that specifically addresses Diesel-Electric/Mini-Subs (DE/MS). Continue to develop and generate actuation and damage operational data for fleet minefield planning for high priority targets. Continue the development of a shallow water array for magnetic and pressure signatures.
(U) ($1,155) Complete the development of mine batteries using the AA lithium cell. Begin the development of a larger lithium cell for use in standard mine warfare system power supplies; evaluate the improved safety and performance potential of lithium cell technologies. Continue the development of the improved pressure sensor and test set. Continue to conduct system analyses for ISLMM and LSM.

000512

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604601N PROJECT NUMBER: Q0267
PROGRAM ELEMENT TITLE: Mine Development PROJECT TITLE: Mine Improvements

2. (U) FY 1997 PLAN: (Cont.)
(U) ($7) Portion of extramural program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:
(U) ($1,300) 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 MCM ships. Complete the fabrication of the shallow water array for magnetic and pressure signatures. Continue to develop and generate actuation and damage operational data for fleet minefield planning for high priority targets.

(U) ($1,065) Complete the development of the larger lithium cell. Complete preliminary designs of batteries using those cells. Complete the development of the improved pressure sensor and test set. Complete the system analyses for LSM.
(U) ($450) Complete the analysis of the results of the ISLMM demonstration. Complete all ISLMM acquisition documentation in preparation for Milestone II and engineering development. Conduct ISLMM Milestone II.

4. (U) FY 1999 PLAN:
(U) ($1,150) Complete the development of the DE/MS algorithm, including final report, and complete a preliminary design report for the MCM algorithm. Publish a users guide and final design report for the shallow water array for magnetic and pressure signatures. Complete delivery of all actuation and damage operational data for fleet minefield planning for high priority targets.
(U) ($1,500) Complete the development of batteries using the larger lithium cell. Begin a demonstration and validation program for a Captor-based LSM.
(U) ($1,000) Begin the engineering development of ISLMM.

000713

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	2,951	2,505	2,927	3,688
(U) Adjustments from FY 1977 PRESBUDG:	-5	-124	-112	-38
(U) FY 1998/99 PRESBUDG Submit:	2,946	2,381	2,815	3,650

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY96 -$5 reflects minor pricing adjustments. FY97 -$124 reflects minor NWCF adjustments and general reductions.
FY98 -$112 reflects minor NWCF adjustments and general reductions. FY99 -$38 reflects minor NWCF adjustments and general reductions.
(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.

000514

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. System Testing	300	250	350	350
b. System Engineering Development	947	793	870	1,350
c. SW Support	1,056	781	1,000	1,300
d. Logistics	250	240	250	250
e. Program Management	375	290	325	375
f. Travel	18	20	20	25
g. SBIR	0	7	0	0
TOTAL	2,946	2,381	2,815	3,650

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

000515

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604601N PROJECT NUMBER: Q0267
PROGRAM ELEMENT TITLE: Mine Development PROJECT TITLE: Mine Improvements

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000516

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
A2183 SLAM ER	50,826	30,991	28,890	5,167	230	223	221	221	2,664	198,604
TOTAL	50,826	30,991	28,890	5,167	230	223	221	221	2,664	198,604
RDT&E ARTICLES		19	4							23

(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.

000517

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 1996 ACCOMPLISHMENTS:

- (U) ($36,412) Continued Engineering & Manufacturing Development (E&MD) efforts and completed Critical Design Review.
- (U) ($ 4,604) Continued F/A-18 aircraft integration, commenced flight clearance testing and software efforts.
- (U) ($ 2,250) Continued Osprey Jaywalker efforts.
- (U) ($ 791) Continued Test and Evaluation. Completed subsystem testing and contractor section level testing.
- (U) ($ 6,769) Continued Warhead development and testing, Government and Contractor support.

2. (U) FY 1997 PLAN:

- (U) ($17,844) Continue E&MD efforts. Deliver SLAM ER flight test missiles and support testing.
- (U) ($ 1,325) Continue F/A-18 aircraft integration, flight clearance and software efforts.
- (U) ($ 1,800) Continue Osprey Jaywalker efforts.
- (U) ($ 5,682) Continue Warhead development and testing, Government and Contractor support.
- (U) ($ 3,724) Perform 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.
- (U) ($ 616) Portion of program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons

PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

3. (U) FY 1998 PLAN:

- (U) ($ 9,570) Continue E&MD efforts. Provide SLAM ER missile support.
- (U) ($ 500) Complete F/A-18 aircraft integration, flight clearance and software efforts.
- (U) ($ 2,100) Complete Osprey Jaywalker efforts.
- (U) ($ 3,970) Complete Warhead development and continue testing. Continue Government and Contractor support.
- (U) ($12,750) Continue Missile Flight Test and Evaluation and complete ASN(RD&A) Program Review for LRIP II.

4. (U) FY 1999 PLAN:

- (U) ($ 1,500) Complete E&MD efforts.
- (U) ($ 3,667) Complete testing, Government and Contractor support.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604603N PROJECT NUMBER: A2183

PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons PROJECT TITLE: SLAM ER

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	51,833	22,322	29,306	5,001
(U) Adjustments from Pres. Budget:	-1,007	+8,669	-416	+166
(U) FY 1998 President s Budget Submit:	50,826	30,991	28,890	5,167

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY96 net adjustment of -$1,007 thousand includes a -$938 thousand Small Business Innovation Research adjustment. The FY97 net adjustment of +$8,669 thousand reflects a +$10,000 thousand Congressional plus up for SLAM ER efforts, -$646 thousand for Navy Working Capital Fund (NWCF) adjustments, and -$685 thousand for minor pricing adjustments. The FY98 net adjustment of -$416 thousand includes a -$462 thousand NWCF adjustment. The FY99 net adjustment of +$166 thousand includes a NWCF adjustment, rebalancing and minor pricing adjustments.

(U) Schedule: FRP contract milestone was erroneously reported in the Congressional Budget submission as 1Q/99; the FRP will occur in 2Q/99. Milestone III will occur in 2Q/99 due to a shift in the F/A-18 Operational Flight Program development.

(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
WPN Line 7										
SLAM Quantity	75	0	0	0	0	0	0	0	0	812*
* 75 completed as SLAM ERs										
*737 completed as SLAMs										
	83,497	0	0	0	0	0	0	0	0	1,087,815
WPN Line 17										
Quantity	0	60	22	54	58	38	38	38	317	625
SLAM-ER	0	41,881	21,694	36,314	36,535	28,907	29,550	30,500	203,700	429,081

(U) RELATED RDT&E: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons
PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		2Q FRR 2Q LRIP (I)	2Q LRIP (II)	2Q MSIII	
Engineering Milestones	2Q CDR 4Q SEPARATION TEST				
T&E Milestones	2Q F/A-18 FLT TEST	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 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. E&MD	36,412	17,844	9,570	1,500
b. Osprey Jaywalker CCM/Sep	2,250	1,800	2,100	0
c. F/A-18 Flight/AC Integration	2,684	0	0	0
d. F/A-18 Software Development	1,920	1,325	500	0
e. Systems Engineering	1,000	1,150	1,000	1,500
f. Warhead Development	3,866	2,500	2,600	0
g. Test and Evaluation	791	3,724	12,750	1,951
h. Government Field Support	1,805	1,784	170	0
i. Consulting Service (CS)	0	150	125	140
j. Travel	98	98	75	76
k. SIBR Assessment		616		
Total	50,826	30,991	28,890	5,167

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FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604604N
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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Comp	Total Program
Product Development:											
McDonnell Douglas St. Louis, MO	SS/CPIF	09/94	125,372	125,372	60,046	36,412	17,844	9,570	1,500	0	125,372
China Lake, CA	WX	11/97	22,445	22,445	8,829	4,866	3,650	3,600	1,500	0	22,445
NAVSUP	PD	10/97	11,250	11,250	5,100	2,250	1,800	2,100	0	0	11,250
Miscellaneous	WX	11/97	17,162	17,162	3,219	6,356	3,207	745	76	3,559	17,162
Support and Management:											
Miscellaneous		07/98	742	742	176	151	150	125	140	0	742
Test and Evaluation:											
Pt. Mugu, CA	WX	11/97	21,017	21,017	1,801	791	3,724	12,750	1,951	0	21,017

GOVERNMENT FURNISHED PROPERTY: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604603N
PROGRAM ELEMENT TITLE: Unguided Conventional Air-launched Weapons
PROJECT NUMBER: A2183
PROJECT TITLE: SLAM ER

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	77,194	49,884	26,501	16,015	3,076	3,559	176,229
Subtotal Support and Management	176	151	150	125	140	0	742
Subtotal Test and Evaluation	1,801	791	3,724	12,750	1,951	0	21,017
SBIR Assessment			616				616
Total Project	79,171	50,826	30,991	28,890	5,167	3,559	198,604

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604610N
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
V2234 LIGHTWEIGHT TORPEDO DEVELOPMENT	19,947	10,832	17,290	8,129	4,771	2,272	2,324	2,382	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The funding is to design, integrate and test a 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 1996 ACCOMPLISHMENTS:

- (U) ($10,157) Awarded LHT Engineering & Manufacturing Development Contract ($8,187K will forward fund FY 1997 efforts).
- (U) ($1,595) Continued development of tactical and signal processing software.
- (U) ($1,621) Conducted simulation in support of software development.

- (U) ($2,502) Performed Lightweight torpedo system engineering efforts.
- (U) ($2,092) Began development and production of Fleet Exercise Equipment and Test Equipment to support LHT. ($1,105K forward funded for FY 1997 efforts).
- (U) ($1,980) Forward funding of FY 1997 FES and Test Equipment tasks due to low execution rates in FY 1996. Obligation 3/97 - 6/97

2. (U) FY 1997 PLAN:

- (U) ($0) Continue LHT Engineering & Manufacturing Development Contract ($8,187K FY 1996 funding for FY 1997 efforts).
- (U) ($2,414) Development of tactical and signal processing software continues.
- (U) ($2,195) Simulation efforts continue in support of software development.
- (U) ($2,843) On-going Lightweight torpedo system engineering efforts.
- (U) ($1,167) Continue development and production of Fleet Exercise Equipment and Test Equipment to support LHT.
- (U) ($1,980) Forward funding of FY 1998 FES and Test Equipment tasks due to low execution rates in FY 1996. Obligation 10/97
- (U) ($233) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($3,909) Continue LHT Engineering & Manufacturing Development Contract.
- (U) ($2,608) Development of tactical and signal processing software continues.
- (U) ($5,930) Begin in-water test program and continue simulations in support of software development.

- (U) ($4,069) Continue Lightweight torpedo system engineering efforts.
- (U) ($774) Continue development and production of Fleet Exercise Equipment and Test Equipment to support LHT.

4. (U) FY 1999 PLAN:

- (U) ($754) Complete Engineering & Manufacturing Development contract.
- (U) ($2,053) Continue development of tactical and signal processing codes.
- (U) ($2,084) Continue simulation and in-water test program in support of software development.
- (U) ($3,238) On-going Lightweight torpedo system engineering efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	21,336	15,019	18,423	7,584
(U) Adjustments from FY 1997 PRESBUDG:	-1,389	-4,187	-1,133	+545
(U) FY 1998/1999 PRESBUDG Submit:	19,947	10,832	17,290	8,129

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY 96: Pricing adjustments.

FY 97: Changes due to E&MD contract award and Congressional undistributed reductions.

FY 98: Change due to minor pricing adjustments and impact of E&MD contract award.

FY 99: Change due to minor pricing adjustments and impact of E&MD contract award.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT PROJECT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT

C. (U) OTHER PROGRAM FUNDING SUMMARY: ($ 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
WPN/321500	0	0	0	21,252	19,221	36,277	37,177	38,154	628,007	780,088

(U) RELATED RDT&E:
(U) PE 0603691N (MK 48 ADCAP (ADV))

D. (U) SCHEDULE PROFILE:

See attached.

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Hardware Development	10,157	0	3,909	754

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b. Software Development	1,595	2,414	2,608	2,053
c. Developmental Test & Evaluation	1,621	2,195	5,930	2,084
d. Systems Engineering	5,914	5,693	4,308	2,953
e. Program Management Support	660	530	535	285
Total	19,947	10,832	17,290	8,129

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NUWC	WR	JAN 97	CONT.	CONT.	12,661	7,975	9,603	11,937	6,577	CONT.	CONT.
Alliant Contract	C/CPAF	DEC 96	14,820	14,820	0	10,157	0	3,909	754	0	14,820
Various	VAR	N/A	CONT.	CONT.	1,336	200	392	580	80	CONT.	CONT.
Support and Management											
ARL/PSU		FEB 97	CONT.	CONT.	2,611	922	260	265	270	CONT.	CONT.
Various	VAR	N/A	CONT.	CONT.	247	660	530	535	285	CONT.	CONT.
Test and Evaluation											
COMOPTEVFOR	VAR	N/A	CONT.	CONT.	0	33	47	64	163	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY:

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FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604610N PROJECT NUMBER: V2234
PROGRAM ELEMENT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT PROJECT TITLE: LIGHTWEIGHT TORPEDO DEVELOPMENT

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	Total FY 1995 & Prior	FY 1996 Actual	FY 1997 Budget	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	0	2,797
Support and Management				0	0	0	0	0	0	0
Test and Evaluation				0	0	0	0	0	0	0

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	16,794	18,332	9,995	16,426	7,411	CONT.	CONT.
Subtotal Support and Management	2,858	1,582	790	800	555	CONT.	CONT.
Subtotal Test and Evaluation	0	33	47	64	163	CONT.	CONT.
Total Project	19,652	19,947	10,832	17,290	8,129	CONT.	CONT.

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604612M
PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
C2106 Advanced Countermeasures System (ACS)	0	3,588	950	3,907	7,272	5,767	4,673	1,990	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project was formerly titled Distributed Explosive Mine Neutralization System (DEMNS) and Standoff Mine Breacher. The ACS program centers on neutralization of blast-hardened and complex-fuzed mines, and unexploded munitions (current and future threat) that defeat the effectiveness of current minefield breaching systems. Primary goals are: neutralization in-stride from a standoff position; very high neutralization percentages against all types of mines; and joint applicability for use with primary assault platforms to include land and amphibious assaults. This joint Army/Marine Corps program, with the Army as the lead service, satisfies the services' standoff minefield breaching requirement.

(U) The ACS program researches and develops assault minefield breaching capabilities that will neutralize current and future blast-hardened and complex-fuzed mines from a standoff position. ACS will alleviate a critical deficiency in breaching minefields during amphibious operations. Current breaching assets are 1950s technology that do not meet breaching mission requirements.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: FY 1996 funding ($1,304) is contained in Project C1969 in this PE.

2. (U) FY 1997 PLAN:

- (U) ($3,277) Complete the Program Definition and Risk Reduction (PDRR) contract to include contractor testing of prototype systems and ammunition. Support government Developmental and Operational Tests and delivery of three systems and fifteen rounds of ammunition.

- (U) ($230) Update all program documentation to complete the Milestone II decision and provide management support analysis of contractor results using a management support contract.

- (U) ($20) Continue to provide travel support in preparation of milestone documentation and contract deliverables.

- (U) ($61) SBIR: Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638(f)(1).

3. (U) FY 1998 PLAN:

- (U) ($500) Start the Engineering Manufacturing and Development (EMD) contract to include contractor testing of prototype systems and ammunition. Support U.S. Army Developmental and Operational Tests.

- (U) ($250) Update all program documentation for the Milestone II decision and provide management support analysis of contractor results using a management support contract.

- (U) ($200) Continue to provide Army, Navy, and government laboratory salaries in support of this program. Continue to provide travel support in preparation of Milestone documentation and contract deliverables. Execute government testing and reports to support Milestone III.

4. (U) FY 1999 PLAN:

- (U) ($3,107) Continue EMD. Continue test and evaluation of manufacturing design.

- (U) ($300) Continue program documentation and contract progress analysis.

- (U) ($500) Continue to provide program support for program documentation and technical/contract support services.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604612M

PROGRAM ELEMENT TITLE: Marine Corps Mine Countermeasures (Engineering)

PROJECT NUMBER: C2106

PROJECT TITLE: Advanced Countermeasures System (ACS)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	2,710	3,023	3,333
(U) Adjustments from FY 1997 PRESBUD:	0	+878	-2,073	+574
(U) FY 1998 President's Budget:	0	3,588	950	3,907

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1997 increase is for forward financing of FY 1998 efforts. The FY 1998 decrease is due to the forward financing effort of FY 1997, an inflation adjustment, and the most currently expected program cost estimates. The FY 1999 funding changes reflect the most currently expected program cost estimates.

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

(U) RELATED RDT&E:

(U) PE 0603606A/0603619A/0604080A (Army Standoff Minefield Breacher Program)
(U) PE 0602131M (Marine Corps Landing Force Technology)
(U) PE 0603612M (Marine Corps Mine Countermeasures)
(U) PE 0603640M (Marine Corps Advanced Technology Demonstrations)
(U) The joint Memorandum of Agreement between the Army and Marine Corps was signed on 01 March 1995.

D. (U) SCHEDULE PROFILE: See attached.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKOUT DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M PROGRAM ELEMENT TITLE: Marine Corps Mine Counter-measures (Engineering) PROJECT NUMBER: C2106 PROJECT TITLE: Standoff Minefield (SMB) Breacher

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Program Manager Civilian Salaries	0	0	0	0
b. Travel	0	25	20	20
c. Professional and Management Service	0	445	560	570
d. Hardware Development	0	1,760	920	2,854
e. Software Development	0	50	50	50
f. Systems Engineering	0	300	300	300
g. Integrated Logistics Support	0	30	30	30
h. Govt Engineer Support	0	0	0	0
i. Developmental Test and Evaluation	0	100	72	101
j. Miscellaneous	0	0	0	0
Total	0	2,710	1,952	3,925

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FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKOUT DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M PROJECT NUMBER: C2106
PROGRAM ELEMENT TITLE: Marine Corps Mine Counter- PROJECT TITLE: Standoff Minefield Breacher
measures (Engineering) (SMB)

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											
Tracor Aerospace, Austin, Texas	C/CPIF	JUN 95	0	0	2,140	1,300	3,231	CONT.	CONT.		
Support and Management											
Night Vision Electronics Sensors Directorate (NVESD), Ft. Belvoir, VA	MIPR	OCT 97	0	0	145	160	170	CONT.	CONT.		
MCCDC, Quantico, VA			0	0	25	20	20	CONT.	CONT.		
CAMBER, Springfield, VA	CONTRACT	OCT 97	0	0	300	400	400	CONT.	CONT.		
Total Support and Management			0	0	470	580	590	CONT.	CONT.		
Test and Evaluation											
Miscellaneous			0	0	100	72	101	CONT.	CONT.		
TOTAL TEST AND EVALUATION			0	0	100	72	101	CONT.	CONT.		

