DEPARTMENT OF THE NAVY
FY 1998/1999 BUDGET ESTIMATES

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RESEARCH, DEVELOPMENT, TEST & EVALUATION
BUDGET ACTIVITY 7

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
147	0101221N	Strategic Sub & Weapons System Support	7	34.666	40.082	44.419	52.124	U
148	0101224N	SSBN Security/Survivability Program (R2/R3 Materials provided in Classified Budget Book)	7	28.572	23.250	24.726	30.190	U
149	0101226N	Sub Acoustic Warfare Dev	7	7.479	7.548	6.058	8.348	U
150	0101402N	Navy Strategic Communications (Prior Year Only -- R2/R3 Not Required)	7	16.736	-	-	-	U
151	0204136N	F/A-18 Squadrons	7	857.265	422.715	316.976	198.891	U
152	0204152N	E-2 Squadrons	7	59.620	62.012	64.852	48.147	U
153	0204163N	Fleet Communications	7	21.160	19.138	19.336	23.289	U
154	0204229N	Tomahawk & TMPC	7	157.745	140.365	93.359	67.253	U
155	0204311N	Integrated Surveillance System	7	30.559	34.608	9.882	24.377	U
156	0204413N	Amphib Tactical Support Units	7	4.074	1.459	0.672	3.210	U
157	0204571N	Consolidated Training Systems Development	7	65.092	48.978	58.612	47.221	U
158	0204575N	EW Readiness Support	7	-	1.583	1.626	3.766	U
159	0205601N	HARM Improvement	7	3.355	36.774	6.169	8.436	U
161	0205604N	Tactical Data Links	7	42.567	35.574	41.375	45.441	U
161	0205620N	Surface ASW Combat Sys Integration	7	9.522	6.503	7.991	7.190	U
162	0205632N	MK 48 ADCAP	7	21.310	12.242	10.786	19.543	U
163	0205633N	Aviation Improvements	7	63.269	52.742	60.025	69.517	U
164	0205658N	Navy Science Assistance Program	7	6.663	12.533	-	-	U
165	0205667N	F-14 Upgrade	7	19.816	9.437	11.704	14.839	U
166	0205675N	Operational Nuclear Power Systems (R2/R3 Materials provided in Classified Budget Book)	7	56.571	53.590	55.998	54.909	U
167	0206313M	Marine Corps Communications	7	6.804	52.853	38.296	41.174	U
168	0206623M	MC Ground Combat/Spt Arms Sys	7	14.439	8.495	12.568	15.470	U
169	0206624M	MC Combat Services Support	7	6.131	5.681	5.048	4.757	U
170	0206625M	MC Intell/Elect Warfare System (Prior Year Only -- R2/R3 Not Required)	7	6.185	-	-	-	U
171	0206626M	MC Command/Control/Communic Sys	7	15.012	-	-	-	U

		(Prior Year Only -- R2/R3 Not Required)						
172	0207161N	Tactical Air Intercept	7	28.103	52.463	60.079	66.040	U
173	0207163N	AMRAAM	7	4.306	2.149	5.700	4.855	U
174	0303906N	Aquarius	7	5.598	5.467	-	-	U
		(Classified -- Material Not Available)						
175	0303901N	Sirius	7	55.108	33.749	27.898	31.351	U
		(Classified -- Material Not Available)						
176	0303109N	Satellite Communications (Space)	7	33.851	36.360	17.026	27.408	U
177	0303140N	Information Systems Security Plan	7	21.383	25.525	20.291	25.301	U
178	0303150N	Global Command and Control	7	-	-	0.498	0.508	U
179	0303905N	Pisces	7	505.445	504.560	460.935	476.716	U
		(Classified -- Material Not Available)						
180	0303907N	Capricorn	7	-	7.939	-	-	U
		(Classified -- Material Not Available)						
181	0305160N	Def Meteorological Satellite Prog (Space)	7	25.271	13.134	3.165	9.135	U
182	0305192N	Joint Military Intelligence Program	7	-	-	2.412	2.293	U
		(Classified -- Material Not Available)						
183	0305207N	DARP, Special Project Aircraft	7	-	-	0.344	0.342	U
		(Classified -- Material Not Available)						
184	0305889N	Counter Drug RDTEN Projects	7	30.162	-	-	-	U
		(Prior Year Only -- R2/R3 Not Required)						
185	0305927N	Navy Space Surv	7	0.712	0.677	0.399	0.529	U
186	0708011N	Manufacturing Technology Development	7	83.139	84.877	-	35.348	U
		Total Operational Systems Development		2,347.690	1,855.062	1,489.225	1,467.918	
		Research, Development, Test and Evaluation, Navy		4,695.380	3,710.124	2,978.450	2,935.836	

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

Exhibit R-1

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

DATE: 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
156	0204413N	Amphib Tactical Support Units	7	4.074	1.459	0.672	3.210	U
173	0207163N	AMRAAM	7	4.306	2.149	5.700	4.855	U
174	0303906N	Aquarius	7	5.598	5.467	-	-	U
		(Classified -- Material Not Available)						
163	0205633N	Aviation Improvements	7	63.269	52.742	60.025	69.517	U
180	0303907N	Capricorn	7	-	7.939	-	-	U
		(Classified -- Material Not Available)						
157	0204571N	Consolidated Training Systems Development	7	65.092	48.978	58.612	47.221	U
184	0305889N	Counter Drug RDTEN Projects	7	30.162	-	-	-	U
		(Prior Year Only -- R2/R3 Not Required)						
183	0305207N	DARP, Special Project Aircraft	7	-	-	0.344	0.342	U
		(Classified -- Material Not Available)						
181	0305160N	Def Meteorological Satellite Prog (Space)	7	25.271	13.134	3.165	9.135	U
152	0204152N	E-2 Squadrons	7	59.620	62.012	64.852	48.147	U
158	0204575N	EW Readiness Support	7	-	1.583	1.626	3.766	U
165	0205667N	F-14 Upgrade	7	19.816	9.437	11.704	14.839	U
151	0204136N	F/A-18 Squadrons	7	857.265	422.715	316.976	198.891	U
153	0204163N	Fleet Communications	7	21.160	19.138	19.336	23.289	U
178	0303150N	Global Command and Control	7	-	-	0.498	0.508	U
159	0205601N	HARM Improvement	7	3.355	36.774	6.169	8.436	U
177	0303140N	Information Systems Security Plan	7	21.383	25.525	20.291	25.301	U
155	0204311N	Integrated Surveillance System	7	30.559	34.608	9.882	24.377	U
182	0305192N	Joint Military Intelligence Program	7	-	-	2.412	2.293	U
		(Classified -- Material Not Available)						
186	0708011N	Manufacturing Technology Development	7	83.139	84.877	-	35.348	U
167	0206313M	Marine Corps Communications	7	6.804	52.853	38.296	41.174	U
169	0206624M	MC Combat Services Support	7	6.131	5.681	5.048	4.757	U
171	0206626M	MC Command/Control/Communic Sys	7	15.012	-	-	-	U

		(Prior Year Only -- R2/R3 Not Required)						
168	0206623M	MC Ground Combat/Spt Arms Sys	7	14.439	8.495	12.568	15.470	U
170	0206625M	MC Intell/Elect Warfare System	7	6.185	-	-	-	U
		(Prior Year Only -- R2/R3 Not Required)						
162	0205632N	MK 48 ADCAP	7	21.310	12.242	10.786	19.543	U
164	0205658N	Navy Science Assistance Program	7	6.663	12.533	-	-	U
185	0305927N	Navy Space Surv	7	0.712	0.677	0.399	0.529	U
150	0101402N	Navy Strategic Communications	7	16.736	-	-	-	U
		(Prior Year Only -- R2/R3 Not Required)						
166	0205675N	Operational Nuclear Power Systems	7	56.571	53.590	55.998	54.909	U
		(R2/R3 Materials provided in Classified Budget Book)						
179	0303905N	Pisces	7	505.445	504.560	460.935	476.716	U
		(Classified -- Material Not Available)						
176	0303109N	Satellite Communications (Space)	7	33.851	36.360	17.026	27.408	U
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172	0207161N	Tactical Air Intercept	7	28.103	52.463	60.079	66.040	U
161	0205604N	Tactical Data Links	7	42.567	35.574	41.375	45.441	U
154	0204229N	Tomahawk & TMPC	7	157.745	140.365	93.359	67.253	U
		Total Operational Systems Development		2,347.690	1,855.062	1,489.225	1,467.918	
		Research, Development, Test and Evaluation, Navy		4,695.380	3,710.124	2,978.450	2,935.836	

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/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN Date: Feb 1997

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0101221N PROJECT NUMBER: J0591
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support PROJECT TITLE: TRIDENT II

(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
J0951 TRIDENT II	16,671	11,829	10,993	9,178	8,240	9,593	9,812	286	CONT.	CONT.
S0004 TRIDENT Submarine System Improvement	926	1,592	4,729	3,997	2,429	1,404	1,403	1,404	CONT.	CONT.
J2228 Technology Applications Program	17,069	26,661	28,697	38,949	38,854	40,090	41,164	42,331	CONT.	CONT.
J2241 NTACMS	0	0	0	0	0	0	2,584	14,134	CONT.	CONT.
TOTAL	34,666	40,082	44,419	52,124	49,523	51,087	54,963	58,155	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The TRIDENT II (D5) Submarine Launched Ballistic Missile (SLBM) provides the U.S. a weapon system with greater accuracy and payload capability as compared to the TRIDENT 1 (C4) system. TRIDENT II enhances U.S. strategic deterrence providing a survivable sea-based system capable of engaging the full spectrum of potential targets with fewer submarines. This PE supports continued evaluation of the system's long range performance and capabilities as well as investigations into new technologies which would help mitigate the program impact due to component obsolescence and a rapidly decreasing manufacturing support base. Efforts also include Reentry System and Guidance Applications efforts. Additionally, effort continues for investigation, identification and resolution of systems design and material problems associated with the Weapon System interface to the TRIDENT submarine baseline. The TRIDENT Submarine System Improvement Program develops and integrates command and control improvements needed to maintain TRIDENT submarine operational capability through the life cycle of this vital strategic asset. The program conducts efforts needed to maintain strategic connectivity, ensure platform invulnerability, and reduce life cycle costs through Obsolete Equipment Replacement (OER) and commonality. Futhermore, beginning with FY 2002 this program provides resources to commence the development of Navy Launched Army Tactical Missile Systems (NTACMS).
(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Feb 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J0591
PROJECT TITLE: TRIDENT II

(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
J0951 TRIDENT II	16,671	11,829	10,993	9,178	8,240	9,593	9,812	286	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The TRIDENT II (D5) Submarine Launched Ballistic Missile (SLBM) provides the U.S. a weapon system with greater accuracy and payload capability as compared to the TRIDENT I (C4) system. TRIDENT II enhances U.S. strategic deterrence by providing a survivable sea-based system capable of engaging the full spectrum of potential targets with fewer submarines. This project supports continued evaluation of the system's long range performance and capabilities as well as investigations into new technologies which would help mitigate the program impact due to component obsolescence and a rapidly decreasing manufacturing support base. Additionally, effort continues for investigation, identification and resolution of systems design and material problems associated with the Weapon System interface to the TRIDENT submarine baseline.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS

1. (U) FY 1996 PLAN:

(U) ($8,900) SLBM Retargeting System (SRS): Effort continued in support of phase three development of the SLBM Retargeting System. This effort was obligated by the second quarter.

(U) ($6,985) TRIDENT COST OF OWNERSHIP REDUCTION INITIATIVE: Available obligational authority was obligated by the 3rd quarter. Efforts began in this task to identify and assess concepts and technologies which will significantly reduce life cycle costs. Areas to be investigated are:

(U) Integrated Design and Manufacturing Project (IDAM) - The IDAM Project will provide a powerful troubleshooting and redesign capability by linking existing and new design and manufacturing software tools and data bases in a distributed processing environment. This capability will result in significant cost reductions in fault isolation and correction and in design and development of replacement system elements caused by the continued erosion of the industrial base for the TRIDENT Weapon Systems. Virtual prototyping and simulation, or elements thereof, has been referred to as Integrated Product Development (IPD), concurrent engineering, or paperless design. This adaptation of commercial software will reduce manpower requirements to meet budgetary downsizing requirements without protracting the problem resolution cycle for these post-production missile systems.

(U) Advanced Non-Destructive Test (NDT) - In the face of a reduced number of flight tests, to meet fiscal constraints, this task will seek to develop and demonstrate advanced NDT techniques which have greater perceptiveness than current

available NDT approaches. Advanced techniques offer the potential for better assessments of current reliability, earlier warning of age or environmentally-induced degradation, and reduced costs of ownership by reducing the level of other, more expensive, destructive tests.

(U) Reduced Cost/Improved Manufacturing Concepts - The Reduced Cost/Improved Manufacturing Concepts project will develop and demonstrate advanced methods of manufacturing and materials applications which can sharply reduce the cost of manufacturing missile components. This effort will investigate methods to reduce manufacturing costs for replacement components by minimizing the number of piece parts, reducing fabrication complexity of individual parts, and simplifying assembly. These approaches will be applicable for long term support of current missile systems as well as for any potential future missile development. Some of the major areas of pursuit include alternative Post Boost Control System (PBCS) technologies, low cost boost propulsion components and reduced cost electronics manufacturing technology. Based on budget execution performance $2.1M of the FY 1997 TRIDENT Cost of Ownership effort is forward funded with FY 1996 funds.

(U) ($786) SHIPBOARD SYSTEMS: Continued to investigate, identify and resolve system design and material problems associated with the weapon system interface with the TRIDENT submarine baseline. This effort was fully obligated by the 4th quarter of FY 1996.

2. (U) FY 1997 PLAN:

(U) ($8,800) SRS: Effort continues in support of phase three development of the SLBM Retargeting System. Projected obligation by 3rd quarter of 1st year.

(U) ($2,292) TRIDENT COST OF OWNERSHIP REDUCTION INITIATIVES: Projected obligation by the 3rd quarter of 1st year. Continue the solid missile models for the Virtual Prototype System (VPS) and continue development of distributed computing methodologies and design tool linkages. Continue the advanced Non Destructive Test (NDT) development efforts with the acquisition of prototype NTD equipments and perform initial studies on full scale test articles. Continue the reduced costs manufacturing concepts project for Post Boost Control System (PBCS) replacement components, electronic and other missile components with small scale component design, manufacture and test. Includes foward financing of $200K of FY 1998 tasks due to FY 1996 "NEW START" designation leading to late release of funding.

(U) ($737) Portion of extramural program reserved for Small Business Innovation Research assessment IAW 15 U.S.C. 638. Full obligation is projected by the 4th quarter of the first year.

3. (U) FY 1998 PLAN:

(U) ($9,000) SRS: Effort continues in support of phase three development of the SLBM Retargeting System.

(U) ($1,993) TRIDENT COST OF OWNERSHIP REDUCTION INITIATIVES: (Projected 3rd quarter of 1st year fully obligated)

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J0591
PROJECT TITLE: TRIDENT II

(U) Complete Integrated Design and Manufacturing Project.

(U) Complete advanced Non-Destructive Test development efforts.

(U) Complete the Reduced Cost/Improved Manufacturing Concepts project.

4. (U) FY 1999 PLAN:

(U) ($9,178) SRS: Effort continues in support of phase three development of the SLBM Retargeting System. Projected 3 rd quarter 1st year fully obligated.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	17,353	12,333	11,896	9,891
(U) Adjustments from FY 1997 PRESBUDG:	-682	-504	-903	-713
(U) FY 1988/99 Presidents21,954	16,671	11,829	10,993	9,178

(U) CHANGE SUMMARY EXPLANATION: FY 1996 represents sponsor reprogramming ($-69K) and SBIR transfer to a separate program element ($-593) and the Jordanian rescission (-20K). FY 1997 reduction resulted from Congressional undistributed reductions. The FY 1998 adjustments include a one-time adjustment for projected carry over of FY 1996 outstanding obligations (-200K). The remaining $-703K and $-713K decrease in FY 1998 and FY 1999 respectively resulted from various issues, including NWCF and inflation 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
506,625	314,277	339,269	317,454	498,874	498,745	520,133	548,182	1,375,000	4,918,559

WPN LI 2+3

(U) RELATED RDT&E: N/A

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Feb 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J0591
PROJECT TITLE: TRIDENT II

D. (U) SCHEDULE PROFILE: Not Applicable.

Exhibit R-2

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FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Feb 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J0591
PROJECT TITLE: TRIDENT II

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Shipboard System	786			
b. Strategic Retargeting System	8,900	8,800	9,000	9,178
c. TRIDENT Cost of Ownership Initiative	6,985	2,292	1,993	0
d. SBIR		737		
Total	16,671	11,829	10,993	9,178

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Feb 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J0591
PROJECT TITLE: TRIDENT II

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
LMDS	SS/CPFF	10/94	1,743	1,743	1,743					0	1,743
LMDS	SS/CPFF	10/94	3,400	3,400	3,400					0	3,400
LMDS	SS/CPFF	10/95	3,400	3,400		3,400				0	3,400
LMDS	SS/CPFF	10/96	3,400	3,400			3,400			0	3,400
IEC	SS/CPFF	4/95	4,400	4,400	4,400					0	4,400
LMMS	SS/CPFF	2/96	4,954	4,954		4,954				0	4,954
LMMS*	SS/CPFF	10/96	2,100	2,100		2,100				0	2,100
LMMS	SS/CPFF	10/96	2,092	2,092			2,092			0	2,092
LMMS**	SS/CPFF	10/97	200	200			200			0	200
LMMS	SS/CPFF	1/95	4,400	4,400	4,400					0	4,400
LMDS	SS/CPFF	10/97	3,600	3,600				3,600		0	3,600
LMDS	SS/CPFF	10/98	3,700	3,700					3,700	0	3,700
LMMS	SS/CPFF	10/97	1,993	1,993				1,993		0	1,993
GDEB	SS/CPFF	3/95	1,497	1,497	711	786				0	1,497

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0101221N PROJECT NUMBER: J0591
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support PROJECT TITLE: TRIDENT II

VARIOUS	900	737	0	1,637

*$2.1 million deferred until 01 Oct 96
**$.2 million deferred until 01 Oct 97

GOVERNMENT FURNISHED PROPERTY

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Feb 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J0591
PROJECT TITLE: TRIDENT II

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Total Delivery Date	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
NSWC	WR	10/94	10/94	1,000					0	1,000
NSWC	WR	10/94	10/94	5,400					0	5,400
NSWC	WR	10/95	10/95		5,500				0	5,500
NSWC	WR	10/96	10/96			5,400			0	5,400
NSWC	WR	10/97	10/97				5,400		0	5,400
NSWC	WR	10/98	10/98					5,478	0	5,478
Support and Management										
Test and Evaluation										
Total										

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support
PROJECT NUMBER: S0004
PROJECT TITLE: TRIDENT Submarine Systems Imprvmnts

(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
S0004 TRIDENT Submarine System Improvements	926	1,592	4,729	3,997	2,429	1,404	1,403	1,404	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The TRIDENT Submarine System Improvement Program develops and integrates command and control improvements needed to maintain TRIDENT submarine operational capability through the life cycle of this vital strategic asset. The program conducts efforts needed to maintain strategic connectivity, ensure platform invulnerability, and reduce life cycle costs through OER and commonality.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($670)Completed Extremely High Frequency(EHF) Satellite Communication(SATCOM) development and integration.
- (U) ($256)Completed BPS-16 Radar development.

2. (U) FY 1997 PLAN:

- (U) ($1,550) Initiate development of Sonar OER/Commonality equipment.
- (U) ($42) 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) ($88)Continue planned subsystem(s)level sustaining and OER development efforts.

- (U) ($4,641)Continue development of Sonar and initiate Defensive Weapons System/Combat System (DWS/CS)OER/Commonality equipment.

4. (U) FY 1999 PLAN:

- (U) ($797)Continue planned subsystem(s)level sustaining and OER development efforts.
- (U) ($3,200)Continue development of Sonar and Defensive Weapons System/Combat System (DWS/CS)OER/Commonality equipment.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	949	1,660	7,981	9,356
(U) Adjustments from FY 1997 PRESBUDG:	-23	-68	-3,252	-5,359
(U) FY 1998/1999 PRESBUDG Submit:	926	1,592	4,729	3,997

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Reductions for FY 96 in the amount of $-23 reflects a SBIR adjustment of $-21 and minor pricing adjustments of $-2. Reduction for FY 97 in the amount of $-68 is due to Congressional undistributed reductions. Reductions for FY 98 in the amount of $-3,252 were based on $-3,227 for the Trident Obsolete Equipment Replacement Restructure, and $-25 for minor pricing adjustments. Reductions for FY 99 IN THE AMOUNT OF $-5,359 were based on $-5,324 for the Trident Obsolete Equipment Replacement Restructure, and $-35 for minor pricing adjustments.

(U) Schedule: Not applicable.

(U) Technical: The RDT&E program is restructured to align with procurement and installation of OER and SSN/SSBN commonality efforts to sustain TRIDENT's current operational capabilities throughout the 30 year service life.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0101221N PROJECT NUMBER: S0004
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support PROJECT TITLE: TRIDENT Submarine Systems Imprvmnts

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 26760/6 (BA-2)										
	9,695	3,469	7,530	27,341	32,732	20,944	16,294	16,797	CONT.	CONT.
• (U) OPN Line 53550/6 (BA-4)										
	0	2,061	2,322	4,116	2,339	4,626	12,604	11,958	CONT.	CONT.

(U) RELATED RDT&E: These PEs develop submarine software and hardware that are directly related to efforts conducted by the program element.

(U) PE 0101224N (SSBN Security & Survivability Program)
(U) PE 0101402N (Navy Strategic Communications)
(U) PE 0604562N (Submarine Tactical Warfare System)
(U) PE 0604503N (Submarine System Equipment Development)

D. (U) SCHEDULE PROFILE: Not applicable.

000035

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Feb 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: S0004
PROJECT TITLE: TRIDENT Submarine Systems Imprvmnts

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	0	0	0	0
b. Test and Certification	919	30	111	108
c. Design/Development Engineering	0	1,500	4,530	3,804
d. Travel	7	62	88	85
Total	926	1,592	4,729	3,997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: S0004
PROJECT TITLE: TRIDENT Submarine Systems Imprvmnts

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	Total Complete	Program
Product Development											
General Electric, Camden, NJ (EHF)											
	SS-CPFF	7/96	11,715	11,715	10,796	919	0	0	0	0	11,715
Various (DWS)	TBD	TBD	Various	Various	0	0	0	2,555	1,700	1,802	6,057
Miscellaneous	TBD	TBD	CONT.	CONT.	3,802	7	1,562	2,063	2,189	CONT.	CONT.
Support and Management					0	0	0	0	0	0	0
Test and Evaluation					0	0	0	0	0	0	0
Miscellaneous	Various	Various	1,132	1,132	683	0	30	111	108	200	1,132

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Feb 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: S0004
PROJECT TITLE: TRIDENT Submarine Systems Imprvmnts

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	14,598	926	1,592	4,618	3,889	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	683	0	0	111	108	200	1,132
Total Project	15,281	926	1,592	4,729	3,997	CONT.	CONT.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J2228
PROJECT TITLE: Technology Applications 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
J2228 Technology Applications Program	17,069	26,661	28,697	38,949	38,854	40,090	41,164	42,331	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This funding supports implementation of a coordinated Air Force/Navy Reentry System Applications Program as well as the implementation of a Strategic Guidance Applications Program. Reentry Vehicle and Guidance Technology is rapidly eroding beyond the point of being capable to respond to increasing aging phenomenon and future requirements. The Nuclear Posture Review examined the infrastructure which supports the nuclear force structure. It concluded that special actions were required to correct the rapidly eroding capability to maintain confidence in the existing weapon systems, and recommended that the reentry vehicle and guidance technology bases should be preserved. That recommendation resulted in the Presidential Decision Directive-30, which directed that programs be established for the reentry vehicle and guidance technology application.

Through sustainment of the Reentry Vehicle Technology Base, confidence in the dependability and reliability of Strategic SLBM and ICBM weapon systems will be maintained over the long term when no new systems will be in development. Critical and unique attributes necessary for the design, development and in-service support of current and modernized SLBM Reentry Systems will be defined and maintained to insure a functioning readiness application technical capability in reentry is preserved. Working closely with the Air Force, Navy requirements will be integrated with the Air Force requirements into a comprehensive program. The Program will maintain close coordination with the DOD Science and Technology (S&T) Community through the Reliance process in order to: leverage S&T programs, ensure system driven technology base requirements are considered in contract awards, eliminate duplication of effort and provide an opportunity to demonstrate appropriate emerging technologies through a reentry flight test evaluation process.

This Program provides a minimum Strategic Guidance core technology development capability consistent with the Strategic Advisory Group (SAG) recommendations to CINCSTRAT. In the SAG recommendations SSP is to establish a program which preserves this critical design and development core. It is a basic bridge program which develops critical guidance technology applicable to any of the existing Air Force/Navy Strategic Missiles. The objective is to transition from current capability to a long term readiness status required to support deployed systems. Air Force and Navy guidance technology requirements shall be integrated and needs prioritized. Efforts shall be focused on alternatives to currently utilized technologies identified as system "weak links". Current system accuracy and functionality depends upon key technologies which provide radiation hardened velocity, attitude and stellar sensing capabilities. As the underlying technologies that currently provide these capabilities age and are no longer technically supportable modern alternatives must be made available in order to allow for orderly replacement. There is no commercial market for these technologies and their viability depends on the Strategic community. This technology development activity provides the necessary technical challenges which insures the availability of a proficient team of technical experts. The availability and maintenance of these skills and experience of these experts are crucial to the support of the nation's Strategic Guidance Systems.

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J2228
PROJECT TITLE: Technology Applications Program

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 PLAN:

(U) ($8,909) Continued Reentry System Applications Program. Obligated by 3rd quarter 1st year. FY 1996 efforts include:

(U) Concept definition and evaluation of nosetip instrumentation for in flight measurement of nosetip recession.

(U) Ground testing of reentry nosetip and heatshield candidate materials including those available from Science & Technology (S&T) and contractor independent research and development (IR&D) activities.

(U) Initiated tasks to sustain capabilities in critical areas as identified by the readiness application assessment completed in FY 1995. Task areas included manufacturing technology, deployment systems, fuze and RF systems, antenna window materials, reentry physics codes and system models, hardening and ground testing.