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FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKOUT DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604612M PROJECT NUMBER: C2106
PROGRAM ELEMENT TITLE: Marine Corps Mine Counter- PROJECT TITLE: Standoff Minefield Breacher
measures (Engineering) (SMB)

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	0	2,140	1,300	3,231	CONT.	CONT.
Subtotal Support and Management	0	0	470	580	590	CONT.	CONT.
Subtotal Test and Evaluation	0	0	100	72	101	CONT.	CONT.
Total Project	0	0	2,710	1,952	3,925	CONT.	CONT.

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DATE: February 1997

FY 1998 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 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
E2137 JDAM	27,873	33,461	12,714	11,853	11,296	14,121	0	0	0	166,922
RDT&E articles										
Separation Test Vehicles	18									
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 for upgrading existing General Purpose Bomb capabilities in adverse weather and medium to high altitude releases. The Air Force is the executive service. The Navy's participation in JDAM involves joint development of JDAM components and support of Navy-Marine Corps unique requirements such as aircraft integration on the F/A-18. JDAM will provide an accurate (defined as not more than 13 meters) adverse weather capability. The program will incorporate commonality with the Joint Standoff Weapon where feasible. The JDAM Product Improvement Program (PIP) will field improvements to the JDAM system with initial emphasis on attaining precision (3 meters or less) accuracy through non-seeker and seeker initiatives.

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 1996 ACCOMPLISHMENTS:

- (U) ($ 4,460) Performed Developmental Testing (DT-IIA) testing and test engineering support, and planned for DT-IIB/Operational Testing (OT-IIA) testing.
- (U) ($ 9,035) Continued Operational Flight Program (OFP) software development for flight testing, and continued JDAM Mission Planning Module development for Tactical Air Mission Planning System (TAMPS).
- (U) ($ 5,871) Procured JDAM test assets.

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DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N
PROGRAM ELEMENT TITLE: Joint Direct Attack Munition (JDAM)

PROJECT NUMBER: E2137
PROJECT TITLE: JDAM

- (U) ($ 6,927) Performed systems engineering, Integrated Logistics Support (ILS) and program support for JDAM Engineering & Manufacturing Development (E&MD) Phase II contract, and Initial Operational Capability (IOC).

- (U) ($ 1,580) Continued systems engineering, ILS, program support, and testing support for the Joint Programmable Fuze (JPF) E&MD program.

2. (U) FY 1997 PLAN:

- (U) ($13,328) Complete DT-IIA testing and test engineering support, initiate test phases: DT-IIB/OT-IIA; DT-IIIA/OT-IIIA; OT-IIC Operational Evaluation (OPEVAL 11C); and planning efforts for OT-IIIB (FOT&E 13C).

- (U) ($ 4,943) Continue OFP software development for flight testing, and JDAM Mission Planning Module development for TAMPS.

- (U) ($ 3,777) Procure JDAM Test Assets.

- (U) ($ 9,389) Perform systems engineering, ILS and program support for the JDAM E&MD Phase II contract, and IOC; prepare to support the Low Rate Initial Production (LRIP) decision; and support AV-8B Integration effort.

- (U) ($ 1,485) Continue systems engineering, ILS, program support, and testing for JPF E&MD program.

- (U) ($ 539) Portion of program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($ 399) Complete DT-IIIA/OT-IIIA testing, OT-IIB (OPEVAL 11C) testing, and initiate OT-IIIB (FOT&E 13C) testing.

- (U) ($ 644) Continue OFP software development for flight testing, and JDAM Mission Planning Module development for TAMPS.

- (U) ($ 803) Procure JDAM Test Assets.

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- (U) ($ 6,845) Perform systems engineering, ILS and program support for the JDAM E&MD Phase II, MS III decision, fleet deployment IOC, and perform systems engineering support for the Product Improvement Program (PIP) development program.

- (U) ($ 3,324) Continue support of the JDAM integration effort on the AV-8B.

- (U) ($ 699) Continue systems engineering, ILS, program support, and testing for JPF E&MD program.

4. (U) FY 1999 PLAN:

- (U) ($ 149) Complete TAMPS software development.

- (U) ($ 6,597) Perform systems engineering, ILS and program support in preparation for fleet introduction IOC of the JDAM weapons system, and for the PIP development program.

- (U) ($ 5,107) Continue support of the JDAM integration effort on the AV-8B.

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DATE: February 1997

FY 1998 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 1996	FY 1997	FY 1998	FY 1999
FY 1997 Presidents Budget Submit:	29,568	35,130	16,912	11,952
Appropriated Value:		35,130		
Adjustments from 1997 Pres Budget:	-1,695	-1,669	-4,198	-99
FY 1998/99 President s Budget Submit:	27,873	33,461	12,714	11,853

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY96 reduction of -$1,695 thousand includes -$1,393 thousand reduction for the SBIR transfer and -$268 thousand for the Sep 96 update. The FY97 reduction of -$1,669 thousand reflects -$702 thousand for Navy Working Capital Funds (NWCF) adjustments, -$702 thousand general reductions, and -$265 thousand in miscellaneous pricing adjustments. The FY98 reduction of -$4,198 thousand reflects -$3,900 thousand due to JDAM prime contract downselect savings; -$183 thousand for NWCF adjustments, and -$115 thousand for miscellaneous pricing adjustments. The FY99 reduction of -$99 thousand includes -$110 thousand for miscellaneous pricing adjustments.

(U) Schedule: 3Q/97 LRIP milestone added to reflect contract award in FY 1997. 2Q OT-IIA versus 1Q OT-IIA; 3Q DT-IIIA versus 3Q DT-IIC; 3Q OT-IIIA versus 3Q OT-IIB in FY 97; 4Q OT-IIB in FY 97 versus 1Q OT-IIC in FY 98 (OPEVAL 11C) and 3Q OT-IIIB in FY 98 (FOT&E 13C) based on availability of software.

(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
PAN&MC/B.A-1 - Ammunition - JDAM	-	38,520	44,803	36,772	30,800	31,372	68,064	472,368	722,699	
PAAF/B.A-1 - Ammunition-JDAM										
USAF (3011) Weapons Procurement	23,010	61,003	62,202	143,207	233,114	223,789	218,020	375,798	1,340,143	

RELATED RDT&E:
Air Force PE 0604618F Joint Direct Attack Munitions (JDAM).

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DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N
PROGRAM ELEMENT TITLE: Joint Direct Attack Munition

PROJECT NUMBER: E2137
PROJECT TITLE: JDAM

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		3Q LRIP	3Q MS-III		
Engineering Milestones					
T&E Milestones	1Q DT-IIA	DT-IIB 1Q 97/4Q 97 OT-IIA 2Q 97/4Q 97 DT-IIIA 3Q 97/2Q 98 OT-IIIA 3Q 97/2Q 98 OT-IIB 4Q 97/1Q 98	OT-IIIB 3Q 98/3Q 98		
Contract Milestones	1Q DOWNSELECT				

DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 | PROGRAM ELEMENT: 0604618N | PROGRAM ELEMENT TITLE:Joint Direct Attack Munition | PROJECT NUMBER: E2137 | PROJECT TITLE: JDAM

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. System Engineering	2,911	4,240	3,886	3,259
b. A/C Integration/Certification	1,238	1,067	3,393	5,150
c. OFP S/W Development	5,066	4,159	355	0
d. TAMPS S/W Development	3,969	784	289	149
e. Development Test & Evaluation	4,380	7,600	107	0
f. Operational Test & Evaluation	80	5,728	292	0
g. Test Asset Hardware	5,871	3,777	803	0
h. Integrated Logistics Support (ILS)	656	1,265	496	1,041
i. Training	351	376	399	311
j. Travel	150	175	130	89
k. Contractor Engineering Support	1,621	2,266	1,865	1,735
l. Joint Programmable Fuze (JPF)	1,580	1,485	699	119
m. SBIR Assessment		539		
TOTAL	27,873	33,461	12,714	11,853

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DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 | PROGRAM ELEMENT: 0604618N | PROGRAM ELEMENT TITLE:Joint Direct Attack Munition | PROJECT NUMBER: E2137 | 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Contract Costs ($2.0M or more):											
OFP Software Dev. McDonnell Douglas Aircraft	WX	10/97	14,241	14,241	7,447	3,946	2,588	260	0	0	14,241
JDAM (Software Dev) (TAMPS) Texas Instruments	WX	10/97	4,675	4,675	1,000	3,274	129	134	138	0	4,675
Less than $2.0M (Aggregate Total)			2,217	2,217	883	980	354	0	0	0	2,217
In-house Support:											
NAWC, CL JDAM DEV.	WX	10/97	89,624	89,624	29,128	6,813	9,441	8,886	9,891	25,197	89,356
Support and Management:											
Less than $2.0M (Aggregate Total):			13,145	13,145	4,892	1,771	2,442	1,996	1,824	220	13,145

DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5 | PROGRAM ELEMENT: 0604618N | PROGRAM ELEMENT TITLE:Joint Direct Attack Munition | PROJECT NUMBER: E2137 | PROJECT TITLE: JDAM

(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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	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 C/FP 9/95 (McDonnell Douglas, St.Louis, MO)			7,031	7,031	4,994	1,200	837	0	0	0	7,031
In-house Support:											
JDAM TEST											
NAWC-PAX	WX	10/97	4,403	4,403	1,176	2,468	652	107	0	0	4,403
NAWC-CL	WX	10/97	15,059	15,059	279	1,550	12,702	528	0	0	15,059

GOVERNMENT FURNISHED PROPERTY

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				0	0	0	0	0		0
Support and Management				0	0	0	0	0		0
Test and Evaluation:										
Test Assets	C/FP	10/95	Oct 97 -	5,805	5,871	3,777	803	0		16,256
	MIPR	10/97	Mar 98							

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DATE: February 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

	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	38,458	15,013	12,512	9,280	10,029	25,197	110,489
Subtotal Support and Management	4,892	1,771	2,442	1,996	1,824	220	13,145
Subtotal Test and Evaluation	12,254	11,089	17,968	1,438	0	0	42,749
SBIR Assessment			539				539
Total Project	55,604	27,873	33,461	12,714	11,853	25,417	166,922

000547

DATE: February 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604618N
PROGRAM ELEMENT TITLE:Joint Direct Attack Munition

PROJECT NUMBER: E2137
PROJECT TITLE: JDAM

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FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
Q1829 Explosive Ordnance Disposal Procedures	5,213	5,609	6,613	6,975	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.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($4,288) Obtained foreign ordnance and developed EOD render-safe procedures for new sophisticated domestic and foreign ordnance.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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) ($925) Developed IND countermeasures procedures and participated in exercises and joint working groups.

2. (U) FY 1997 PLAN:

- (U) ($4,599) Continue to obtain foreign ordnance and develop EOD render-safe procedures for new sophisticated domestic and foreign ordnance.

- (U) ($1,010) Continue to develop IND countermeasures procedures and participate in exercises and joint working groups.

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FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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 Countermeasure procedures.

4. (U) FY 1999 PLAN:

- (U) ($5,190) Continue to obtain foreign ordnance and develop EOD render-safe procedures for new sophisticated domestic and foreign ordnance.
- (U) ($1,035) Continue to develop IND countermeasures procedures and participate in exercises and joint working groups.
- (U) ($750) Continue to obtain high priority foreign mines for analysis and exploitation to provide for the development of Mine Countermeasure procedures.

000551

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	5,240	7,346	5,205	6,257
(U) Adjustments from FY 1997 PRESBUDG:	-27	-1,737	+1,408	+718
(U) FY 1998/1999 PRESBUDG Submit:	5,213	5,609	6,613	6,975

080752

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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: -$27K for minor pricing adjustments in FY 96. Adjustments in FY 97 are due to Near Term Mine Warfare Plan, -$1,500K, minor NWCF adjustments -$116K and General reductions -$121K. FY 98 - +$908K Additional funding will provide for the development of EOD render-safe procedures for additional known foreign ordnance, complete support of DOD Technical Response Group (DTRG), and full participation in inter-agency exercises and Joint Agency Working Groups; +$500K Additional funding will support foreign mine acquisition. Additional funding +$750K in FY 99 will support foreign mine acquisition and -$32K General reductions.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

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

(U) RELATED RDT&E: All conventional or nuclear ordnance related developments, both domestic and foreign, manufactured or improvised.

(U) 0603654N (Joint Service Explosive Ordnance Disposal Development)

D. (U) SCHEDULE PROFILE: Not applicable.

000553

FY 1998/FY 1999 PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604654N
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development

PROJECT NUMBER: Q1829
PROJECT TITLE: Explosive Ordnance Disposal Procedures

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. RSP Development	4,288	4,599	5,013	5,190
b. IND Countermeasures	925	1,010	1,100	1,035
c. Foreign Mine Acquisition	0	0	500	750
Total	5,213	5,609	6,613	6,975

000754

FY 1998/FY 1999 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 4 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NAVEODTD IH	WR	10/96	CONT.	CONT.	130,070	4,997	5,609	6,613	6,975	CONT.	CONT.
CSS, FL	WR	1/96	346	346	130	216	0	0	0	0	346

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 1995 & Prior	FY 1996 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.

FY 1998/FY 1999 PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0604654N PROJECT NUMBER: Q1829
PROGRAM ELEMENT TITLE: Joint Service Explosive Ordnance Disposal Development PROJECT TITLE: Explosive Ordnance Disposal Procedures

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	130,200	5,213	5,609	6,613	6,975	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	130,200	5,213	5,609	6,613	6,975	CONT.	CONT.

000556

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: January 1997

APPROPRIATION: RDTE&N
BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604703N
PROGRAM ELEMENT TITLE: Manpower, Personnel, Training, Simulation and Human Factors

PROJECT NUMBER: L1822
PROJECT TITLE: Manpower, Personnel, and Training, Simulation and Human Factors

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	COST TO COMPLETE	TOTAL COST
L1822 Manpower, Personnel, Training, Simulation and Human Factors	1,002	972	1,022	1,252	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, and human factors, and transitions into operation those projects demonstrated in advanced development. Enabling technologies include adaptive testing, math optimization, statistical and econometric forecasting, computer-based simulation, and decision support systems.

(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 1996 ACCOMPLISHMENTS:

(U) ($200) Implemented the C and A School Planning Systems to permit feasibility analyses based on school capacities to estimate PCS move costs of training plans, and to estimate effects of training on fleet readiness.

(U) ($155) Tested and refined the QOL socioeconomic model to predict increases/decreases in retention and readiness in response to varying levels of QOL support.

(U) ($147) Began conversion of demonstration Medical Manpower Allocation Model to an All-Navy model.

(U) ($160) Completed implementation of the Enlisted Community Managers' Integrated modeling system, developed in advanced technology demonstration.

(U) ($240) Began development of rate forecasting models for Military Personnel Navy Appropriation for use by Pers-2 and Pers-7 to ensure implemented personnel policies are consistent with cost impact and to link budgetary need to personnel readiness.

(U) ($100) Developed tools to enable tailored corrections programs to raise the potential of prisoner retention/reassignment to the Fleet.

2. (U) FY 1997 PLANS:

(U) ($143) Complete development and validation of the Brig Training Assessment Model and transition to operational use.

(U) ($152) Complete validation of the Quality of Life Predictive Model and transition to an operational system.

(U) ($140) Complete conversion of demonstration medical manpower allocation model to an All-Navy model and start transition to implementation at NAVMAC, CNO (N932), and BUMED.

(U) ($190) Continue development of the rate forecasting models for Military Personnel Navy Appropriation for use by the Military Personnel Policy and Career Management Division (Pers-2) and the MPN Financial Management Division (Pers-7), Bureau of Naval Personnel (BUPERS).

000558

(U) ($330) 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.

- (U) ($17) Portion of program reserved for Small Business Innovative Research assessments in accordance with 15 USC 638.

3. (U) FY 1998 PLANS:

(U) ($300) Complete development of the rate forecasting models for Military Personnel Navy Appropriation for use by BUPERS (Pers-2) and (Pers-7). Begin development of interfaces between the Pers-2 planning models and Pers-7 budget calculation and execution models.

(U) ($347) 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) ($74) Complete validation and transition of the All-Navy manpower allocation model.

(U) ($200) Begin expansion of the Economics of Retention (Officer and Enlisted) system to all Navy. This effort will allow managers to efficiently and effectively allocate compensation to achieve a given force structure. Initial 6.3 demonstrations focused on the Nuclear Officer Community, followed by some key Enlisted communities.

000359

(U) ($101) Begin examining the BUPERS data bases and delivery systems to determine if an Executive Information System can be developed for the Special Advisors, Assistant Chiefs, Deputy Chief, and Chief of Naval Personnel.

4. (U) FY 1999 PLANS:

(U) ($347) Complete development and validation 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.

(U) ($297) Pull together large database management tools developed in 6.3 R&D and combine them with off the shelf technologies developed by the private sector to develop executive information systems (EIS s) for the Bureau of Naval Personnel, more specifically for the Special Advisors, Assistant Chiefs, Deputy Chief, and the Chief of Naval Personnel. These EIS s are needed so that BUPERS top management in Millington, TN and Washington, DC will have the ability to act on the same information.

(U) ($297) Begin expanding the products of the 6.3 Distribution 2000 Prototyping Project to demonstrate that technologies and models developed for the future distribution of Navy personnel will work across a range of detailing communities, both officer and enlisted.

(U) ($311) Complete expansion of the Economics of Retention (Officer and Enlisted) system to all Navy. This effort will allow managers to efficiently and effectively allocate compensation to achieve a given force structure.

000560

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: January 1997

APPROPRIATION: RDTE&N
BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604703N
PROGRAM ELEMENT TITLE: Manpower, Personnel, Training, Simulation and Human Factors

PROJECT NUMBER: L1822
PROJECT TITLE: Manpower, Personnel, and Training, Simulation and Human Factors

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	1,013	1,013	1,027	1,264
(U) Adjustments from FY 1997 PRESBUDG:	-11	-41	-5	-12
(U) FY 1998/1999 President s Budget Submission:	1,002	972	1,022	1,252

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 (-11K) changes reflects minor pricing adjustments and Small Business Innovative Research (SBIR) transfer. FY 1997 (-41K), FY 1998 (-5K), and FY 1999 (-12K) reflect undistributed Congressional cuts, Navy Working Capital Fund (NWCF) surcharges and minor repricing adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

000561

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: January 1997

APPROPRIATION: RDTE&N
BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604703N
PROGRAM ELEMENT TITLE: Manpower, Personnel, Training, Simulation and Human Factors

PROJECT NUMBER: L1822
PROJECT TITLE: Manpower, Personnel, and 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.

000562

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604710N
PROGRAM ELEMENT TITLE: Navy Energy Program (ENG)

A. (U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
R0371	Energy Conservation (ENG)									
	2,518	1,903	2,088	2,535	2,565	2,597	2,703	2,718	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 energy technologies to Navy facility needs. Provide test and evaluation support to the companion PE 0603724N Project R0829. Annual savings of $130M were achieve in FY 1995 and, as currently funded, $155M is projected for FY 2000 compared to FY 1985 cost.

This program, and the companion PE 0603724N Navy Energy Program (ADV), support the achievement of Executive Department, DoD, and Navy Energy Management Goals; 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. Navy is TRISERVICE lead for the implementation of renewable/alternative energy systems across DoD.

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 Warfare Areas: Air Superiority, Maritime Superiority Strike, and Forward Deployed Combat Capable Forces.

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FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604710N PROGRAM ELEMENT TITLE: Navy Energy Program (ENG) PROJECT NUMBER: R0371 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 1996 ACCOMPLISHMENTS:
   - (U) ($721) Aircraft: Extension of F/A-18 Flight Performance Advisory System (FPAS) to F/A-18E/F assumed in baseline performance estimates. Translated existing P-3 FPAS code (not implemented before because of computer resource problems) to run on new computer assets being provided for satellite navigation. The P-3 system will be capable of reducing fuel consumption by 3-6%. Provided first field deployable flight planning system to Marine Corps in form of DOS compatible palmtop computers running Flight Optimization Routines for Energy Management (FOREM) software.
   - (U) ($1,185) Ships: Supported endurance test of CG-47, and DDG-51 modified air conditioning plants with ozone safe refrigerant, monitoring efficiency, wear and noise. Performed pre-installation hull cleaning and powering trial for stern flap trial on designated DD-963/CG-47 hull. Continued ship trials of easy release and ablative copper/cobiocide anti-fouling (AF) coatings--examined life cycle management issues for promising coatings.
   - (U) ($612) Facilities: Completed geothermal resource assessments at China Lake and Fallon. Test and evaluated integrated wind/photovoltaic (PV) hybrid power system. Evaluated advanced PV technologies for Navy applications, including use of excess PV electrical power to generate hydrogen for later consumption in a fuel cell (a joint effort with National Aeronautic and Space Administration).

2. (U) FY 1997 PLAN:
   - (U) ($500) Aircraft: Develop FOREM software for P-3C and AV-8B; continue fleet requested enhancements of FOREM software and begin conversion to WINDOWS format. Define airframe to computer interfaces required to automate P-3 FPAS sensor inputs (e.g. fuel flow, external winds and temperature, MACH NO. and altitude). Identify 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 Marine Corps squadrons for in-the-field flight planning.

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- (U) ($903) Ships: Install stern flap on DD-963/CG-47 test ship and perform powering trials. Support endurance test of CV/CVN modified air conditioning plant (R114 replacement program), monitoring efficiency. Continue advanced easy release and ablative copper/cobiocide AF coating ship trials; belly stripe and hull patch performance demonstrations; and life cycle management studies.
- (U) ($500) Facilities: Test and evaluate advanced PV systems incorporating thin film receptors and ganged, parallel, processors/controllers. Continue test and evaluation of solar/wind and solar/fuel cell hybrid power systems. Evaluate hydrogen storage technologies for PV/fuel cell power systems.

3. (U) FY 1998 PLAN:
   - (U) ($588) Aircraft: 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) ($900) Ships: 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. 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.
4. (U) FY 1999 PLAN:
   - (U) ($700) 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) ($1,035) Ships: Installation and 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

000765

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 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.

B. (U) PROGRAM CHANGE SUMMARY

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	2,548	1,983	2,117	2,531
(U) Adjustments from FY 1997 PRESBUDG:	-30	-80	-29	+4
(U) FY 1998/1999 PRESBUDG Submission:	2,518	1,903	2,088	2,535

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 adjustment is due to Jordanian F-16 financing rescission (-3), administrative and personal services rescission (-15) and SBIR assessment (-12). FY 1997 adjustment is due to Congressional Undistributed Reductions (-80). FY 1998 adjustment is due to NWCF and minor adjustments (-24) and inflation (-5). FY 1999 adjustment is due to NWCF and minor adjustments (+13), and inflation (-9).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

000586

FY 1998/1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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.

0085687

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
Engineering Development & Testing	2,518	1,903	2,088	2,535

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

C. (U) FUNDING PROFILE: Not applicable.

000568

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
X2134 BGPHES-ST	4,992	2,723	2,127	2,608	999	751	768	785	Cont.	Cont.
X2135 CHBDL-ST	2,868	1,755	2,404	3,367	1,599	1,608	1,643	1,681	Cont.	Cont.
Total	7,860	4,478	4,531	5,975	2,598	2,359	2,411	2,466	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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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 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
X2134 BGPHES-ST	4,992	2,723	2,127	2,608	999	751	768	785	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 1996 ACCOMPLISHMENTS:

(U) ($1,333) Performed at-sea TECHEVAL/OPEVAL on CVN on overall BGPHES; obtained MS-III decision.

080570

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

(U) ($2,259) Continued rehost of software to TAC-N computer and definition of software interfaces to host ship's C^4I system.

(U) ($600) Continued P^3I access to other ES-3A Prime Mission Equipment (PME), including special signals.

(U) ($300) Completed hardware design for LHD and LHA ship configurations (Oct 95 through Jan 96).

(U) ($500) Initiated P^3I access to other USAF U-2R PME, including special signals (Oct 95 through Apr 96).

2. (U) FY 1997 PLAN:

(U) ($558) Complete rehost of software to TAC-N computer and definition of software interfaces to host ship's C^4I system (Nov 96).

(U) ($400) Continue P^3I access to other ES-3A PME, including special signals.

(U) ($535) Continue P^3I access to other USAF U-2R PME, including special signals.

(U) ($170) Initiate USAF U-2R interoperability test with rehosted configuration (Oct 96 through Feb 97).

(U) ($1,000) Initiate the development of EPR-157 or EPR-208 functional capabilities into existing BGPHES-ST hardware.

(U) ($60) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

000571

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

3. (U) FY 1998 PLAN:

(U) ($953) Complete USAF U-2R interoperability test with rehosted configuration.

(U) ($640) Complete P^3I access to other ES-3A PME, including special signals.

(U) ($534) Continue P^3I access to other USAF U-2R PME, including special signals.

4. (U) FY 1999 PLAN:

(U) ($908) Continue P^3I access to other USAF U-2R PME, including special signals.

(U) ($500) Initiate development design engineering of BGPHES-ST on the LCC/AGF class.

(U) ($1,200) Initiate rehost of software to TAC-(N+1) computer and definition of software interfaces to host ship s C^4I system.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY1997 President's Budget:	5,076	1,853	2,152	2,647
(U) Adjustments from FY1997 PRESBUDG:	-84	+870	-25	-39
(U) FY 1998 President s Budget Submit:	4,992	2,723	2,127	2,608

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

(U) FY 1996: -$4K reprogrammed to fund the Joint Service Deskbook Initiative; -$5K for Jordan Rescission; -$13K reflects reduction for administrative and personal services rescission; and -$62K for SBIR transfer.

(U) FY 1997: +$1,000K for development of additional BGPHES capabilities and -$130K for Congressional Undistributed General Adjustments.

(U) FY 1998: -$20K for Navy Working Capital Fund (NWCF) adjustment and -$5K for inflation adjustment.

(U) FY 1999: -$29K for Navy Working Capital Fund (NWCF) adjustment and -$10K for inflation adjustment.

(U) Schedule: Current schedule unchanged.

(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
OPN Line 2434	0	38,075	50,221	76,117	78,398	51,068	35,792	34,108	Cont.	Cont.
O&M,N 4B7N	0	1,371	1,656	1,767	1,710	1,934	1,988	2,080	Cont.	Cont.

000523

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

(U) RELATED RDT&E: N/A

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones	MSIII 4Q		IOC 2Q	
Engineering Milestones		P^3I Development	P^3I Development	P^3I Development
T&E Milestones	TECHEVAL 2Q OPEVAL 2Q	JTF-EX-97-02	Interoperability Testing	Interoperability Testing
Contract Milestones		Award Prod Contract 1Q		

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1996

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 1996	FY 1997	FY 1998	FY 1999
a. Project Management	331	141	150	153
b. Systems Engineering	672	150	150	150
c. Software Development	226	1,174	250	249
d. Hardware Development	300	153	200	200
e. System Test & Evaluation	3,313	1,055	1,327	1,806
f. Integrated Logistic Support	150	50	50	50
Total	4,992	2,723	2,127	2,608

000725

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1996

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 1996 Budget	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	20,851	20,851	1,198	1,477	600	599	Cont.	Cont.
Support and Management					481	191	200	203	Cont.	Cont.
Test and Evaluation					3,313	1,055	1,327	1,806	Cont.	Cont.

000726

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1996

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2134
PROGRAM ELEMENT TITLE: BATTLE GROUP PASSIVE HORIZON EXTENSION SYSTEM PROJECT TITLE: BGPHES-ST

	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
GOVERNMENT FURNISHED PROPERTY: N/A						
Subtotal Product Development	1,198	1,477	600	599	Cont.	Cont.
Subtotal Support and Management	481	191	200	203	Cont.	Cont.
Subtotal Test and Evaluation	3,313	1,055	1,327	1,806	Cont.	Cont.
Total Project	4,992	2,723	2,127	2,608	Cont.	Cont.

000377

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System

PROJECT NUMBER: X2135
PROJECT TITLE: CHBDL-ST

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & Title	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
X2135 CHBDL-ST	2,868	1,755	2,404	3,367	1,599	1,608	1,643	1,681	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 1996 ACCOMPLISHMENTS:

(U) ($2,233) Initiated and completed environmental testing.

(U) ($438) Initiated rehost to TAC-4 computer and initiated design for Solid State Power Amplifier, new embedded COMSEC, and spectrum analyzer. Included in this effort is $300K which will forward fund FY 97 requirements.

(U) ($500) Completed Technical Evaluation (TECHEVAL) and Operational Evaluation (OPEVAL) of the CHBDL-ST system leading to Milestone III in fourth quarter.

000128

(U) (-$960) Reflects an erroneous reduction which was the result of a double posting error for a BTR adjustment.

(U) ($250) Completed LHA installation design planning.

(U) ($350) Developed Technical Data Package for Production Contract.

(U) ($57) Continued Test and Evaluation with other systems such as Joint Services Imagery Processing System (JSIPS), Advanced Tactical Airborne Reconnaissance System (ATARS), and Tier II+ Unmanned Air Vehicle (UAV).

2. (U) FY 1997 PLAN:

(U) ($300) Complete Physical and Functional Configuration Audits. This effort will be funded by $300K of FY 96 carryover funding.

(U) ($200) Complete rehost to TAC 4 computers, complete design for Solid State Power Amplifier, new embedded COMSEC, and spectrum analyzer.

(U) ($500) Incorporate design changes from DT/OT.

(U) ($350) Update supporting documentation for production.

(U) ($370) Continue Test and Evaluation with other systems such as Joint Services Imagery Processing System (JSIPS) and Tier II+ Unmanned Air Vehicle (UAV).

(U) ($35) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

3. (U) FY 1998 PLAN:

(U) ($903) Initiate increased Link Capability development efforts. This effort will be forward funded by an additional $300K of FY 97 carryover funding.

(U) ($320) Initiate development efforts for interoperability with other emerging sensor systems.

(U) ($500) Continue Test and Evaluation with other systems such as Joint Services Imagery Processing System (JSIPS) and Tier II+ Unmanned Air Vehicle (UAV).

(U) ($681) Initiate development efforts for ship-to-ship data connectivity.

4. (U) FY 1999 PLAN:

(U) ($1,391) Continue increased Link Capability development efforts.

(U) ($250) Continue development efforts for interoperability with other emerging sensor systems.

(U) ($476) Continue development efforts for ship-to-ship data connectivity.

(U) ($600) Initiate multi-mission capability development.

(U) ($400) Initiate development of KG-135 upgrade.

(U) ($250) Continue Test and Evaluation with other systems such as Joint Services Imagery Processing System (JSIPS) and Tier II+ Unmanned Air Vehicle (UAV).

000580

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 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) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	5,563	1,851	2,724	5,911
(U) Adjustments from FY 1997 PRESBUDG:	-2,695	-96	-320	-2,544
(U) FY 1998 President s Budget Submit:	2,868	1,755	2,404	3,367

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

(U) FY 1996: -$960K for GFO-1 Cost Growth BTR 96-35; -$960K double posting error; -$95K for SBIR transfer; -$50K reprogrammed to fund JF Joint Simulation system; -$1K reprogrammed to fund Joint Service Deskbook Initiative; -$6K for Jordan Rescission; -$7K reflects reduction for administrative and personal services rescission and -$616K for other minor Navy fiscal adjustments.

(U) FY 1997: -$96K for Congressional Undistributed General Adjustments.

(U) FY 1998: -$14K for Navy Working Capital Fund (NWCF) adjustment; -$300K due to FY 96 low expenditure; and -$6K for inflation adjustment.

(U) FY 1999: -$29K for minor POM adjustment; -$3K for Navy Working Capital Fund (NWCF) adjustment; -$2,500K reprogrammed to OPN for LCC/AFG production engineering, and -$12K for inflation.

(U) Schedule: Current schedule unchanged.

(U) Technical: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

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
OPN Line 2434	0	38,075	50,221	76,117	78,398	51,068	35,792	34,108	Cont.	Cont.
O&M,N	0	657	982	1,120	1,197	1,216	1,249	1,326	Cont.	Cont.

(U) RELATED RDT&E:

(U) PE (0603261N) Project A2174 Joint Service Imagery Processing Systems - Navy (JSIPS-N)

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones	4Q MS III	1Q FCA 1Q PCA	IOC 2Q	
Engineering Milestones		TAC-4 Rehost	Increase Link Capability	K6-135 Upgrade Increase Link Capability
T&E Milestones	2Q - TECHEVAL 2Q - OPEVAL	JIF-EX-97-02 JSIPS-N Test	Interoperability Test/JSIPS-N Test	Interoperatibility Test/Ship-to-Shore Test/JSIPS-N Test

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FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Project Management	322	262	270	400
b. Systems Engineering	525	544	430	755
c. Hardware & Software Development	517	290	350	1,295
d. System Test & Evaluation	1,998	405	1,000	585
e. Integrated Logistic Support	206	254	354	332
f. Site/Platform Integration	260			
Total	*3,828	1,755	2,404	3,367

* Assumes correction of the erroneous posting reduction (+$960K).

0005583

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development		10/93	20,502	20,502	1,302				20,502	20,502
Loral Salt Lake City, UT	FFP	W/Options								
P3I Development										
Loral	Various	Various	TBD	TBD		834	780	2,050	Cont.	Cont.

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management				528	516	624	732	Cont.	Cont.
Test & Evaluation				1,998	405	1,000	585	Cont.	Cont.

* Assumes correction of the erroneous posting reduction (+$960K).

000584

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	1,302	834	780	2,050	Cont.	Cont.
Subtotal Support and Management	528	516	624	732	Cont.	Cont.
Subtotal Test and Evaluation	1,998	405	1,000	585	Cont.	Cont.
Total Project	*3,828	1,755	2,404	3,367	Cont.	Cont.

* Assumes correction of the erroneous posting reduction (+$960K).

080585

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604721N PROJECT NUMBER: X2135
PROGRAM ELEMENT TITLE: Battle Group Passive Horizon Extension System PROJECT TITLE: CHBDL-ST

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* Assumes correction of the erroneous posting reduction (+$960K).

000586

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
E2068										
JSOW	79,901	82,488	71,526	78,828	52,054	34,693	21,259	187	0	691,303
RDT&E Articles	24	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 standoi outside the range of most target area surface-to-air threat systems. The JSOW launch-and-leave capability will allow seve target kills per aircraft sortie.

(U) The JSOW program will first develop a baseline weapon for use against fixed area targets. The JSOW Baseline varian will include a kinematically efficient airframe, and integrated Inertial/Global Positioning System (INS/GPS) navigation capability, and a BLU-97/B submunition payload. This weapon will be designed upfront for pre-planned product improvements. The Unitary Warhead variant will add a terminal seeker, a man-in-the-loop data link, and a unitary warhead to enable the attack of blast/frag sensitive or moving point targets. The JSOW Unitary will provide increased accuracy and lethality, a the capability for aimpoint selection, target discrimination, and bomb impact assessment. The JSOW/BLU-108 variant incorporates the Sensor Fuze Weapon submunition (BLU-108) into the baseline vehicle. The JSOW/BLU-108 variant will provid standoff delivery capability against massed armor and land combat vehicles.

(U) Through adherence to international standards for weapons interfaces and minimized weight and dimension considerati 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 because encompasses engineering and manufacturing development of new end-items prior to production approval decision.

000187

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System PROJECT TITLE: JSOW

1. (U) FY 1996 ACCOMPLISHMENTS:

(U) BASELINE:

(U) ($29,067) Continued Engineering & Manufacturing Development (E&MD) efforts.

(U) ($ 5,823) Continued Systems Engineering Technical efforts, conduct Functional Configuration Audit (FCA), Production Verification Review (PVR).

(U) ($ 7,103) Conducted Developmental Testing (DT-IIC), and completed DT-IIB test.

(U) ($ 1,795) Conducted Operational Testing (OT-IIA).

(U) ($ 2,000) Continued F/A-18 Integration efforts.

(U) UNITARY:

(U) ($25,199) Continued E&MD efforts.

(U) ($ 5,646) Continued Systems Engineering Technical efforts, conduct Critical Process Review (CPR) Phase #1.

(U) ($ 160) Continued F/A-18 Integration efforts.

(U) BLU-108:

(U) ($ 565) Continued E&MD efforts.

(U) ($ 1,508) Conducted Systems Engineering Technical efforts and conducted Preliminary Design Review (PDR).