(U) Designed formulation and requirements definition to evaluate instrumentation and test concepts for reentry vehicle service life extension and accuracy maintenance assessments.

(U) Initiated planning, design formulation, and requirements definition to evaluate material concepts for reentry vehicle design applications and instrumentation concepts for on-board flight measurements. Maintained the technical program plan.

(U) ($8,160) Initiated the Strategic Guidance Applications Program. Obligated by 4th quarter 1st year. FY 1996 efforts included:

(U) Designed and began development of an Integrated Engineering Environment (IEE) using a computer based simulation applicable to strategic guidance systems. The IEE framework was built using commercial off the shelf computer aided engineering tools with integrated engineering models describing electrical, mechanical, control or software details. Development and use of the IEE enabled evaluation of aging or problematical guidance hardware and the application of alternative technologies. This effort formed the basis for development of the guidance modular testbed which is being initiated in FY 1997.

(U) Evaluated alternative technologies for inertial components to ensure projected life requirements which will help preserve core expertise. Developed roadmap for inertial components technology sustainment.

2. (U) FY 1997 PLAN:

(U) ($14,810) Continue Reentry System Applications Program. Projected obligation by 3rd quarter 1st year. FY 1997 efforts include:

(U) Select and prepare flight test on-board instrumentation for measurement of nosetip recession.

(U) Manufacture selected ground test nosetip and heatshield replacement material specimens.

(U) Update the readiness application assessment and state-of-the art technology survey completed in FY1995. Results will be used to modify the technical program plan as appropriate.

(U) Evaluate reentry vehicle ground test and flight test data for aging related trends.

(U) Define and test instrumentation to support reentry vehicle service life extension and accuracy maintenance assessments.

(U) Continue tasks initiated in FY 1996 in response to the results of the readiness application assessment.

(U) Continue concept formulation, trade studies, and requirements definition to evaluate material concepts for reentry vehicle design applications and instrumentation concepts for on-board flight measurements. Maintain the technical program plan.

(U) ($11,851) Continue Strategic Guidance Applications Program. Projected obligation by 3rd quarter 1st year. FY 1997 efforts include:

(U) Adapt and enhance the current Guidance Modeling and Simulation (Integrated Engineering Environment-IEE) by completing functional subsystem models including "discipline specific" design tools. Utilize the IEE to support design of the velocity model under the Strategic Inertial Guidance Hardware Technology Synthesizer (SIGHTS), previously referred to as "testbed", which will be used as a proof of concept and initial hardware correlation of the IEE. One of the evaluation tools developed under SIGHTS will be a set of "probes" delivered in FY 1998 for better diagnostic evaluation of the TRIDENT D-5 guidance system. The velocity module effort will require and include power and timing functions. As part of the proof of concept demonstration, multiple accelerometers will be used in the velocity module (10 PIGA and 16 PIGA).

(U) Continue accelerometer trade off studies and initiate prototype design of next generation PIGA. Complete evaluation of gyro "slider" bearing technology and radiation hardening studies/testing of Inteferometic Fiber Optic Gyro (IFOGs). Perform evaluation of alternate stellar sensors, English Electric Valve Charge Coupled

Device (CCD) and Photobit Active Pixel Sensor. Continue the Radiation Hardened Electronics effort associated with alternate design approaches of using either low voltage analog and or digital parts to replace high voltage analog parts in conventional designs

(U) Includes forward financing of $1,700K of FY 1998 tasks.

3. (U) FY 1998 Plan

(U) ($15,706) Continue reentry system applications program. Projected obligations by 3rd quarter 1st year. FY 1998 efforts include:

(U) Continue Ground Testing of reentry vehicle candidate materials including those available from Science & Technology (S&T).

(U) Manufacture ground test candidate nosetip and heatshield replacement materials.

(U) Develop program plan and initiate testing on new & aged reentry materials exposed to operational environments and assess impact to system performance which includes accuracy.

(U) Continue development & application of critical analytical method areas as defined by the results of the readiness application assessment completed in FY 1997.

(U) Maintain Technical Program Plan.

(U) ($12,991) Continue Strategic Guidance Applications program. Projected obligation by 3rd quarter 1st year. FY 1998 efforts include:

(U) Continue development of IEE towards full system functionality which should be attained in early FY 1999. Continue expanding the hardware design support of SIGHTS into other subsystems such as attitude and stellar and their associated hardware correlation. SIGHTS will continue development towards having a laboratory Inertial Measurement Unit (IMU) design complete by the end of FY 1998. Deliver and begin utilization of the "probes" initiated in FY 1997.

(U) Continue the prototype/design tradeoff effort for the next generation PIGA towards a Critical Design Review (CDR) at the end of FY 1998. The review of alternate accelerometer efforts/technologies and the status of the next generation PIGA will go through down select to one or more technologies to be pursued with eventual evaluation in SIGHTS. Complete the radiation testing of IFOG technology and pursue technology alternatives for

deficiencies. Continue to pursue alternatives for the current TRIDENT II gyro to improve its anticipated reliability. Depending on stellar sensor performance under the FY 1997 task, possible procurement of sensors to TRIDENT II format. If FY 1997 stellar sensor task meets with failure, pursue alternate technologies. Select one or more of the alternate designs from the Rad Hard electronics task for hardware implementation. Continue to look at other alternatives for the Rad Hard electronics issue.

4. (U) FY 1999 Plan

(U) ($21,570) Continue reentry system applications program. Full obligation is projected by the 3rd quarter of the 1st year. FY 1999 efforts include:

(U) Downselect by Ground Testing of reentry vehicle candidate materials as well as candidates available from Sciences & Technology (S&T).

(U) Conduct system level ground testing of candidate nosetip & heatshield replacement materials.

(U) Initiate planning for procurement of flight required hardware.

(U) Update aging assessment methodologies with new test data collected in FY 1998.

(U) Continue development & application of analytical methods as defined by the Readiness Application Assessment.

(U) ($17,379) Continue Strategic Guidance Applications Program. Projected obligation by 3rd quarter 1st year. FY 1999 efforts include:

(U) Complete IEE System functionality and provide improved fidelity towards a "virtual" system capability in FY 2000. Utilize the IEE/SIGHTS capability to perform system architecture/design tradeoffs. Continue with IEE/SIGHTS towards a "real time hardware-in-the-loop simulation capability targeted for completion in late FY 2001.

(U) Dependent on prior year performance, possibly initiate fabrication and testing of prototype accelerometers. Gyro, Stellar and Rad Hard electronics tasks depend on the results of prior year efforts.

B. (U) PROGRAM CHANGE SUMMARY:

(U) CHANGE SUMMARY EXPLANATION:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	17,143	27,797	40,479	49,251

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Feb 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J2228
PROJECT TITLE: Technology Applications Program

(U) Adjustment from 1997 PRESBUDG:	-64	-1,336	-11,782	-10,302
(U) FY 1998/99 President's submission	17,069	26,661	28,697	38,949

(U) CHANGE SUMMARY EXPLANATION:

(U) The FY 1996 reduction represents sponsor reprogramming. The FY 1997 reduction resulted from undistributed Congressional reductions. FY 1998 adjustments include a -$1,700K one time adjustment for projected carryover of FY 1996 outstanding obligations. FY 1998 and FY 1999 were reduced -$10,000 per year for affordability reasons, and the remaining adjustments of $-82K and -$302K in FY 1998 and FY 1999 respectively resulted from various issues, primarily NWCF and inflation adjustments.

(U) Schedule: N/A

(U) Technical: N/A

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J2228
PROJECT TITLE: Technology Applications Program

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	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE/ TOTAL PROGRAM
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

(U) RELATED RDT&E: FY 1994 Program Element J0091 FBM Systems ($2,105K), and Program Element 0603308F, Strategic Missile Modernization. This program element includes the resources which will support the Air Force/Reentry System Applications program.

D. (U) SCHEDULE PROFILE: N/A

(U) COST (Dollars in thousands)

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Jan 197

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J2241
PROJECT TITLE: NATCMS

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Reentry System Applications	8,909	14,810	15,706	21,570
b. Strategic Guidance Applications	8,160	11,851	12,991	17,379
Total	17,069	26,661	28,697	38,949

Exhibit R-2

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Jan 197

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J2241
PROJECT TITLE: NATCMS

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										
LMSC	SS/CPFF	1/96	5,306	5,306	5,306				0	5,306
LMSC	SS/CPFF	1/97	8,666	8,666		8,666			0	8,666
LMSC	SS/CPFF	1/98	9,508	9,508			9,508		0	9,508
LMSC	SS/CPFF	1/99	12,959	12,959				12,959	0	12,959
CSDL	SS/CPFF	3/96	8,160	8,160	8,160				0	8,215
CSDL	SS/CPFF	10/96	10,151	10,151		10,151			0	10,151
CSDL*	SS/CPFF	10/97	1,700	1,700		1,700			0	1,700
CSDL	SS/CPFF	10/97	12,991	12,991			12,991		0	12,991
CSDL	SS/CPFF	10/98	17,379	17,379				17,379	0	17,379

* $1.7 million deferred until 01 Oct 97

GOVERNMENT FURNISHED PROPERTY

Exhibit R-2

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: Jan 197

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101221N
PROGRAM ELEMENT TITLE: Strategic Submarine & Weapon Systems Support

PROJECT NUMBER: J2241
PROJECT TITLE: NATCMS

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
Product Development									
NSWC	WR	10/95		3,394				0	3,394
NSWC	WR	10/96			5,794			0	5,794
NSWC	WR	10/97				5,698		0	5,698
NSWC	WR	10/97					7,861	0	7,861
DOE	WR	10/95 - 10/98		209	350	500	750	0	1,809

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0101226N PROGRAM ELEMENT TITLE: Submarine Acoustic Warfare Development PROJECT NUMBER: V1265 PROJECT TITLE: Submarine Defensive Warfare

(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
V1265 Submarine Defensive Warfare										
	7,479	7,548	6,058	8,348	11,011	6,476	14,945	23,394	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops a Submarine Defensive Warfare System (SDWS to improve the effectiveness and survivability of all classes of US submarines. Project efforts consist of a new acousti threat intercept system (AN/WLY-1) that will have threat platform sonar and torpedo recognition capability for earl detection, classification, and tracking of threats. It will allow radius of curvature and multipath ranging. The system wil also include a control subsystem for launch management of all onboard countermeasure devices and launchers. Next Generatic Countermeasure (NGCM) including Weapons Analysis Facility (WAF) simulation analysis capability provides the US Navy wit testing of hardware and software within detailed representations of acoustic environments. NGCM concepts includ offensive/defensive capabilities against threat submarines and torpedoes. Submarine Regional Warfare Missile (SRWM) provide threat neutralization of small aircraft, helicopters and small, fast patrol crafts in littoral areas.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under Operational Systems Development because it encompasse engineering and manufacturing development for upgrade of existing, operational systems.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101226N
PROGRAM ELEMENT TITLE: Submarine Acoustic Warfare Development

PROJECT NUMBER: V1265
PROJECT TITLE: Submarine Defensive Warfare

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($7,179) Exercised AN/WLY-1 Engineering and Manufacturing Development (EMD) contract option to design and fabricate two (2) Engineering Development Model (EDM) units.
   - (U) ($300) Provided technology updates for the Submarine Torpedo Defense (SMTD) program.
2. (U) FY 1997 PLAN:
   - (U) ($7,285) Conduct Critical Design Review (CDR-2), and fabrication and development of AN/WLY-1.
   - (U) ($115) Continue technology updates for the SMTD program.
   - (U) ($148) 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) ($6,058) Continue fabrication and development testing and conduct AT-SEA test for the AN/WLY-1.
4. (U) FY 1999 PLAN:
   - (U) ($6,840) Conduct DT-II A/B/C and TECHEVAL/OPEVAL for the AN/WLY-1 system. Commence PI for AN/WLY-1 system.
   - (U) ($1,508) Perform WAF analysis. Perform system analysis and prototyping for NGCM including SMTD, Submarine High Speed Offensive Countermeasure (SHOCM) and Smart Adaptive Countermeasure (SACM).

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	7,690	7,917	9,754	13,729

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0101226N
PROGRAM ELEMENT TITLE: Submarine Acoustic Warfare Development
PROJECT NUMBER: V1265
PROJECT TITLE: Submarine Defensive Warfare

(U) Adjustments from FY 1997 PRESBUDG:	-211	-369	-3,696	-5,381
(U) FY 1998/1999 PRESBUDG Submit:	7,479	7,548	6,058	8,348

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996: SBIR Transfer ($103), minor pricing adjustments ($9) and Librascope contract closout ($99).
FY 1997: Congressional undistributed reductions ($369).
FY 1998: Deferral of the Anti Torpedo Torpedo ($468); minor pricing adjustments ($228); revised weapons adjustments (cancellation of ADC EX-11 due to funding constraints) ($3,000).
FY 1999: Deferral of the Anti Torpedo Torpedo ($1,216); minor pricing adjustments ($165); revised weapons adjustments (cancellation of ADC EX-11 due to funding constraints)($4,000).

(U) Schedule: The AN/WLY-1 program is comprised of three phases; Active Emissions System (AES), Passive Emission System (PES) and Command and Control Sub-System (C&CS). Due to the funding reductions in FY 98 and FY 99, PES has been descoped within the AN/WLY-1 program.

(U) Technical: Not applicable.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101226N
PROGRAM ELEMENT TITLE: Submarine Acoustic Warfare Development

PROJECT NUMBER: V1265
PROJECT TITLE: Submarine Defensive Warfare

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 BLI: 2210 Submarine Acoustic Warfare Systems	8,054	6,457	4,259	8,472	8,404	10,510	13,256	19,749	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 BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0101226N PROGRAM ELEMENT TITLE: Submarine Acoustic Warfare Development PROJECT NUMBER: V1265 PROJECT TITLE: Submarine Defensive Warfare

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	6,623	6,583	5,208	6,323
b. Development Test and Evaluation	0	100	0	610
c. Operational Test and Evaluation	0	0	0	565
d. Program Management Support	748	750	750	750
e. Travel	108	115	100	100
Total	7,479	7,548	6,058	8,348

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101226N
PROGRAM ELEMENT TITLE: Submarine Acoustic Warfare Development

PROJECT NUMBER: V1265
PROJECT TITLE: Submarine Defensive Warfare

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											
Northrop Grumman Norden Melville, NY	C/CPAF	12/91	35,477	35,477	24,285	3,400	3,156	2,384	2,252	0	35,477
General Dynamics Groton, CT	C/CPAF	7/90	4,908	4,908	4,473	30	405	0	0	0	4,908
NUWC/NPT	WR	VAR				2,549	2,676	2,824	4,071	CONT.	CONT.
Miscellaneous	VAR	VAR				752	461	100	100	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0101226N PROGRAM ELEMENT TITLE: Submarine Acoustic Warfare Development PROJECT NUMBER: V1265 PROJECT TITLE: Submarine Defensive Warfare

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											
Miscellaneous	VAR	VAR	CONT.	CONT.	6,237	748	750	750	750	CONT.	CONT.
Test and Evaluation											
Miscellaneous	VAR	VAR	1,275	1,275	0	0	100	0	1,175	0	1,275

GOVERNMENT FURNISHED PROPERTY:

Product Development - Not applicable.

Management and Support - Not applicable.

Test and Evaluation - Not applicable.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0101226N
PROGRAM ELEMENT TITLE: Submarine Acoustic Warfare Development

PROJECT NUMBER: V1265
PROJECT TITLE: Submarine Defensive Warfare

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	28,758	6,731	6,698	5,308	6,423	CONT.	CONT.
Subtotal Support and Management	6,237	748	750	750	750	CONT.	CONT.
Subtotal Test and Evaluation	0	0	100	0	1,175	0	1,275
Total Project	34,995	7,479	7,548	6,058	8,348	CONT.	CONT.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

(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
E1662 F/A-18 Improvements	34,526	58,676	47,110	70,188	64,048	58,673	46,429	33,750	0	2,995,607
E2065 F/A-18 RADAR Upgrade	19,614	20,864	2,330	0	0	0	0	0	0	290,974
E2130 F/A-18 Follow-On Variant	803,125	343,175	267,536	128,703	61,499	55,376	6,539	5,790	0	5,507,485
TOTAL	857,265	422,715	316,976	198,891	125,547	114,049	52,968	39,540	0	8,794,066
RDT&E Articles			10							10

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The F/A-18 is capable of using external equipment to perform either fighter or attack missions. The capabilities of the F/A-18 weapon system can be upgraded to accommodate and incorporate new or enhanced weapons as well as advances in technology to respond effectively to emerging future threats. Continued development capability is required to successfully optimize new F/A-18 weapon system capabilities in the Fleet. Additionally, continued improvements in reliability and maintainability are necessary to ensure maximum benefit is achieved through reduced cost of ownership and to provide enhanced availability.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E2130
PROJECT TITLE: FOLLOW-ON VARIANT

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Contract	696,100	211,245	160,900	45,873
b. Support Contract	12,014	6,251	3,127	1,300
c. In-House	92,247	115,726	102,509	80,530
d. GFE/Other	2,764	2,219	1,000	1,000
e. SBIR Assessment		7,734		
Total	803,125	343,175	267,536	128,703

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E2130
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE: FOLLOW-ON VARIANT

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

PERFORMING ORGANIZATIONS:

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
MDA	SS/CPFF	3/92	81,785	81,785	81,785						81,785
St.Louis,MO	SS/CPIF/AF	7/92	3,805,637	3,805,637	2,784,644	619,300	157,700	133,600	45,873	64,520	3,805,637
GE	SS/CPFF	3/92	51,500	51,500	51,500						51,500
Lynn,MA	SS/CPIF/AF	7/92	799,667	799,667	645,367	76,000	51,000	27,300	0	0	799,667
Hughes LA, Calif	SS/CPFF	9/93	4,365	4,365	1,020	800	2,545	0	0	0	4,365
Other Contracts	Var	Var	20,214	20,214	20,214	0	0	0	0	0	20,214
NAWC Warminster	Var	11/97	36,751	36,751	19,651	6,700	6,300	4,100	0	0	36,751
NAWC China Lake	Var	11/97	57,410	57,410	18,210	16,000	13,000	5,200	5,000	0	57,410
NAWC Lakehurst	Var	11/97	27,994	27,994	18,794	6,500	2,100	400	200	0	27,994
NADEP North Island	Var	11/97	10,036	10,036	6,886	2,400	750	0	0	0	10,036
NAWC Indianapolis	Var	11/97	10,867	10,867	6,967	1,700	500	1,700	0	0	10,867
Other Field Activities	Var	Var	39,830	39,830	21,553	2,847	1,109	14,021	300	0	39,830

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E2130
PROJECT TITLE: FOLLOW-ON VARIANT

PERFORMING ORGANIZATIONS (CONT.):

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Support and Management											
Rail Co. Towson, MD	T&M	9/94	17,452	17,452	3,830	4,822	4,900	2,600	1,300	0	17,452
Misc Contracts	Var	11/97	12,370	12,370	7,639	4,216	412	103	0	0	12,370
Field Activities	Var	11/97	21,043	21,043	16,704	2,976	939	424	0	0	21,043
Test and Evaluation											
NAWC Pax River	Var	11/97	278,498	278,498	22,913	47,800	82,200	64,900	37,067	23,618	278,498
Arnold Engineering Development Center Tulahoma, TN	MIPR	1/97	25,392	25,392	17,392	6,500	1,500	0	0	0	25,392
NAWC China Lake	Var		79,029	79,029	0	0	0	0	37,963	41,066	79,029
Other Field Activities	Var	Var	27,730	27,730	5,475	1,800	8,267	12,188	0	0	27,730
SBIR							7,734				7,734

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E2130
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE: FOLLOW-ON VARIANT

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										
GFE/Other	FFP	Var	Var	85,198	2,764	2,219	1,000	1,000	0	92,181
Support and Management				N/A						
Test and Evaluation				N/A						
Subtotal Product Development				3,761,789	735,011	237,223	187,321	52,373	64,520	5,038,237
Subtotal Support and Management				28,173	12,014	6,251	3,127	1,300	0	50,865
Subtotal Test and Evaluation				45,780	56,100	91,967	77,088	75,030	64,684	410,649
SBIR Assessment						7,734				7,734
Total Project				3,835,742	803,125	343,175	267,536	128,703	129,204	5,507,485

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

(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
E0463 E-2C IMPROVEMENTS	59,620	62,012	39,380	10,266	3,963	6,505	6,492	6,695	0	615,435
RDT&E ARTICLES	5	8	1							
E2321 E-2 RADAR MODERNIZATION PROGRAM	0	0	25,472	37,881	21,002	34,806	35,484	0	0	154,645
TOTAL	59,620	62,012	64,852	48,147	24,965	41,311	41,976	6,695	0	770,080

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: E-2C Improvements provides preplanned product improvements for the evolution of E-2C airborne weapon system capabilities in support of naval warfare command and control requirements. It has previously funded developments for the modification/replacement of selected weapon replaceable assemblies of current installed subsystems. This has resulted in a new baseline capability configuration referred to as Group II aircraft. The current program is developing a Mission Computer Upgrade (MCU), applying on-going developments in data processing and target detection, which will relieve current bottlenecks in signal and data processing. The MCU will permit incorporation of additional functional capabilities to satisfy evolving operational requirements, e.g., Cooperative Engagement Capability (CEC), Satellite Communications (SATCOM) and permits the evolutionary growth of a Cruise Missile Defense (CMD) capability. The Radar Modernization Program (RMP), initiates the application of new radar technologies which can be common to both seabased and landbased airborne early warning platforms, E-2C and E-3, to provide a definitive cruise missile defense capability. Focused technologies developed in association with the RMP will be cost shared by the Navy and Air Force. Funding shown in the RMP includes the Navy cost share. Key technologies to be applied are Space-Time Adaptive Processing, an electronically scanable radar antenna with multi-channel rotary coupler, a solid state radar transmitter and high dynamic range digital receivers. The resulting detection system will specifically provide an improved overland capability for CMD, advanced auto detect and track, a single beam cue to a shooter, Non-Cooperative Target Recognition classification technologies and enhanced E-2C CEC capabilities. These technologies and resultant equipment will be demonstrated in ground environment in FY1997 and FY 1999 and flight tested in FY 2000 and FY 2001 leading to a potential Engineering and Manufacturing Development (EMD) start in 2001.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational 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
E0463 E-2C IMPROVEMENTS	59,620	62,012	39,380	10,266	3,963	6,505	6,492	6,695	0	615,435
RDT&E ARTICLES	5	8	1							

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission computer upgrade (MCU), applying ongoing developments in data processing and target detection, will relieve current bottlenecks in signal and data processing and will permit incorporation of additional functional capabilities to satisfy evolving operational requirements, e.g., CEC and SATCOM, and permits the evolutionary growth of a CMD capability.

(U) COST: (Dollars in Thousands)

A. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($12,337) Continued aircraft MCU integration design. Initiated CEC aircraft hardware interface.
- (U) ($21,901) Continued tactical software development. Initiated CEC software interface.
- (U) ($6,000) Conducted site preparation at Pacific Missile Range Facility and technology development in preparation for Radar Modernization Program (RMP) flight test. Included in the development of the facilities at PMRF is the establishment of an Aircraft Early Warning System Integration Laboratory (SIL) for the E-2 Radar Modernization Program.

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DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 | PROGRAM ELEMENT: 0204152N | PROGRAM ELEMENT TITLE: E-2 SQUADRONS | PROJECT NUMBER: E0463 | PROJECT TITLE: E-2C IMPROVEMENTS

- (U) ($12,630) Completed and delivered EDM hardware. Commenced fabrication of preproduction hardware.
- (U) ($500) Conducted System Critical Design Review.
- (U) ($500) Conducted Design Review for Build 0/1 software configuration.
- (U) ($2,060) Initiated Software Build 0 system test.
- (U) ($3,692) Complete establishment of the SIL and the rest of the technology effort.

2. (U) FY 1997 PLAN:

- (U) ($4,061) Conduct environmental, maintainability and reliability qualification testing.
- (U) ($4,138) Complete software system test for Build 0 and initiate test for Build 1.
- (U) ($4,060) Conduct DT/OT-IIA with airborne testing of hardware/software.
- (U) ($17,020) Complete preproduction hardware fabrication and begin deliveries.
- (U) ($25,118) Continue MCU software development and CEC software interface. Update software configuration, as necessary, from DT/OT IIA.
- (U) ($6,110) Conduct MCU hardware integration and applicable aircraft modification and continue CEC hardware interface.

  (U) ($1,505) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

- (U) ($0) Initiate Low Rate Initial Production.

3. (U) FY 1998 PLAN:

- (U) ($8,020) Conduct DT/OT-IIB.

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BUDGET ACTIVITY: 7 | PROGRAM ELEMENT: 0204152N | PROGRAM ELEMENT TITLE: E-2 SQUADRONS | PROJECT NUMBER: E0463 | PROJECT TITLE: E-2C IMPROVEMENTS

- (U) ($5,100) Complete CEC software interface.
- (U) ($6,176) Complete software system test for Build 1. Initiate Build 2.
- (U) ($15,074) Conduct DT/OT-IIC Formal Qualification Testing.
- (U) ($1,000) Conduct Test Readiness Review for FY99 Technical Evaluation/Operational Evaluation (TECHEVAL/OPEVAL).
- (U) ($4,010) Complete test aircraft modifications.

4. (U) FY 1999 PLAN:

- (U) ($5,194) Complete software system test for Build 2.
- (U) ($500) Conduct Production Readiness Review.
- (U) ($4,572) Conduct MCU TECHEVAL/OPEVAL.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	60,961	65,025	40,121	10,145
(U) Appropriated Value:		65,025		
(U) Adjustments from PRESBUDG:	-1,341	-3,013	-741	+121
(U) FY 1998 President's Budget Submit:	59,620	62,012	39,380	10,266

(U) CHANGE SUMMARY EXPLANATION:

(U) The FY 1996 decrease of -$1,341 thousand reflects Small Business Innovation Research adjustments and minor pricing adjustments. The FY 1997 decrease of -$3,013 thousand reflects Navy Working Capital Fund (NWCF) adjustments and minor pricing adjustments. The FY 1998 adjustment of -$741 thousand and FY 1999 adjustment of +$121 thousand reflects rebalancing and NWCF adjustments.

(U) Schedule: Not applicable

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

PROJECT NUMBER: E0463
PROJECT TITLE: E-2C IMPROVEMENTS

(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
APN 1/E-2C LI #10 & 11	211,812	297,007	255,955	308,955	272,991	287,331	305,579	318,698	340,197	2,918,725
APN 5/E-2C LI #34	18,498	27,359	49,073	103,924	120,629	42,995	99,961	92,958	CONTINUED	CONTINUED
APN 6/E-2C LI #48	1,037	2,007	6,228	17,719	8,192	1,173	5,702	5,828	18,201	68,187

(U) RELATED RDT&E:
(U) 0602232N (Command, Control and Communications Technology)
(U) 0602111N (Surface/Aerospace Survivability and Weapons Technology)
(U) 0603755N (Ship Self Defense, Cooperative Engagement) will fund the R&D efforts to integrate CE hardware/software into the E-2C. CE will also fund equipment, software and installation costs.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					1Q/00 MCU MSIII
Engineering Milestones	2Q MCU CDR				
T&E Milestones		2Q/3Q MCU QUAL TESTS 3Q MCU DT/OT-IIA	2Q MCU DT/OT-IIB 4Q MCU DT/OT-IIC	2Q-3Q/99 MCU TECHEVAL 3Q/99 MCU OPEVAL	2Q/00 MCU FRP
Contract Milestones		3Q MCU LRIP			

DATE: February 1997

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

BUDGET ACTIVITY: 7 | PROGRAM ELEMENT: 0204152N | PROGRAM ELEMENT TITLE: E-2 SQUADRONS | PROJECT NUMBER: E0463 | PROJECT TITLE: E-2C IMPROVEMENTS

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Hardware/Software Development	45,061	50,581	35,123	2,902
b. Contractor Engineering Support	3,062	4,000	2,280	2,090
c. Travel	55	55	55	55
d. Test and Evaluation	11,442	5,871	1,922	5,219
e. SBIR Assessment		1,505		
Total	59,620	62,012	39,380	10,266

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

PROJECT NUMBER: E0463
PROJECT TITLE: E-2C 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											
GAC (MCU)	SS/CPIF	11/94	155,180	155,180	37,563	34,118	50,581	30,016	2,902	0	155,180
GAC (CEC)	SS/CPFF	10/95	17,313	17,313	8,076	4,130	0	5,107	0	0	17,313
GAC (Other)	SS/CPFF	8/95	37,553	37,553	7,085	6,813	0	0	0	23,655	37,553
Miscellaneous	SS/CPFF	12/95	671	671	671	0	0	0	0	0	671
GAC (Prior Yr. Efforts)	Var.	Var.	254,800	254,800	254,800						254,800
Support and Management											
NAWCAD, PAX (MCU only)	WX/RC	10/97	17,380	17,380	5,728	3,117	4,055	2,335	2,145	0	17,380
NAWCAD, PAX (Prior Yr. Efforts)	WX/RC	Var.	58,800	58,800	58,800						58,800
SPAWAR	PD	Var.									
Test and Evaluation											
NAWCAD, PAX (MCU only)	WX/RC	10/97	30,879	30,879	8,579	9,288	5,871	1,922	5,219	0	30,879
NAWCAD, PAX (Prior Yr. Efforts)	WX/RC	Var.	39,200	39,200	39,200						39,200
Miscellaneous	WX/MIPR	Var.	2,154	2,154	0	2,154	0	0	0	0	2,154

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DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

PROJECT NUMBER: E0463
PROJECT TITLE: E-2C IMPROVEMENTS

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	308,195	45,061	50,581	35,123	2,902	23,655	465,517
Subtotal Support and Management	64,528	3,117	4,055	2,335	2,145	0	76,180
Subtotal Test and Evaluation	47,779	11,442	5,871	1,922	5,219	0	72,233
SBIR Assessment			1,505				1,505
Total Project	420,502	59,620	62,012	39,380	10,266	23,655	615,435

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

(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
E2321 E-2 RADAR MODERNIZATION PROGRAM	0	0	25,472	37,881	21,002	34,806	35,484	0	0	154,645

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Radar Modernization Program (RMP), initiates the application of new radar technologies which can be common to both seabased and landbased airborne early warning platforms, E-2C and E-3, to provide a definitive cruise missile defense capability. Focused technologies developed in association with the RMP will be cost shared by the Navy and Air Force. Funding shown in the RMP includes the Navy cost share. Key technologies to be applied are Space-Time Adaptive Processing, an electronically scanable radar antenna with multi-channel rotary coupler, a solid state radar transmitter and high dynamic range digital receivers. The resulting detection system will specifically provide an improved overland capability for Cruise Missile Defense (CMD), advanced auto detect and track, a single beam cue to a shooter, Non-Cooperative Target Recognition classification technologies and continue to enhance E-2C CEC capabilities. These technologies and resultant equipment will be demonstrated in ground environment in FY 1997 and FY 1999 and flight tested in FY 2000 and FY 2001 leading to a planned Engineering and Manufacturing Development start in 2001.

A. (U) PROGRAM ACCOMPLISHMENTS AND PLANS

1. (U) FY 1996 ACCOMPLISHMENTS: NOT APPLICABLE

2. (U) FY 1997: NOT APPLICABLE

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

PROJECT NUMBER: E2321
PROJECT TITLE: RADAR MODERNIZATION PROGRAM

3. (U) FY 1998 PLAN:

- (U) ($15,000) Commence advanced sensor common component design and fabrication for CMD.
- (U) ($7,322) Commence flight test and instrumentation hardware design and fabrication. Procure off the shelf instrumentation parts. Develop instrumentation package evaluation and checkout capability including related test equipment.
- (U) ($1,575) Flight hardware and instrumentation software development.
- (U) ($1,575) Aircraft integration design. Initiate aircraft preparation (environmental subsystems).

4. (U) FY 1999 PLAN:

- (U) ($7,500) Complete advanced sensor common component design and fabrication. Commence integration of components into applicable sensors.
- (U) ($13,606) Complete hardware and instrumentation package fabrication.
- (U) ($3,575) Complete software integration package.
- (U) ($3,575) Install aircraft integration modifications
- (U) ($6,500) Conduct RMP testing at Pacific Missile Range Facility.
- (U) ($3,125) Conduct test and evaluation of flight test and instrumentation system.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 | PROGRAM ELEMENT: 0204152N | PROGRAM ELEMENT TITLE: E-2 SQUADRONS | PROJECT NUMBER: E2321 | PROJECT TITLE: RADAR MODERNIZATION PROGRAM

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	+25,472	+37,881
(U) FY 1998 President's Budget Submit:	0	0	25,472	37,881

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Funds were provided for the Radar Modernization Program in FY 1998 and FY 1999.

(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 0603238N (Precision Strike And Air Defense Advanced Technology) will fund the R&D effort to integrate existing RMP technologies at the Pacific Missile Range Facility to include in the Cruise Missile Defense PhaseII FY 97 demonstration and data collection.

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DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

PROJECT NUMBER: E2321
PROJECT TITLE: RADAR MODERNIZATION PROGRAM

D. (U) SCHEDULE PROFILE: NOT APPLICABLE (Non Acquisition Program)

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					
Engineering Milestones					
T&E Milestones					
Contract Milestones					

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DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

PROJECT NUMBER: E2321
PROJECT TITLE: RADAR MODERNIZATION PROGRAM

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Hardware/Software Development	0	0	22,847	23,756
b. Contractor Engineering Support	0	0	1,542	4,542
c. Travel	0	0	55	55
d. Test and Evaluation	0	0	1,028	9,528
Total	0	0	25,472	37,881

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											
GAC Support and Management	TBD	11/97	114,945	114,945	0	0		22,847	23,756	68,342	114,945
NAWCAD, PAX RV	WX/RX	10/97	20,030	20,030	0	0	0	1,597	4,597	13,836	20,030
Test and Evaluation											
NAWCAD, PAX RV	WX/RX	10/97	13,170	13,170	0	0	0	1,028	3,028	9,114	13,170
PMRF,Hawaii	TBD	10/97	6,500	6,500	0	0	0	0	6,500	0	6,500

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DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204152N
PROGRAM ELEMENT TITLE: E-2 SQUADRONS

PROJECT NUMBER: E2321
PROJECT TITLE: RADAR MODERNIZATION PROGRAM

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	0	0	0	22,847	23,756	68,342	114,945
Subtotal Support and Management	0	0	0	1,597	4,597	13,836	20,030
Subtotal Test and Evaluation	0	0	0	1,028	9,528	9,114	19,670
Total Project	0	0	0	25,472	37,881	91,292	154,645

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204163N
PROGRAM ELEMENT TITLE: Fleet Communications

(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
X0725 Communication Automation	825	1712	1650	3152	3175	3250	3320	3396	CONT	CONT
X2074 Communications Support Systems	5,041	3,418	4,209	6,596	6,830	4,958	4,530	4,584	CONT	CONT
X1083 Shore to Ship Communications System	*14,603	13,334	12,982	12,767	8,426	7,963	7,011	7,167	CONT	CONT
X0795 Support of MEECN	691	674	495	774	796	789	807	827	CONT	CONT
TOTAL	21,160	19,138	19,336	23,289	19,227	16,960	15,668	15,974	CONT	CONT

*Assumes an erroneous reduction which was the result of a double posting error for a BTR adjustment.
(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Communication Automation program developed an anti-jam radio system incorporating shipboard interfaces, interface mitigation, radio frequency distribution (including antennas), high speed burst data transmission and relocatable Very High Frequency (VHF) relay. The Communications Support Systems (CSS) develops the architecture for an integrated Navy communication system for Ship-to-Shore and Shore-to-Ship communications defined as the Copernicus TADIXS and prototypes early operational capabilities and incremental implementation and fielding of CSS capabilities. The Shore to Ship Communications System develops communications systems elements which provide positive command and control of deployed ballistic missile submarines (SSBNs). Minimum Essential Emergency Communications Network (MEECN) is the Tri-Service transmission system which ensures delivery of Emergency Action Messages (EAM) to our strategic platforms.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0725
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: COMMUNICATION AUTOMATION

(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
X0725 Communication Automation	825	1712	1650	3152	3175	3250	3320	3396	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Communication Automation. This project is a continuing program that provides for automating and communications upgrades for Fleet Tactical Communications. Navy Modular Automated Communications System (NAVMACS) automates the message receiving, distribution and preparation functions aboard ships.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($825) NAVMACS: Continued migration of NAVMACS software to Multi-level Secure Operating System. Continued integration and planning efforts of NAVMACS into Defense Message System (DMS) Architecture. Continued accommodation of emergent required interfaces with other shipboard equipment including both LAN and Command, Control, and Communications (C3) systems and Automated Digital Network System (ADNS).

2. (U) FY 1997 PLAN:

- (U) ($815) NAVMACS: Continue DMS Tactical Afloat efforts. Continue accommodation to C3 technology to include ADNS. Integrate to TAC-4 hardware. Begin development of connectionless protocols to support Tactical DMS Afloat. Begin integration and test and evaluation of DMS components. Develop limited DMS (UNCLAS) point-to-point protocol. Integrate, test & evaluate SSIXS protocol.

- (U) ($854) Develop connectionless protocols and time-shared link protocol to support DMS over various RF paths to include UHF LOS.

(U) ($43) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15U.S.C.638.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0725
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: COMMUNICATION AUTOMATION

(U) COST: (Dollars in thousands)

3. (U) FY 1998 PLAN:

- (U) ($1,650) NAVMACS: Continue DMS Tactical Afloat efforts. Test and Evaluation of DMS protocols. Continue integration of DMS components. Develop interfaces for classified DMS (MISSI Guards). Establish full message profiling. An additional $156K is forward financed with FY 1997 funding due to low expenditures in FY 1996.

4. (U) FY 1999 PLAN:

- (U) ($3,152) NAVMACS: Continue DMS Tactical afloat efforts. Continue accommodation to emergent technology. Integrate Broadcast DMS (X.400 protocol). Begin TAC-5 hardware integration and test & evaluation. Initiate "Smart Push - Warrior Pull" features.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0725
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: COMMUNICATION AUTOMATION

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget	846	1,784	1,812	3,181
(U) Adjustments from FY 1997 PRESBUDG:	-21	-72	-162	-29
(U) FY 1998 President's Budget Submit:	825	1,712	1,650	3,152

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 reduction of $21K reflects other minor Navy Fiscal adjustment. FY 1997 decreased $72K for congressional undistributed general adjustments. FY 1998 reduction of $2K for NWCF rate adjustments, $4K for inflation and $156K reduction due to an adjustment for poor execution. FY 1999 reduction of $3K due to Navy programmatic adjustment, $14K due to NWCF rate adjustments, and $12K reduction for inflation.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

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
(U) OPN Line 3050 Ship Comm Automation (NAVMACS Project Unit)	0	5,275	5,521	27,323	36,297	22,588	30,885	31,574	CONT	CONT

(U) RELATED RDT&E: Not Applicable.

(U) SCHEDULE PROFILE: Not Applicable.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0725
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: COMMUNICATION AUTOMATION

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

PROJECT COST CATEGORIES	FY 1996	FY 1997	FY 1998	FY 1999
1. Software Development	825	1,712	1,650	3,152
TOTAL	825	1,712	1,650	3,152

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0725
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: COMMUNICATION AUTOMATION

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

PERFORMING ORGANIZATIONS Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Misc Contracts	Various	Various	N/A	N/A	0	684	714	981	635	CONT	CONT
Misc Labs	WX	10/95	N/A	N/A	0	141	123	105	135	CONT	CONT
TBD	TBD	TBD	N/A	N/A	0	0	0	0	1,130	CONT	CONT
Support and Management	N/A										
Test and Evaluation											
TBD	TBD	TBD	N/A	N/A	0	0	510	274	745	CONT	CONT
NISE EAST Charleston, SC	WX	10/96	1,162	1,162	0	0	365	290	507	CONT	CONT

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0725
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: COMMUNICATION AUTOMATION

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	825	837	1,086	1,900	CONT	CONT
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	875	564	1,252	CONT	CONT
Total Project	0	825	1,712	1,650	3,152	CONT	CONT

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X2074
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: Communications Support Systems (CSS)

(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
X2074 Communication Support Systems	5,041	3,418	4,209	6,596	6,830	4,958	4,530	4,584	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project is an initiative to develop the Copernicus architecture and implementation concept, an integrated Navy information system architecture based on shared use of links and multimedia networks. It will provide increased communication survivability, throughput and security. The Copernicus system concept will further integrate the approach to research, development, acquisition and deployment of a total Command, Control and Communications Intelligence (C3I) system supporting Navy missions. The work to be performed is a system engineering effort that generates engineering solutions and guidelines, prototyping and early operational capabilities, and transition plans for incremental fielding involving all current and planned Navy communication systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,331) Incrementally designed, implemented, and tested CSS Common Operating Environment (COE) interface to the Joint Maritime Command Information System (JMCIS).
- (U) ($1,483) Supported upgrade, prototype, test, and installation of CSS Increment One.
- (U) ($2,227) Built, prototyped, tested, and demonstrated further CSS (User Interface Segment (UIS), Platform Distribution Segment (PDS), Control and Management Segment (CMS), and Channel Access Protocols (CAPs), Increments including Military Internet with Multicast (MIM) and Inter Force Radio Frequency Network (IFRFN).

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X2074
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: Communications Support Systems (CSS)

2. (U) FY 1997 PLAN:
   - (U) ($1,592) Initiate architectural and system engineering efforts leading to incremental design and implementation of CSS and JMCIS integration in accordance with the phased Copernicus...Forward, Naval C4I Implementation Plan.
   - (U) ($769) Support fielding of Joint Maritime Communications System (JMCOMS) Build 1.
   - (U) ($1,013) Build, test and demonstrate JMCOMS Builds 2 and 3 including implementation\testing IF RF network.
   - (U) ($44) 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) ($2,027) Continue architectural and system engineering efforts leading to incremental design and implementation of CSS and JMCIS integration in accordance with the phased Copernicus...Forward, Naval C4I Implementation Plan.
   - (U) ($400) Publish derived Copernicus system requirements.
   - (U) ($700) Support field of JMCOMS Build 2.
   - (U) ($1,082) Build, test and demonstrate JMCOMS Build 3.

4. (U) FY 1999 PLAN:
   - (U) ($2,789) Continue architectural and system engineering efforts leading to incremental design and implementation of CSS and JMCIS integration in accordance with the phased Copernicus...Forward, Naval C4I Implementation Plan.
   - (U) ($500) Define and prototype key services of Defense Information Infrastructure (DII) COE.
   - (U) ($1,400) Support fielding of JMCOMS Build 3.
   - (U) ($1,907) Build, test and demonstrate JMCOMS Build 4.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X2074
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: Communications Support Systems (CSS)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget	5,132	3,563	2,951	2,927
(U) Adjustments from FY 1997 PRESBUDG:	-91	-145	+1,258	+3,669
(U) FY 1998 President's Budget Submit:	5,041	3,418	4,209	6,596

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decreased by $91K reflects other Minor Navy adjustments. FY 1997 adjustments reflect a decrease of $145K for Congressional undistributed general adjustment. FY 1998 adjustments reflect an increased of $1,400K for BRAC correction and reductions of $97K for NWCF rate adjustments, $11K for inflation and $34K for rebalance. FY 1999 adjustments reflect an increased of $3,800K for BRAC correction, and reductions of $104K for NWCF rate adjustment, $24K for inflation, and $3K for rebalance.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: PE 0205604N (Tactical Data Links)
PE 0303109N (Satellite Communications)
PE 0303140N (Information Systems Security Plan)

D. (U) SCHEDULE PROFILE: Not applicable.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204163N
PROGRAM ELEMENT TITLE: Fleet Communications

PROJECT NUMBER: X2074
PROJECT TITLE: Communications Support Systems (CSS)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	1,390	946	1,336	2,710
b. Research Support Equipment	398	325	383	535
c. System Engineering	1,794	1,057	1,217	1,997
d. Technical Data	1,335	987	1,148	1,207
e. Licences	56	30	50	67
f. Misc/travel	68	73	75	80
Total	5,041	3,418	4,209	6,596

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X2074
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: Communications Support Systems (CSS)

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:											
Harris Melbourne, FL	CPFF	5/92	14,855	14,855	11,475	1,960	1,420	0	0	0	14,855
Contractor XYZ	TBD	TBD	TBD	TBD	0	0	0	1,502	1,991	CONT	CONT
NRaD San Diego, CA	WX	VAR	VAR	VAR	6,982	812	1,337	1,545	2,505	CONT	CONT
NISE E Charleston, SC	WX	VAR	VAR	VAR	0	2,132	600	602	1,364	CONT	CONT
OTHER	VAR	VAR	VAR	VAR	8,503	137	61	560	736	CONT	CONT

Support and Management: Not Applicable.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY - Not applicable.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X2074
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: Communications Support Systems (CSS)

	FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	26,960	5,041	3,418	4,209	6,596	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	26,960	5,041	3,418	4,209	6,596	CONT	CONT

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROGRAM ELEMENT TITLE: Fleet Communications PROJECT NUMBER: X1083 PROJECT TITLE: Shore to Ship Communication 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
X1083 Shore to Ship Communication Systems	*14,603	13,334	12,982	12,767	8,426	7,963	7,011	7,167	CONT	CONT

*Assumes an erroneous reduction which was the result of a double posting error for a BTR adjustment.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops communications systems elements which provide positive command and control of deployed of ballistic missile submarines (SSBNs). This program provides enhancements to the shore-to-ship transmitting systems, shipboard receiver systems, and development of the Submarine Low Frequency (LF)/Very Low Frequency (VLF) Versa Module Eurocard (VME) Receiver (SLVR) System (formerly the Advanced VLF/LF VME (AVR/VME) receiver system). Continuing evaluation of this communications system is provided via the Strategic Communications Assessment Program (SCAP). Fixed VLF/LF develops an energy efficient, solid state, power amplifier for the VLF shore based transmitters of the Submarine Broadcast System, investigates improvement of the radio frequency high voltage insulators bushings and antenna components used in these stations through the High Voltage Insulator Program (HVIP) and measures and signal propagation through the Coverage Prediction Improvement Program (CPIP).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($640) Installed SSPAR at Naval Radio Transmitting Facility (NRTF), Jim Creek.
- (U) ($262) HVIP insulator/bushing development and test.
- (U) ($5,103) Completed SLVR Lab testing and performed OP assessment.
- (U) ($3,247) Completed SSPAR E&MDM hardware/software integration and factory test.
- (U) ($1,253) Continued SLVR Communications Support System (CSS) phase I integration.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROGRAM ELEMENT TITLE: Fleet Communications PROJECT NUMBER: X1083 PROJECT TITLE: Shore to Ship Communication Systems

- (U) ($3,744) Continued SCAP and conducted continuing evaluation of strategic communications (CEP).
- (U) ($404) Completed VLF Test bed analysis.
- (U) (-$50) Reflects an erroneous reduction which was the result of a double posting for a BTR adjustment.

2. (U) FY 1997 PLAN:

- (U) ($317) High Voltage and antenna component development and test.
- (U) ($8,210) Complete SLVR TECHEVAL/OPEVAL.
- (U) ($750) Complete SSPAR E&MDM on site training.
- (U) ($267) Complete SLVR CSS Phase I integration. (
- (U) ($3,586) Continue SCAP and CEP.
- (U) ($204) 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) ($350) Continue high voltage and antenna component development and test.
- (U) ($7,563) Conduct Follow-on Test and Evaluation (FOT&E) of SLVR, integration and test of the KG-38 replacement and begin SLVR P3I.
- (U) ($1,445) Begin CSS Phase II integration.
- (U) ($3,624) Continue SCAP and conduct continuing evaluation of CEP.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROGRAM ELEMENT TITLE: Fleet Communications PROJECT NUMBER: X1083 PROJECT TITLE: Shore to Ship Communication Systems

4. (U) FY 1999 PLAN:

- (U) ($370) Continue high voltage and antenna component development and test.
- (U) ($7,597) Complete SLVR P3I efforts.
- (U) ($885) Continue CSS Phase II integration.
- (U) ($3,915) Continue SCAP and conduct continuing evaluations of CEP.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget	15,059	13,963	14,096	12,979
(U) Adjustments from FY 1997 PRESBUDG:	-456	-629	-1,114	-212
(U) FY 1998 President's Budget Submit:	14,603	13,334	12,982	12,767

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 reduction of $406K for other minor Navy fiscal adjustments and $50K erroneous reduction due to double posting. FY 1997 decreased $629K for Congressional undistributed general adjustment. FY 1998 reduction of $16K due to reduction in CSS Phase II integration for SLVR, $1011K NWCF rate adjustments, $33K for inflation, $9K for NWCF activites, $45K for rebalance. FY 1999 reduction of $14K due to reduction in CSS Phase II integration for SLVR, $174K are due to NWCF rate adjustments, $47K for inflation, $4K for rebalance. FY 1999 increased $27K for NWCF RDT&E activities.

(U) Schedule: SLVR MSIII slipped as a result of software design issues involving Fiber Data Distributed Interface and timing interfaces which have now been resolved.

(U) Technical: Not applicable.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204163N
PROGRAM ELEMENT TITLE: Fleet Communications

PROJECT NUMBER: X1083
PROJECT TITLE: Shore to Ship Communication Systems

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

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
(U) OPN Line 3107 Shore LF	4,159	4,140	7,795	16,429	19,809	19,680	19,922	4,400	CONT	CONT
(U) OPN Line 3147 Advanced VLF Receiver	0	0	7,675	18,566	20,972	19,140	3,000	0	CONT	CONT
(U) O&M,N	23,273	26,190	26,392	26,231	19,798	18,733	19,143	19,561	CONT	CONT

(U) RELATED RDT&E: Not applicable.

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0204163N
PROGRAM ELEMENT TITLE: Fleet Communications
PROJECT NUMBER: X1083
PROJECT TITLE: Shore to Ship Communication Systems

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones			2Q SLVR MS III	
Engineering Milestones				
T&E Milestones		3Q SLVR TECHEVAL 3Q SLVR OPEVAL		
Contract Milestones				

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204163N
PROGRAM ELEMENT TITLE: Fleet Communications

PROJECT NUMBER: X1083
PROJECT TITLE: Shore to Ship Communication Systems

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

PROJECT COST CATEGORIES	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management	2,615	2,240	2,200	2,100
b. Systems Engineering	3,189	2,962	3,406	2,871
c. Software Development	1,796	2,110	2,000	2,000
d. Hardware Development	4,079	1,357	1,000	1,796
e. System Test & Evaluation	1,907	2,481	2,676	2,400
f. Integrated Logistic Spt	647	1,524	1,000	800
g. Site/Platform Integration	420	660	700	800
TOTAL	*14,653	13,334	12,982	12,767

*Assumes correction of the erroneous posting reduction (-$50K).

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROGRAM ELEMENT TITLE: Fleet Communications PROJECT NUMBER: X1083 PROJECT TITLE: Shore to Ship Communication Systems

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
U.S. Army Monmouth, NJ	WX	2/96	N/A	N/A	1,656	1,091	650	77	30	CONT	CONT
Misc Contracts	Various	Var	N/A	N/A	628	1,077	818	903	741	CONT	CONT
APL/JHU Baltimore, MD	CPFF	10/95	N/A	N/A	1,114	3,984	3,586	3,624	3,915	CONT	CONT
NCCOSC NRaD San Diego, CA	WX	10/95	N/A	N/A	11,453	3,602	6,021	7,479	7,416	CONT	CONT
ROCKWELL Richardson, TX	CPFF	12/93	11,287	11,287	6,608	3,505	500	0	0	0	10,613
Miscellaneous Labs	Various	10/95	N/A	N/A	581	316	660	576	335	CONT	CONT

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROGRAM ELEMENT TITLE: Fleet Communications PROJECT NUMBER: X1083 PROJECT TITLE: Shore to Ship Communication Systems

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 99 Budget	To Complete	Total Program
Support and Management											
Miscellaneous	Various	10/95	866	866	0	646	316	323	330	0	1,615
Test and Evaluation											
Miscellaneous	Various	10/95	1,215	1,215	0	432	783	0	0	0	1215

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	22,040	13,575	12,235	12,659	12,437	CONT	CONT
Subtotal Support and Management	0	646	316	323	330	0	1,615
Subtotal Test and Evaluation	0	432	783	0	0	0	1215
Total Project	22,040	*14,653	13,334	12,982	12,767	CONT	CONT

*Assumes correction of the erroneous posting reduction (-$50K).