(U) ($ 205) Continued F/A-18 Integration efforts.

(U) ($ 830) Began Sensor Fuze Weapon efforts.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System PROJECT TITLE: JSOW

2. (U) FY 1997 PLAN:

(U) BASELINE:

(U) ($13,856) Complete E&MD efforts.

(U) ($ 2,824) Complete Systems Engineering Technical efforts, complete DT-IIC, and conduct Production Readiness Review (PRR).

(U) ($ 5,110) Conduct and complete OT-IIB testing.

(U) ($ 4,540) Complete F/A-18 Integration efforts.

(U) UNITARY:

(U) ($34,632) Continue E&MD efforts.

(U) ($ 7,562) Continue Systems Engineering Technical Efforts and conduct Developmental Test & Evaluation (DT&E) test planning.

(U) ($ 490) Continue F/A-18 Integration efforts.

(U) BLU-108:

(U) ($ 5,382) Continue E&MD efforts.

(U) ($ 1,900) Begin procuring Government Furnished Equipment (GFE) assets.

(U) ($ 4,327) Continue Systems Engineering Technical efforts, conduct Critical Design Review (CDR), and conduct DT&E.

(U) ($ 159) Continue F/A-18 Integration efforts.

(U) ($ 0) Continue Sensor Fuze Weapon efforts commensurate with available funds.

(U) ($ 1,706) Portion of Program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET Date: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System PROJECT TITLE: JSOW

3. (U) FY 1998 PLAN:

(U) UNITARY:

(U) ($53,642) Continue E&MD efforts.

(U) ($ 8,495) Continue Systems Engineering Technical efforts, Mission Planning System Integration, Safety Approvals and Test and Evaluation Planning.

(U) ($ 1,100) Continue F/A-18 Integration efforts.

(U) BLU-108:

(U) ($ 4,097) Continue E&MD efforts.

(U) ($ 3,163) Continue Systems engineering Technical efforts and start Initial Operational Test and Evaluation (IOT&E).

(U) ($ 29) Complete F/A-18 Integration efforts.

(U) ($ 1,000) Continue Sensor Fuze Weapon efforts.

4. (U) FY 1999 PLAN:

(U) UNITARY:

(U) ($58,750) Continue E&MD efforts.

(U) ($10,365) Continue Systems Engineering Technical efforts, Mission Planning System Integration, Safety Approvals and Test and Evaluation Planning and conduct CPR Phase #2. Conduct OT-11A,and DT&E (DT-IIB).

(U) ($2,135) Continue F/A-18 integration efforts.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: FEBRUARY 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) ($ 1,868) Complete Systems Engineering Technical efforts and complete IOT&E.

(U) ($ 600) Complete Sensor Fuze Weapon efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	79,259	86,266	61,368	76,197
(U) Adjustments from PRESBUDG:	+642	-3,778	+10,158	+2,631
(U) FY 1998 President s Budget Submit:	79,901	82,488	71,526	78,828

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 increase of +642 thousand includes -$300 for Small Business Innovation Research (SBIR) assessment and +$950 thousand Below Threshold Reprogramming for the commencement of Sensor Fuze weapon efforts. Tl FY 97 decrease of -$3,778 thousand includes -$247 Non-Federally Funded Research and Development Centers -$1,725 Na Working Capital Fund (NWCF) Surcharge and -$1,725 General Reduction. The FY 98 net increase of +$10,158 thousand consists of +$11,200 thousand to accelerate Unitary DT/OT, -$679 for NWCF adjustments, -$123 for the Acquisition Center and Internship Program; +173 for Aviation Depot Level Repairables (AVDLR) Redistribution, -$177 for Inflation, and -$236 for miscellaneous program balancing. The FY 99 net increase of +$2,631 thousand consists +$3,500 thousand to continue acceleration of Unitary DT/OT, -$214 for NWCF adjustments; -$223 for the Acquisition Center and Internship Program, +$197 for AVDLR Redistribution, -$290 for Inflation and -$339 for miscellaneous program adjustments.

(U) Schedule: The JSOW Baseline Production Readiness Review occurred in 1Q/97 vice 4Q/96 due to briefing schedule conflicts. The JSOW BLU-108 and Unitary program schedules have been adjusted to reflect accelerated BLU-108 and Unitary production programs. Unitary DT&E schedule changed from 2Q/01 to 3Q/99, OT-IIA changed from 2Q/00 to 3Q/99 and OT-IIB changed from 1Q/02 to 1Q/01. BLU-108 MS-III changed from 1Q/02 to 1Q/01, LRIP Contract Option changed from 2Q/00 to 2Q/99 and DT&E changed from 1Q/97 to 2Q/96.

(U) Technical: Not Applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System

PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

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
USN WPN, PE: 223000										
BASELINE										
$s	25,458	78,232*	58,665	111,489	138,412	113,402	116,970	129,122	1,359,068	2,130,818
Qty's	0	100	113	324	560	497	524	584	6098	8800
BLU-108										
$s	0	0	0	18,725	75,088	91,978	117,041	98,658	51,273	452,763
Qty's	0	0	0	0	188	251	335	282	144	1200
UNITARY										
$s	0	0	0	0	8,763	116,388	134,582	152,363	3,683,902	4,095,998
Qty's	0	0	0	0	0	118	167	209	7306	7800
USAF WP, APPN: 3020 PE: 27324F										
BASELINE										
$s	0	0	0	23,821	30,065	37,885	15,739	16,210	536,551	660,271
Qty's	0	0	0	78	121	171	65	53	2512	3000
BLU-108										
$s	0	0	0	30,306	58,150	74,566	77,149	108,373	809,690	1,158,234
Qty's	0	0	0	61	144	206	227	314	2048	3000

*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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: FEBRUARY 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 1996	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 FCA 2Q PVR	1Q PRR			
Unitary	3Q CPR PHASE #1			2Q CPR PHASE #2	4Q/00 PHASE #3
BLU-108	1Q PDR	1Q CDR			

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

Date: FEBRUARY 199

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon System

PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
T&E Milestones					
Baseline	DT-IIC 2Q/96-1Q/97 OT-IIA 2Q/96-1Q/97	OT-IIB 2Q-4Q/97			
Unitary				OT-IIA 3Q/99-1Q/00 DT&E (DT-IIB) 3Q/99-4Q/00	OT-IIB 1Q-3Q/01
BLU-108	DT&E 2Q/96-4Q/97		IOT&E 3Q/98-3Q/99		
Contract Milestones					
Baseline		2Q LRIP (OPTION)	4Q LRIP (FIRST DELIVERY)		
Unitary					1Q/01 LRIP (CONTRACT OPTION)
BLU-108				2Q/99 LRIP (CONTRACT OPTION)	

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604727N PROJECT NUMBER: E2068
PROGRAM ELEMENT TITLE: Joint Standoff Weapon PROJECT TITLE: JSOW

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	57,350	57,736	58,439	64,460
b. Systems Engineering	6,180	6,524	5,862	3,299
c. Integrated Logistics Support	2,158	658	767	954
d. Training Development	487	236	574	704
e. F/A-18 Integration	2,365	5,189	1,129	2,135
f. Developmental Test and Evaluation	7,103	3,226	2,769	5,449
g. Operational Test and Evaluation	1,770	4,920	250	0
h. Government Engineering Support	660	940	850	935
i. Program Management Support	1,545	973	686	692
j. Travel	283	380	200	200
k. SBIR		1,706		
Total	79,901	82,488	71,526	78,828

000595

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: FEBRUARY 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Major Contracts:											
TI B/L E&MD	C/CPIF	10/94	242,897	242,897	199,974	29,067	13,856	0	0	0	242,897
TI UNITARY PRE-E&MD	C/CPIF	10/94	8,216	8,216	8,216	0	0	0	0	0	8,216
TI UNITARY E&MD	C/CPIF	08/95	257,661	257,661	4,401	25,199	34,632	53,642	58,750	81,037	257,661
TI BLU-108 PRE-E&MD	C/CPIF	01/94	474	474	474	0	0	0	0	0	474
TI BLU-108 E&MD	C/CPIF	06/95	17,268	17,268	2,114	565	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	0	4,585
MCDONNELL DOUGLAS F/A-18 INTEGRATION	C/CPIF	10/95	12,107	12,107	9,767	740	1,600	0	0	0	12,107
Misc Contracts: (< $2M)		10/97	5,045	5,045	0	1,779	2,266	700	300	0	5,045
In-House Support:											
NAWCAD, PAX WX		10/94	1,000	1,000	1,000	0	0	0	0	0	1,000
NAWC WD, CL WX		10/97	62,078	62,078	21,543	9,565	9,417	7,203	5,257	10,126	62,078
PMA-265, CL WX		10/97	15,566	15,566	3,610	1,625	3,189	1,129	2,135	3,878	15,566

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: FEBRUARY 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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management											
In-House Support:											
Misc Contracts:		10/97	17,604	17,604	5,910	2,488	2,294	1,736	1,827	3,349	17,604
Test and Evaluation											
In-House Support:											
NAWCWD,CL	WX	10/97	32,008	32,008	8,773	7,103	3,226	2,769	5,449	4,688	32,008
OPTEVFOR	PD	10/97	12,055	12,055	0	1,770	4,920	250	0	5,115	12,055

GOVERNMENT FURNISHED PROPERTY. Not Applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604727N
PROGRAM ELEMENT TITLE: Joint Standoff Weapon

PROJECT NUMBER: E2068
PROJECT TITLE: JSOW

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	255,684	68,540	70,342	66,771	71,552	95,041	627,930
Subtotal Support and Management	5,910	2,488	2,294	1,736	1,827	3,349	17,604
Subtotal Test and Evaluation	8,773	8,873	8,146	3,019	5,449	9,803	44,063
SBIR Assessment			1,706				1,706
Total Project	270,367	79,901	82,488	71,526	78,828	108,193	691,303

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N

PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
U0166 SPS IMPROVEMENT PROGRAM	12,961	20,994	3,756	2,747	1,740	1,781	1,820	1,861	CONT.	CONT.
U0167 5" RAM MISSILE	24,641	19,170	14,136	4,616	7,723	7,941	8,129	8,330	CONT.	CONT.
U0172 CIWS PHALANX	5,554	4,781	0	0	0	0	0	0	CONT.	CONT.
U0173 NATO SEASPARROW	64,386	45,437	48,687	14,233	6,420	4,510	4,699	4,816	CONT.	CONT.
U0665 IRST	13,940	7,523	0	0	0	0	0	0	CONT.	CONT.
U0954 SHIPBOARD EW DEV	13,538	8,657	2,819	3,067	2,703	2,624	2,600	2,739	CONT.	CONT.
U2178 QRCC	51,900	26,246	27,710	28,326	13,554	13,657	13,954	14,277	CONT.	CONT.
U2190 NULKA	7,567	6,111	8,233	8,314	7,154	5,801	3,772	6,867	CONT.	CONT.
U2256 SEMI-ACTIVE FUZE	228	5,225	0	0	0	0	0	0	0	5,423
U2309 AIEWS	0	0	26,929	41,487	47,015	35,637	27,483	21,639	CONT.	CONT.
TOTAL	194,715	144,144	132,270	102,790	86,309	71,951	62,457	60,529	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element, effective for FY 1994, consolidates currently ongoing and planned programmatic efforts related to Ship Self Defense (SSD). The consolidation facilitates effective planning and management of these efforts, exploiting the synergistic relationship inherent in each. These projects are directed by a single program manager in Program Executive Office for Theater Air Defense. Analysis and demonstration have established that surface SSD based on single-sensor detection, point-to-point control architecture performs marginally against current and projected Anti-Ship Cruise Missile (ASCM) threats. The supersonic seaskimming ASCM reduces the effective battle space to the horizon and the available reaction time-line to less than 30 seconds, from first opportunity to detect until the ASCM impacts its target ship. Against such a threat multi-sensor integration is required for effective detection; parallel processing is essential to reduce reaction time to acceptable levels and to provide vital coordination/integration of hardkill and softkill assets; and improvements in terminal gun system effectiveness and in missile kinematics, control and homing accuracy are required for successful hardkill engagement. These SSD projects address and coordinate the detect, control, and engage functions necessary to meet the rigorous SSD requirements within a development structure dedicated to systems engineering.

(U) DETECTION: Improved coordinated sensor performance to increase the probability of detecting low altitude, low observable targets is to be achieved through the synergism gained from the integration of dissimilar sensor sources. Multi-sensor integration is being addressed through the efforts of Quick Reaction Combat Capability (QRCC) (U2178), while sensor improvements are addressed through the SPS Improvements (U0166), Infrared Search and Track (U0665), 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.

(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, rate-of-fire, number of rounds on target, first round accuracy, and reliability and maintenance. The Fuze improvement (U2256) will provide Evolved SeaSparrow Missile (ESSM) and possibly other missiles with improvements to accurately discriminate targets in high clutter/chaff environments and will provide increased capability in high closing rate engagements.

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

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
U0166 SPS IMPROVEMENT PROGRAM	12,961	20,994	3,756	2,747	1,740	1,781	1,820	1,861	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops and tests performance and reliability upgrades for search radar equipment to meet the evolving threat.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($300) 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) ($9,202) Continued to fund ongoing AN/SPQ-9B Radar development contract.
   - (U) ($3,076) Conducted a Critical Design Review (CDR) and a Production Readiness Review (PRR). Continued radar integration task to MK 86 Gun Fire Control System.
   - (U) ($183) Analyzed and demonstrated Digital Sidelobe Cancellation development as a product improvement to the AN/SPQ-9B Radar.
   - (U) ($200) Forward financing of FY 1997 requirements due to low execution rates.

2. (U) FY 1997 PLAN:
   - (U) ($200) Continue 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) ($8,938) Continue 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) ($3,328) Conduct First Article Testing (FAT) at contractor site and MK 86 integration testing at Naval Surface Warfare Center, Port Hueneme Division (NSWC/PHD).
- (U) ($169) Continue Digital Sidelobe Cancellation development as a product improvement to the AN/SPQ-9B Radar.
- (U) ($200) Forward financing of FY 1998 requirements due to low execution rates.
- (U) ($7,672) Begin development of AN/SPS-48 Pulse Doppler upgrade.
- (U) ($487) Portion of extramural program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

3. (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) Conduct developmental testing at NSWC Port Hueneme and aboard DD-963 class ship. Commence Operational Testing (OT).
- (U) ($999) Complete FAT at contractor site and MK 86 integration testing at NSWC Div Port Hueneme.
- (U) ($100) Continue Digital Sidelobe Cancellation development as a product improvement to the AN/SPQ-9B Radar.
- (U) ($100) Investigate Solid State Multi-function Radar feasibility.

4 (U) FY 1999 PLAN:

- (U) ($900) 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) ($108) Continue Digital Sidelobe Cancellation development as a product improvement to the AN/SPQ-9B Radar.
- (U) ($1,639) Complete OT IIC on DD-963 class ship.
- (U) ($100) Continue Solid State Multi-function Radar investigations.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense
PROJECT NUMBER: U0166
PROJECT TITLE: SPS Improvement Program

(U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	13,185	9,892	6,182	2,711
(U) Adjustments from FY 1997 PRESBUDG:	-224	+11,102	-2,426	+36
(U) FY 1998 / FY 1999 PRESBUDG Submit:	12,961	20,994	3,756	2,747

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease in FY 1996 is due to a SBIR transfer (-234) and minor pricing adjustments (+10). Increase in FY 1997 is due to Congressional increase for AN/SPQ-9B (+4,000) and AN/SPS-48E (+8,000), and Congressional Undistributed reductions (-898). Decrease in FY 1998 is due to Arsenal Ship 3rd Team (-2,500), forward financing of FY 1998 requirements due to low execution rates (-200), POM 98 decision adjustment (+337) and minor pricing adjustments (-63). Increase in FY 1999 is due to minor pricing adjustments.

(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 14UK / LINE 511000/05/06	4,034	10,237	9,753	22,514	35,674	18,575	18,684	19,381	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: See Attached.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
a. System Development Contract	9,402	15,310	0	0
b. Contractor Engineering Support	75	750	50	100
c. Government Engineering Support	3,459	4,392	3,676	2,617
d. Miscellaneous	25	542	30	30
Total	12,961	20,994	3,756	2,747

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT:0604755N
PROGRAM ELEMENT TITLE:Ship Self Defense

PROJECT NUMBER: U0166
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/ Oblige Date	Perform Activity EAC	Project Office EAC	Total FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development											
Norden Systems Melville, NY	CPAF	10/94	28,067	9,727	9,402	8,938	0	0	0	28,067	
NRL Washington, DC	WR/RC	Various	CONT.	CONT.	6,348	0	0	0	0	CONT.	CONT.
NAVSURFWARCENDIV Port Hueneme, CA	WR	Various	CONT.	CONT.	4,058	0	0	0	0	CONT.	CONT.
Miscellaneous (NSWC/CD, JHU/APL)	PD/WR	Various	CONT.	CONT.	2,490	3,154	5,304	915	747	CONT.	CONT.
ITT/G Van Nuys, CA	CPAF	Various	CONT.	CONT.	0	0	6,372	0	0	CONT.	CONT.
Support and Management											
Miscellaneous (EG&G, Techmatics)	CPFF	Various	2,385	2,385	1,890	105	180	80	130	0	2,385
Test and Evaluation											
Miscellaneous (NSWC/PHD)	WR/RC	Various	CONT.	CONT.	1,523	0	0	400	762	CONT.	CONT.
NRL Washington, DC	WR	Various	CONT.	CONT.	0	300	200	2,361	1,108	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT:0604755N
PROGRAM ELEMENT TITLE:Ship Self Defense

PROJECT NUMBER: U0166
PROJECT TITLE: SPS Improvement Program

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1995 &Prior	FY1996 Budget	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	0	259

Support and Management - Not applicable.
Test and Evaluation - Not applicable.

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	22,882	12,556	20,614	915	747	CONT.	CONT.
Subtotal Support and Management	1,890	105	180	80	130	0	2,385
Subtotal Test and Evaluation	1,523	300	200	2,761	1,870	CONT.	CONT.
Total Project	26,295	12,961	20,994	3,756	2,747	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
U0167 5" ROLLING AIRFRAME MISSILE										
	24,641	19,170	14,136	4,616	7,723	7,941	8,129	8,330	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 1996 ACCOMPLISHMENTS:

- (U) ($3,000) Continued algorithm and electronics development.
- (U) ($2,000) Prepared technical data and conducted Critical Design Review (CDR).
- (U) ($2,000) Prepared for at-sea testing phase.
- (U) ($6,000) Continued Seeker Hardware Development.
- (U) ($6,500) Assembled Engineering Models (EM).
- (U) ($1,000) Conducted software/hardware integration tasks.
- (U) ($2,000) Conducted government and contractor simulation efforts.
- (U) ($1,641) Continued to support development of system interface adaptations as necessary to provide effective SSD integration.
- (U) ($500) Prepared for RAM "Surface Mode" feasibility demonstration.

2. (U) FY 1997 PLAN:
   - (U) ($1,800) Conduct Government Electromagnetic Environmental Effects (E3) testing.
   - (U) ($4,745) Continue algorithm development.
   - (U) ($2,700) Conduct government and contractor simulations.
   - (U) ($1,000) Documentation of test results.
   - (U) ($1,000) Complete Electronics Design.
   - (U) ($1,000) Complete Seeker Design.
   - (U) ($1,470) Continue to support development of system interface adaptations as necessary to provide effective SSD integration.
   - (U) ($1,100) Conduct RAM "Surface Mode" feasibility demonstration.
   - (U) ($2,000) Conduct EM flight tests.
   - (U) ($1,000) Conduct Aircraft Captive Carry Seeker testing.
   - (U) ($1,000) Prepare for Technical/Operational Evaluation (TECH/OPEVAL) Testing.
   - (U) ($355) Portion of extramural program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:
   - (U) ($8,000) Conduct DT/OT-IIB.
   - (U) ($1,200) Conduct Tech Eval (DT-IIC).
   - (U) ($1,600) Conduct OPEVAL (OT-IIC).
   - (U) ($1,200) Conduct contractor and government simulation efforts.
   - (U) ($800) Documentation of test results.
   - (U) ($500) Complete Aircraft Captive Carry Seeker Testing and Algorithm Modification.
   - (U) ($836) Continue to support development of system interface adaptations as necessary to provide effective SSD integration.

4. (U) FY 1999 PLAN:
   - (U) ($2,300) Conduct OT-IIIA (FOT&E).
   - (U) ($300) Documentation of test results.
   - (U) ($300) Continue development of algorithms required to support RAM "Surface Mode".
   - (U) ($800) Conduct contractor and government simulation efforts.
   - (U) ($916) Continue to support development of system interface adaptations as necessary to provide effective SSD integration.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0167
PROJECT TITLE: 5" Rolling Airframe Missile

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	25,139	20,016	18,147	8,729
(U) Adjustments from FY 1997 PRESBUDG:	-498	-846	-4,011	-4,113
(U) FY 1998 / FY 1999 PRESBUDG Submit:	24,641	19,170	14,136	4,616

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: Decrease in FY 1996 is due to a SBIR transfer (-469) and minor pricing adjustments (-29). Decrease in FY 1997 is due to Congressional Undistributed reductions. Decrease in FY 1998 is due to minor pricing adjustments (-346), Arsenal Ship 3rd Team reduction (-2,000), program restructure (-1,000) and White Oak Wind Tunnel assessment (-665). Decrease in FY 1999 is due to minor pricing adjustments (-48), White Oak Wind Tunnel assessment (-665), and program restructure (-3,400).
(U) Schedule: Testing of RAM Block I Surface Mode will be delayed.
(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 LINE 523800:	44,463	44,473	68,292	61,174	27,876	10,287	44,024	45,271	CONT.	CONT.
(U) WPN LINE 224200:	61,343	47,645	44,082	56,950	33,787	34,644	35,492	36,424	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: See Attached.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	13,536	9,280	0	0
b. Ancillary Hardware Development	1,450	1,050	1,000	400
c. Test and Evaluation (GFP)	3,687	0	0	0
d. Developmental Test and Evaluation	373	1,726	600	0
e. Operational Test and Evaluation	0	2,215	9,137	1,788
f. Contractor Engineering Support	298	0	650	476
g. Government Engineering Support	2,444	2,792	1,800	843
h. Travel	141	170	175	180
I. Miscellaneous	2,712	1,937	774	929
Total	24,641	19,170	14,136	4,616

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE:Ship Self Defense

PROJECT NUMBER: U0167
PROJECT TITLE: 5" Rolling Airframe Missile

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ 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 :											
HMSC - 89C5339 Tuscon, AZ	SS/CPFF	09/89	19,630	19,630	19,630	0	0	0	0	0	19,630
HMSC - 94C5435 Tuscon, AZ	SS/CPAF	06/94	37,100	37,100	16,083	12,403	8,614	0	0	0	37,100
HMSC - 94C5430 Tuscon, AZ	SS/CPFF	12/94	2,700	2,700	567	1,133	554	0	0	0	2,254
JHU/APL Laurel, MD	SS/CPFF	12/94	CONT.	CONT.	1,325	1,450	1,050	1,000	400	CONT.	CONT.
NAVAIRWARCEN / WD China Lake, CA	WR	Various	CONT.	CONT.	10,398	1,838	1,953	1,800	643	CONT.	CONT.
NRL Washington, DC	WR/RC	Various	1,400	1,400	200	1,200	0	0	0	0	1,400
Miscellaneous	Various	Various	CONT.	CONT.	202,943	2,259	3,058	949	1,309	CONT.	CONT.
Support and Management :											
Miscellaneous	Various	Various	CONT.	CONT.	2,526	298	0	650	476	CONT.	CONT.
Test and Evaluation :											
HMSC - 94C5435 Tuscon, AZ	SS/CPAF	10/96	CONT.	CONT.	0	0	1,056	6,230	1,638	CONT.	CONT.
NAVAIRWARCEN / WD Pt. Mugu, CA	WR	01/95	CONT.	CONT.	336	176	791	1,557	100	CONT.	CONT.
Miscellaneous	Various	Various	CONT.	CONT.	200	197	2,094	1,950	50	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE:Ship Self Defense

PROJECT NUMBER: U0167
PROJECT TITLE: 5" Rolling Airframe Missile

GOVERNMENT FURNISHED PROPERTY

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 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	0	3,687	0	0	0	0	3,687

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	251,146	20,283	15,229	3,749	2,352	CONT.	CONT.
Subtotal Support and Management	2,526	298	0	650	476	CONT.	CONT.
Subtotal Test and Evaluation	536	4,060	3,941	9,737	1,788	CONT.	CONT.
Total Project	254,208	24,641	19,170	14,136	4,616	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
U0173 NATO SeaSparrow	64,386	45,437	48,687	14,233	6,420	4,510	4,699	4,816	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 which 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 to allow for full exploitation of the capabilities of the future ESSM, as well as 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 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U0173
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: NATO SeaSparrow

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

(a) (U) ESSM [$52,335]

- (U) ($22,279) Provided incremental funding to continue ESSM EMD effort at Hughes, includes exercise of option to develop S-Band capability for AEGIS ESSM uplink. Conducted System Design Review (SDR) and Preliminary Design Review (PDR).
- (U) ($3,210) Provided incremental funding to continue ESSM Warhead development and started warhead qualification process.
- (U) ($10,101) Continued ESSM integration (Integrated Product Team (IPT) participation) and government lab/engineering successfully. Completed SDR and PDR.
- (U) ($15,117) Continued MK41 VLS ESSM QuadPack Development & Qualification effort at United Defense, Lockheed Martin and Government Labs.
- (U) ($1,628) Continued development on Raytheon Contract for NSSMS to fire ESSM.

(b) (U) MK91 Rearchitecture [$10,518]

- (U) ($9,042) Continued effort on EMD Contract with Raytheon, to modify NSSMS MK91 to integrate with SSDS Architecture.
- (U) ($1,476) Initiated integration engineering efforts to support NSSMS MK91 SSDS. Successfully completed System Design Review (SDR) in Jan 96 and Hardware Preliminary Design Review (HPDR) in Apr 1996. Completed Software Specification Review (SSR) Jun 1996. Conducted Software Preliminary Design Review (PDR).

(c) (U) OTHER SDSMS (SWY-1/2/3) [$1,533]

- (U) ($1,533) Based on results of engineering investigations initiated as a result of LHD-4 SQT testing, commenced modification of common program software package and rectifying hardware deficiencies. Commenced follow-on SQT testing to certify correction of fixes. Initiated follow-on CSIT to allow validation of these modifications. Continued modification to the MK23 TAS hardware and software program, participated in ship installation/integration tests (light off) and begin first deliveries of software for CSIT testing.

2. (U) FY 1997 PLAN:

- (U) ($924) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

(a) (U) ESSM [$37,707]

- (U) ($14,949) Provide incremental funding to continue ESSM EMD efforts at Hughes including the S-Band capability for AEGIS ESSM Uplink. Conduct CDR, deliver 12 production representative missiles to support the first major development test event (DT-IIA).
- (U) ($1,675) Provide incremental funding for continuation of ESSM Warhead development. Finalize warhead qualification tests and deliver assets for warhead arena and vulnerability testing.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0173
PROJECT TITLE: NATO SeaSparrow

2. (U) FY 1997 PLAN (Cont'd):

(a) (U) ESSM [$37,707] (Cont'd)

- (U) ($11,476) Continue 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) ($1,048) Continue development on Raytheon Contract of NSSMS Modifications to fire ESSM.
- (U) ($8,559) Continue ESSM Integration (Integrated Product Team participation) and government lab/engineering efforts associated with EMD. Support CDR, conduct first major Development Test event (DT-IIA) and conduct Insensitive Munitions (IM) testing.

(b) (U) MK91 Rearchitecture [$6,137]

- (U) ($4,941) Continue effort on EMD Contract with Raytheon to modify NSSMS MK91 to integrate with SSDS Architecture.
- (U) ($1,196) 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 will lead to formal qualification testing in Sept 1997. Begin installation of modified equipment on the Self Defense Test Ship in Sept 1997

(c) (U) OTHER SDSMS (SWY-1/2/3) [$669]

- (U) ($669) Continue parallel development effort to support modifications to MK23 hardware to support installation of TAS radar in SSDS configured Ships.

3. (U) FY 1998 PLAN:

(a) (U) ESSM [$39,360]

- (U) ($26,208) Deliver 30 PRM's (includes Warhead, MK41 VLS QuadPack and AEGIS S-Band Link)
- (U) ($2,750) Conduct first at-sea development test and operational assessment.
- (U) ($3,300) Conduct DT/OT against stressing targets from Self Defense Test Ship.
- (U) ($500) LRIP Decision
- (U) ($3,027) Continue live fire threat/vulnerability testing.
- (U) ($3,575) Continue section/component test and qualification

(b) (U) MK91 Rearchitecture [$6,249]

- (U) ($4,799) Complete effort on EMD Contract to Raytheon to modify MK91 to integrate with SSDS Architecture. Complete formal qualification testing in Jan 1998 and install on Lead Ship.
- (U) ($1,450) Continue clean up of any ship installation problems and correct any software/hardware problems.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0173
PROJECT TITLE: NATO SeaSparrow

3. (U) FY 1998 PLAN: (Cont'd)

(c) (U) OTHER SDSMS (SWY-1/2/3) [$3,078]

- (U) ($3,078) Modify computer programs to address deficiencies identified in Software Qualification Tests. Continue efforts associated with support of SSDS Configuration.

4. (U) FY 1999 PLAN:

(a) (U) ESSM [$11,733]

- (U) ($8,783) Deliver remaining PRM's (10).
- (U) ($2,200) Conduct TECHEVAL and OPEVAL.
- (U) ($500) Achieve Milestone III Decision.
- (U) ($250) Submit Live Fire Test Report.

(b) (U) MK91 Rearchitecture [0]

(c) (U) OTHER SDSMS (SWY-1/2/3 [$2,500]

- (U) ($2,500) Complete efforts associated with support of SSDS Configuration.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	63,234	47,475	49,308	14,337
(U) Adjustments from FY 1997 PRESBUDG:	+1,152	-2,038	-621	-104
(U) FY 1998 / FY 1999 PRESBUDG Submit:	64,386	45,437	48,687	14,233

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 increase is due to a SBIR transfer (-1,287) and other pricing adjustments (+2,439). Decrease in FY 1997 is due to Congressional Undistributed reductions. Decrease in FY 1998 and FY 1999 is due to minor pricing adjustments.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0173
PROJECT TITLE: NATO SeaSparrow

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) 1. WPN BA-2 Other Missiles, Sparrow Modifications including the AIM/RIM-7P, ESSM and MHIP programs (ESSM production startup begins in FY97, Low Rate Initial Production (LRIP) in FY99 and Full Rate Production (FRP) in FY00). Reflects ESSM element only:	2,530	15,529	36,486	83,495	95,074	85,472	116,394	CONT.	CONT.	
• (U) 2. OPN BA-4 NATO SEASPARROW P-1 166 (FY96-outyears): Provides funding for follow-on production/installation of R&D related efforts (ESSM and MK 91 Rearchitecture system mods beginning in FY98 and non-R&D related mods and installation).			19,874	46,090	55,765	48,872	33,668	CONT.	CONT.	

(U) RELATED RDT&E:

- (U) PE 0603609N (Conventional Munitions)
- (U) PE 0604307N (AEGIS Combat System Engineering)
- (U) PE 0604755N (U2176 SSD Engagement Improvement)
- (U) PE 0604755N (U2178 Quick Reaction Combat Capability-QRCC)

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 3Q PDR	2Q CDR		
T&E Milestones		2Q DT-IIA 4Q DT-IIC	1Q DT-IIB 1Q OT-IIA 3Q DT-IIE 3Q OT-IIB	1Q DT-IIF 2Q OT-IIC
Contract Milestones			4Q LRIP CA	1Q LRIP OA

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0173
PROJECT TITLE: NATO Seasparrow

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	31,915	20,987	21,768	2,357
b. Ancillary Hardware Development	14,534	8,508	8,390	3,280
c. Software Development	1,968	1,391	1,256	480
d. System Engineering	7,626	6,116	7,374	3,107
e. Development Test and Evaluation	2,250	2,885	4,463	1,545
f. Integrated Logistics Support	675	855	727	224
g. Engineering Support	780	965	821	552
h. Program Management Support	1,043	598	610	544
I. Program Management Personnel	937	1,208	1,495	1,507
j. Travel	314	320	325	330
k. Miscellaneous	250	680	720	150
I. Other	2,094	924	738	157
Total	64,386	45,437	48,687	14,233

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0173
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 FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development											
(a) SDSM ENHANCEMENTS:											
Raytheon - Wayland, MA	SS/CP	06/95	TBD	TBD	4,815	8,634	5,573	4,925	0	0	23,947
Hughes - Fullerton, CA	SS/CPFF	06/95	TBD	TBD	3,538	0	0	0	0	0	3,538
Vitro - Rockville, MD	SS/CPFF	03/95	TBD	TBD	1,160	1,186	66	478	0	CONT.	CONT.
Miscellaneous	SS/CPFF	Various	TBD	TBD	17,915	923	200	1,209	863	CONT.	CONT.
(b) ESSM/QUAD PACK:											
Hughes - Tuscon, AZ	LC/CPAF	06/95	TBD	TBD	26,230	21,116	14,526	16,843	2,357	CONT.	CONT.
Lockheed-Martin/ UNDEF/ Baltimore MD/Minn, MN	LC/CPAF	06/95	TBD	TBD	5,318	13,588	8,383	7,239	1,678	CONT.	CONT.
Raytheon/ED - Wayland, MA	SS/CPFF	06/95	TBD	TBD	2,109	1,628	1,048	0	0	CONT.	CONT.
TDW (German Company) NSWC Dahlgren Contracted with a German Contractor to Manufacture Warhead	LC/CP	08/95	TBD	TBD	961	2,165	888	0	0	CONT.	CONT.
Miscellaneous	SS/CPFF	Various	CONT.	CONT.	2,195	1,512	1,857	2,604	723	CONT	CONT

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0173
PROJECT TITLE: NATO Seasparrow

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 Comple	Total Program
Support and Management											
(a) SDSM ENHANCEMENTS:											
Miscellaneous	SS/CPFF	11/93	3,769	3,769	3,769	0	0	0	0	0	3,769
(b) ESSM/QUAD PACK:											
Miscellaneous	Various	Various	CONT.	CONT.	0	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 FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development										
(a) SDSM ENHANCEMENTS:										
Miscellaneous	WR	Various	Various	1,129	565	400	1,500	0	0	3,594
(b) ESSM/QUAD PACK:										
NAWC-CL / NSWC-DD	WR	Various	Various	4,912	4,976	4,976	4,255	2,260	CONT.	CONT.
NSWC/PHD	WR	Various	Various	470	905	1,345	1,521	1,645	CONT.	CONT.
Miscellaneous	WR	Various	Various	188	550	440	482	351	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0173
PROJECT TITLE: NATO Seasparrow

Item Description	Contract Method/ FundType Vehicle	Award/ Oblig Date	Delivery Date	Total FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Support and Management										
(a) SDSM ENHANCEMENTS:										
Miscellaneous	WR/PD	Various	Various	1,614	618	407	665	877	CONT.	CONT.
(b) ESSM/QUAD PACK:										
NSPO/Various	PD	Various	Various	522	1,589	1,437	1,695	1,707	CONT.	CONT.
(c) Miscellaneous:										
Other Program Costs	Various	Various	Various	0	2,094	924	738	157	CONT.	CONT.
Test and Evaluation										
(a) SDSM ENHANCEMENTS:										
Miscellaneous	WR	Various	Various	1,251	125	160	550	760	CONT.	CONT.
(b) ESSM/QUAD PACK:										
Miscellaneous	WR	Various	Various	0	2,125	2,725	3,913	785	CONT.	CONT.

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	70,940	57,748	39,702	41,056	9,877	CONT.	CONT.
Subtotal Support and Management	5,905	4,388	2,850	3,168	2,811	CONT.	CONT.
Subtotal Test and Evaluation	1,251	2,250	2,885	4,463	1,545	CONT.	CONT.
Total Project	78,096	64,386	45,437	48,687	14,233	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
U0954 Shipboard EW Improvements	13,538	8,657	2,819	3,067	2,703	2,624	2,600	2,739	CONT.	CONT.

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, DDG 993, 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, an Advanced Display System (ADS) 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 1996 ACCOMPLISHMENTS:
   - (U) ($5,457) Continued AIEWS Increment I Development; conducted AIEWS Broad Agency Announcement (BAA) study.
   - (U) ($3,722) Completed RCSR design package for DDG-993 class. Conducted DT III on CG 47 class. Initiated RAM improvement program, including maintenance and reduced installation cost initiatives. Continued signature measurement tests. Conducted effectiveness modeling and simulation.
   - (U) ($4,359) Initiated acceleration of an advanced ES capability.