000096

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0795
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: MEECN

(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
X0795 MEECN	691	674	495	774	796	789	807	827	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Support of Minimum Essential Emergency Communications Network (MEECN). MEECN is the Tri-Service transmission system which ensures delivery of Emergency Action Messages (EAMs) to our strategic platforms. Because of substantial downsizing in the number of MEECN assets, such as the CINC Airborne Command Post (ABNCP) fleet, it is necessary to improve the range, timeliness and reliability of MEECN communications to maintain connectivity to the platforms. This project identifies, researches, and develops improvements to the MEECN primarily in the Very Low Frequency and Low Frequency (VLF/LF) ranges of MEECN. The MEECN Message Processing Mode (MMPM), which reduces transmission time while improving message delivery reliability at greater ranges, was developed under this project and is being implemented in the MEECN VLF/FL Systems. The new High Data Rate (HIDAR) mode, which greatly reduces message transmission time while providing the performance of low data rate modes, has been deployed. Potential improvements in mode design and signal processing are continually being investigated for MEECN application.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($184) EVS SV 7.6, which provided HIDAR and 3-Mode Automatic Mode Recognition (AMR) became operational; issued EVS 7.7 to correct a deficiency in the 3-Mode AMR.
- (U) ($106) HIDAR implementation in SLVR completed.
- (U) ($262) Issued HIDAR Mode Standard for Multi-Channel Receivers (e.g., Modified Miniature Receive Terminal (MMRT)).
- (U) ($75) NONAP optimized for HIDAR.
- (U) ($64) Issued the initial version of the wideband atmospheric noise data base.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0795
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: MEECN

000097

2. (U) FY 1997 PLAN:

- (U) ($237) Develop integrated NONAP and signal separator AJ algorithm.
- (U) ($102) Investigate HIDAR/Block II compatibility.
- (U) ($71) Document HIDAR Signal Design.
- (U) ($106) Support EVS HIDATR upgrade software release.
- (U) ($76) Support KG-38 replacement development.
- (U) ($70) Support SLVR MMPM and HIDAR implementation certifications.
- (U) ($12) 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) ($100) Support HIDAR implementation in MMRT for TACAMO aircraft.
- (U) ($133) Implement and test integrated NONAP and signal separator AJ algorithm.
- (U) ($122) Initiate development of MEECN Mode Frequency Scanning as P3I for SLVR.
- (U) ($73) Support MMRT MMPM and HIDAR implementation certification.
- (U) ($67) Continue data collection and analysis for inclusion in the wideband atmospheric noise data base. An additional $189K is forward financed with FY 1997 funding due to low expenditures in FY 1996.

4. (U) FY 1999 PLAN:

- (U) ($193) Support implementation of MEECN Mode Frequency Scanning in SLVR.
- (U) ($71) Continue the wideband atmospheric noise base effort.
- (U) ($237) Investigate the application of newly emerging error detection and correction (EDAC) algorithms for application to the MEECN Modes.
- (U) ($273) Update the MEECN Integrated Test Bed to reflect modifications made to the MEECN Modes and to take advantage of technology improvements in processor speed and memory density.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0795
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: MEECN

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget	702	703	746	836
(U) Adjustments from FY 1997 PRESBUDG:	-11	-29	-251	-62
(U) FY 1998 President's Budget Submit:	691	674	495	774

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 reduction of $11K reflects other minor Navy adjustments. FY 1997 decreased $29K for Congressional undistributed general adjustment. FY 1998 reduction of $51K for Navy decisions, $7K for NWCF Rate adjustment, $1K for inflation, $3K due to rebalance, and $189K due to an adjustment for poor execution. FY 1999 reduction of $58K is for Navy decisions, $3K for inflation, and $1K for NWCF rate adjustment.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

000099

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0795
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: MEECN

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

PROJECT COST CATEGORIES	FY 1996	FY 1997	FY 1998	FY 1999
A. Project Management	691	674	495	774
TOTAL	691	674	495	774

000100

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204163N PROJECT NUMBER: X0795
PROGRAM ELEMENT TITLE: Fleet Communications PROJECT TITLE: MEECN

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Misc Contracts	Various	Various	N/A	N/A	795	454	599	435	615	CONT	CONT
Misc Labs	WX	10/97	N/A	N/A	418	237	75	60	159	CONT	CONT

Support and Management: Not Applicable.

Test and Evaluation: Not Applicable.

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	1,213	691	674	495	774	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	1,213	691	674	495	774	CONT	CONT

000101

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER

(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
A0545 TOMAHAWK	150,416	134,705	90,276	64,625	36,377	7,088	295	293	CONT.	CONT.
A1784 THEATER MISSION PLANNING CENTER	7,329	5,660	3,083	2,628	1,979	1,965	0	0	0	97,210
TOTAL	157,745	140,365	93,359	67,253	38,356	9,053	295	293	CONT.	CONT.
RDT&E Articles			2	3	3					

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

(U) The TOMAHAWK Weapons System (TWS) provides the Tomahawk cruise missile attack capability against targets on land (Tomahawk Land Attack Missile (TLAM)). The TLAM can be fitted with either Conventional unitary warhead (TLAM/C), Nuclear warhead (TLAM/N) or submunition Dispenser (TLAM/D). This program ensures that the TWS exploits state-of-the-art technology to preserve the efficiency of this proven weapon system.

(U) The Tomahawk project includes all missile development; mission planning system development, and submarine and surface ship weapons control development.

(U) The Tomahawk TLAM Block III system upgrade (IOC March 93) incorporated the Global Positioning System (GPS) capability; provided a smaller, lighter warhead, extended range, Time of Arrival, and improved accuracy for low contrast matching of Digital Scene Matching Area Correlator. The Advanced Tomahawk Weapons Control System (ATWCS) and Tomahawk Baseline Improvement Program (TBIP) Phase I will provide a quick reaction response capability as well as improved flexibility, accuracy and lethality.

(U) The Theater Mission Planning project provides for the Tomahawk Theater Mission Planning Center (TMPC) and the Afloat Planning System (APS). TMPC and APS provide mission planning and command and control for the nuclear (TMPC only) and conventional TLAM. The TMPC software development decreases mission planning time and increases the quality and accuracy of each mission. APS rapidly plans and/or enhances conventional TLAM missions at sea for either TLAM only or TLAM/tactical air joint strikes. TOMAHAWK Strike Planning Tools are comprised of two elements: 1) The Mission Distribution System (MDS) which gives TOMAHAWK users the capability to transmit and receive mission data updates in a

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER

tactical environment; 2) The Electronic TOMAHAWK Employment Planning Package (ETEPP) which provides the TOMAHAWK user with command and control information needed to employ TOMAHAWK missions.

(U) These efforts provide battle-group tactical flexibility and responsiveness while maximizing TWS wartime capability.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing operational systems.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER

PROJECT NUMBER: A0545
PROJECT TITLE: TOMAHAWK

(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
A0545 TOMAHAWK	150,416	134,705	90,276	64,625	36,377	7,088	295	293	CONT.	CONT.
RDT&E Articles			2	3	3					

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The TOMAHAWK Cruise Missile provides an attack capability against targets on land (TOMAHAWK Land-Attack Missile (TLAM)). The TLAM can be fitted with either Conventional unitary warhead (TLAM/C), Nuclear warhead (TLAM/N) or submunition Dispenser (TLAM/D).

(U) The Tomahawk development encompasses TLAM C/D Block III (BLK III) upgrade, the TBIP and ATWCS surface and submarine. The BLK III effort incorporates the GPS capability; provides a smaller, lighter warhead, extended range, Time of Arrival; and upgrades the Digital Scene Matching Area Correlater accuracy for low contrast matching. The ATWCS allows for increased data throughout, resulting in significant reductions in the time required to execute missile preparation and launch sequences, and provides improved strike coordination capability, increased tactical flexibility and responsiveness. The ATWCS development is accomplished in three upgrades and is a prerequisite for TBIP: the ATWCS Track Control Group (TCG); the ATWCS Launch Control Group (LCG); and the Submarine Block III Phase III which installs ATWCS on submarines. The TBIP development provides a comprehensive baseline upgrade to the TWS to improve system flexibility, responsiveness, accuracy and lethality. Essential elements of the TBIP include upgrades to the guidance, navigation, control, and mission computer systems of the missile, along with the associated Command and Control (C2) systems and weapons control systems. TBIP will provide a UHF SATCOM data link to enable the missile to receive in-flight mission modification messages, to transfer health and status messages and to broadcast Battle Damage Indication (BDI) messages. TBIP also includes the development of a high anti-jam GPS receiver and antenna system for the missile.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204229N PROJECT NUMBER: A0545
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER PROJECT TITLE: TOMAHAWK

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($3,500) Concluded Ship-Based System Integration Testing (SBSIT), Land Based Systems Integration Testing (LBSIT) and TECHEVAL for ATWCS TCG. Completed ATWCS TCG Low Rate Initial Production (LRIP) deliveries. Conducted ATWCS LCG Operational Assessment (OA). Completed ATWCS LCG hardware design/development.

- (U) ($9,251) Completed Sub ATWCS version 1.4 software development. Delivered three Sub ATWCS hardware engineering production prototypes. Conducted Sub ATWCS Weapons Compatibility Testing (WCT). Supported Combat Control System (CCS) MK2 Program. Accomplished Sub ATWCS portion of Block 1A/B Rapid Commercial-off-the Shelf (COTS) insertion program.

- (U) ($137,665) Continued TBIP Engineering Manufacturing Development (EMD) detailed design activity, including Preliminary Design Review (PDR) of system, mission planning, and weapons control systems upgrades. Initiated prototyping and initial development of C2 segment capability for restructured Phase 1 program through System Design Review (SDR). Completed prototyping, fleet demonstrations and began lab testing of communications capabilities.

2. (U) FY 1997 PLAN:

- (U) ($3,400) Achieve ATWCS LCG LRIP. Conduct ATWCS LCG DT assist, LBSIT and SBSIT. Receive ATWCS LCG IOC software delivery. Perform OPEVAL for ATWCS TCG. Achieve IOC and Milestone III for ATWCS TCG.

- (U) ($8,300) Conduct Sub ATWCS TECHEVAL/OPEVAL. Commence development of Sub ATWCS for CCS MK2 Block 1C upgrade and New Attack Submarine (NSSN) Combat Control. Conduct CCS MK2 Critical Design Review (CDR).

- (U) ($120,345) Continue other elements of TBIP EMD including mission planning and weapons control systems upgrades. Perform missile component qualification and component level CDRs. Continue development of data link and C2 capability through PDR. Initiate development of route planning and imagery handling capabilities in support of the restructured Phase 1 program. Perform prototyping and fleet demonstrations. Complete lab test communications and perform live testing to and from representative sites. Continue ATWCS for TBIP software development.

- (U) ($2,660) 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) ($311) Commence ATWCS LCG LRIP deliveries. Commence ATWCS TCG full production deliveries. Achieve ATWCS LCG IOC and Milestone III.

- (U) ($4,129) Continue development of Sub-ATWCS for CCS MK2 Program Block 1C and NSSN Combat Control. Conduct system and weapons capability testing on CCS MK2 Program Block 1C.

- (U) ($85,836) Conduct ATWCS for TBIP LBSIT/SBSIT. Continue ATWCS for TBIP Full Operational Capability (FOC) software development and integration. Continue TBIP EMD and weapons control systems upgrades. Continue all C2 development through CDR and begin coding software for the restructured Phase 1 program. Begin Development Test (DT) and OA. Conduct missile LRIP Program review.

4. (U) FY 1999 PLAN:

- (U) ($566) Continue ATWCS LCG LRIP deliveries and begin production deliveries.

- (U) ($4,534) Conduct Development Testing (DT) of Sub ATWCS with CCS MK2 Program Block 1C. Conduct system and weapon compatibility testing for Sub ATWCS and NSSN Combat Control. Deliver initial installation suites for SSN 688 CCS MK2 Program Block 1C Mod 0/1 and Mod 2.

- (U) ($59,525) Conduct DT/Operational Testing (OT) for ATWCS for TBIP. Achieve final ATWCS for TBIP FOC software delivery. Continue TBIP EMD, mission planning and weapons control systems upgrades. Continue demonstration test, operational test and OA.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204229N PROJECT NUMBER: A0545
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER PROJECT TITLE: TOMAHAWK

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	157,202	130,465	116,312	82,785
(U) Adjustments from FY 1997 PRESBUDG:	-6,786	+4,240	-26,036	-18,160
(U) FY 1998 President's Budget Submit:	150,416	134,705	90,276	64,625

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY96 net reduction of -$6,786 thousand includes +$223 thousand for an MRTFB adjustment; -$183 thousand for Jordanian rescission; -$3,094 thousand for SBIR transfer and -$3,700 thousand reflects transfer of funds within the Department of the Navy. FY97 net increase of +$4,240 thousand consists of -$2,809 thousand for Navy Working Capital Fund (NWCF) rate adjustments; -$2,809 thousand for congressional general reductions; +$10,000 thousand for Block IV Upgrades and -$142 thousand for minor pricing adjustments. FY98 net reduction of -$26,036 thousand includes -$19,232 thousand for restructure of TBIP program; -$5,901 thousand adjustment for NWCF carryover and rates; -$414 thousand for modeling and simulation reductions; -$295 thousand for Acquisition Center and Internship Program and -$225 thousand for inflation. FY99 net reduction of -$18,160 thousand includes -$17,055 thousand for restructure of the TBIP program; -$346 thousand for modeling and simulation reductions; -$355 thousand for Acquisition Center and Internship Program; -$228 thousand for NWCF rate adjustments; -$239 thousand for inflation and +$115 thousand for Military and Civilian pay rates.

(U) Schedule: 4Q/98 LRIP/FRP decisions, 3Q/99 TECHEVAL and 1Q/00 TECH/OPEVAL Sub ATWCS Blk 1C decisions were omitted from President's budget. TBIP IOC change from 2Q/02 to 4Q/00, TBIP CDR change from 3Q/97 to 4Q/97 and TBIP DT/OA change from 2Q/98 to 3Q/98 are due to the restructuring of the TBIP missile program. The one year slip in the Sub ATWCS IOC from 1Q/00 to 3Q/01 is due to restructuring of the TBIP weapons control system program. LCG LRIP change from 1Q/97 to 2Q/97 to align with TCG IOC/Milestone III. LCG IOC change from 3Q/98 to 4Q/98 to allow OPTEVFOR report generation after OPEVAL.

(U) Technical: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER

PROJECT NUMBER: A0545
PROJECT TITLE: TOMAHAWK

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) WPN	109,949	100,566	48,953	132,786	137,489	135,653	102,396	180,931	CONT.	CONT.
(U) OPN	29,306	66,463	20,074	49,336	50,583	46,775	26,104	26,505	CONT.	CONT.
(U) OPN	1,347	0	1,425	4,060	6,001	7,555	8,001	6,631	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		2Q ATWCS LCG LRIP 2Q MSIII ATWCS TCG IOC	4Q ATWCS LCG IOC 4Q TBIP LRIP/ FRP DECISION		4Q/00 IOC TBIP 3Q/01 SUB ATWCS IOC
Engineering Milestones	2Q TBIP PDR	4Q TBIP CDR			
T&E Milestones	3Q LBSIT ATWCS TCG 3Q WCT SUB ATWCS 4Q TECHEVAL ATWCS TCG 4Q SBSIT ATWCS TCG	1Q OPEVAL ATWCS TCG 1Q TECH/OPEVAL SUB ATWCS 3Q LBSIT/SBSIT ATWCS LCG	3Q/98-2Q/99 DT/OA TBIP 3Q TECH/OPEVAL ATWCS LCG	3Q TECHEVAL SUB ATWCS BLK 1C 2Q-4Q/99 DT TBIP	1Q/00 TECH/OPEVAL SUB ATWCS BLK 1C 1Q-2Q/00 OT TBIP
Contract Milestones	TBIP ATWCS SUB ATWCS	TBIP ATWCS SUB ATWCS	TBIP ATWCS SUB ATWCS	TBIP ATWCS SUB ATWCS	TBIP ATWCS SUB ATWCS

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204229N PROJECT NUMBER: A0545
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER PROJECT TITLE: TOMAHAWK

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	42,807	56,800	31,642	21,605
b. Hardware/Software Development	106,542	72,845	51,434	33,320
c. Test & Evaluation	1,020	2,300	7,100	9,600
d. Travel	47	100	100	100
e. SBIR Assessment		2,660		
Total	150,416	134,705	90,276	64,625

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER
PROJECT NUMBER: A0545
PROJECT TITLE: TOMAHAWK

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											
NSWC, Dahlgren, VA	WX	Nov 97	90,890	90,890	25,896	10,430	10,901	9,021	9,184	CONT.	CONT.
Tiburon, San Jose, CA	SS/CPFF	Mar 94	35,248	35,248	3,223	13,184	14,200	4,360	2,002	CONT.	CONT.
APL, Laurel, MD	SS/CPFF	Apr 98	45,738	45,738	9,983	4,503	3,347	1,795	1,600	CONT.	CONT.
Hughes, Tuscon,AZ	C/CP	Dec 96	298,375	298,375	54,568	92,799	62,720	48,139	25,666	CONT.	CONT.
NAWC, China Lk, CA	WX	Dec 97	47,250	47,250	22,580	2,338	3,480	2,600	2,600	CONT.	CONT.
NSWC, Pt. Hueneme, CA	WX	Dec 96	8,896	8,896	4,292	3,968	636	0	0	0	8,896
MDA, St. Louis, MO	C/FP	Apr 94	32,605	32,605	18,496	1,679	3,303	919	800	CONT.	CONT.
NUWC, Newport,RI	WX	Dec 97	42,258	42,258	15,560	5,697	5,021	4,500	4,450	CONT.	CONT.
Lockheed, Austin,TX	SS/CPFF	Apr 94	41,100	41,100	21,461	5,785	8,854	5,000	0	0	41,100
SAIC, Arlington,VA	SS/CP	Mar 94	21,872	21,872	4,436	3,913	7,873	1,080	1,900	CONT.	CONT.
NAVSEA, Washington,DC	PD	Apr 98	16,638	16,638	4,332	2,026	6,425	3,000	1,000	CONT.	CONT.
Miscellaneous (<$2M EACH)		Various	TBD	TBD	1,608,756	2,924	2,985	2,762	5,823	CONT.	CONT.
SBIR							2,660				2,660

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204229N PROJECT NUMBER: A0545
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER PROJECT TITLE: TOMAHAWK

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											
Miscellaneous					695	150	0	0	0	0	845
Test and Evaluation											
NAWC, Pt Mugu, CA	WX	Dec 97	TBD	TBD	650	854	1,834	6,525	9,025	CONT.	CONT.
Miscellaneous		Nov 97	TBD	TBD	310	166	466	575	575	CONT.	CONT.

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: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: TOMAHAWK AND THEATER MISSION PLANNING CENTER

PROJECT NUMBER: A0545
PROJECT TITLE: TOMAHAWK

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	1,793,583	149,246	129,745	83,176	55,025	CONT.	CONT.
Subtotal Support and Management	695	150	0	0	0	0	845
Subtotal Test and Evaluation	960	1,020	2,300	7,100	9,600	CONT.	CONT.
SBIR Assessment			2,660				2,660
Total Project	1,795,238	150,416	134,705	90,276	64,625	CONT.	CONT.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: THEATER MISSION PLANNING CENTER

(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
A1784 THEATER MISSION PLANNING CENTER										
	7,329	5,660	3,083	2,628	1,979	1,965	0	0	0	97,210

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The TOMAHAWK Theater Mission Planning Center (TMPC) ashore and Afloat Planning System (APS) provide data base generation and processing, flight mission data, command and control information preparation, and distribution for nuclear (TMPC only) and conventional TOMAHAWK Land Attack Missiles. The TMPC project designs and develops software to decrease mission planning time in response to contingency requirements, improves the production of missile data for distribution and provides automated command and control information for employment and strike planning. APS utilizes the TMPC software on down-sized and ruggedized computer hardware for use in support of Afloat Strike Warfare Commanders. This improves battle-group tactical flexibility and responsiveness while maximizing TOMAHAWK Weapon Systems (TWS) warfare capability. The TMPC and APS systems will be compatible with the Navy Command and Control Systems and the TOMAHAWK Weapon System. TOMAHAWK Strike Planning Tools are comprised of two elements. The Mission Distribution System (MDS) allows TOMAHAWK users the capability to transmit and receive mission data updates in a tactical environment. The Electronic TOMAHAWK Employment Planning Package (ETEPP) provides the TOMAHAWK user with command and control information needed to employ TOMAHAWK missions.

FY 1998 RDT&EN BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: THEATER MISSION PLANNING CENTER

PROJECT NUMBER: A1784
PROJECT TITLE: TMPC

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($3,369) Commenced development of APS Strike Module/Operational Employment and APS operational deficiency corrections.
- (U) ($1,128) Provided TMPC and national sensor integration; and software architectural enhancements.
- (U) ($2,832) Supported corrections of Operational Advisory Group (OAG) discrepancies found for the Mission Distribution System (MDS) and the Electronic TOMAHAWK Employment Planning Package (ETEPP) of the TOMAHAWK Strike Planning Tools.

2. (U) FY 1997 PLAN:

- (U) ($1,879) Commence APS Strike Module Development/Operational Employment.
- (U) ($1,962) Continue TMPC integration of New National Sensors and Software Architectural Enhancements.
- (U) ($1,720) Support development of enhancements to the MDS and ETEPP portion of the TOMAHAWK Strike Planning Tools.

(U) ($ 99) 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) ($1,860) Continue TMPC integration of New National Sensors and Software Architectural Enhancements.
- (U) ($1,223) Support development of enhancements to the MDS and ETEEP portion of the TOMAHAWK Strike Planning Tools.

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT: TITLE: THEATER MISSION PLANNING CENTER

PROJECT NUMBER: A1784
PROJECT TITLE: TMPC

4. (U) FY 1999 PLAN:

- (U) ($1,583) Continue TMPC integration of New National Sensors and Software Architectural Enhancements.
- (U) ($1,045) Support development of enhancements to the MDS and ETEEP portion of the Tomahawk Strike Planning Tools.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	7,463	5,899	3,220	2,670
(U) Adjustments from Pres Budget:	-134	-239	-137	-42
(U) FY 1998 President's Budget Submit:	7,329	5,660	3,083	2,628

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY96 net decrease of -$134 thousand includes -$129 SBIR Transfer. The FY97 net decrease of -$239 thousand includes -$117 thousand for Navy Working Capital Fund (NWCF) Surcharge and $-117 thousand for General Reductions. The FY98 net decrease of -$137 thousand includes $-112 thousand NWCF rate and carryover reductions. The FY99 net decrease of -$42 thousand includes NWCF rate and carryover reductions and minor pricing adjustments.

(U) Schedule: Not applicable

(U) Technical: Not applicable

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204229N PROJECT NUMBER: A1784
PROGRAM ELEMENT TITLE: THEATER MISSION PLANNING CENTER PROJECT TITLE: TMPC

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
Appropriation/Line Number									
WPN Lines 6, 5									
2,129	2,830	2,867	3,787	3,762	6,636	6,939	9,073	CONT.	CONT.
OPN Line 151									
28,927	17,322	28,893	45,428	31,414	27,935	28,995	29,763	CONT.	CONT.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	3Q-4Q96 RTF TMPC 2.4	3Q-4Q97 RTF TMPC 3.0	3Q-4Q98 RTF TMPC 3.1	3Q-4Q99 RTF TMPC 4.0	Annual Fleet Releases
Engineering Milestones					
T&E Milestones					
Contract Milestones	TMPC APS	TMPC APS	TMPC APS	TMPC APS	

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION (Continued): The F/A-18 Naval Strike Fighter program transitioned from full-scale engineering development to operational systems development during FY 1983. As F/A-18 squadrons report discrepancies and new requirements, a continuing capability is needed to perform technical evaluations, investigative flight testing, software support, and incorporate Pre-Planned Product Improvements (P3I) (i.e., capability enhancements). The F/A-18 radar (APG-65) has been upgraded to the APG-73 to operate in the projected electronic warfare environment of the 1990's. The follow-on F/A-18 (E/F version) is an airframe upgrade incorporating increased capabilities, performance,and survivability necessary to satisfy the 41% percent increase in range over the C/D in the high-low-low-high attack/interdiction mission carrying three 480 gallon drop tanks, four 1000 pound bombs, and two AIM-9 air-to-air missiles. The E/F version will have increased internal fuel capacity, increased weapons carriage capability, increased carrier recovery payload, enhanced survivability/vulnerability, increased growth capacity, and increased engine thrust. It will retain all of the P3I enhancements developed for the earlier night attack C/D version of the aircraft.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 199

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

(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
E1662 F/A-18 Improvements										
	34,526	58,676	47,110	70,188	64,048	58,673	46,429	33,750	0	2,995,607

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The F/A-18 is a multi-mission strike fighter aircraft that is used in fighter and attack roles through selected use of external equipment (such as external fuel tanks, targeting and navigation Forward Looking Infrared (FLIR) pods). The capabilities of the F/A-18 weapon system are being upgraded to accommodate and incorporate new or enhanced weapons including the AMRAAM, Imaging Infrared (IR) Maverick, Harpoon, and SLAM as well as other advances in technology such as night attack, reconnaissance, enhanced performance engine and radar upgrade to respond effectively to emerging future threats. Continued development capability in terms of software and hardware improvements is required to successfully optimize new F/A-18 weapons system capabilities in the fleet. Continued improvements in reliability and maintainability for the airframe, avionics, and engines are necessary to ensure maximum benefit is achieved through reduced cost of ownership and enhanced availability. As F/A-18 squadrons report system problems and requirements, a continuing capability is needed to perform technical evaluations, investigative flight testing, software support, and incorporate capability enhancements.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E1662
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE: F/A-18 IMPROVEMENTS

A. (U) Program Accomplishments and Plans:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($8,013) Continued to develop and integrate enhancements to the effectiveness, operability, and safety of the F/A-18 Weapon System (airframe, avionics, weapons, and subsystems). Continued to investigate deficiencies and develop corrective action. Commenced development of Digital Communications System (DCS) and Joint Helmet Mounted Cueing System (JHMCS).

- (U) ($11,206) Continued to conduct engineering analysis and development improvements to existing systems and subsystems for deficiencies identified during deployment of the aircraft. Provided technical support for the integration of new weapons and systems.

- (U) ($14,886) Continued development and flight test of the Positive Identification System (PIDS) for combat identification.

- (U) ($421) Funded trade study to support Generation III TFLIR development.

2. (U) FY 1997 PLAN:

- (U) ($33,941) Continue to develop and integrate enhancements to the effectiveness, operability, and safety of the F/A-18 Weapon System (airframe, avionics, weapons, and subsystems). Continue to investigate deficiencies and develop corrective action. Continue development of PIDS for combat identification and JHMCS.

- (U) ($4,000) Continue to conduct engineering analysis and development improvements to existing systems and subsystems for deficiencies identified during deployment of the aircraft. Provide technical support for the integration of new weapons and systems.

- (U) ($1,305) Provide technical support, integration testing and engineering analysis for PIDS and JHMCS. Plan procurement and continue development of DCS.

- (U) ($18,000) Commence engineering design for integration of BOL Chaff Dispenser (LAU-138) into the F/A-18.

- (U) ($1,430) Portion of program reserved for the Small Business Innovation Research (SBIR) assessment in accordance with 15 USC 638.

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BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E1662
PROJECT TITLE: F/A-18 IMPROVEMENTS

3. (U) FY 1998 PLAN:

- (U) ($2,026) Continue to develop and integrate enhancements to the effectiveness, operability, and safety of the F/A-18 Weapon System (airframe, avionics, weapons, and subsystems). Continue to investigate deficiencies and develop corrective action.

- (U) ($3,976) Continue to conduct engineering analysis and development improvements to existing systems and subsystems for deficiencies identified during deployment of the aircraft. Provide technical support for the integration of new weapons and systems.

- (U) ($41,108) Continue development of DCS, PIDS and JHMCS. Begin development of Targeting Forward Looking Infrared (TFLIR) System.

4. (U) FY 1999 PLAN:

- (U) ($4,982) Continue to develop and integrate enhancements to the effectiveness, operability, and safety of the F/A-18 Weapon System (airframe, avionics, weapons, and subsystems). Continue to investigate deficiencies and develop corrective action.

- (U) ($7,000) Continue to conduct engineering analysis and development improvements to existing systems and subsystems for deficiencies identified during deployment of the aircraft. Provide technical support for the integration of new weapons and systems.

- (U) ($58,206) Continue development of DCS, PIDS, JHMCS and TFLIR.

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E1662

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE: F/A-18 IMPROVEMENTS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	45,117	43,105	43,248	28,151
(U) Appropriated amount:		61,105		
(U) Adjustments from President's Budget:	-10,591	+15,571	+3,862	+42,037
(U) FY 1998/99 President's Budget Submit:	34,526	58,676	47,110	70,188

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net decrease of -$10,591 thousand in FY 1996 reflects the BOL Chaff rescission and a reprioritization of requirements within the Department of Navy. The net increase of +15,571 thousand in FY 1997 provides for integration of the BOL Chaff System (LAU-138) into the F/A-18 and minor program adjustments. The net increases of +3,862 thousand in FY 1998 and +$42,037 thousand in FY 1999 provide for development of the Targeting Forward Looking Infrared (TFLIR) System and various minor program adjustments.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 199

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E1662
PROJECT TITLE: F/A-18 IMPROVEMENTS

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

F/A-18 C/D	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	18	6	0	0	0	0	0	0	0	1,027
APN-1	794,501	273,159	0	0	0	0	0	0	0	3,740,213
APN-5	76,381	146,296	156,213	278,642	374,219	259,515	212,283	202,193	Cont.	Cont.
APN-6	5,605	9,586	0	0	0	0	0	0	0	133,345

(U) RELATED RDT&E:

(U) PE 0207163N Advanced Medium Range Air-To-Air Missile (AMRAAM)
(U) PE 0604727N Joint Stand-off Weapon (JSOW) System
(U) PE 0604270N EW Development
(U) PE 0305141D BQH Communications
(U) PE 0604777N Navigation ID System, project X0921, NAVSTAR GPS equipment

D. (U) SCHEDULE PROFILE: Not Applicable.

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E1662
PROJECT TITLE: F/A-18 IMPROVEMENTS

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Contracts	22,549	40,265	37,305	56,675
b. In-House	3,897	13,339	5,281	7,782
c. Test & Evaluation	8,080	3,642	4,524	5,731
d. SBIR Assessment		1,430		
Total	34,526	58,676	47,110	70,188

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E1662
PROJECT TITLE: F/A-18 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											
MDA	SS/CPFF/FFP	3,7,9/93	1,565	1,565	1,565	0	0	0	0	0	1,56
MDA St. Louis, MO	SS/CPFF/FFP	12/93	101,557	101,557	34,050	16,549	17,400	13,705	14,975	4,878	101,55
Rockwell-Collins Cedar Rapids, IA	SS/FFP	7/96	22,365	22,365	0	6,000	7,365	5,800	3,200	0	22,36
TBD (TFLIR)	TBD	12/97	TBD	186,317	0	0	0	14,800	36,500	135,017	186,31
TBD (BOL CHAFF)	TBD	3/97	TBD	13,500	0	0	13,500	0	0	0	13,50
Other Contracts	Var	Var	3,719	3,719	3,719	0	0	0	0	0	3,71
WPAFB Dayton OH	MIPR	12/97	8,000	8,000	0	0	2,000	3,000	2,000	1,000	8,00
NAWC China Lake	WX	11/97	55,426	55,426	17,145	2,078	12,003	3,900	6,300	14,000	55,42
Other Field Activities	WX	11/97	4,354	4,354	0	672	411	306	407	2,558	4,35
Support and Management											
Field Activities	Var	11/97	6,429	6,429	2,207	1,147	925	1,075	1,075	0	6,42
Test and Evaluation											
NAWC Pax River	Var	11/97	79,641	79,641	12,217	8,080	3,642	4,524	5,731	45,447	79,64
SBIR Assessment							1,430				1,43

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E1662
PROJECT TITLE: F/A-18 IMPROVEMENTS

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				N/A						
Support and Management				N/A						
Test and Evaluation				N/A						

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	56,479	25,299	52,679	41,511	63,382	157,453	396,80
Subtotal Support and Management	2,207	1,147	925	1,075	1,075	0	6,42
Subtotal Test and Evaluation	12,217	8,080	3,642	4,524	5,731	45,447	79,64
SBIR			1,430				1,43
FY92 & Prior	2,511,304						2,511,30
Total Project	2,511,304	70,903	34,526	58,676	47,110	70,188	202,900	2,995,60

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FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 199

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

(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
E2065 F/A-18 Radar Upgrade										
	19,614	20,864	2,330	0	0	0	0	0	0	290,974

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The F/A-18 radar (AN/APG-65), requires an upgrade to improve Electronic Counter-Countermeasure (ECCM) performance against improved threat Electronic Countermeasures (ECM). This threat ECM improvement has partially resulted from compromises in the F/A-18 radar performance against various threat electronic warfare systems. The AN/APG-73 radar follows and capitalizes on AN/APG-70 and AN/APG-71 developmental and value engineering programs to maximize Shop Replaceable Assembly (SRA) commonality. A Pre-planned Product Improvement (PI) Phase II program will develop improved hardware and software for an all-weather Reconnaissance (RECCE) strip map and spotlight modes.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E2065
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE:RADAR UPGRADE

A. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

• (U)($13,164) Phase I: Achieved Initial Operational Capability, obtained Milestone III approval and began Full Rate Production. Phase II: Continued development efforts; commenced Development testing. Commenced Radar Upgrade (RUG) Phase II unique integration efforts into Tactical Reconnaissance (TAC RECCE) System.

• (U) ($6,450) Continued in-house engineering support.

2. (U) FY 1997 PLAN:

• (U) ($14,431) Complete Phase II hardware and software Design and Development. Prepare for Validation and Verification/Technical Evaluation.

• (U) ($5,894) Perform RUG Phase II integration testing and engineering analysis for the Radar Upgrade Program. Continue in-house engineering support. Complete TAC RECCE/Rug Phase II integration.

• (U) ($539) Portion of program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 USC 638.

3. (U) FY 1998 PLAN:

• (U) ($2,330) Conduct RUG Phase II Follow-on Test and Evaluation.

4. (U) FY 1999 PLAN: Not Applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 199

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E2065
PROJECT TITLE: RADAR UPGRADE

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	21,901	21,766	2,539	0
(U) Appropriated amount:		21,766		
(U) Adjustments from President's Budget:	-2,287	-902	-209	0
(U) FY 1998/99 President's Budget Submit:	19,614	20,864	2,330	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 reduction of -$2,287 thousand, the FY 1997 reduction of -$902 thousand and the FY 1998 reduction of -$209 thousand are Navy Working Capital Fund (NWCF) and minor balancing adjustments.

(U) Schedule: FY 1997 President's Budget input error: Rug Phase II FOT&E is scheduled to commence in 3Q/FY98 vice 1Q/FY97.

(U) Technical: Not Applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 199

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E2065
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE:RADAR 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
(U) PROCUREMENT:										
F/A-18 RADAR UPGRADE										
(U) APN-1										
C/D	44,937	14,270	0	0	0	0	0	0	0	468,303
E/F	0	32,997	58,917	83,829	127,095	129,420	131,508	132,515	2,436,167	3,132,448
(U) APN-5 (RADAR)	8,210	7,784	32,236	19,913	31,902	22,504	92,297	91,920	39,127	365,692

(U) RELATED RDT&E:

(U) PE 0603261N Tactical Airborne Reconnaissance (TAC RECCE)

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 199

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E2065
PROJECT TITLE: RADAR UPGRADE

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	To Complete
Program Milestones	4Q/MS III PH I 4Q/IOC PH I				
Engineering Milestones					
T&E Milestones	4Q95-3Q96/OT-IIC PH I		1Q-2Q/TECHEVAL PH II 3Q/FOT&E PH II		
Contract Milestones	1Q/LRIP IV 4Q/FRP PH I				

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E2065
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE:RADAR UPGRADE

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Contracts	13,035	14,431	0	0
b. In-House	671	619	700	0
c. Test & Evaluation	5,908	5,275	1,630	0
d. SBIR Assessment		539		
Total	19,614	20,864	2,330	0

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

DATE: February 199

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E2065
PROJECT TITLE:RADAR 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											
MDA (RUG PH I) St. Louis, MO	SS/LTR(FPIF)	4/90	170,903	170,903	170,903	0	0	0	0	0	170,903
MDA(RUG PH II)	CPIF	3/95	54,000	54,000	35,534	4,035	14,431	0	0	0	54,000
(RUG PH II)(INTEG) St. Louis, MO	CPFF	11/95	11,000	11,000	2,000	9,000	0	0	0	0	11,000
Support and Management											
In-House Support Rail	T&M	9/94	2,844	2,844	854	671	619	700	0	0	2,844
Test and Evaluation											
NAWC China Lake	WX	11/97	37,754	37,754	25,629	5,590	4,905	1,630	0	0	37,754
Other Field Activities	Var	Var	4,798	4,798	4,110	318	370	0	0	0	4,798
SBIR Assessment							539				539

FY 1998 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: February 199

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E2065
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE:RADAR 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										
GFP/Munitions	FFP	N/A	N/A	9,136	0	0	0	0	0	9,136
Support and Management				N/A						
Test and Evaluation				N/A						

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	217,573	13,035	14,431	0	0	0	245,039
Subtotal Support and Management	854	671	619	700	0	0	2,844
Subtotal Test and Evaluation	29,739	5,908	5,275	1,630	0	0	42,552
SBIR Assessment			539				539
Total Project	248,166	19,614	20,864	2,330	0	0	290,974

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

(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
E2130 F/A-18 Follow-On Variant										
	803,125	343,175	267,536	128,703	61,499	55,376	6,539	5,790	0	5,507,485
RDT&E Articles			10							10

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The F/A-18 is a twin-engine, mid-wing, multi-mission, tactical aircraft employed in Navy and Marine Corps strike fighter squadrons. The F/A-18, through selected use of external equipment is designed for flexibility in fighter, attack, fleet air defense, and close air support roles. The F/A-18 E/F variant is an upgrade to the night attack "C" and "D" models. The F/A-18 E/F will be the second major upgrade since the program's inception. The F/A-18 E/F incorporates modifications to the air vehicle to increase mission radius, payload flexibility, improve survivability, increase carrier recovery payload and growth potential. This will allow the F/A-18 to continue to adapt its strike fighter role to evolving threats into the next century. The F/A-18 E/F E&MD program is under a Congressional mandated cost cap of $4.883B FY90 dollars. Pre-development effort of $36.6M in FY90 base year dollars, previously funded under the F/A-18 C/D program, is reflected in the RDT&E total, but is not included in the approved $4.883B development cap.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E2130
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE: FOLLOW-ON VARIANT

A. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

• (U) ($689,383) Continued engineering and manufacturing design activity leading to the development of the airframe and engine. Began flight test.

• (U) ($62,104) Continued to plan and develop ground test support for integration, test and evaluation. Finalized phased pricing for Low Rate Initial Production (LRIP). Began aircraft delivery acceptance. Completed DT-IIA.

• (U) ($0 - Funded within APN) Procured long lead materials for LRIP. Began LRIP.

• (U) ($51,638) Started drop test. Began developmental flight test. Continued to procure Government Furnished Equipment (GFE) required for developmental effort.

2. (U) FY 1997 PLAN:

• (U) ($281,659) Continue engineering and manufacturing design activity leading to the development of the airframe and engine.

• (U) ($20,989) Continue to plan and develop ground test support for integration and test and evaluation. Complete Milestone IIIA. Continue aircraft delivery acceptance.

• (U) ($32,793) Continue developmental flight test. Commence DT-IIB and begin fatigue testing. Continue to procure GFE items required for developmental effort.

• (U) ($7,734) Portion of program reserved for Small Business Innovation Research (SBIR) assessment in accordance with 15 USC 638.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E2130
PROJECT TITLE: FOLLOW-ON VARIANT

3. (U) FY 1998 PLAN:

- (U) ($115,156) Continue engineering and manufacturing design activity in support of developmental flight test. Complete engine Full Production Qualification.
- (U) ($25,010) Continue to develop ground test support for integration and test and evaluation. Complete DT-IIB and OT-IIA.
- (U) ($120,370) Continue developmental flight testing. Continue to procure GFE items required for developmental effort.
- (U) ($7,000) Continue Test Program Set (TPS) development.

4. (U) FY 1999 PLAN:

- (U) ($45,733) Continue engineering and manufacturing design activity in support of developmental flight test. Complete DT-IID.
- (U) ($21,102) Continue ground testing support for integration, test and evaluation.
- (U) ($54,868) Continue developmental flight testing. Continue to procure GFE items required for developmental effort. Conduct OT-IIC.
- (U) ($7,000) Continue Test Program Set (TPS) development.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROJECT NUMBER: E2130
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT TITLE: FOLLOW-ON VARIANT

B. (U) PROGRAM CHANGE SUMMARY

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	820,411	360,462	157,042	123,153
(U) Appropriated amount:		358,262		
(U) Adjustments from President's Budget:	-17,286	-17,287	+110,494	+5,550
(U) FY 1998/99 President's Budget Submit:	803,125	343,175	267,536	128,703

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net reduction of -$17,286 thousand in FY 1996 reflects the Jordanian Rescission, SBIR assessment, and minor program adjustments. The net decrease of -$17,287 thousand in FY 1997 is comprised of Congressional general reductions, Navy Working Capital Fund (NWCF) and balancing adjustments. The net increase of +110,494 thousand in FY 1998 represents funding required to maintain the F/A-18 E/F Variant Engineering and Manufacturing Development Program schedule (+$111M), development of Test Program Sets (+$7M) and various other program adjustments (-$8M). The net increase of +$5,550 thousand in FY 1999 consists of NWCF and balancing adjustments (-$1.450) along with funding to continue TPS development (+$7M).

(U) Schedule: Operational Assessment was completed in the third quarter of 1996. It was incorrectly identified in the 1997 President's Budget as being completed in the second quarter of 1996. Engine Full Power Qualification (FPQ) will be delayed by one quarter due to a high pressure turbine design modification required as a result of Low Power Qualification (LPQ) test information. Navy Program Reviews (NPRs) and LRIP Contract Awards were added to the budget exhibit. Test milestones DT-IIB, DT-IID, OT-IIA (TECHEVAL) and OT-IIC(OPEVAL) were added to the budget exhibit based on the Test and Evaluation Master Plan.

(U) Technical: Not Applicable.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E2130
PROJECT TITLE: FOLLOW-ON VARIANT

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) PROCUREMENT:										
(U) A/C QTY	0	12	20	30	48	50	50	50	740	1000
(U) APN1	233,633	2,094,821	2,191,575	3,034,356	4,133,751	3,654,137	3,502,129	3,462,738	50,291,601	72,598,741
(U) APN6	0	79,965	69,772	111,472	61,776	88,790	93,396	57,929	822,252	1,385,352

(U) RELATED RDT&E:

(U) PE 0207163N (AMRAAM)
(U) PE 0604727N (Joint Standoff Weapon System) (JSOW)
(U) PE 0604270N (EW Development)
(U) PE 0604777N (Navigation/ID System)
(U) PE 0305141D (Joint UAV)
(U) PE 0603261N (Tactical Airborne Reconnaissance)
(U) PE 0204163N (Fleet Communications)

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204136N PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS PROJECT NUMBER: E2130 PROJECT TITLE: FOLLOW-ON VARIANT

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	To Complete
Program Milestones	2Q/NPR	2Q/NPR 2Q/MS-IIIA	2Q/NPR	2Q/NPR	2Q/00 MS-III
Engineering Milestones	3Q96-1Q97/Operational Assessment		2Q/Eng FPQ		
T&E Milestones	1Q/1st Flt 1Q96-1Q97/DT-IIA	1Q97-1Q98/DT-IIB	1Q/OT-IIA	1Q99-2Q99/DT-IID (TECHEVAL) 3Q99-1Q00/OT-IIC (OPEVAL)	
Contract Milestones	3Q/LRIP-1 Long Lead	3Q/LRIP-2 Long Lead	3Q/LRIP-3 Long Lead	3Q/LRIP-4 Long Lead	2Q/00 FRP

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: THEATER MISSION PLANNING CENTER

PROJECT NUMBER: A1784
PROJECT TITLE: TMPC

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	7,329	5,561	3,083	2,628
b. SBIR Assessment		99		
Total	7,329	5,660	3,083	2,628

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204229N PROJECT NUMBER: A1784
PROGRAM ELEMENT TITLE: THEATER MISSION PLANNING CENTER PROJECT TITLE: TMPC

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											
MDA St. Louis Mo	C\FFPI	June 94	36,841	36,841	36,841	0	0	0	0	0	36,841
GD\E San Diego Ca	SS\CPFF	June 94	14,803	14,803	7,076	2,670	1,263	1,137	982	1,675	14,803
NCCOSC San Diego Ca					0	2,251	2,074	1,041	896	0	6,262
MISCELLANEOUS		Various			30,649	2,408	2,224	905	750	2,269	39,205
Support and Management	Not Applicable										
Test and Evaluation	Not Applicable										

GOVERNMENT FURNISHED PROPERTY Not Applicable

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	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: 7

PROGRAM ELEMENT: 0204229N
PROGRAM ELEMENT TITLE: THEATER MISSION PLANNING CENTER

PROJECT NUMBER: A1784
PROJECT TITLE: TMPC

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	74,566	7,329	5,561	3,083	2,628	3,944	97,111
Subtotal Support and Management							
Subtotal Test and Evaluation							
SBIR Assessment			99				99
Total Project	74,566	7,329	5,660	3,083	2,628	3,944	97,210

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0766
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: IUSS Detect/Classif 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
X0766 IUSS Detect/Classif System	19,519	17,803	8,564	18,327	19,520	19,090	15,209	30,463	CONT.	CONT.
X0758 SURTASS	11,040	16,805	1,318	6,050	7,205	7,785	7,951	8,133	CONT.	CONT.
TOTAL	30,559	34,608	9,882	24,377	26,725	26,875	23,160	38,596	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (P.E.) comprises two projects - X0766 and X0758. Project X0766 provides for Integrated Undersea Surveillance Systems (IUSS) Research and Development Projects. Project X0758 is for the Surveillance Towed Array Sensor (SURTASS) development efforts. IUSS provides the Navy with its primary means of submarine detection both nuclear and diesel. The program has undergone a major transition from emphasis on maintaining a large dispersed surveillance force keyed to detection and tracking of soviet submarines to a much smaller force that is effective against modern diesel and nuclear submarines in regional/littoral or broad ocean areas of interest. This transition preserves the ability to continue open ocean surveillance.

(U) The IUSS Research and Development project (X0766) funds Fixed Surveillance Systems (FSS) which encompasses the Sound Surveillance System (SOSUS), the Surveillance Direction System (SDS), and SURTASS Low Frequency Active (LFA) developments. The number of FSS processing sites has been reduced and the display equipment used at the remaining sites will be converted to SDS/SSIPS (Shore Signal and Information Processing Segment) to significantly lower life cycle costs and enable system-wide consolidation. The SDS Command, Control and Communications system provides the means for Fixed Distributed System (FDS), SOSUS, and SURTASS to manage and report contacts with minimum time-late. The SDS equipment and software replace obsolescent components of IUSS which are increasingly expensive to support. SURTASS LFA will provide an active adjunct capability for IUSS passive and tactical sensors to assist in countering the quieter diesel and nuclear threats of the 1990s and beyond. The LFA tasks are directed at detection of slow quiet threats in harsh littoral waters.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: Budget Activity 7: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing operational systems.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0766
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: IUSS Detect/Classif 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
X0766 IUSS Detect/Classif System	19,519	17,803	8,564	18,327	19,520	19,090	15,209	30,463	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: SDS will provide the Command, Control, Communications (C3) and data fusion functions to combine the capabilities of the FDS, SURTASS, and SOSUS, sensor systems in a manner that provides a comprehensive maritime surveillance picture. SDS will provide a reliable and mobile tactical communications system significantly reducing reporting times. SDS will be fully integrated into the Navy's Space and Electronic Warfare Architecture and is using conventional fleet circuits for direct reporting to the fleet. Joint Maritime Command Information System (JMCIS) will serve as the IUSS gateway to the fleet and is being upgraded to better report acoustic data. In addition, SDS is a specified requirement for FDS and Advanced Deployable System (ADS) sensor fusion and communications developments. LFA will provide an active adjunct capability for IUSS passive and tactical sensors to counter the quieter diesel and nuclear threats of the 1990s and beyond. The LFA tasks are directed at detection of slow quiet threats in harsh littoral waters. Functional improvements are delivered to the Fleet in software "Builds". SURTASS/LFA Build #1 (FY 97) includes doppler sensitive waveforms and adaptive beamforming. Build #2 (FY 98) includes Twin-Line/LFA integration; advanced waveforms for littoral/shallow water operations; and processing algorithms to reduce clutter and reverberation false alarms in shallow water. Build #3 (FY 99) includes integration of tactical decision aids for LFA monostatic and bistatic operation; integration of SURTASS active and passive information processing systems to provide contact association and geographic tracking; and common antisubmarine warfare (ASW) OMI and environmental processing. The LFA task includes development and test of a compact LFA transmit source array for SWATH-P ships.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0766
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: IUSS Detect/Classif System

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($ 1,356) Completed Factory Acceptance Test (FAT) for Build 5 at 7800. Install SDS Build 5 at 7800.
- (U) ($ 2,708) Performed data analysis on FY 1995 LFA sea test data and conducted one FY 1996 LFA sea test.
- (U) ($ 5,118) Continued development of algorithms and signal/data processing software for LFA littoral/shallow water performance.
- (U) ($10,337) Continued integration of active and passive improvements into SURTASS/LFA receive processing subsystem.

2. (U) FY 1997 PLAN:

- (U) ($ 2,000) Conduct analysis, trade-off studies and prototyping for Compact LFA.
- (U) ($ 1,416) Continue LFA development of data fusion algorithms and C4I interfaces for tactical reporting.
- (U) ($ 1,569) Perform data analysis on FY 1996 LFA sea test data and conduct two FY 1997 LFA sea tests.
- (U) ($ 2,946) Continue development of algorithms and signal/data processing software for littoral/shallow water performance.
- (U) ($ 3,525) Complete and install SDS Build 5 at 4400. Complete SDS TECHEVAL and OPEVAL. Assess FDS SSIPS real world performance and correct software to optimize processing. Incorporate Advanced Technology Development (ATD), Advanced Concept Technology Demonstration (ACTD) and Small Business Innovative Research (SBIR) technology.
- (U) ($ 3,598) Continue LFA development and integration of signal/data processing software for littoral water operations, including advanced waveforms and clutter and reverberation reduction algorithms .

- (U) ($ 2,300) Continue sea testing and test data analysis .

- (U) ($ 449) 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) ($ 1,385) SDS design development; complete coding, integrating and test of baseline system. Complete action on operational deficiencies as documented by OPTEVFOR. Maintain curren cy with communications systems evolution. Incorporate ATD, ACTD and SBIR technology .

- (U) ($ 588) SSIPS development; assess SSIPS real world performance and correct software to optimize processing. Incorporate ATD, ACTD and SBIR technology .

- (U) ($ 6,591) Initiate development of Compact Low Frequency Active (CLFA) EDM transmit source array.

4. (U) FY 1999 PLAN:

- (U) ($ 1,801) SDS for Advanced Deployable System (ADS); modify SDS for use with ADS. Procure hardware, modify existing software for deployment environment. Integrate SDS system with ADS prototype and support at sea testing.

- (U) ($ 1,390) FSS/SDS/SSIPS design development; assess SDS/SSIPS real world performance and modify software to optimize processing. Maintain currency with communications systems evolution. Incorporate ATD, ACTD and SBIR technology. Improve signal processing and automation tools .

- (U) ($7,903) Continue development of CLFA EDM transmit source array .

- (U) ($ 5,458) Continue LFA development and integration of signal/data processing software for littoral/shallow water operation to support RV CORY CHOUEST operations and T-AGOS 23 Fleet introduction.

- (U) ($ 1,775) Continue sea testing and test data analysis .