2. (U) FY 1997 PLANS:
   - (U) ($4,358) AIEWS - Continue AIEWS Increment 1 development by consolidating AIEWS BAA results into RFP for E&MD contract award.
   - (U) ($3,520) OUTLAW BANDIT - Continue signature measurement tests. Continue P3I and signature improvements, including RAM improvement program.
   - (U) ($128) Portion of extramural program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 U.S.C. 638.
   - (U) ($651) Used to forward finance FY 1998 OUTLAW BANDIT requirements.

3. (U) FY 1998 PLAN:
   - (U) ($2,819) OUTLAW BANDIT - Continue signature measurement tests. Continue systems engineering improvements, including T&E cost reduction initiative. Continue P3I and signature/RAM improvement program.

4. (U) FY 1999 PLAN:
   - (U) ($3,067) 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 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	14,436	9,094	18,631	29,942
(U) Adjustments from FY 1997 PRESBUDG:	-898	-437	-15,812	-26,875
(U) FY 1998 / FY 1999 PRESBUDG Submit:	13,538	8,657	2,819	3,067

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: Decrease in FY 1996 is due to Below Threshold Reprogramming Action (96-09) CNO PA&E (-175), a SBIR transfer (-203) and minor pricing adjustments (-520). Decrease in FY 1997 is due to Congressional Undistributed reductions. Decrease in FY 1998 is due to recapitalization of AIEWS (-15,118), forward financing of FY 1998 requirements for low execution rates (-651); and minor pricing adjustments (-43), Decrease in FY 1999 is due to recapitalization of AIEWS (-26,846) and minor pricing adjustments (-29). Funding for AIEWS is transferred to Project U2309 starting in FY 1998.
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0954
PROJECT TITLE: Shipboard EW Improvements

C. (U) OTHER PROGRAM FUNDING SUMMARY:

	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 Line 231200 (AN/SLQ-32/12TC)	17,992	6,358	0	0	0	0	0	0	CONT.	CONT.
(U) OPN Line 0204596N (OUTLAW BANDIT) 121K-1K010	2,700	556	6,920	0	9,269	10,445	11,427	11,345	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: See Attached.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0954
PROJECT TITLE: Shipboard EW Improvements

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

Project Cost Categories		FY 1996	FY 1997	FY 1998	FY 1999
a. Major SW Contracts		3,776	1,191	0	0
b. System Engineering		2,954	2,225	947	744
c. Program Spt/Review/Meetings-In/House Spt		2,449	1,416	0	0
d. Test & Evaluation		500	229	250	250
e. Contractor Eng. Spt		688	382	400	400
f. Program Mgmt Spt		400	400	400	400
g. Logistic Spt		733	877	100	100
h. Pre Planned Prod. Imprvmt		827	400	477	687
i. Software Development/Documentation		200	200	100	100
j. RCS Radar Improvement		200	200	100	200
k. Travel		95	80	30	30
l. Misc		716	1,057	15	156
Total:	13,538	8,657	2,819	3,067	

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 FY1995 &Prior	FY1996 Budget	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	0	18,916
PHASE E											
NMSO	C/CPFF	05/92	13,329	13,329	13,329	0	0	0	0	0	13,329
AIEWS PHASE 1											
NMSO	C/CPFF	03/95	11,000	11,000	11,000	0	0	0	0	0	11,000
DSR SW DEV	C/CPFF	03/95	CONT.	CONT.	53	3,776	1,191	0	0	0	5,020
HUGHES/LOCKHEED											
AIEWS-BAA	C/CPFF	12/95	1,498	1,498	1,498	0	0	0	0	0	1,498
ADCAP/PHASE E/AIEWS											
NRL	WR/RCP	12/94	26,132.	26,132	23,825	1,577	1,187	0	0	0	26,589
NSWC/DD/PHD/NAWC/											
CRANE/NWAD	WR/RCP	01/95	33,342	33,342	28,879	3,659	2,361	0	0	0	35,169
OACM (FY95 & prior)											
NRL	WR/RCP	12/94	930	930	930	0	0	0	0	0	930
NSWC/DD/WHITE											
OAK/CRANE	WR/RCP	01/95	3,838	3,838	3,838	0	0	0	0	0	3,838
OUTLAW BANDIT											
NRL	WR	10/94	CONT.	CONT.	15,846	575	350	500	500	CONT.	CONT.

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FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE:February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U0954
PROJECT TITLE: Shipboard EW Improvements

Contractor/ Government Performing Activity	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
NSWC/DD/NSWC/CD											
NSWC/PHD/NCCOSC	WR/RCP	01/95	CONT.	CONT.	21,704	1,306	868	974	1,081	CONT.	CONT.
SPCC	WR	10/94	CONT.	CONT.	1,389	271	200	250	250	CONT.	CONT.
TRAVEL	WR	10/94	CONT.	CONT.	918	70	80	30	30	CONT.	CONT.
MISC	VAR	VAR	CONT.	CONT.	1,249	716	1,327	15	156	CONT.	CONT.
Support and Management											
ADCAP/PHASE E AIEWS/OUTLAW BANDIT NMSO/NAVSEA/APL)	PD/PR	10/94	CONT.	CONT.	18,625	1,088	864	800	800	CONT.	CONT.
Test and Evaluation											
ADCAP/PHASE E/OUTLAW 01/95	10/94	CONT.	CONT.	7,963	500	229	250	250	CONT.	CONT.	

Government Furnished Property: Not applicable.

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	143,374	11,950	7,564	1,769	2,017	CONT.	CONT.
Subtotal Support and Management	18,625	1,088	864	800	800	CONT.	CONT.
Subtotal Test and Evaluation	7,963	500	229	250	250	CONT.	CONT.
Total Project	169,962	13,538	8,657	2,819	3,067	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
U2178 Quick Reaction Combat Capability (QRCC)	51,900	26,246	27,710	28,326	13,554	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 non-AEGIS 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, Target Acquisition system (TAS), and other sensors, as well as the RAM, CIWS, and AN/SLQ-32 installations on other ship classes. Ships with a Combat Direction System (CDS) or 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 transmit SSDS track data to other ships.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2178
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Quick Reaction Combat Capability

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($16,736) Continued E&MD development of SSDS MK 1 for LSD 41 class.
   - (U) ($10,550) Commenced DT on LSD 41 class ship.
   - (U) ($1,000) Completed programmatic documentation to support Milestone III deployment decision.
   - (U) ($4,362) Completed logistics requirements to support DT/OT and MS III.
   - (U) ($4,450) Continued planning of Milestone III and transitioning to production of SSDS MK 1 LSD 41 class ships.
   - (U) ($2,021) Continued engineering development of SSDS MK 1 for follow-on class ships.
   - (U) ($3,614) Developed a multi-sensor data fusion capability for Centralized Identification Friend or Foe (CIFF) and Non-Cooperative Target Recognition Capability for Self Defense (NCTRC-SD) to ensure proper identification.
   - (U) ($2,205) Continued development and testing of Ship Self Defense System (SSDS) on future Non-Aegis ships as well as integration of new technologies.
   - (U) ($6,962) Provided modifications to the Self Defense Test Ship (SDTS) for testing of remote operations, reduced radar cross section targets and infrared signature reductions.

2. (U) FY 1997 PLAN:
   - (U) ($7,500) Complete DT and conduct OT on LSD-41 class ship.
   - (U) ($13,635) Continue E&MD of SSDS MK 1 for follow-on class ships.
   - (U) ($750) Support programmatic documentation changes.
   - (U) ($3,758) Support logistics requirements due to ship class adaptations.
   - (U) ($603) Portion of extramural program reserved for the Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:
   - (U) ($12,975) Continue E&MD and commence qualification testing of SSDS MK 1 for follow-on class ships. (CV(N), LPD-17, LHD, LHA)
   - (U) ($5,410) Continue E&MD of SSDS MK 1 for follow-on class ships.
   - (U) ($1,325) Support programmatic documentation changes.
   - (U) ($8,000) Conduct FOT&E on Self Defense Test Ship (SDTS).

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2178
PROJECT TITLE: Quick Reaction Combat Capability

4. (U) FY 1999 PLAN:
   - (U) ($14,799) Conduct System Integration testing of SSDS for CV(N) and LPD-17 class ships.
   - (U) ($12,078) Continue E&MD of SSDS MK 1 for LHA/CV(N) class ships.
   - (U) ($1,449) Support programmatic documentation changes.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	52,924	29,480	30,076	28,521
(U) Adjustments from FY 1997 PRESBUDG:	-1,024	-3,234	-2,366	-195
(U) FY 1998 / FY 1999 PRESBUDG Submit:	51,900	26,246	27,710	28,326

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease in FY 1996 is due to minor pricing adjustments. Decrease in FY 1997 is due to reductions for Near Term Mine Warfare Plan (-2,000), and Congressional Undistributed General reductions (-1,234) . Decrease in FY 1998 is due to reductions for Arsenal Ship 3rd Team (-2,000) and NCWF rate adjustments (-366). Decrease in FY 1999 is due to NCWF rate adjustments.

(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 Line 523900, 523905 (MK 1)	15,308	19,239	5,841	22,673	59,664	65,750	67,477	65,935	CONT.	CONT.
(U) O&MN 14D70 Wpn Maint. QRCC	2,222	4,161	5,300	7,144	5,100	4,897	5,100	13,843	CONT.	CONT.
(U) SCN 8210 SSDS MK1	25,038	0	11,991	12,805	26,174	26,750	27,469	28,188	56,000	134,286

(U) RELATED RDT&E: PE 0603755N (Ship Self Defense)

D. (U) SCHEDULE PROFILE: See attached

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2178
PROJECT TITLE: Quick Reaction Combat Capability

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	1,505	0	0	0
b. Software Development	16,372	11,644	11,150	13,254
c. Systems Engineering	4,698	3,407	6,300	5,750
d. Training Development	800	800	800	800
e. Integrated Logistics Support	500	400	400	200
f. Configuration Management	204	198	200	100
g. Install	3,475	0	0	0
h. Test & Evaluation	19,717	4,893	4,000	4,000
i. Government Engineering Support	2,500	2,750	2,700	2,262
j. Program Management Support	1,379	1,394	1,400	1,300
k. Documentation	600	600	600	500
l. Travel	150	160	160	160
Total	51,900	26,246	27,710	28,326

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2178
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 FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development											
Hughes San Diego, CA	SS/CPAF	10/95	CONT.	CONT.	0	26,880	12,766	13,443	14,454	CONT.	CONT.
Hughes Tucson, AZ	SS/FP	10/94	17,740	17,740	16,861	879	0	0	0	0	17,740
NAVSURFWARCENDIV Port Hueneme, CA	WR	Various	CONT.	CONT.	1,950	1,946	50	1,000	1,200	CONT.	CONT.
NAVSURFWARCENDIV Dahlgren, VA	WR	Various	CONT.	CONT.	1,925	2,387	733	1,000	1,200	CONT.	CONT.
JHU/APL Laurel, MD	SS/FP	10/93	CONT.	CONT.	6,827	6,298	1,824	1,693	1,450	CONT.	CONT.
Raytheon Maynard, MA	SS/FP	6/95	4,000	4,000	4,000	0	0	0	0	0	4,000
NRL Washington DC	WR	Various	CONT.	CONT.	302	200	120	120	120	CONT.	CONT.
NWAD Corona, CA	WR	Various	CONT.	CONT.	200	665	493	400	400	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development (Cont.)											
NWAD-AD St. Inigoes, MD	WR	Various	CONT.	CONT.	1,036	2,200	820	979	800	CONT.	CONT.
MISC. Various	Various	Various	CONT.	CONT.	100	2,053	3,587	4,115	3,742	CONT.	CONT.
Support and Management MISC. Various	Various	Various	CONT.	CONT.	1,633	1,166	960	960	960	CONT.	CONT.
Test and Evaluation NAVSURFWARCENDIV Port Hueneme, CA	WR	Various	CONT.	CONT.	650	3,230	1,663	2,000	2,000	CONT.	CONT.
NAVSURFWARCENDIV Dahlgren, VA	WR	Various	CONT.	CONT.	3,650	3,430	3,230	2,000	2,000	CONT.	CONT.
MISC. Various	Various	Various	566	566	0	566	0	0	0	0	566

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 FY1995 &Prior	FY1996 Budget	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	0	3,863
HARDWARE - Command Table										
NRaD San Diego, CA	WR	Various	CONT.	100	374	0	0	0	0	474

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	37,164	43,508	20,393	22,750	23,366	CONT.	CONT.
Subtotal Support and Management	1,633	1,166	960	960	960	CONT.	CONT.
Subtotal Test and Evaluation	4,300	7,226	4,893	4,000	4,000	CONT.	CONT.
Total Project	43,097	51,900	26,246	27,710	28,326	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
U2190 NULKA Decoy	7,567	6,111	8,233	8,314	7,154	5,801	3,772	6,867	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 1996 ACCOMPLISHMENTS:
   - (U) ($7,203) Completed NULKA development and conducted land based test. Completed integration of the stand-alone NULKA system with SLQ-32. Commenced research and development of payload improvements required to counter the next generation threat and to improve EMC capability. Commenced integration of NULKA with SSDS.
   - (U) ($364) Forward financing of FY 1997 requirements due to low execution rates.

2. (U) FY 1997 PLAN:
   - (U) ($5,665) Conduct DT/OT testing required to achieve a milestone III decision for the stand-alone NULKA system. Continue research and development of payload improvements required to counter the next generation threat and to improve EMC capability. Continue integration of NULKA with SSDS.
   - (U) ($364) Forward financing of FY 1998 requirements due to low execution rates.
   - (U) ($82) Portion of extramural program reserved for Small Business Innovation Research (SBIR) in accordance with 15 U.S.C. 638.

3. (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.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2190
PROJECT TITLE: NULKA Decoy

4. (U) FY 1999 PLAN:
   - (U) ($8,314) Conduct FOT&E of initial P3I into NULKA. Conduct performance validation testing and FOT&E for inclusion in production units.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	7,751	4,377	1,906	1,937
(U) Adjustments from FY 1997 PRESBUDG:	-184	+1,734	+6,327	+6,377
(U) FY 1998 / FY 1999 PRESBUDG Submit:	7,567	6,111	8,233	8,314

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease in FY 1996 is due to a SBIR transfer (-175) and minor pricing adjustments (-9). Increase in FY 1997 is due to Congressional increase ($2,000) and Congressional Undistributed reductions (-266). Increase in FY 1998 is due to reduction for forward financing of FY 1998 requirements due to low execution rates (-364), AIEWS recapitalization (+6,840) and minor pricing adjustments (-149) Increase in FY 1999 is due to AIEWS recapitalization (+6,463) and minor pricing adjustments (-86).
(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 Line 553000	106	21,485	23,372	19,447	19,249	15,811	15,762	16,132	CONT.	CONT.
(U) OPN Line 553005	2,403	2,121	1,324	2,931	2,012	1,659	1,605	1,905	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: See attached.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Design and analysis	2,727	3,000	6,681	6,531
b. Hardware Fabrication and Procurement	1,960	1,101	1,317	1,548
c. Demonstration Test and Evaluation	965	475	0	0
d. Operational test and Evaluation	1,234	1,300	0	0
e. Program management Support	631	175	175	175
f. Travel	50	60	60	60
Total	7,567	6,111	8,233	8,314

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 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 FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development											
NAVSURFWARCENDIV Crane, IN	WR	Various	CONT.	CONT.	0	970	350	400	400	CONT.	CONT.
NAVSURFWARCENDIV Indian Head, MD	WR/RC	Various	CONT.	CONT.	0	1,125	350	150	150	CONT.	CONT.
NAVSURFWARCENDIV Dahlgren, VA	WR	Various	CONT.	CONT.	0	1,491	1,900	900	900	0	CONT.
NRL Washington, DC	WR	Various	CONT.	CONT.	0	540	700	400	400	0	CONT.
Sippican Boston, MA	SS/CPFF	09/96	4,713	4,713	0	1,300	1,300	0	0	CONT.	CONT.
AWA, Australia	SS/CPFF	05/96	1,460	1,460	0	1,460	1,176	0	0	0	CONT.
NAVSUP Washington, DC	PD	Various	CONT.	CONT.	0	0	0	6,148	6,229	CONT.	CONT.
Support and Management											
Techmatics Arlington, VA	CC/CPFF	06/96	CONT.	CONT.	0	456	175	175	175	CONT.	CONT.
Miscellaneous	Various	Various	CONT.	CONT.	0	225	60	60	60	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2190
PROJECT TITLE: NULKA Decoy

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
Test and Evaluation:											
OPTEVFOR	WR	11/07/96	100	100	0	0	100	0	0	0	100

GOVERNMENT FURNISHED PROPERTY: Not applicable.

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	0	6,886	5,776	7,998	8,079	CONT.	CONT.
Subtotal Support and Management	0	681	235	235	235	CONT.	CONT.
Subtotal Test and Evaluation	0	0	100	0	0	0	0
Total Project	0	7,567	6,111	8,233	8,314	CONT.	CONT.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL	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	0	26,929	41,487	47,015	35,637	27,483	21,639	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 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, an Advanced Display System (ADS) 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 1996 ACCOMPLISHMENTS: Not applicable.

2. (U) FY 1997 PLANS: Not applicable.

3. (U) FY 1998 PLANS:

- (U) ($1,387) Conduct modeling effort of EW environment and improve EW measures of effectiveness.
- (U) ($23,075) Initiate AIEWS Increment 1 E&MD to include special receiver, SEI, precision ESM, and advanced technology demonstration development including integration efforts for both AEGIS (Baseline 6 & 7) and ISDS Combat Systems.
- (U) ($2,467) Initiate development of Increment 1 logistics efforts to include electronic technical documentation, embedded training foundation, perform manpower analysis, and perform smart ship manning demonstration.