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0766
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: IUSS Detect/Classif System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	20,060	10,694	7,960	11,409
(U) Adjustments from FY 1997 PRESBUDG:	-541	+7109	+604	+6,918
(U) FY 1998 President's Budget:	19,519	17,803	8,564	18,327

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 was decreased by -$541K; -$4K reprogrammed to fund the Joint Service Desk Book Initiative,-$23K for Jordanian Rescission, and -$51K reflects reduction for administrative and personal services rescission, -$429 SBIR transfer, and -$34K reprogrammed for other Navy priorities. FY 1997 was increased by $7,109K; -$789K Congressional undistributed general reduction; and $7,898 IUSS technology. FY 1998 was increased by $604K; -$855K for Navy Working Capital Fund (NWCF) adjustments; -$21K reduction for inflation; -$600K deletion of SURTASS EMSP hardware; $8,000K for development of Compact Low Frequency Active (CLFA); -$5,898K reduction due to anticipated FY1997 Congressional plus-up to accelerate FY 1998 efforts; and -$22K for Navy minor adjustments. FY 1999 was increased by $6,918K; -$89K NWCF adjustments; -$68K reduction for inflation; -$900K deletion of SURTASS EMSP hardware; $8,000K for development of CLFA; and -$25K for Navy minor adjustments.

(U) Schedule/Technical: Congressional plus-up funds Compact LFA risk reduction analysis and prototyping, LFA littoral improvements and sea testing to validate improvements. $5,898K of the FY 1997 plus-up funds FY 1998 improvements and sea testing.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0766
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: IUSS Detect/Classif 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
OPN# 2225	22,517	33,853	15,175	11,444	7,805	10,905	11,152	17,406	CONT.	CONT.
OMN 1C3C	69,659	67,950	69,616	72,791	74,316	74,572	76,277	88,441	CONT.	CONT.
OPN# 2237	17,984	10,352	7,108	16,413	13,195	8,175	20,435	24,038	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0204311N(Integrated Surveillance System)
(U) PE 0603785N(Combat Systems Oceanographic Performance Assessment)
(U) PE 0604507N(Enhanced Modular Signal Processor)
(U) PE 0603747N(Undersea Warfare Advanced Technology)

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones		SDS MS II/III 3Q/97		
Engineering Milestones	SDS I&T 3Q/96	BUILD #1 LITTORAL IMPROV 10/96	Build #2 LITTORAL IMPROV 8/98	
T&E Milestones	LFA SEA TESTS 4/96 SDS FAT/FQT 3Q/96 SDS SAT 4Q/96	LFA SEA TESTS 5/97 SDS TECHEVAL 2Q/97 SDS OPEVAL 3Q/97		T-AGOS 23 DLVRY 12/98 LFA SEA TESTS/OA 2/99
Contract Milestones				

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0766
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: IUSS Detect/Classif System

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	1,097	3,407	1,746	2,956
b. Misc.	259	168	227	235
c. System Integration/ Receive Subsystem	14,633	7,020	0	3,522
d. LFA Sea Tests/Data Analysis	1,798	2,382	0	1,775
e. LFA Littoral Improvements	1,732	4,826	6,591	9,839
Total	19,519	17,803	8,564	18,327

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT NUMBER: X0766 PROJECT TITLE: IUSS Detect/Classif System

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle Program	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
Product Development											
LOCKHEED MARTIN Manassas, VA	C/CPFF	9/91 option	41,649	41,649	11,886	1,230	3,731	1,746	2,956	CONT.	CONT.
VARIOUS	Various		72,005	72,005	50,950	5,341	2,271	2,207	3,634	CONT.	CONT.
HAC Fullerton, CA	SS/CPFF	8/90 option	63,228	63,228	43,974	11,429	10,080	2,192	2,951	CONT.	CONT.
LOCKHEED MARTIN Nashau, NH	SS/CPFF	10/98 option						1,505	7,286	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0766
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: IUSS Detect/Classif System

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
Support and Management											
MISC-TRW	C/CPAF	11/95 option	5,495	5,495	3,500	250	330	200	425	CONT.	CONT.
Various	WX					389	400	314	500	CONT.	CONT.
Test and Evaluation											
Various	WX					880	991	400	575	CONT.	CONT.
GOVERNMENT FURNISHED PROPERTY	Not applicable.										
Subtotal Product Development						18,000	16,082	7,650	16,827	CONT.	CONT.
Subtotal Support and Management						639	730	514	925	CONT.	CONT.
Subtotal Test and Evaluation						880	991	400	575	CONT.	CONT.
Total Project						19,519	17,803	8,564	18,327	CONT.	CONT.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204311N

PROGRAM ELEMENT TITLE: Integrated Surveillance System

PROJECT NUMBER: X0758

PROJECT TITLE: SURTASS

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
X0758 SURTASS	11,040	16,805	1,318	6,050	7,205	7,785	7,951	8,133	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The SURTASS project comprises the mobile, tactical arm of the Integrated Undersea Surveillance System, providing long range detection and cueing for tactical weapons platforms against both diesel and nuclear powered submarines. With the SOSUS Arrays being placed in a standby status (data available but not continuously monitored), SURTASS must provide the undersea surveillance necessary to support regional conflicts and sea lane protection. SURTASS has experienced recent passive and active success against diesel submarines operating in shallow water. SURTASS is greatly reducing costs by consolidating logistics support, using Non-Developmental Items and commercial hardware, and increasing operator efficiency through computer aided detection and classification processing. SURTASS development efforts include: twin-line array processing, improved detection and classification/passive automation to counter quieter threats; additional signal processing and bi-static active capability; integrated active and passive operations; improved Battle Group support; and improved information processing. Functional improvements are delivered to the Fleet in software "Builds". Build #1 (FY 95) included source-set formulation and analysis tools, automated line trackers and nuclear source auto-detector. Build #2 (FY 96) included wideband energy trackers, wideband/narrowband feature association, and diesel Full Spectrum Processing (FSP). Build #3 (FY 97) includes twin-line integration, automated localization and tracking, diesel automated detectors. Build #4 (FY 98) includes automated classification aids that provide surface/subsurface target discrimination and subsurface target classification clues; bistatic LFA signal processing and integration of active and passive information processing subsystems to improve contact association and geographic tracking performance.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($ 1,200) Continued software upgrades ORI, Bi-Static, and Full Spectrum Processing .
- (U) ($ 1,155) Continued SEM B to SEM E conversion .

- (U) ($ 4,330) Continued array improvements, including expanded frequency processing. ($306K forward finances FY 1997 efforts.)

- (U) ($ 4,355) Continued software development for computer aided detection and classification/passive automation.

2. (U) FY 1997 PLAN:

- (U) ($12,807) Continue array improvements, including multi-line development, Fiber Optics, twinline integration and expanded array/processing interoperability.

- (U) ($ 2,492) Continue software development for computer aided detection and classification/passive automation.

- (U) ($ 1,068) Continue signal processing improvements including Bi-Static processing.

- (U) ($ 438) 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) ($ 1,318) Continue signal processing improvements including Bi-Static processing.

4. (U) FY 1999 PLAN:

- (U) ($2,490) Continue software development for computer aided detection and classifi cation including improvements to nuclear and diesel auto-detectors, integration of active and passive informa tion processing, and improved classification aids.

- (U) ($2,350) Continue array improvements including multi-line array development and i ntegration and expanded array interoperability.

- (U) ($1,210) Continues signal processing improvements.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204311N
PROGRAM ELEMENT TITLE: Integrated Surveillance System

PROJECT NUMBER: X0758
PROJECT TITLE: SURTASS

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	11,388	3,339	5,314	6,104
(U) Adjustments from PRESBUDG:	-348	+13,466	-3,996	-54
(U) FY 1998 President's Budget:	11,040	16,805	1,318	6,050

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 was decreased by $348K; -$2K reprogrammed to fund the Joint Service Desk Book Initiative, -$13K for Jordanian Rescission and -$29K reflects reduction for administrative and personal services rescission, -$252 SBIR transfer, and -$52K reprogrammed for other Navy priorities. FY 1997 was increased by $13,466K; -$736K Congressional undistributed general adjustments; +$14,202K for IUSS technology. FY 1998 was decreased by $3,996K; -$3,680K reduction due to a FY 1997 Congressional plus-up that accelerated FY 1998 efforts, -$306K for low expenditures, -$6K for Navy minor adjustments; -$1K for NWCF adjustment; and -$3K for inflation reduction. FY 99 was decreased by $54K; -$6K due to Navy minor adjustments; -$26K for NWCF adjustment; and -$22K inflation reduction .

(U) Schedule/Technical: Congressional plus-up funds full integration of twin line into SURTASS Block Upgrade architecture, development of a fiber optic towed array, expanded frequency processing and passive 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
SCN	0	0	0	84,086	0	0	0	0	CONT.	CONT.
OPN #2237	17,984	10,352	7,108	16,431	13,195	8,175	20,435	24,038	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0758
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: SURTASS

(U) RELATED RDT&E:

(U) PE 0204311N(Integrated Surveillance System)
(U) PE 0603785N(Combat Systems Oceanographic Performance Assessment)
(U) PE 0604507N(Enhanced Modular Signal Processor)
(U) PE 0603747N(Undersea Warfare Advanced Technology)

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones				
Engineering Milestones	BUILD #2 COMPUTER AIDED DET/CLASS	BUILD #3 COMPUTER AIDED DET/CLASS	BUILD #4 COMPUTER AIDED DET/CLASS	
T&E Milestones	DT/OT BI-STATIC	DT TWIN-LINE		DT/OT TWIN-LINE
Contract Milestones				

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204311N
PROGRAM ELEMENT TITLE: Integrated Surveillance System

PROJECT NUMBER: X0758
PROJECT TITLE: SURTASS

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Passive Processing/Automation	6,432	2,489	0	2,474
b. Array Improvements	3,408	13,248	0	2,493
c. Signal Processing Improvements	1,200	1,068	1,318	1,083
Total	11,040	16,805	1,318	6,050

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204311N PROJECT NUMBER: X0758
PROGRAM ELEMENT TITLE: Integrated Surveillance System PROJECT TITLE: SURTASS

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											
HAC Fullerton, CA	SS/CPFF	5/89 option	32,500	32,500	25,407	4,440	0	0	0	CONT.	CONT.
HAC Fullerton, CA	SS/CPFF	8/90 option	41,233	41,233	22,653	1,529	10,905	1,100	2,062	CONT.	CONT.
APL/JHU Baltimore, MD		10/95				2,945	900	0	1,160	CONT.	CONT.
NRAD San Diego, CA	WX					0	3,000	0	800	CONT.	CONT.
Support and Management											
VARIOUS	WR					900	1,100	218	828	CONT.	CONT.
Test and Evaluation											
VARIOUS	WR					1,226	900	0	1,200	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204311N
PROGRAM ELEMENT TITLE: Integrated Surveillance System

PROJECT NUMBER: X0758
PROJECT TITLE: SURTASS

	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	8,914	14,805	1,100	4,022	CONT.	CONT.
Subtotal Support and Management	900	1,100	218	828	CONT.	CONT.
Subtotal Test and Evaluation	1,226	900		1,200	CONT.	CONT.
Total Project	11,040	16,805	1,318	6,050	CONT.	CONT.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204413N
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units

(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
S1980	Amphib Other C2									
	0	562	0	0	0	0	0	0	0	15,768
S2231	MCAC Weapons Development									
	4,074	897	672	3,210	7,191	3,608	3,681	3,768	CONT.	CONT.
TOTAL	4,074	1,459	672	3,210	7,191	3,608	3,681	3,768	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Both projects support Landing Craft, Air Cushion (LCAC) during amphibious operations. Project S1980, AN/KSQ-1 Amphibious Assault Direction System integrates existing developments into a system which will support the command and control of surface amphibious assaults launched from extended, over-the-horizon, off shore ranges. The AN/KSQ-1 adapts the USMC's Position Location Reporting System for naval operations and integrates it with shipboard navigation and communication systems. The AN/KSQ-1 is required to identify, track, communicate with, and control landing craft from launch through transit, offload, and return. AN/KSQ-1 will be integrated with the Joint Maritime Command Information System (JMCIS). The feasibility of using alternate sources of position location information (PLI) instead of PLRS and integrating available sources of PLI into the AN/KSQ-1 system will be investigated. Project S2231, LCAC Control Enhancements initiates studies that will provide a remote control capability for LCAC and will be integrated and scheduled with developing minesweeping and shallow water mine-counter-measures systems. LCAC Deep Skirt will provide an improved LCAC performance in Sea State 3 and higher and improved capability near and in the surf zone for explosive lane breaching missions in support of amphibious operations.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204413N
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units

(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
S1980	Amphib Other C2									
	0	562	0	0	0	0	0	0	0	15,768

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project S1980, AN/KSQ-1 Amphibious Assault Direction System integrates existing developments into a system which will support the command and control of surface amphibious assaults launched from extended, over-the-horizon, off shore ranges. The AN/KSQ-1 adapts the USMC's Position Location Reporting System (PLRS) for naval operations and integrates it with shipboard navigation and communication systems. The AN/KSQ-1 is required to identify, track, communicate with, and control landing craft from launch through transit, offload and return. AN/KSQ-1 will be integrated with the Joint Maritime Command Information System (JMCIS). The feasibility of using alternate sources of position location information (PLI) instead of PLRS and integrating available sources of PLI into the AN/KSQ-1 system will be investigated.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

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

2. (U) FY 1997 PLAN:
   - (U) ($215) Study and identify additional position location information sources.
   - (U) ($332) Interface the AN/KSQ-1 to the JMCIS/UB.
   - (U) ($ 15) Portion of Extramural Program Reserved for Small Business Innovative Research (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: 7 PROGRAM ELEMENT: 0204413N PROJECT NUMBER: S1980
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units PROJECT TITLE: Amphib Other C2

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

4. (U) FY 1999 PLAN: Not applicable.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY1997	FY1998	FY1999
(U) FY 1997 President's Budget	0	602	349	3,497
(U) Adjustments from FY 1997 PRESBUDG:	0	-40	-349	-3,497
(U) FY 1998/1999 PRESBUDG Submit:	0	562	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The following decreases apply: FY 1997 (-$40K) minor pricing adjustments; FY 1998 (-$349K) and FY 1999 (-$3,497) termination of follow on KSQ-1 enhancements.

(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 067000	1,903	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	2,397

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204413N
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204413N
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units

(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
S2231 MCAC Weapons Development	4,074	897	672	3,210	7,191	3,608	3,681	3,768	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project S2231, LCAC Control Enhancements initiates studies that will provide a remote control capability for LCAC and will be integrated and scheduled with developing minesweeping and shallow water mine-counter-measures systems. LCAC Deep Skirt will provide an improved LCAC performance in Sea State 3 and higher and improved capability near and in the surf zone for explosive lane breaching missions in support of amphibious operations.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($305) Design of Deep Skirt system.
   - (U) ($740) Conducted model testing.
   - (U) ($1,101) Full scale drawings/template development.
   - (U) ($1,500) Full scale system procurement/craft modifications and installation.

- (U) ($217) Control system enhancement studies/Shallow Water Mine Countermeasures (SWMCM) interface specification preparation.
- (U) ($211) Forward financing FY 97 Deep Skirt requirements for low execution rates.

2. (U) FY 1997 PLAN:

- (U) ($621) Full scale testing of Deep Skirt.
- (U) ($65) Control system enhancement/SWMCM system integration.
- (U) ($211) Forward financing FY 98 Deep Skirt requirements for low execution rates.

3. (U) FY 1998 PLAN:

- (U) ($527) Full scale ship integration tests of Deep Skirt.
- (U) ($145) Complete system spec for remote control.

4. (U) FY 1999 PLAN:

- (U) ($1,960) Prototype remote control system design and software development.
- (U) ($1,250) Procure remote control hardware.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204413N
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units

PROJECT NUMBER: S2231
PROJECT TITLE: MCAC Weapons Development

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY1997	FY1998	FY1999
(U) FY 1997 President's Budget	4,229	946	879	3,215
(U) Adjustments from FY 1997 PRESBUDG:	-155	-49	-207	-5
(U) FY 1998/1999 PRESBUDG Submit:	4,074	897	672	3,210

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 changes due to minor pricing adjustments and general reductions. FY 1997 changes due to minor pricing adjustments. FY 1998 changes due to low FY 1996 expenditure rates and revised NWCF rate adjustments. FY 1999 changes due to minor pricing adjustments and revised 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) OPN Line 098000	- 0 -	- 0 -	- 0 -	15,431	12,923	15,086	15,364	15,642	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: 7

PROGRAM ELEMENT: 0204413N
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units

PROJECT NUMBER: S2231
PROJECT TITLE: MCAC Weapons Development

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	3,169	132	0	2,515
b. Integrated Logistics Support	150	50	40	200
c. Program Management Support	220	180	89	225
d. Test and Evaluation	515	515	528	250
e. Travel	20	20	15	20
Total	4,074	897	672	3,210

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204413N PROJECT NUMBER: S2231
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units PROJECT TITLE: MCAC Weapons Development

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
VARIOUS	WR	12/97	CONT.	CONT.	0	3,319	182	40	2,715	CONT.	CONT.
Support and Management											
VARIOUS	CPAF	01/98	CONT.	CONT.	410	240	200	104	245	CONT.	CONT.
Test and Evaluation											
VARIOUS	WR	12/97	CONT.	CONT.	3,034	515	515	528	250	CONT.	CONT.

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.									

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204413N
PROGRAM ELEMENT TITLE: Amphibious Tactical Support Units

PROJECT NUMBER: S2231
PROJECT TITLE: MCAC Weapons Development

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	3,319	182	.40	2,715	CONT.	CONT.
Subtotal Support and Management	410	240	200	104	245	CONT.	CONT.
Subtotal Test and Evaluation	3,034	515	515	528	250	CONT.	CONT.
Total Project	3,444	4,074	897	672	3,210	CONT.	CONT.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training 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
S1427	Surface Tactical Team Trainer (STTT)									
	9,561	5,178	4,948	3,761	318	316	565	1,069	CONT.	CONT.
S1823	Training and Modeling Systems (TMS)									
	0	4,230	8,785	8,304	8,399	10,599	10,796	10,982	CONT.	CONT.
W0431	Tactical Aircrew Combat Training System (TACTS)									
	5,099	3,346	3,512	3,112	0	0	0	0	0	53,056*
W0604	Training Range and Instrumentation Development (TRID)									
	21,205	12,993	4,315	4,500	4,651	4,796	4,917	5,080	CONT.	CONT.
W1998	Joint Tactical Combat Training System (JTCTS)									
	27,342	19,973	33,623	23,765	11,748	2,367	22,222	22,198	CONT.	CONT.
W2124	Air Warfare Training Development (AWTD)									
	0	1,743	2,106	2,113	2,209	2,267	2,026	2,278	CONT.	CONT.
X1823	Training and Training Devices Systems (TTDS)									
	1,885	1,515	1,323	1,666	0	0	0	0	0	15,856**
TOTAL	65,092	48,978	58,612	47,221	27,325	20,345	40,526	41,607	CONT.	CONT.

* This amount includes FY90-FY99.
** This amount includes FY92-FY99.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The STTT will develop the Battle Force Tactical Training System to provide realistic joint warfare training including a means to link ships together for coordinated Combat System team training using Distributed Interactive Simulation (DIS) protocols. This system is the planned shipboard training systems interface of the JTCTS program. The TMS encompasses the requirements analysis and software development associated with the Navy's Maritime Development Agent function as part of the Joint Simulation System (JSIMS). TACTS provides real-time monitoring and post-exercise debrief of aircrews flying on instrumented training ranges. This system is the primary training tool used by the Naval Strike and Air Warfare Center and the Marine Aviation Weapons and Tactics Squadron. TRID program provides development of many range systems including range electronic warfare simulator, advanced weapons training systems, laser training systems, and shallow water range technology. JTCTS (formerly TCTS) became a joint USN/USAF program in March, 1994. JTCTS will develop U.S. Navy fleet deployable instrumentation for at sea surface, subsurface, and air training and tactics development and fixed/transportable air range instrumentation for U.S. Navy and

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

(U) COST: (Dollars in Thousands)

U.S. Air Force air training and tactics development. JTCTS will incorporate the Defense Modeling and Simulation Office sponsored Distributed Interactive Simulation Protocol Data Unit for interoperability with Navy and other service live, virtual (simulators), and constructive (war games) simulations. This summary reflects only the USN funding component of the JTCTS. AWTD program provides development of many aviation training systems including, mission rehearsal simulation technologies and the Aviation Training Technology Integration Facility (ATTIF) which was a former Advanced Research Projects Agency project known as What-If Simulation System for Advanced Research & Development (WISSARD). TTDS provides a geographically distributed wargaming system for littoral operations training which supports objectives of Fleet Commanders, Naval War College, Joint Warfare Center, and Tactical Training Groups in wargaming, tactical decision making training, and tactics development and evaluation.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training 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
S1427 Surface Tactical Team Trainer (STTT)	9,561	5,178	4,948	3,761	318	316	565	1,069	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Battle Force Tactical Training (BFTT) Program provides realistic joint warfare training across the spectrum of armed conflict; realistic unit level team training in all warfare areas; a means to link ships together which are in different homeports for coordinated training; external stimulation of shipboard training systems; and simulation of non-shipboard forces. BFTT uses a distributed architecture, integrating existing training systems, and uses Distributed Interactive Simulation (DIS) protocols. BFTT provides ships' Commanding Officers and Battle Group/Battle Force Commanders with the ability to conduct coordinated, realistic, high stress, combat system team training as an integral part of the Afloat Training Organization. BFTT Baseline 1 provides a Baseline capability/system that meets the Operational Requirements Document (ORD). BFTT Baseline 1A provides enhanced software capability based on fleet-driven requirements. Upgrade of the Standard Ocean Acoustics Model (SOAM) will provide a realistic, reusable software ocean model for use in Naval training systems. The AN/SSQ-94 Mine Warfare Model (MW MODEL) will provide integration of the Mine Warfare Trainer capability with BFTT. Stimulators/Simulators (STIM/SIM) provides standardized Radio Frequency (RF), Intermediate Frequency (IF), and/or Digital injection into surface ship radars and fire control systems for training of shipboard operators/teams as part of the BFTT System. The Cryptologic Systems Trainer (CST) development will provide embedded operator and team training capability.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1427
PROJECT TITLE: Surface Tactical Team Trainer (STTT)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($3,573) BFTT B/L 1 - Conducted DT-IIB and developed for DT-III the preliminary CG 47/DDG 51 Class, SSDS equipped ship Classes, and CV/CVN enhancements to include integration of the following systems: Scenario Generation & Control Human Machine Interface/Distributed Interactive Simulation (SG&C/HMI/DIS) upgrades, Performance Monitoring (PM) enhancement per class, Mine Warfare Server Phase I, and Navigation Simulator.

- (U) ($5,330) BFTT B/L 1A - Initiated software development of the modifications required to incorporate amphibious/littoral functionality into BFTT B/L 1 software for LHD 1, LHA 1, and LSD 41 Class ships.

- (U) ($500) Mine Warfare - Developed the software modification required to integrate the Mine Warfare capability with BFTT.

- (U) ($158) SOAM - Developed an update to the SOAM for use in all surface trainer/expeditionary warfare programs.

2. (U) FY 1997 PLAN:

- (U) ($1,410) BFTT B/L 1 - Conduct DT-III of the recompiled BFTT software to include: SG&C/HMI/DIS upgrades, the final AEGIS Combat Training System (ACTS) configuration in CG 47/DDG 51 Class, additional On-Board Trainer (OBT) interfaces, NAVSIM and PM enhancements (both ship and shore). Accomplished Milestone III. Attain BFTT Initial Operational Capability (IOC). (12/96)

- (U) ($200) Mine Warfare - Continue development of the software modifications required to integrate the Mine Warfare capability with BFTT. (04/97)

- (U) ($1,441) SIM/STIM - Develop generic Radio Frequency (RF) and Intermediate Frequency (IF) radar stimulators. Initiate development of MK 91 NATO Sea Sparrow Missile System RF Stimulator. (08/97)

- (U) ($45) SOAM - Complete the update to the SOAM to incorporate Shallow Water effects. (01/97)

- (U) ($2,000) CST - Resume development of the Cryptologic Systems Trainer (CST). (08/97)

- (U) ($82) Portion of program reserved for Small Business Innovative Research Assessment in accordance with 15 U.S.C. 638.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development
PROJECT NUMBER: S1427
PROJECT TITLE: Surface Tactical Team Trainer (STTT)

3. (U) FY 1998 PLAN:

- (U) ($2,859) BFTT B/L 1 - Develop software required as a result of lessons learned/additional Fleet requirements since BFTT IOC to include an automated interface to the Naval Warfare Tactical Data Base (NWTDB) and complete software development of the modifications required to incorporate amphibious/littoral functionality into BFTT software. (12/97)

- (U) ($500) Mine Warfare - Complete development of the software modifications required to integrate the Mine Warfare capability. (03/98)

- (U) ($1,589) STIM/SIM - Continue development of the MK 91 NATO Sea Sparrow Missile System RF Stimulator. (04/98)

4. (U) FY 1999 PLAN:

- (U) ($2,054) BFTT - Complete development of software required as a result of lessons learned/additional Fleet requirements since BFTT IOC to include SG&C, Display & Debrief, Entity Motioning and Modeling (EM&M) Improvements and interface to the General Navy Stimulator/Simulator. (12/98)

- (U) ($1,707) STIM/SIM - Complete development of the MK 91 NATO Sea Sparrow Missile System RF Stimulator. (04/99)

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1427
PROJECT TITLE: Surface Tactical Team Trainer (STTT)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	9,691	3,414	3,881	2,198
(U) Appropriated Value:		5,414		
(U) Adjustments from FY 1997 PRESBUDG:	-130	+1,764	+1,067	+1,563
(U) FY 1998 President's Budget Submit:	9,561	5,178	4,948	3,761

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 96 net adjustment of -$130 thousand reflects a Small Business Innovation Research adjustment and minor pricing adjustments. The FY 97 net adjustment of $1,764 thousand reflects a Congressional plus p for the CST program, Navy Working Capital Fund (NWCF) adjustments and minor pricing adjustments. The FY 98 adjustment of +$1,067 thousand and FY 99 adjustment of +$1,563 thousand reflects additional funds provided for the BFTT program and NWCF adjustments.

(U) Schedule: Stim/Sim Contract award is expected to be awarded 3Q/97. BFTT milestone III was conducted in 1Q/97 versus 4Q/96, due to time intensive verification of BFTT operational suitability by the Fleet.

(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 #2762	11,239	26,005	20,956	29,570	38,149	28,536	27,519	26,311	CONT.	CONT.
(U) O&MN #3B4K	4,152	6,361	8,515	9,868	9,069	9,967	9,456	9,304	CONT.	CONT.

(U) RELATED RDT&E: Not Applicable

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1427
PROJECT TITLE: Surface Tactical Team Trainer (STTT)

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones		1Q BFTT B/L I M/S III 4Q BFTT B/L I IOC		
Engineering Milestones	1Q/2Q BFTT B/L I DTIIB	4Q BFTT B/L I DTIII		
T&E Milestones				
Contract Milestones		3Q Stim/Sim Contract Award		

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1427
PROJECT TITLE: Surface Tactical Team Trainer (STTT)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering				
o BFTT B/L 1	200	102	300	100
o BFTT B/L 1A	1,200	0	0	0
o Mine Warfare	100	100	100	0
o STIM/SIM	0	1,441	589	707
o CST	0	500	0	0
o SBIR	0	82	0	0
b. Technical Data				
o BFTT B/L 1	222	226	321	200
o BFTT B/L 1A	1,260	0	0	0
o SOAM	158	45	0	0
o STIM/SIM	0	0	1,000	1,000
o CST	0	500	0	0
c. Software Development				
o BFTT B/L 1	3,151	1,082	2,238	1,754
o BFTT B/L 1A	2,870	0	0	0
o Mine Warfare	400	100	400	0
o CST	0	1,000	0	0
Total	9,561	5,178	4,948	3,761

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: S1427 PROJECT TITLE: Surface Tactical Team Trainer (STTT)

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											
NSWC/PHD	WR/RC	10/97	CONT.	CONT.	10,652	7,230	1,742	2,987	2,215	CONT.	CONT.
NSWC/DD	WR/RC	3/95	6,378	6,378	6,378	0	0	0	0	0	6,378
MISCELLANEOUS	VARIOUS	10/97	CONT.	CONT.	9,004	1,181	2,036	1,061	942	CONT.	CONT.
Support and Management											
MISC C/CPFF/REQN		10/97	CONT.	CONT.	629	350	400	150	150	CONT.	CONT.
Test and Evaluation											
NSWC/PHD	WR/RC	10/97	CONT.	CONT.	2,050	300	500	250	204	CONT	CONT

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			60 DAYS ARO							
MISC	RCP	10/97		1,000	500	500	500	250	CONT.	CONT.
Support and Management										
Test and Evaluation										

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1427
PROJECT TITLE: Surface Tactical Team Trainer (STTT)

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	27,034	8,911	4,196	4,548	3,407	CONT.	CONT.
Subtotal Support and Management	629	350	400	150	150	CONT.	CONT.
Subtotal Test and Evaluation	2,050	300	500	250	204	CONT.	CONT.
SBIR Assessment			82				82
Total Project	29,713	9,561	5,178	4,948	3,761	CONT.	CONT.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training 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
S1823 Training and Modeling Systems (TMS)	0	4,230	8,785	8,304	8,399	10,599	10,796	10,982	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The employment of naval forces in a multi-dimensional warfare environment is a complex operational problem. To counter the threat expected in hostile environments, naval officer training must be provided for all mission areas on a real-time basis at the Battle Force/Group level. This training must focus on tactical decision-making, tactics development/evaluation, and operational planning/execution. Shore-based classroom training and at-sea exercises have historically satisfied the Battle Group tactical training requirement. However, the effectiveness of this approach to training was reduced by the lack of a real-time decision-making environment during shore-based training and the reduction in number and scope of at-sea exercises. The TMS encompasses the requirements analysis and software development associated with the Navy's Maritime Development Agent (DA) function as part of the Joint Simulation System (JSIMS). Based on experience gained through DESERT SHIELD/DESERT STORM, training of Naval forces must be enhanced to ensure proficiency in joint operations. In 1994, the military services, with concurrence of the Defense Modeling and Simulation Office and the Director, Defense Research and Engineering, determined that the Advanced Level Simulation Protocols federation currently used to accomplish Joint Task Force level training, should be replaced by a new architecture designed specifically to meet joint strategic training requirements, while retaining the ability to meet individual service training requirements. The Joint Simulation System (JSIMS) Operational Requirements Document was approved by JCS ltr MCM-32-96 of 1 Feb 96. The Sea Warfare Executive Agent and the Maritime Warfare Development Agent functions represent the Navy portion of and commitment to JSIMS.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1823
PROJECT TITLE: Training and Modeling Systems (TMS)

1. (U) FY 1996 ACCOMPLISHMENTS:

- Not Applicable.

2. (U) FY 1997 PLAN:

- (U) ($4,163) Develop Navy Maritime strategic objects/functionality as part of JSIMS. Tasks include Maritime Domain engineering and developing JSIMS Maritime software to be used as part of the JSIMS Build 0 demonstration in 1Q/98. ($1,320K-12/96, $1,060K - 01/97, $943K - 02/97, $407K - 03/97)

- (U) ($67) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

(U) ($8,785) Demonstrate Maritime Build 0 software during the JSIMS Build 0 demonstration in 1Q/98. Develop and demonstrate JSIMS Maritime software to be used as part of the JSIMS Build 1 strategic training demonstration in 4Q/98. ($3,746K - 12/97, $2,710K - 01/98, $2,329K - 02/98)

4. (U) FY 1999 PLAN:

(U) ($8,304) Develop and demonstrate Maritime Build 2 software during the JSIMS Build 1 demonstration in 1Q-3Q/99. Attain Initial Operational Capability (IOC) for JSIMS Maritime software Version 1.0 in 4Q/99. ($4,198K - 12/98, $4,106K - 01/99)

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: S1823 PROJECT TITLE: Training and Modeling Systems (TMS)

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 FY 1997 PRESBUDG:	0	+4,230	+8,785	+8,304
(U) FY 1998 President's Budget Submit:	0	4,230	8,785	8,304

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 97 net adjustment of +$4,230 thousand reflects minor pricing adjustments and transfer of funds from SPAWAR to NAVSEA for JSIMS Maritime software for the JSIMS Build O demonstration. The FY 98 adjustment of +$8,785 thousand and FY 99 adjustment of +$8,304 thousand reflects the realignment of JSIMS, Navy Working Capital Fund adjustments and rebalancing adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1823
PROJECT TITLE: Training and Modeling Systems (TMS)

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

(U)	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
JSIMS:										
(U) OPN LI #2760	0	0	2,633	2,233	3,567	3,351	3,375	3,400	CONT.	CONT.
(U) OMN AG/SAG 1C4C	0	0	1,286	892	899	907	916	926	CONT.	CONT.
(U) MPN AG 1C	0	0	390	401	410	420	432	444	CONT.	CONT.

(U) RELATED RDT&E: NOT APPLICABLE

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1823
PROJECT TITLE: Training and Modeling Systems (TMS)

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones			1Q Build 0 Demo	1Q Build 1 Demo & 3Q Build 2 Demo 4Q JSIMS IOC
Engineering Milestones		2Q/4Q Domain Engr		
T&E Milestones				
Contract Milestones		1Q/2Q Award JSIMS Maritime Dev. Contract		

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1823
PROJECT TITLE: Training and Modeling Systems (TMS)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Requirements Definition	0	2,256	1,000	0
o SBIR Assessment	0	67	0	0
b. System Engineering	0	1,557	2,000	1,000
c. Software Development/Demo				
o Build 0	0	350	956	0
o Build 1	0	0	3,000	0
o Build 2	0	0	1,829	4,000
o Version 1.0	0	0	0	3,304
Total	0	4,230	8,785	8,304

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: S1823 PROJECT TITLE: Training and Modeling Systems (TMS)

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
NRAD	WR/RC	10/97	CONT.	CONT.	0	0	2,313	6,385	5,604	CONT.	CONT.
MISC C/CPFF/REQN		10/97	CONT.	CONT.	0	0	1,625	2,000	2,300	CONT.	CONT.
Support and Management											
MISC C/CPFF/REQN		10/97	CONT.	CONT.	0	0	150	250	250	CONT.	CONT.
Test and Evaluation:											
NSWC/PHD	WR/RC	10/97	CONT.	CONT.	0	0	75	150	150	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

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											
NSWC/PHD	WR/RC	10/97	CONT.	CONT.	0	0	0	0	0	CONT.	CONT.
Support and Management											
Test and Evaluation											

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: S1823
PROJECT TITLE: Training and Modeling Systems (TMS)

	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	3,938	8,385	7,904	CONT.	CONT.
Subtotal Support and Management	0	0	150	250	250	CONT.	CONT.
Subtotal Test and Evaluation	0	0	75	150	150	CONT.	CONT.
SBIR Assessment	0		67				67
Total Project	0	0	4,230	8,785	8,304	CONT.	CONT.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training 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
W0431 Tactical Aircrew Combat Training System (TACTS)	5,099	3,346	3,512	3,112	0	0	0	0	0	53,056

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops new TACTS capabilities primarily through the integration of additional types of aircraft and weapons. This requires development of new aircraft interfaces, weapons and countermeasures simulations, and modifications to displays. Software is also developed to produce computer generated Electronic Warfare (EW) threats to enhance the system's ability to provide training in a realistic EW environment. Various other system performance improvements are also developed to make the system more effective and reliable.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($694) Aircraft Integration - Completed development of a No-Drop Weapons Scoring capability for the AV-8B (day attack) and F-14A/B, as well as software modifications to accommodate the F-14D tape D02 release. Began developing software modifications to make TACTS compatible with the F/A-18E/F.

- (U) ($909) Weapons Integration - Continued the development of a training capability for the Phoenix missile. Continued development of an Advanced Medium Range Air to Air Missile (AMRAAM) training capability.

- (U) ($30) Threat Integration - Completed the development of simulation capabilities for the 2S6 anti-aircraft artillery and SA-11 surface to air missile.

- (U) ($3,034) System Upgrades - Continued development of block 6.0/A10 software (formerly 6.0/A09/A04.1). Completed integration of the Fallon EW range interface with the front end processor. Continued the development of Advanced Message Oriented Data Security Module (AMODSM) as well as other system improvements.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development
PROJECT NUMBER: WO431
PROJECT TITLE: Tactical Aircrew Combat Training System (TACTS)

- (U) ($432) Studies/Analysis/T&E - Began test planning for block 6.0/A10 software. Tested the Fallon front end processor EW interface functionality. Completed development of a TACTS Simulation User's Manual.

2. (U) FY 1997 PLAN:

- (U) ($208) Aircraft Integration - Complete development of training capabilities for the F/A-18E/F.
- (U) ($1,506) Weapons Integration - Complete the development of the Phoenix training capability for the F-14. Complete development of an initial AMRAAM training capability for the F/A-18.
- (U) ($1,453) System Upgrades - Continue the development of block 6.0/A10 software as well as other system improvements. Complete the development of the AMODSM.
- (U) ($100) Studies/Analysis/T&E - Conduct development testing of the AMODSM.
- (U) ($79) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($1,635) Weapons Integration - Develop an enhanced AMRAAM training capability for the F/A-18 and AV-8B. Resume development of a Joint Stand-Off Weapon (JSOW) training capability.
- (U) ($1,560) System Upgrades - Complete development of A10 software and continue development of block 6.0 software.
- (U) ($317) Studies/Analysis/T&E - Complete testing of A10 software. Develop test procedures for testing block 6.0 software.

4. (U) FY 1999 PLAN:

- (U) ($1,165) Weapons Integration - Complete development of training capabilities for AMRAAM and JSOW.
- (U) ($1,532) System Upgrades - Complete development of block 6.0 software.
- (U) ($415) Studies/Analysis/T&E - Test block 6.0 software and simulation capabilities for AMRAAM and JSOW.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: WO431 PROJECT TITLE: Tactical Aircrew Combat Training System (TACTS)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	4,729	3,538	3,954	5,274
(U) Appropriated Value:		3,538		
(U) Adjustments from FY 1997 PRESBUDG:	+370	-192	-442	-2,162
(U) FY 1998 President's Budget Submit:	5,099	3,346	3,512	3,112

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 96 increase of +$370 thousand reflects a below threshold reprogramming and minor pricing adjustments. The FY 97 reduction of -$192 thousand reflects minor pricing and Navy Working Capital Fund (NWCF) adjustments. The FY 98 net reduction of -$442 thousand reflects the realignment of funds to the Joint Tactical Combat Training System (JTCTS) project, NWCF and minor pricing adjustments. The FY 99 reduction of -$2,162 thousand reflects a realignment of funds to the JTCTS project, minor pricing and NWCF adjustments.

(U) Schedule: AMODSM testing was delayed due to difficulties optimizing the software performance in the test articles. Block 6.0 testing was delayed due to the need to fund AMODSM efforts and develop Phoenix and AMRAAM training capabilities. Testing of A10 software (one of the TACTS airborne software components) is broken out separately from the Block 6.0 testing since it is now planned to be tested.

(U) Technical: Not Applicable.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: WO431
PROJECT TITLE: Tactical Aircrew Combat Training System (TACTS)

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/P-1 #129	4,526	2,789	150	100	0	0	0	0	0	0
(U) APN/P-1 #52	1,407	1,028	0	0	0	0	0	0	0	0

(U) RELATED RDT&E:

(U) PE 0604735F (Range Improvement) - Includes funding for joint efforts with USAF.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					
Engineering Milestones	2Q AMODSM PDR 3Q AMODSM CDR				
T&E Milestones	3Q FEP(FEWR) DT-IIB	3Q/4Q AMODSM DT-II	3Q/4Q A10 DT-II	1Q/4Q Blk 60 DT-II	
Contract Milestones					

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: WO431
PROJECT TITLE: Tactical Aircrew Combat Training System (TACTS)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems/Software Development	4,076	2,422	3,035	2,547
b. T&E	36	100	55	100
c. Systems Engineering	945	715	382	425
d. Travel	42	30	40	40
e. SBIR Assessment		79		
Total	5,099	3,346	3,512	3,112

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W0431
PROJECT TITLE: Tactical Aircrew Combat Training System (TACTS)

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	1Q/98	33,566	33,566	21,348	4,118	2,452	3,075	2,587	0	33,580
Support and Management											
Miscellaneous	Various	1Q/98	15,652	15,652	13,185	945	715	382	425	0	15,652
Test and Evaluation											
Miscellaneous	Various	1Q/98	3,745	3,745	3,454	36	100	55	100	0	3,745

GOVERNMENT FURNISHED PROPERTY: Not Applicable

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											
Support and Management											
Test and Evaluation											
Total Project											

*This includes only FY 90-95.

DATE: February 1997

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development
PROJECT NUMBER: WO431
PROJECT TITLE: Tactical Aircrew Combat Training System (TACTS)

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	21,348	4,118	2,452	3,075	2,587	0	33,580
Subtotal Systems Engr/Management	13,185	945	715	382	425	0	15,652
Subtotal Test and Evaluation	3,454	36	100	55	100	0	3,745
SBIR Assessment			79			0	79
Total Project	37,987	5,099	3,346	3,512	3,112	0	53,056

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training 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
W0604 Training Range and Instrumentation Development (TRID)	21,205	12,993	4,315	4,500	4,651	4,796	4,917	5,080	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops specialized instrumentation systems for fleet readiness training while minimizing life cycle costs. Tasks include the following systems: Range Electronic Warfare Simulators (REWS) and associated subsystems, Target Control System, Large Area Tracking Range (LATR), Underwater Training System-Mobile (UTS-M), Shallow Water Undersea Warfare Training Range (SWUWTR) technology and assorted Advanced Weapons Training Systems (AWTS), such as Imaging Weapons Training Systems (IWTS), Weapons Impact Scoring Set (WISS), Hawaii Island Shallow Water Training Range (HI SWTR) and range requirements.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($753) Conducted and completed IWTS DT-IIB and DT-IIC testing and evaluation. Initiated development of Remote Strafe Scoring System (RSSS) Product Improvement Program (PIP) (previously referred to as improved strafe scoring capability) and attain MS-I/II in 4Q/96.

  (U) ($100) Continued to support development of Next Generation Target Control System (NGTCS).

- (U) ($2,023) Continued technology development for CONUS Shallow Water Range (SWR) procurements. Conducted DT I 2Q/96 and DT II 3Q/96. Conducted combined SWR MS-I/II in 3Q/96. Continued technology development for UTS(M) to reflect identified requirements.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 | PROGRAM ELEMENT: 0204571N | PROGRAM ELEMENT TITLE: Consolidated Training Systems Development | PROJECT NUMBER: W0604 | PROJECT TITLE: Training Range and Instrumentation Development

- (U) ($17,000) Conducted MS III in 3Q/96 for Phase I of Congressionally directed HI SWTR and awarded development contract. The installation will take place in 4Q/97. Began development for Phase II of Congressionally directed HI SWTR in Hawaiian Island area. The contract will be awarded 3Q/97 with installation planned for 3Q/98.

- (U) ($624) Initiated and completed the Electronic Warfare Range Operation Center encryption effort at Southern California Offshore Range. Conducted Electronic Warfare Response Monitor DT-IIB in 3Q/96 and attain MS-III in 4Q/96.

- (U) ($522) Continued analysis/demonstration of concepts for range instrumentation including 3-D display technology (for aircrew debrief) and plastic formed multi-spectral cues. Continued support for DOD common range architecture. Identified requirements for East Coast Naval Gun Fire Simulator.

- (U) ($183) Conduct analyses of design data to ensure that Tactical Training Range (TTR) programs are logistically supportable. Provide technical support for TTR programs scheduled for Naval Aviation Systems Team.

2. (U) FY 1997 PLAN:

- (U) ($1,000) Initiate development of IWTS Pre-Planned Product Improvement (P3I). Continue development and conduct testing of RSSS PIP.

- (U) ($129) Continue to support development of NGTCS.

- (U) ($1,719) Complete technology development for CONUS SWR to meet FY 97 MS III. Continue technology development for UTS(M) to reflect identified requirements.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W0604
PROJECT TITLE: Training Range and Instrumentation Development

- (U) ($348) Continue systems definitions, development of specifications, analysis of concepts, and systems engineering for various projects. Continue systems engineering efforts for range integration using DIS technology and initiate development of a common range architecture that meets High Level Architecture (HLA) standards.

- (U) ($100) Conduct analyses of design data to ensure that TTR programs are logistically supportable. Provide technical support for TTR programs scheduled for Naval Aviation Systems Team.

- (U) ($197) Portion of program reserved for Small Business Innovation Research Assessment in accordance with 15 U.S.C. 638.

- (U) ($9,500) Congressionally directed funding for the PMRF Optical Sensors Project and the Large Area Tracking Range Program. Both programs are procurement efforts and as such, funds will be transferred to the OPN Weapons Range support Equipment line.

3. (U) FY 1998 PLAN:

- (U) ($1,051) Complete development of RSSS PIP and obtain MS III. Continue development of IWTS P3I. Initiate investigation of Advanced Weapons Training Systems (AWTS) requirements.

- (U) ($260) Continue to support development and testing of NGTCS.

- (U) ($2,195) Continue technological development of UTS(M) to reflect identified requirements, included are interoperablity with future programs such as Joint Tactical Combat Training System.

- (U) ($809) Continue systems definitions, development of specifications, analysis of concepts, and systems engineering for various projects. Continue systems engineering efforts for range integration using DIS technology and continue development of common range architecture that meets HLA standards and conduct analyses of design data to ensure that TTR programs are logistically supportable.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7	PROGRAM ELEMENT: 0204571N	PROJECT NUMBER: W0604
	PROGRAM ELEMENT TITLE: Consolidated Training Systems Development	PROJECT TITLE: Training Range and Instrumentation Development

4. (U) FY 1999 PLAN:

- (U) ($1,047) Complete development and testing of IWTS P3I. Continue investigation of AWTS requirements.
- (U) ($2,200) Continue technology development for UTS(M) to reflect identified requirements.
- (U) ($400) Continue to support development of NGTCS.
- (U) ($853) Continue systems definitions, development of specifications, analysis of concepts, and systems engineering for various projects. Continue systems engineering efforts for range integration using DIS technology and continue development of common range architecture that meets HLA standards and conduct analyses of design data to ensure that TTR programs are logistically supportable.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W0604
PROJECT TITLE: Training Range and Instrumentation Development

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	22,090	4,115	4,421	5,521
(U) Appropriated Value:		13,615		
(U) Adjustments from FY 1997 PRESBUDG:	-885	+8,878	-106	-1,021
(U) FY 1998 President's Budget Submit:	21,205	12,993	4,315	4,500

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 96 decrease of -$885 thousand reflects a below threshold reprogramming for Tactical Aircrew Combat Training Systems, a Small Business Innovation Research adjustment and minor pricing adjustments. The FY 97 increase of +$8,878 thousand reflects a $9,500 thousand increase to support the Large Area Tracking Range System Upgrade and the Optical Sensors programs at the Pacific Missile Range Facility. Other adjustments include Navy Working Capital Fund (NWCF) adjustments and minor pricing adjustments. The FY 98 reduction of -$106 thousand reflects NWCF and minor pricing adjustments. The FY 99 reduction of -$1,021 reflects a realignment of funds to the Joint Tactical Combat Training System project, minor pricing and NWCF adjustments.

(U) Schedule: Milestones have changed or have been added due to program restructure.

The following milestones have been changed:

From	To
Phase I SWTR MS-II 3Q/96	Phase I SWTR MS III 3Q/96
Phase II SWTR MS/II 1Q/97	Phase II SWTR MS III 3Q/97
IWTS DT-IIB 1Q/96	IWTS DT-IIB 2Q-3Q/96
SWR MS-III 1Q/97	SWR MS-III 2Q/97

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W0604
PROJECT TITLE: Training Range and Instrumentation Development

The following milestones have been added:

RSSS PIP MS I/II 4Q/96
Phase I SWTR Contract Award 4Q/96
RSSS PIP DT-I 1Q/96-3Q/97
Phase II SWTR Contract Award 3Q/97
RSSS PIP MS III 4Q/98
RSSS PIP DT-II 4Q/97-4Q/98
IWTS P3I DT-II 1Q/96-1Q/99

(U) Technical: Not Applicable.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W0604
PROJECT TITLE: Training Range and Instrumentation Development

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

	FY 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN/P-1 #129	10,542	20,261	3,860	4,345	10,042	20,620	16,321	16,050	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 Phase I SWTR MS-III 3Q SWR MS-I/II 4Q EWRM MS-III 4Q RSSS PIP MS I/II	3Q Phase II SWTR MS-III 2Q SWR MS-III		4Q RSSS PIP MS III	
Engineering Milestones					
T&E Milestones	2Q SWR DT-I 3Q SWR DT-II 2Q/3Q IWTS DT-IIB 4Q IWTS DT-IIC 3Q EWRM DT-IIB 1Q/96-3Q/97 RSSS PIP DT-I	4Q/97-4Q/98 RSSS PIP DT-II		1Q96/1Q IWTS P3I DT-II	
Contract Milestones	4Q Phase I SWTR Contract Award	3Q Phase II SWTR Contract Award			

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W0604
PROJECT TITLE: Training Range and Instrumentation Development

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering and Software Development				
· REWS	624	0	0	0
· AWTS	753	877	918	917
· UTS and SWR Development	18,271	1,619	2,095	2,100
· Target Control System Integration	100	129	260	400
· Range Integration Requirements	796	284	468	502
b. Range Requirements & Engineering Technical Services and Support	601	323	508	512
d. Travel	60	64	66	69
e. SBIR Assessment		197		
f. Procurement funding for PMRF Optical Sensors and LATR		9,500		
Total	21,205	12,993	4,315	4,500

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W0604
PROJECT TITLE: Training Range and Instrumentation 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											
NUWC/NEWPORT,RI	WX	N/A	CONT.	CONT.	8,401	18,271				CONT.	CONT.
Miscellaneous	WX	1Q/98	CONT.	CONT.	42,819	2,333	2,909	3,807	3,988	CONT.	CONT.
Support and Management											
Miscellaneous	RC/WX	1Q/98	CONT.	CONT.	8,969	601	387	508	512	CONT.	CONT.

Test and Evaluation: None

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

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											
Support and Management											
Test and Evaluation											

*This includes FY90-FY95.

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W0604
PROJECT TITLE: Training Range and Instrumentation Development

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	51,220	20,604	2,909	3,807	3,988	CONT.	CONT.
Subtotal Support and Management	8,969	601	387	508	512	CONT.	CONT.
SBIR Assessment			197				197
Procurement funding for PMRF Optical Sensors and LATR			9,500				
Total Project	60,189	21,205	12,993	4,315	4,500	CONT.	CONT.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N

PROGRAM ELEMENT TITLE: Consolidated Training 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
W1998 Joint Tactical Combat Training System (JTCTS)	27,342	19,973	33,623	23,765	11,748	2,367	22,222	22,198	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Tactical Combat Training System (JTCTS) will develop and procure fixed, transportable, and mobile range instrumentation equipment for the USN and USAF for both shore-based (aircrew training) and deployable (ship/sub/aircrew training) applications. The FY-97 common requirements for JTCTS were estimated at the time of contract award in March 1995. During the November/December 1995 time frame, as the program developed and more was known about the common/unique requirements of each service, it was determined the common or joint costs (payable by USN) were actually much higher than originally estimated. To accommodate this, additional funds have been reprogrammed into W1998 for FY-98 through FY-00. Additionally, the JTCTS engineering and manufacturing development contract was restructured to accommodate a greater interface challenge than expected, as well as to address the revised funding availability schedule. This will allow for the progressive development of an EDM for two phases of test and evaluation. The fixed application will provide shore-based tactical aircrew training while the mobile application will provide deployable at-sea single platform to multi-platform (surface ship, submarine and aircraft) and Naval Expeditionary Force multi-warfare training. To accomplish this, JTCTS instrumentation will be designed to develop and transmit exercise scenarios; simulate/stimulate all exercise participants sensors/weapons with the exercise scenario, track all exercise participants and events, e.g., weapons engagements; and provide accurate, realistic, and timely exercise feedback. JTCTS will build on technology developed for Large Area Tracking Range, and the capabilities developed for the in-port Battle Force Tactical Trainer program. JTCTS will incorporate the Defense Modeling and Simulation Office sponsored Distributed Interactive Simulation protocol data unit and potentially the Higher Level Architecture for interoperability with Navy and other service live, virtual (simulators), and constructive (war games) simulations. After initial operational capability, JTCTS will continue development of engineering changes in accordance with its evolutionary acquisition strategy.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W1998
PROJECT TITLE: Joint Tactical Combat Training System (JTCTS)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($23,236) Continued contract for Engineering Development Model (EDM) development.
- (U) ($3,804) Monitored contractor progress, coordinated subsystem engineering development/integration.
- (U) ($302) Conducted Preliminary Design Reviews.