FY 1998 / FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604755N PROJECT NUMBER: U2309
PROGRAM ELEMENT TITLE: Ship Self Defense PROJECT TITLE: Advanced Integrated Electronic Warfare

4. (U) FY 1999 PLANS:
   - (U) ($ 2,287) Continue modeling effort of EW environment and improve EW measures of effectiveness.
   - (U) ($31,072) Continue Increment 1 E&MD.
   - (U) ($3,157) AIEWS Increment 2 risk reduction efforts.
   - (U) ($4,971) Continue development of Increment 1 logistics efforts, and initiate development and integration of Increment 2 logistics efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	0	0
(U) Adjustments from FY 1997 PRESBUDG:	0	0	+26,929	+41,487
(U) FY 1998 / FY 1999 PRESBUDG Submit:	0	0	26,929	41,487

(U) CHANGE SUMMARY EXPLANATION:
(U) Funding: The FY 1998 increase is due to CNO directed requirement to accelerate AIEWS advanced Electronic Support (ES) development (+$19,794); transfer of AIEWS funding from U0954 (+$10,168); NWCF adjustments (-315), various Congressional adjustments (-218), and reduction to fund Arsenal Ship (-2,500). The FY 1999 increase is due to CNO directed requirement to accelerate AIEWS ES development (+$15,197); transfer of AIEWS funding from U0954 (+$26,846); NWCF adjustments (-317), and various Congressional adjustments (-239).
(U) Schedule: Not applicable.
(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY:

	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 Line 231300 (AIEWS)	0	0	0	0	0	7,233	28,429	63,318	71,040	CONT.	CONT.

U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: See attached.

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FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 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 1996	FY 1997	FY 1998	FY 1999
a. Hardware Development	0	0	16,924	25,074
b. Software Development	0	0	3,250	6,457
c. Systems Engineering	0	0	2,245	2,390
d. Government Engineering Support	0	0	2,459	3,674
e. Test & Evaluation	0	0	0	500
f. Contractor Engineering Support	0	0	195	195
g. Integrated Logistics Support	0	0	1,253	2,576
h. Travel	0	0	75	75
i. Miscellaneous	0	0	528	546
Total	0	0	26,929	41,487

Note: Funding for AIEWS through FY97 is contained in U0954

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense

PROJECT NUMBER: U2309
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/ 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											
DSR SW Development	C/CPFF	3/95*	13,375	13,375	0	0	0	0	2,457	0	13,375
TBD Increment 1 E&MD	C/CPFF	12/98	TBD	TBD	0	0	0	16,924	25,074	CONT	CONT
NRL	WR/RCP	10/97	CONT	CONT	0	0	0	2,779	3,951	CONT	CONT
NSWC/DD;CD;PHD;NWAD	WR/RCP	10/97	CONT	CONT	0	0	0	3,178	4,689	CONT	CONT
AEGIS Backfit Integration	WR/RCP	10/97	CONT	CONT	0	0	0	3,250	4,000	CONT	CONT
Travel	WR	10/97	CONT	CONT	0	0	0	75	75	CONT	CONT
Miscellaneous	Various	Various	CONT	CONT	0	0	0	528	546	CONT	CONT
Support and Management											
NSMO Technical Support	PD	10/94	CONT	CONT	0	0	0	195	195	CONT	CONT
Test and Evaluation											
AIEWS Increment 1	Various	12/98	CONT	CONT	0	0	0	0	500	CONT	CONT

* Note: Funding for AIEWS is contained in Project U0954 for FY97 and prior.

FY 1998 / FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 1997

BUDGET ACTIVITY: 5
PROGRAM ELEMENT: 0604755N
PROGRAM ELEMENT TITLE: Ship Self Defense
PROJECT NUMBER: U2309
PROJECT TITLE: Advanced Integrated Electronic Warfare System (AIEWS)

GOVERNMENT FURNISHED PROPERTY: Not applicable

	FY1995 &Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	0	0	0	26,734	40,792	CONT	CONT
Subtotal Support and Management	0	0	0	195	195	CONT	CONT
Subtotal Test and Evaluation	0	0	0	0	500	CONT	CONT
Total Project	0	0	0	26,929	41,487	CONT	CONT

DATE: FEBRUARY 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	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
F0253 Navigation and Electro-optical Support	10,990	11,976	4,005	3,326	2,029	985	1,006	1,033	CONT.	CONT.
W0676 Improved ID Developments	3,767	1,195	2,094	0	0	0	0	0	0	93,741
W1253 Combat ID System	4,855	0	0	0	0	0	0	0	0	95,308
W2212 All Service Combat Identification Evaluation Test (ASCIET)	2,734	2,960	1,552	3,205	3,285	3,365	3,440	3,518	CONT.	CONT.
X0921 NAVSTAR GPS Equipment	29,958	30,706	34,115	43,894	5,806	0	0	0	0	808,078
X2303 Combat Survivor Evader Locator (CSEL)	380	0	475	0	0	0	0	0	0	855
X2313 Situational Awareness BEacon with Reply (SABER)	0	0	8,129	7,506	5,342	2,764	3,781	4,430	CONT.	CONT.
TOTAL	52,684	46,837	50,370	57,931	16,462	7,114	8,227	8,981	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,

DATE: FEBRUARY 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

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 replacement for existing optical periscopes. The Photonics Mast exploits a wide portion of the electro-magnetic spectrum utilizing advanced Electro-Optic/thermal imaging and communications reception/Electronic Warfare Support Measures(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 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER & TITLE	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
F0253 Navigation & E-O Support	10,990	11,976	4,005	3,326	2,029	985	1,006	1,033	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, infrared imaging capabilities and make extensive use of image enhancement techniques for target identification and classification. The non-hull penetrating design provides freedom in ship design as well as space savings for future design submarines. The system will be designed to satisfy Operational Requirement #365-87-94. The Photonics Mast, mounted on the Modular Mast, is planned for installation on the New Attack Submarine, SSN-688 and SEAWOLF class submarines.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

(U) ($10,810) Continued Photonics Mast Program (PMP) Engineering and Manufacturing Development (EMD) Phase.

(U) ($30) Performed Photonics Mast Critical Design Review (CDR).

(U) ($50) Completed Universal Modular Mast Program PDR.

(U) ($100) Completed Universal Modular Mast Program CDR.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUAY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID System

PROJECT NUMBER: F0253
PROJECT TITLE: Navigation & E-O Support

2. (U) FY 1997 PLAN:

(U) ($11,558) Continue Photonics Program EMD Phase.

(U) ($20) Complete Photonics Program CDR.

(U) ($50) Perform Photonics Program Test Readiness Review.

(U) ($25) Perform Universal Modular Mast Functional Configuration Audit (FCA).

(U) ($50) Perform Universal Modular Mast Program Physical Configuration Audit (PCA).

(U) ($273) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

(U) ($3,806) Continue Photonics Program EMD Phase.

(U) ($75) Perform Photonics Program FCA and PCA.

(U) ($124) Perform Photonics Program/Universal Modular Mast DT IIA testing.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEETDATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID System
PROJECT NUMBER: F0253
PROJECT TITLE: Navigation & E-O Support

4. (U) FY 1999 PLAN:

(U) ($2,746) Continue Program EMD Phase.

(U) ($580) Perform Photonics System/Universal Modular Mast DT IIB testing.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	11,213	12,505	4,191	3,402
(U) Adjustments from FY 1997 PRESBUDG:	-223	-529	-186	-76
(U) FY 1998 PRES Budget Submit:	10,990	11,976	4,005	3,326

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID System

PROJECT NUMBER: F0253
PROJECT TITLE: Navigation & E-O Support

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY96 decrease of $223K is due to a Below Threshold Reprogramming (-$4K), Jordanian Recission (-$59K), SBIR assessment (-$206K) and minor pricing adjustments ($46K). The decreases in FY97 ($-529K), FY98 ($-186K) and FY 99 ($-76K) are a result of NWCF rate adjustments and minor pricing adjustments.

(U) Schedule: Photonics Mast FCA, PCA and CDR have been delayed due to program restructure. The program was restructured to remain within cost baseline due to technical challenges encountered with the optical bench. Two EDMs were eliminated.

(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) SCN line 201300	0	0	20,028	15,421	15,980	16,239	16,596	17,051	CONT.	CONT.

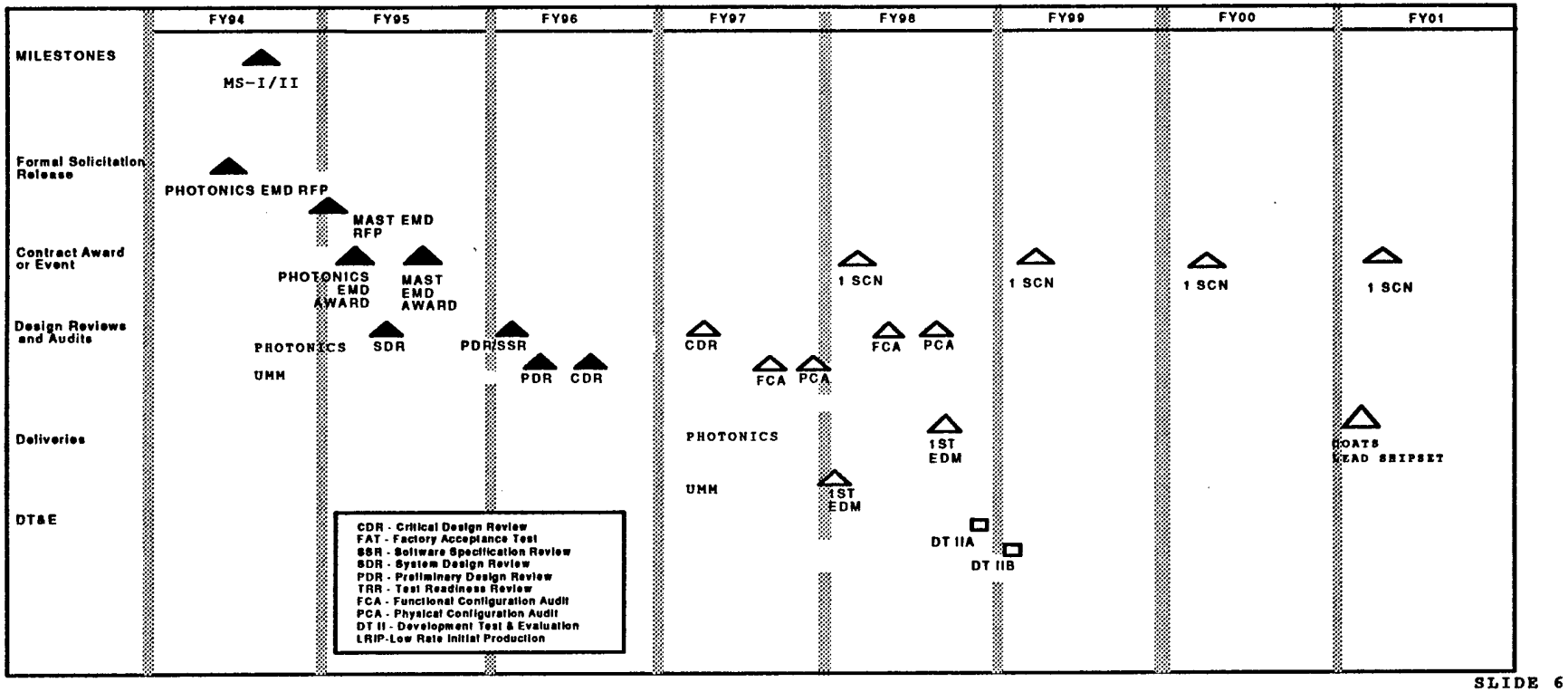
(U) RELATED RDT&E:

(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

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID System
PROJECT NUMBER: F0253
PROJECT TITLE: Navigation & E-OSupport

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Hardware/Computers	5,243	5,434	1,959	1,502
b. Project Management/Systems Engineering	3,606	1,754	638	491
c. Integrated Logistics Support	1,629	3,035	316	176
d. Installation and Test	512	1,480	1,092	1,157
e. SBIR	0	273	0	0
Total	10,990	11,976	4,005	3,326

B. BUDGET ACQUISITION HISTORY AND PLANNING: Not applicable.

PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: Improved ID Developments

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	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
W0676 Improved ID Developments	3,767	1,195	2,094	0	0	0	0	0	0	7,056

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 1996 ACCOMPLISHMENTS:

- (U) ($3,767) Performed developmental testing of the AN/SLQ-20 Upgrade and prepared for operational testing.

2. (U) FY 1997 PLAN:

- (U) ($1,176) Perform operational testing, pass Milestone III and transition AN/SLQ-20 Upgrade to production.

- (U) ($ 19) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($2,094) Explore SLQ-20B adaptation to other ship classes and incorporation of desired requirements.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604777N PROJECT NUMBER: W0676
PROGRAM ELEMENT TITLE: Navigation/ID Systems PROJECT TITLE: Improved ID Developments

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President s Budget:	3,830	1,254	2,204	0

(U) Adjustments from President s Budget:	-63	-59	-110	0
(U) FY 1998 President s Budget Submit:	3,767	1,195	2,094	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease of $63 thousand resulted from adjustments made for the F-16 Jordanian rescission and the Small Business Innovation Research assessment. FY 1997 decrease of $59 thousand reflects Congressional undistributed reduction adjustments. FY 1998 decrease of $110 thousand reflects minor pricing and Navy Working Capital Fund (NWCF) adjustments.

(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 Surface ID Systems	8,274	0	0	5,462	3,011	1,729	1,749	1,745	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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 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 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		2Q SLQ-20 MS III			
Engineering Milestones					
T&E Milestones	3Q&4Q SLQ-20 DT	1Q SLQ-20 OT			
Contract Milestones		3Q SLQ-20B production			

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: W0676
PROJECT TITLE: Improved ID Developments

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Dev	2,150	700	0	0
b. Field Activity Support	1,523	457	2,074	0
c. Program Management Support	94	19	20	0
d. SBIR Assessment	0	19	0	0
Total	3,767	1,195	2,094	0

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: W0676
PROJECT TITLE: Improved ID Developments

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 Miscellaneous		Various			83,121	3,513	1,132	2,074	0	0	89,840
Support and Management Miscellaneous		Various	-	-	1,653	204	19	20	0	0	1,896
Test and Evaluation Miscellaneous		Various	-	-	1,911	50	25	0	0	0	1,986
SBIR Assessment		-	-	-	0	0	19	0	0	0	19

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: W0676
PROJECT TITLE: Improved ID Developments

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	83,121	3,513	1,132	2,074	0	0	89,840
Subtotal Support and Management	1,653	204	19	20	0	0	1,896
Subtotal Test and Evaluation	1,911	50	25	0	0	0	1,986
Subtotal SBIR Assessment	0	0	19	0	0	0	19
Total Project	86,685	3,767	1,195	2,094	0	0	93,741

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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 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
W2212 All Service Combat Identification Evaluation Test	2,734	2,960	1,552	3,205	3,285	3,365	3,440	3,518	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 1996 ACCOMPLISHMENTS:

- (U) ($2,734) Conducted test and evaluation of combat identification platforms and systems in the air-to ground and ground-to-ground mission areas.

2. (U) FY 1997 PLAN:

- (U) ($2,882) Conduct test and evaluation of combat identification platforms and systems in the air-to-air and ground-to-air mission areas.

. (U) ($ 78) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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)

3. (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.

4. (U) FY 1999 PLAN:

- (U) ($3,205) 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 1996	FY 1997	FY 1998	FY 1999
• (U) FY 1997 President s Budget:	2,800	3,085	3,164	3,240
• (U) Adjustments from Pres Budget:	-66	-125	-1,612	-35
• (U) FY 1998 President s Budget Submit:	2,734	2,960	1,552	3,205

(U) CHANGE SUMMARY EXPLANATION:

- (U) Funding: FY 1996 decrease of $66 thousand resulted from the F-16 Jordanian Rescission and the Small Business Innovation Research Assessment. FY 1997 decrease of $125 thousand reflects Congressional undistributed reductions. FY 1998 decrease reflects a reduction of $1,525 thousand due to low expenditures in the STARS accounting system for FY 1996, and $87 thousand for minor pricing and Navy Working Capital Fund (NWCF) adjustments. FY 1999 decrease of $35 thousand resulted from minor pricing and 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: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 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 1996	FY 1997	FY 1998	FY 1999
a. Fleet Test and Evaluation	2,640	2,830	1,506	3,164
b. Miscellaneous	83	40	34	28
b. Travel	11	12	12	13
c. SBIR Assessment	0	78	0	0
Total	2,734	2,960	1,552	3,205

DATE: FEBRUARY 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development					0	0	0	0	0	Cont.	Cont.
Support and Management		Various	-	-	0	0	0	0	0	Cont.	Cont.
Test and Evaluation Miscellaneous		Various	-	-	0	2,734	2,882	1,552	3,205	Cont.	Cont.
SBIR Assessment		-	-	-	0	0	78	0	0	0	78

GOVERNMENT FURNISHED PROPERTY : Not applicable.

DATE:FEBRUARY 1997

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	0	0	0	0	0	Cont.	Cont.
Subtotal Support and Management	0	0	0	0	0	Cont.	Cont.
Subtotal Test and Evaluation	0	2,734	2,882	1,552	3,205	Cont.	Cont.
Subtotal SBIR Assessment	0	0	78	0	0	0	78
Total Project	0	2,734	2,960	1,552	3,205	Cont.	Cont.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 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 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
X0921 NAVSTAR Global Positioning System (GPS) Equipment	29,958	30,706	34,115	43,894	5,806	0	0	0	0	808,078

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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 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:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($21,448) Continued upgrade and integration engineering on CH-53D/E, P-3C, VP-3A, C-9B, DC-9, RC-12M, UC-12M, F-14A/B, S-3B, F/A-18A, F/A-18B, AH-1W, C-20D, C-20G, UH-3H, EA-6B, AV-8B, CH-46E, VH-60N, HC-130H aircraft (DEC 95 through MAR 97).
- (U) ($6,311) Continued NAVSSI integration engineering with shipboard command and control.
- (U) ($2,659) Continued effort in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis.
- (U) (-$460) Reflects an erroneous adjustment which was the result of a double posting error for a BTR.

(U) COST: (Dollars in thousands)

2. (U) FY 1997 PLAN:

- (U) ($21,540) Continue 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.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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) ($3,200) Continue efforts in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis rates.
- (U) ($5,500) Continue NAVSSI upgraded and integration engineering with shipboard command and control.
- (U) ($466) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($24,015) Continue integration engineering on AH-1W, SH-2G, AV-8B Radar, F-14A/B, F/A-18A, F/A-18B, EA-6B, SH-60B, SH-60R, HH-1N, F-5E/F, CT-39G, HH-65A, TC-130G, HC-130H aircraft.
- (U) ($5,600) Continue NAVSSI upgrade and integration engineering with shipboard command and control.
- (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 correction to design deficiencies of GPS vulnerability to jamming and integrity. Develop non-precision approach to meet navigation requirement to fly in the National Airspace System as directed in the Federal Radionavigation Plan , The Chairman Joint Chief of Staff Master Navigation Plan , and CNO s GPS Integration Guidance .
- (U) ($500) Start P3I program for GPS requirements identified by the joint service GPS User Equipment Implementation Acquisition Strategy Panel Integrated Product Team (ASP/IPT). These include anti-jam, security, precision approach, anti-spoof, ground control segment capability to directly acquire the encrypted signal (Y code), integrity, and capability to operate in an electronic warfare environment.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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)

5. (U) FY 1999 PLAN:

- (U) ($29,942) Continue integration engineering on AH-1W, SH-2G, AV-8B Radar, F-14A/B, F-14D, F/A-18A, F/A-18B, EA-6B, SH-60R, HH-1N, F-5E/F, C-9B, DC-9, RC-12F,RC-12M, UC-12B, UC-12F,UC-12M, CT-39G, HH-65A, TC-130G.
- (U) ($6,500) Continue NAVSSI upgrade and integration engineering with shipboard command and control.
- (U) ($3,000) Continue effort in areas of integration design support, data reduction, platform test support, deficiency resolution and user equipment design analysis.
- (U) ($2,952) Continue correction to design deficiencies of GPS vulnerability to jamming and integrity. Development of non-precision approach to meet navigation requirement to fly in the National Airspace System as directed in the Federal Radionavigation Plan, The Chairman Joint Chief of Staff Master Navigation Plan, and CNO s GPS Integration Guidance.
- (U) ($1,500) Start P3I program for GPS requirements identified by the joint service GPS User Equipment Implementation Acquisition Strategy Panel Integrated Product Team (ASP/IPT). These include anti-jam, security, precision approach, anti-spoof, ground control segment capability to directly acquire the encrypted signal (Y code), integrity, and capability to operate in an electronic warfare environment.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	27,788	30,041	37,543	46,455
(U) Adjustments from FY1997 PRESBUDG:	+2,170	+665	-3,428	-2,561
(U) FY 1998 President s Budget Submit:	29,958	30,706	34,115	43,894

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996: Decrease of $32 thousand is for Jordan Rescission, a decrease of $80 thousand is for administrative and personal services rescission, a decrease of $1 thousand is for Joint Service Deskbook initiative reprogramming, a decrease of $383 thousand for Small Business Innovation Research assessment, a decrease of $460 thousand is double posting error, and an Increase of $3,126 thousand due to funds provided for the SECDEF ASAP Passenger Aircraft Accelerated GPS requirements. FY 1997: Decrease $1,335 is for Congressional Undistributed General Adjustments, and a Congressional increase of $2,000 thousand is to accelerate GPS Passenger Aircraft requirements. FY 1998: Decrease of $3,342 thousand is for Navy Working Capital Fund (NWCF) adjustments; decrease of $42 thousand is for Navy minor POM adjustment, and decrease of $44 thousand is for DOD inflation adjustments. FY 1999: Decrease of $2,398 thousand is for NWCF adjustments; decrease of $48 thousand is for Navy minor POM adjustment, and $115 thousand is for DOD inflation adjustments.

(U) Schedule: None.

(U) Technical: None.

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 Line #26570	1,448	4,834	5,006	9,901	9,791	10,579	10,941	11,085	cont.	cont.
(U) APN-Common Avionics	39,849	35,627	59,089	46,278	14,557	26,016	26,214	49,485	cont.	cont.

(U) RELATED RDT&E: None

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: FEBRUARY 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)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management	2,502	3,400	2,846	2,720
b. Systems Engineering	3,676	5,103	5,854	7,491
c. Software Development	4,183	4,794	4,522	5,933
d. Hardware Development	17,372	16,249	18,083	24,066
e. System Test & Evaluation	1,416	956	2,510	3,291
f. Integrated Logistics Support	349	204	300	393
Total	1/29,498	30,706	34,115	43,894

1/ Assumes correction of the erroneous posting reduction (-$460K)

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 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 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
X2303 Combat Survivor Evader Locator (CSEL)	380	0	475	0	0	0	0	0	CONT.	CONT.

(U) A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: CSEL is being developed as a joint service program with initial funding provided by the Air Force as the lead service, in response to a Joint Memorandum of 21 Sept 95 from the Secretary of Defense and the Director, Intelligence Community. This memorandum directed the development and procurement of an improved Combat Search And Rescue (CSAR) radio that fulfills the CSEL mission needs statement as validated by the Joint Resource Oversight Council (JROC), including the addition of GPS precision positioning service, dual frequency (Y Code) capability. The CSEL system consists of three segments: 1) the user segment, which includes a new self-locating hand-held survival radio, 2) the Over-The-Horizon (OTH) Communications segment comprised of satellite-based data relays, and 3) the Ground segment made up of a communications network. The OTH segment will rely on the use of existing national assets to meet threshold requirements. Use of MILSATCOM or leased commercial mobile satellite services will be evaluated for meeting objective OTH data communication requirements. The Ground segment will include the 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 and Command and Control nodes. Additionally, the Ground segment may require modifications to government-owned ground stations (Hubs) to enable receipt of OTH data from MSS relay satellites, or require new Hubs to augment certain commercial services in order to meet system timeliness and access requirements. The baseline system definition has not been defined and will depend on the concept of the contractor. The contractor s concept will be developed in Phase 1 and finalized in Phase 2, system development. The Navy effort consists of determining Navy peculiar integration requirements in order to fulfill the JROC mandate.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N

PROJECT NUMBER: X2303

(U) COST: (Dollars in thousands)
(U) PROGRAM PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($50) Initiated JMCIS segment development.
- (U) ($50) Initiated battery safety analysis
- (U) ($ 50) Preliminary Design Review (PDR) and Critical Design Review (CDR)
- (U) ($150) Participated in Joint multiple IPTs for system design.
- (U) ($ 80) Performed Navy requirements analysis.

2. (U) FY 1997 PLANS: N/A

3. (U) FY 1998 PLANS:

- (U) ($175) Conduct shipboard rescue center integration analysis.
- (U) ($125) EMD System assessment.
- (U) ($100) Support to command and control analysis.
- (U) ($75) Develop training requirements.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	0	0
(U) Adjustments from FY1997 PRESBUDG:	380	0	475	0
(U) FY 1998 President s Budget Submit:	380	0	475	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996: Increase of $380 thousand is due to reprogramming adjustments by program sponsor to complete command and control requirements analysis and initiate process to qualify CSEL lithium sulfur dioxide battery FY 1998: Increase of $475 is for ILS and command and control analyses of Navy peculiar integration efforts to fulfill JROC requirements.

(U) Schedule: Navy accelerated CSEL command and control planning into existing Navy C2 systems while participating fully in the Preliminary Design Review. Navy peculiar integration efforts continue in successive years.

(U) Technical: Reprogramming of funds ($380K) into FY96 by Program Sponsor permitted Navy to complete command and control requirements analysis and initiate process to qualify CSEL lithium sulfur dioxide battery.

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 PE: 0708017N	0	0	6,000	15,000	16,000	16,000	0	0	CONT.	CONT.
(U) O&MN PE: 0708017N	0	0	1,000	1,000	1,000	1,000	1,000	1,000	CONT.	CONT.

(U) RELATED RDT&E: None

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET — DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2303
PROJECT TITLE: Combat Survivor Evader Locator

D. (U) SCHEDULE PROFILE: *

FY 1996	FY 1997	FY 1998	FY 1999

Program Milestones	2Q - MSII	4Q - MSIII	
Engineering Milestones			
T&E Milestones	3Q - PDR	1Q - CDR	3Q - DT&E
Contract Milestones	2Q - Contract Award		4Q - 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.

(U) COST: (Dollars in thousands)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering	380		475	
b. Hardware Development				
c. System Test & Evaluation				
Total	380		475	

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FERBRUARY 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 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
X2313 Situational Awareness Beacon with Reply (SABER)	0	0	8,129	7,506	5,342	2,764	3,781	4,430	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 maintains a constant accurate position of the user. When a correctly encoded interrogation signal is received by the SABER, it transmits a reply containing 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 friendly fire fratricide. This Program will start with 200 SABER units then grow to 1,500 or more units as the baseline unit is improved.

(U) PROGRAM PLANS:

1. (U) FY 1998 PLANS:

- (U) ($4,550) Modify SABER: P-coded GPS, add second transceiver to SABER.
- (U) ($1,500) Develop SABER demonstration model into production configuration.
- (U) ($1,350) Modify SABER to include AH-1W COBRA and Enhanced Precision Lightweight GPS Receiver (EPLGRS) interface.
- (U) ($729) Procure associated technical data.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 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)

2. (U) FY 1999 PLANS:

- (U) ($5,051) Develop integration kit for minimal aircraft integration (H-53, H-46, UH-1, UH-60 and C-130).
- (U) ($1,000) Develop Manpack SABER variant.
- (U) ($1,000) Conduct operational testing for SABER.
- (U) ($455) Procure associated technical data.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	0	0	0
(U) Adjustments from FY1997 PRESBUDG:	0	0	8,129	7,506
(U) FY 1998 PRESBUDG Submit:	0	0	8,129	7,506

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1998: Initial funding of SABER program. Planned POM-98 funding was $8,380 thousand. Decrease of $231 thousand is for NWCF adjustment, and a decrease of $20 thousand is for DOD inflation adjustment. FY 1999: Planned POM-98 funding was $7,590 thousand. Decrease of $56 thousand is for NWCF adjustment, and a decrease of $28 thousand is for DOD inflation adjustment.

(U) Schedule: None.

(U) Technical: None.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 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 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 #285100:	0	0	0	1,093	1,024	1,161	386	0	CONT.	CONT.
(U) O&MN #AG/SAG 1A4A:	0	0	1,487	1,383	3,393	5,874	6,376	6,750	CONT.	CONT.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones		*4Q-Milestone II		1Q - Milestone IIIA 4Q - Milestone III-Full Prod.
Engineering Milestones			2Q - PDR 3Q - CDR	
T&E Milestones				1Q - FAT 3Q - OPEVAL
Contract Milestones		*3Q - Acquisition Package Comp.	1Q - Contract Award	

* The SABER program is an ACTD program. The Navy has funded the funds for concept design, test, and milestone accomplishment prior to FY98 thru reprogramming within Navy.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 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 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering				4,860
b. Hardware Development			3,072	1,181
c. Software Development			4,328	
d. System Test & Evaluation				1,000
e. Technical Data			729	465
Total			8,129	7,506

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 1997

UNCLASSIFIED

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604777N
PROGRAM ELEMENT TITLE: Navigation/ID Systems

PROJECT NUMBER: X2313
PROJECT TITLE: Situational Awareness Beacon with Reply

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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 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
Fixed Distributed System										
X1312	69,051	22,058	0	0	0	0	0	0	0	1,249,020
Advanced Deployable System										
X1300	28,112	33,422	33,048	38,623	39,358	41,622	39,862	6,044	CONT	CONT
TOTAL	97,163	55,480	33,048	38,623	39,358	41,622	39,862	6,044	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 cuing 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 response to tactical requirements and uses proven technology to detect very quiet submarines in the most difficult shallow water environments with very high target position accuracy. The system will include sensors, processing and an interface to the Surveillance Direction System (SDS) for reporting of submarine 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, 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.

(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 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N
PROGRAM ELEMENT TITLE: Distributed Surveillance System
PROJECT NUMBER:X1300
PROJECT TITLE: Advanced Deployable System

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	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
Advanced Deployable System X1300	28,112	33,422	33,048	38,623	39,358	41,622	39,862	6,044	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 1996 ACCOMPLISHMENTS:

(U) ($14,172) Continued planning and development efforts and initiated subsystem component selection and Towed Deployment Vehicle (TDV) development and testing. Initiated cable risk reduction efforts and studies on alternate platform deployment capabilities to achieve ORD goals.

(U) ($2,120) Continued to analyze collected test data and incorporated findings into the prototype development process. Performed sea tests to model and validate prototype development and environmental performance. Initiated Early Operational Assessment (EOA) (OT-1A).

(U) ($2,464) Conducted two (2) rehearsal deployment tests, then performed at-sea testing of All Optical Deployable System (AODS) two-node system and analyzed test data. Initiated the development, assembly, integration of the AODS eight-node system. Initiated evaluation of other technologies with potential pay-offs for ADS.

(U) ($7,879) Integrated Government and Lockheed Martin's design efforts using Integrated Product Teams (IPTs) within the Integrated Product Development (IPD) systems engineering process. Continued algorithm and parallel software development efforts and Non-Developmental Item (NDI) cable survivability testing efforts. Conducted ADS Under Water Segment (UWS) System Requirements Review (SRR).

(U) ($1,477) Continued to manage the ADS program by integrating the plans of the ADS PD&RR contractor and Government design activity efforts into a program level Integrated Baseline. Began tracking and recording program Earned Value (EV).

2. (U) FY 1997 PLAN:

(U) ($19,082) Conduct Integrated Article Test (IAT), begin assembly and integrate the Multi-Node system for the Multi-Node Test (MNT). Continue ADS risk reduction efforts for system survivability and alternative platform deployment capability.

(U) ($211) Continue at-sea data collection effort. Initiate detailed planning, scheduling and resource allocation for the MNT effort. Continue EOA (OT-1A).

(U) ($1,333) Continue to test the prototype AODS to demonstrate system performance. Modify the prototype AODS as result of testing. Continue the development, assembly, and integration of the AODS eight-node system. Conduct comparative analysis of AODS and ADS UWS capabilities.

(U) ($7,597) Continue to support the system engineering design effort through continued IPD process and testing support.

(U) ($4,386) Manage ADS program development through the monitoring of Contractor and Government efforts through technical, schedule and cost performance. Continue program EV monitoring and progress assessment.

(U) ($813) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 U.S.C 638.

3. (U) FY 1998 PLAN:

(U) ($18,858) Conduct the MNT. Evaluate collected test data and incorporate lessons learned into development process. Continue cable survivability and the alternate platform deployment capability risk reduction efforts. Evaluate system performance and determine operational performance and suitability. Complete the Fleet Exercise Test (FET) test plan. Complete Prototype development effort and prepare system for delivery to the FET site.

(U) ($465) Complete EOA (OT-1A).

(U) ($1,545) Continue to assess and perform comparative analysis of AODS and ADS UWS capabilities.

(U) ($6,952) Continue to support the system engineering design effort through continued IPD process and testing support. Complete the analysis of the IAT data and assess the MNT plan. Complete the preparation of the FET plan and prepare for at-sea testing.

(U) ($5,228) Manage ADS program development through the monitoring of Contractor and Government efforts through technical, schedule and cost performance. Prepare E&M,D Phase Request For Proposal (RFP) package.

4. (U) FY 1999 PLAN:

(U) ($22,502) Complete system development, integrate UWS with PAS and conduct FET. Perform analysis of collected FET data and perform post test system assessment.

(U) ($2,285) Complete analysis of data collected during FET. Conduct Operational Assessment Testing (OT-IB). Support additional developmental and operational testing.

(U) ($7,851) Continue to support the system engineering design effort through continued IPD process and testing support.

(U) ($5,985) Manage ADS program development through the monitoring of Contractor and Government efforts through technical, schedule and cost performance. Exercise PD&RR Contract Option to procure a second UWS. Issue RFP for E&M,D Phase contract. Plan for prepare and conduct MSII review.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N PROGRAM ELEMENT TITLE: Distributed Surveillance System PROJECT NUMBER:X1300 PROJECT TITLE: Advanced Deployable System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	28,957	35,194	34,314	39,067
(U) Adjustments from FY1997 PRESBUDG:	(845)	(1,772)	(1,266)	(444)
(U) FY 1998 President's Budget Submit:	28,112	33,422	33,048	38,623

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY 96 was reduced $845K; -$ 10K Navy decision to reprogram to fund joint service deskbook; -$33K for Jordanian F-16 financing Rescission; -$73K to fund Personnel Services Rescission, -$595K SBIR; -$134K Other minor Navy fiscal adjustments.
FY 97 was reduced $1,772K; -$1,772K Congressional Undistributed general adjustments
FY 98 was reduced $1,266K; -$1,144K DBOF Carryover & rate adjustments; -$39K Navy minor POM adjustment; -$83K inflation adjustment
FY 99 was reduced $444K; -$260K DBOF rate adjustments; -$41K Navy minor POM adjustment; -$143K inflation adjustment

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

(U) RELATED RDT&E: Not applicable.

000285

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N
PROGRAM ELEMENT TITLE: Distributed Surveillance System
PROJECT NUMBER:X1300
PROJECT TITLE: Advanced Deployable System

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones				MSII 4th Qtr
Engineering Deliver Prototype Milestones	SRR 2nd Qtr Risk Reduction 4th Qtr	Start Prototype 4th Qtr	Complete SVT & IAT 2nd Qtr	ISR 2nd Qtr 2nd Qtr SDR 4th Qtr
T&E Milestones	Commence EOA (OT-1A) 2nd Qtr		Complete EOA (OT-1A) 2nd Qtr MNT 1st Qtr	TRR 1st Qtr FET 2nd Qtr OT-1B 1st Qtr
Contract Milestones	PAC 1st Qtr IBR 3rd Qtr		Start EMD RFP 2nd Qtr	Complete EMD RFP 2nd Qtr

000686

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 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 1996	FY 1997	FY 1998	FY 1999
a. Prime Mission Product	12,703	17,132	16,972	20,852
b. Processing & Analysis Segment (PAS)	800	1,950	1,886	1,650
c. Program Management	1,477	5,199	5,228	5,985
d. System Engineering	7,550	6,889	6313	7,313
e. Test & Evaluation	2,061	211	465	2,285
f. Integrated Logistics Support	204	708	639	538
g. Technical Data	125	0	0	0
h. Special Purpose Support & Test Equip	669	0	0	0
i. Operational Site Activation/Support	59	0	0	0
j. Special Projects	2,464	1,333	1,545	0
Total	28,112	33,422	33,048	38,623

000687

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: FEBRUARY 1997

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604784N
PROGRAM ELEMENT TITLE: Distributed Surveillance System
PROJECT NUMBER:X1300
PROJECT TITLE: Advanced Deployable System

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

--- Not Applicable ---

C. (U) FUNDING PROFILE:

--- Not Required ---

000688