2. (U) FY 1997 PLAN:

- (U) ($14,245) Phase I: Continue contract for EDM software/hardware development.
- (U) ($5,006) Phase I: Monitor contractor progress, coordinate subsystem engineering development/integration.
- (U) ($303) Phase I: Conduct Critical Design Review.
- (U) ($419) 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: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W1998
PROJECT TITLE: Joint Tactical Combat Training System (JTCTS)

3. (U) FY 1998 PLAN:

- (U) ($23,200) Phase I: Complete software/hardware development, integration and development testing. Phase II: Begin software development, hardware/software integration, development testing and hardware manufacturing.

- (U) ($10,423) Phase I: Monitor contractor performance for software/hardware development and integration testing. Begin government Development Testing/Operational Testing (DT/OT) for Phase I. Phase II: Monitor contractor performance in software development and hardware manufacturing. Prepare for range integration at government east coast location. Prepare platforms for integration testing.

4. (U) FY 1999 PLAN:

- (U) ($12,200) Phase I: Complete government DT/OT for Phase I. Phase II: Complete software development, hardware/software integration, development testing and hardware manufacturing. Support government DT/OT for Phase II.

- (U) ($11,565) Monitor software development, hardware/software integration, development testing and hardware manufacturing. Begin government DT/OT for Phase II. Continue to prepare integration site on east coast. Continue to prepare platform for integration testing.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: W1998 PROJECT TITLE: Joint Tactical Combat Training System (JTCTS)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	27,936	17,946	6,155	7,476
(U) Appropriated Value:		20,946		
(U) Adjustments from FY 1997 PRESBUDG:	-594	+2,027	+27,468	+16,289
(U) FY 1998 President's Budget Submit	27,342	19,973	33,623	23,765

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY96 decrease of -$594 thousand reflects adjustments for Jordanian rescission, Small Business Innovation Research and minor pricing adjustments. The FY 97 net increase of $2,027 thousand reflects $3,000 thousand Congressional plus up for JTCTS, Navy Working Capital Fund (NWCF) adjustments and minor pricing adjustments. The FY 98 and FY 99 net increase reflects NWCF adjustments, minorpricing adjustments and provides funds to accommodate higher common (Navy) costs for JTCTS than originallyestimated and provides for restructuring of the contract to control the complex integration challenge and rebaselineto a new funding profile.

(U) Schedule: In the Congressional budget submission the following milestones were appropriately shown in the plans section of the R-2, however, in the schedule profile section the milestones were typed under the wrong fiscal year.

From	To
MS II 2Q/96	MS II 2Q/95
SDR 3Q/96	SDR 3Q/95
E&MD CA 2Q/96	E&MD CA 2Q/95
PDR 3Q/97	PDR 4Q/96
CDR 4Q/97	CDR 2Q/97

The following milestones have been changed due to program restructure.

Initial Production	Initial Production
Decision 3Q/98	Decision 1Q/99
DT-IIB 1Q/98	Phase I DT 3Q/98-1Q/99
OT-IIA 2Q/98	Phase I OT 3Q/98-1Q/99

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development
PROJECT NUMBER: W1998
PROJECT TITLE: Joint Tactical Combat Training System (JTCTS)

The following milestones have been added:

Phase I Contractor Acceptance testing 2Q/98-3Q/98

Phase II Contractor Acceptance testing 3Q/99-1Q/00
LRIP Decision 1Q/99

The following milestones have slipped to FY 2000:

MS III
TECHEVAL
OPEVAL

The following milestone has been deleted:

FOT&E for incorporated into system

(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/P-1 #129									
	0	0	0	9,270	12,240	11,050	15,980	16,121	CONT.	CONT.
(U)	APN/P-1 #52									
	0	0	0	16,848	24,535	24,194	24,659	25,331	CONT.	CONT.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development
PROJECT NUMBER: W1998
PROJECT TITLE: Joint Tactical Combat Training System (JTCTS)

(U) RELATED RDT&E: Joint program with USAF (P.E.: TBD)

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones				Initial Production Decision 1Q	MS III 2Q/01
Engineering Milestones	PDR 4Q	CDR 2Q			
T&E Milestones			Phase I Contractor acceptance testing 2Q/98-3Q/98	Phase II Contractor acceptance testing 3Q/99-1Q/00 Phase I DT/OT 3Q/98-1Q/99 OPEVAL 4Q/99-4Q/00	TECHEVAL 3Q/00
Contract Milestones				LRIP Decision 1Q	

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W1998
PROJECT TITLE: Joint Tactical Combat Training System (JTCTS)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. EDM #1/#2 Development	23,236	14,245	23,200	12,200
b. Government Engineering & Technical Support	2,188	4,038	7,848	8,940
c. Engineering & Technical Services	1,845	1,193	2,500	2,550
d. Travel	73	78	75	75
e. SBIR Assessment		419		
Total	27,342	19,973	33,623	23,765

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: W1998 PROJECT TITLE: Joint Tactical Combat Training System (JTCTS)

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 Division, Providence RI/Loral Space & Range Systems, Sunnyvale, CA											
TRW,FFX,VA	C/CPAF	1Q/93	3,900	3,900	3,900	0	0	0	0	0	3,90
Raytheon	C/CPAF	2Q/95	90,381	90,381	17,500	23,236	14,245	23,200	12,200	0	90,38
NAWC AD PAX	WX	1Q/98	CONT.	CONT.	1,832	1,904	2,333	3,923	4,790	CONT.	CONT
Miscellaneous	WX	N/A	CONT.	CONT.	3,886	357	723	0	0	CONT.	CONT
Support and Management											
Miscellaneous RCP		1Q/98	CONT.	CONT.	4,107	1,845	1,193	2,500	2,550	CONT.	CONT
Test & Evaluation:											
NAWC AD PAX	WX	1Q/98	CONT.	CONT.	0	0	1,060	4,000	4,225	CONT.	CONT

GOVERNMENT FURNISHED PROPERTY Not Applicable.

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											
Support and Management											
Test and Evaluation											

*This include FY90-FY95.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W1998
PROJECT TITLE: Joint Tactical Combat Training System (JTCTS)

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	27,118	25,497	17,301	27,123	16,990	CONT.	CONT.
Subtotal Support and Management	4,107	1,845	1,193	2,500	2,550	CONT.	CONT.
Subtotal Test and Evaluation	0	0	1,060	4,000	4,225	CONT.	CONT.
SBIR Assessment			419				419
Total Project	31,225	27,342	19,973	33,623	23,765	CONT.	CONT.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N

PROGRAM ELEMENT TITLE: Consolidated Training 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 ESTIIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
W2124 Air Warfare Training Development (AWTD)	0	1,743	2,106	2,113	2,209	2,267	2,026	2,278	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops new training system technologies for use in naval aviation training. Tasks include: 1) Mission rehearsal technologies. Develop new and emerging aviation training technologies to provide a transportable, modular, high fidelity mission rehearsal capability. Mission rehearsal is defined as the practice of planned tasks and functions critical to mission success using a true-to-life, interactive representation of the expected operating environment. Technologies to be developed and integrated include helmet mounted and/or flat panel displays, photographic quality image generation, environmental effects models, radar/infra-red/electro-optic and acoustic sensor simulations; and 2) Aviation Training Technology Integration Facility (ATTIF) is a man-in-the-loop testbed for the integration of software, hardware, mission management systems, and threat environment simulations. ATTIF was formally an ARPA project known as What-If Simulation Systems for Advanced Research & Development. ATTIF includes a Distributed Interactive Simulation node for participation in fleet exercise synthetic battlespace. This capability provides a window to fleet aviators for critical comment, evaluation, and fine tuning of new and innovative technology before it is fielded.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W2124
PROJECT TITLE: Air Warfare Training Development (AWTD)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

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

2. (U) FY 1997 PLAN:

- (U) ($353) Determine performance level specification for Mission Rehearsal displays and acoustics.
- (U) ($500) Upgrade Helmet Mounted Display testbed and integrate with Tactical Operational Preview Scene (TOPSCENE) system. TOPSCENE is a generic mission rehearsal trainer.
- (U) ($293) Photographic imagery upgrade for TOPSCENE system.
- (U) ($570) Achieve preliminary operating capability for ATTIF.
- (U) ($27) Portion of program reserved for Small Business Innovation Research Assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($423) Continue performance level specification for Mission Rehearsal image generators.
- (U) ($416) Determine sensor, environmental, and threat modeling performance level specifications.
- (U) ($400) Integrate display, image generator, and effects modeling systems.
- (U) ($867) Reach Initial Operational Capability (IOC) for ATTIF for F-14 prototype demonstrations.

4. (U) FY 1999 PLAN:

- (U) ($729) Demonstrate F-14 concept mission rehearsal system and evaluate.
- (U) ($640) Reach IOC for ATTIF for AV-8B transportable concept demonstration evaluation.
- (U) ($744) Demonstrate and evaluate AV-8B concept transportable mission rehearsal system.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: W2124 PROJECT TITLE: Air Warfare Training Development (AWTD)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	1,666	2,174	2,140
(U) Appropriated Value:		1,666		
(U) Adjustments from FY 1997 PRESBUDG:	0	+ 77	-68	-27
(U) FY 1998 President's Budget Submit:	0	1,743	2,106	2,113

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 97 adjustment of +$77 thousand, FY 98 adjustment of -$68 thousand and FY 99 adjustment of -$27 thousand reflects 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)

(U) APN/P1# BA-7 (47C2) Common Ground Equipment

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
1,000	0	0	0	1,000	7,000	5,000	5,000	CONT.	CONT.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W2124
PROJECT TITLE: Air Warfare Training Development (AWTD)

(U) RELATED RDT&E: Not Applicable.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		MISSION REHEARSAL 2Q/3Q INTEG PLAN			Init Production Decision 4Q/01
Engineering Milestones		MISSION REHEARSAL 2Q/4Q PERF SPEC			PDR 1Q/00 CDR 4Q/00
T&E Milestones				Fleet Project Team Testing 1Q/99-2Q/01	
Contract Milestones		MISSION REHEARSAL 4Q/97-3Q/98 Prototype Pkg			

DATE: February 1997

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development
PROJECT NUMBER: W2124
PROJECT TITLE: Air Warfare Training Development (AWTD)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	0	1,332	1,168	609
b. Governmnent Engineering Support	0	353	287	335
c. Developmental Test and Evaluation	0	0	620	1,138
d. Travel	0	31	31	31
e. SBIR		27		
Total	0	1,743	2,106	2,113

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W2124
PROJECT TITLE: Air Warfare Training Development (AWTD)

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 FY1995 & Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development											
Miscellaneous	WX	10/97	CONT.	CONT.	4,867	0	1,305	1,205	644	CONT.	CONT.
Support and Management											
Miscellaneous	WX	11/97	CONT.	CONT.	1,297	0	31	31	31	CONT.	CONT.
Test and Evaluation											
Miscellaneous	MIPR/WX	11/97	CONT.	CONT.	0	0	380	870	1,438	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: NOT APPLICABLE

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											
Support and Management											
Test and Evaluation											

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: W2124
PROJECT TITLE: Air Warfare Training Development (AWTD)

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	4,867	0	1,305	1,205	644	CONT.	CONT.
Subtotal Support and Management	1,297	0	31	31	31	CONT.	CONT.
Subtotal Test and Evaluation	0	0	380	870	1,438	CONT.	CONT.
SBIR			27				27
Total Project	6,164	0	1,743	2,106	2,113	CONT.	CONT.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training 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
X1823 Training and Training Devices Systems (TTDS)	1,885	1,515	1,323	1,666	0	0	0	0	0	15,856*

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The employment of naval forces in a multi-dimensional warfare environment is a complex operational problem. To counter the threat expected in hostile environments, naval officer training must be provided for all mission areas on a real-time basis at the Battle Force/Group level. This training must focus on tactical decision-making, tactics development/evaluation, and operational planning/execution. Shore-based classroom training and at-sea exercises have historically satisfied the Battle Group tactical training requirement. However, the effectiveness of this approach to training was reduced by the lack of a real-time decision-making environment during shore-based training and the reduction in number and scope of at-sea exercises. Training and Training Devices Systems is composed of the Enhanced Naval Warfare Gaming System (ENWGS).

ENWGS provides the decision-making environment and is a critical portion of the training that Battle Group Commanders and their supporting Warfare Commanders receive prior to deployment. ENWGS provides development of an enhanced wargaming/simulation capability to provide training to Battle Group Commanders and associated Warfare Commanders. ENWGS is a geographically distributed wargaming system that supports the needs and objectives of the Fleet Commanders. Through computer simulation, ENWGS assists tactical commanders in planning, executing, and evaluating Fleet operations and exercises. ENWGS also provides the ability to test the Battle Groups' Operation Orders, providing the essential supplement to at-sea operations, prior to deployment. During FYs 95-97, ENWGS will complete its conversion to an open systems architecture to provide software portability (Release 5.0) and lead to the development of the capability to provide exercise scenarios for other Navy models (Release 6.0).

* This amount includes FY92-FY99.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: X1823
PROJECT TITLE: Training and Training Devices Systems (TTDS)

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,135) Performed DT and OT on ENWGS R4.1. Fielded ENWGS R4.1. Commenced development of ENWGS R5.0 (Phase 2 Work Station and Phase 2 Distributed Interactive Simulation (DIS)) and conducted Preliminary Design Review (PDR) and In Process Reviews (IPRs). Continued development of R5.0. Awarded ENWGS development contract.

- (U) ($250) Performed Joint Maritime Command Information Systems (JSIMS) Maritime Development Agent (DA) requirements analysis and developed the Maritime Training Requirements Document (TRD) for strategic training.

- (U) ($500) Began JSIMS Sea Warfare Functionality development.

2. (U) FY 1997 PLAN:

- (U) ($1,515) Conduct ENWGS R5.0 IPRs and Critical Design Reviews. Perform Development Testing (DT) and Operational Testing (OT) on ENWGS R5.0. Complete and field R5.0. Commence development of ENWGS R6.0, Build 1 (technical enhancements to support interoperability with 2-way Link 11, Link 16 and OTH-T, and improved functionality in the following areas: DIS ENWGS Interface Unit (EIU) upgrade; model modernization; mine warfare; littoral warfare) and Build 2 (continue improvements to 2-way Link 11, Link 16 and OTH-T, and improved functionality in the following areas: DIS/HLA; DIS EIU PDUs; mine warfare; national sensors and satellites; post game analysis; and JMCIS segment integration). Conduct R6.0 Builds 1 and 2 PDR and IPRs. Award new ENWGS IV&V and Test and Evaluation contract.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: X1823
PROJECT TITLE: Training and Training Devices Systems (TTDS)

3. (U) FY 1998 PLAN:

- (U) ($1,323) Continue ENWGS R6.0, Builds 1 and 2, development. Conduct IPRs. Perform DT and OT for R6.0, Build 1. Complete and field test R6.0, Build 1.

4. (U) FY 1999 PLAN:

- (U) ($1,666) Continue ENWGS R6.0, Build 2, development. Conduct IPRs for R6.0, Build 2. Perform DT and OT for R6.0, Build 2. Complete and field integrated R6.0. Integrate Builds 1 and 2 and perform DT and OT for R6.0, integrated Builds 1 and 2.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	1,394	5,988	6,683	6,988
(U) Appropriated Value:		5,988		
(U) Adjustments from FY 1997 PRESBUDG:	+491	-4,473	-5,360	-5,322
(U) FY 1998 President's Budget Submit:	1,885	1,515	1,323	1,666

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 96 adjustment of +$491 thousand reflects a below threshold reprogramming for JSIMS requirements, SBIR and minor pricing adjustments. The FY 97 adjustment of -$4,473 thousand, FY 98 adjustment of -$5,360 thousand, and FY 99 adjustment of -$5,322 reflects a realigment of JSIMS resources, Navy Working Capital Fund adjustments and minor pricing adjustments.

(U) Schedule: The ENWGS program was restructured due to the realignment of funds to project S1823 for Joint Simulation Systems (JSIMS).

(U) Technical: Not Applicable.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: X1823 PROJECT TITLE: Training and Training Devices Systems (TTDS)

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 #2760	1,048	1,557	947	1,066	4	4	4	4	CONT.	CONT.
(U) OMN AG/SAG 1C4C	2,383	2,145	1,860	1,932	1,966	1,984	2,026	2,072	CONT.	CONT.

(U) RELATED RDT&E: Not applicable.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: X1823
PROJECT TITLE: Training and Training Devices Systems (TTDS)

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	ENWGS Release 4.1	ENWGS Release 5.0	ENWGS Release 6.0 Build 1	ENWGS Release 6.0 Build 2 ENWGS Release 6.0 Integ. Build 1 & 2	
Engineering Milestones	ENWGS Release 5.0 PDR & IPRs	ENWGS Release 5.0 IPRs & CDRs ENWGS Release 6.0 PDR & IPRs	ENWGS Release 6.0 Build 1 IPR	ENWGS Release 6.0 Build 2 IPRs ENWGS Release 6.0 Integ. Build 1 & 2	
T&E Milestones	ENWGS Release 4.1 DT & OT	ENWGS Release 5.0 DT & OT	ENWGS Release 6.0 Build 1 DT & OT	ENWGS Release 6.0 Build 2 DT & OT ENWGS Release 6.0 Integ. Build 1 & 2 DT & OT	
Contract Milestones	Award new ENWGS Development Contract (XYZ)	Award new ENWGS IV&V & T&E Contract (XYZ)			

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204571N PROGRAM ELEMENT TITLE: Consolidated Training Systems Development PROJECT NUMBER: X1823 PROJECT TITLE: Training and Training Devices Systems (TTDS)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. System Engineering	500	220	0	0
b. Software Development	1,185	1,161	1,142	1,415
c. System Test & Evaluation	200	100	181	251
d. SBIR Assessment		34		
Total	1,885	1,515	1,323	1,666

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 FY1995 & Prior	FY1996 Budget	FY1997 Budget	FY1998 Budget	FY1999 Budget	To Complete	Total Program
Product Development											
Various contracts	RC	1Q/98	12,635	12,635	7,166	1,685	1,161	1,208	1,415	0	12,635
Support and Management											
NRAD, SC	WX	N/A	1,201	1,201	981	0	220	0	0	0	1,201
Test and Evaluation											
OMN/Various CPFF		08/94	1,986	1,986	1,320	200	100	115	251	0	1,986

GOVERNMENT FURNISHED PROPERTY: NOT APPLICABLE

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											
Support and Management											
Test and Evaluation											

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204571N
PROGRAM ELEMENT TITLE: Consolidated Training Systems Development

PROJECT NUMBER: X1823
PROJECT TITLE: Training and Training Devices Systems (TTDS)

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	7,166	1,685	1,161	1,208	1,415	0	12,635
Subtotal Support & Management	981	0	220	0	0	0	1,201
Subtotal Test and Evaluation	1,320	200	100	115	251	0	1,986
SBIR Assessment			34				34
TOTAL PROJECT	9,467	1,885	1,515	1,323	1,666	0	15,856

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204575N
PROGRAM ELEMENT TITLE: Electronic Warfare Readiness Support

(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
R2263 Information Warfare Systems	0	1,583	1,626	3,766	5,084	5,995	6,115	6,248	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Naval Information Warfare Activity is tasked as the Navy's principal technical agent to research, assess, develop and prototype Information Warfare (IW) capabilities. This new start program will support the development of an effort encompassing all aspects of IW attack, protect and exploit. A key focus of efforts in this line will be providing tactical commanders with an IW Mission Planning, Analysis, and Command and Control Targeting System (IMPACTS) tool. An aggressive program is maintained to acquire and analyze state-of-the-art technologies (software and hardware), evaluate fleet applicability and prototype developmental capabilities.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

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

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204575N PROGRAM ELEMENT TITLE: EW Readiness Support PROJECT NUMBER: R2263 PROJECT TITLE: Information Warfare Systems

2. (U) FY 1997 PLAN:
   - (U) ($300) Migrate offensive IW capabilities to Fleet Information Warfare Command. Develop for use in tactical environments.
   - (U) ($1,091) Develop Joint Maritime Command Information Strategy (JMCIS)-based IMPACTS.
     - (U) Transition IMPACTS electromagnetic environmental planning system to Level III JMCIS compliance.
     - (U) Develop additional JMCIS command and control warfare (C2W) segment tactical decision aids.
   - (U) ($151) Initiate study to develop system-specific requirements for Naval Deception capabilities.
   - (U) ($41) Portion of extramural program reserved for Small Business Innovation Research Assessment in accordance with 15 USC 638.

3. (U) FY 1998 PLAN:
   - (U) ($650) Continue development of offensive IW capabilities. Add additional counter-C2 capabilities for existing systems.
   - (U) ($846) Continue developing and updating IMPACTS.
     - (U) Update electromagnetic environmental planning system to incorporate new Tactical Parabolic Equation Model developed by NRAD.
     - (U) Continue development of JMCIS-compliant IMPACTS and C2W tactical decision aids.
   - (U) ($130) Continue with design specifications for Naval Deception capabilities.

4. (U) FY 1999 PLAN:
   - (U) ($990) Initiate development of JMCIS-compliant synthetic radio frequency environmental modeling tool.
   - (U) ($1,850) Continue developing and updating IMPACTS.
     - (U) Update electromagnetic environmental planning system to incorporate new "what-if" type scenario planning in support of tactical IW mission planning.
     - (U) Continue development of JMCIS-compliant IMPACTS C2W tactical decision aids.
   - (U) ($100) Continue and deliver final design specification for Naval IW Deception capability.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204575N PROJECT NUMBER: R2263
PROGRAM ELEMENT TITLE: EW Readiness Support PROJECT TITLE: Information Warfare Systems

- (U) ($826) Initiate effort to standardize data bases and human-machine interfaces between IMPACTS segments to increase the level of interoperability and commonality.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	1,651	1,932	3,935
(U) Adjustments from FY 1997 PRESBUDG:	0	-68	-306	-169
(U) FY 1998/1999 PRESBUDG Submission:	0	1,583	1,626	3,766

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 adjustment is due to Congressional Undistributed Reductions (-68). FY 1998 adjustment is due to plus ups and offsets for increased information warfare (-300) and internal Navy adjustment (-2) and inflation (-4). FY 1999 adjustment is due plus ups and offsets for increased information warfare (-136) and NWCF and other DON adjustments (-33).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: 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

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204575N PROGRAM ELEMENT TITLE: EW Readiness Support PROJECT NUMBER: R2263 PROJECT TITLE: Information Warfare Systems

MPN	Line 1B1B	11,360	11,327	11,260	11,448	11,770	12,129	12,474	12,833	CONT.	CONT.
OMN	Line 4B7N	1,194	1,235	1,710	1,833	1,894	1,931	1,977	2,026	CONT.	CONT.
OPN	Line 234000	1,406	4,671	5,126	6,719	7,556	8,252	8,420	8,592	CONT.	CONT.
RPN	Line 1C1C	877	731	756	779	797	814	836	861	CONT.	CONT.

(U) RELATED RDT&E:
(U) PE 0305885G (Defense Cryptologic Program)

D. (U) SCHEDULE PROFILE: Not applicable.

000230

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204575N PROJECT NUMBER: R2263
PROGRAM ELEMENT TITLE: EW Readiness Support PROJECT TITLE: Information Warfare Systems

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	0	1,391	1,496	3,666
b. Miscellaneous	0	192	130	100
Total	0	1,583	1,626	3,766

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

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					0	0	1,583	1,626	3,766	CONT.	CONT.

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0204575N PROGRAM ELEMENT TITLE: EW Readiness Support PROJECT NUMBER: R2263 PROJECT TITLE: Information Warfare Systems

	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	1,583	1,626	3,766	CONT.	CONT.
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	0	1,583	1,626	3,766	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205601N
PROGRAM ELEMENT TITLE: HARM 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
W1780 HARM Improvement	2,422	2,293	5,089	7,448	10,618	8,322	5,279	40	0	41,511
W2185 Advanced Anti-Radiation Guided Missile (AARGM)	0*	33,567	0	0	0	0	0	0	0	33,567
W2211 Joint Advanced Weapons System (JAWS) (Army Lead)	933	914	1,080	988	0	0	0	0	0	3,915
TOTAL	3,355	36,774	6,169	8,436	10,618	8,322	5,279	40	0	78,993

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: W1780/HIGH-SPEED ANTI-RADIATION (HARM) IMPROVEMENT: The HARM Improvement Program consists of a tactical software upgrade (Block V) to the missile. Also, in order to meet Insensitive Munitions (IM) requirements for shipboard compatibility, studies will be conducted regarding the development of a technical data package to verify that a recommended Fast-Cook-Off mitigating material is compatible with the HARM weapons system. The HARM Block VI Upgrade Program is a tri-national HARM Upgrade Program consisting of a tactical software upgrade in conjunction with a hardware upgrade which includes the installation of a Inertial Measurement Unit (IMU) closely coupled with a Global Positioning System (GPS) receiver to provide much improved guidance capability to the current AGM-88B missiles (in German and Italian inventories) and AGM-88C missiles (in U.S. inventory). This IMU/GPS system will be retrofitted into existing missiles as a kit at the depot.

(U) W2185/ ADVANCED ANTI-RADIATION GUIDED MISSILE (AARGM): AARGM is a congressionally-mandated Phase III Small Business Innovative Research (SBIR) program designed to demonstrate an advanced dual-mode seeker on an existing High speed Anti-Radiation Missile (HARM) airframe.

(U) W2211/JOINT ADVANCED WEAPONS SYSTEM (JAWS): JAWS is a proposed joint service program which will fulfill Army and Marine Corps Mission Needs Statement requirements for the program. The Navy is participating with the Army in joint trade studies and development of Milestone 0 support documentation including an FY 2000 new start decision and joint Cost and Operational Effectiveness Analysis (COEA).

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing operational systems.

*FY96 and prior executed under P.E. 0603217N/W2185

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205601N
PROGRAM ELEMENT TITLE: HARM 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
W1780 HARM Improvement	2,422	2,293	5,089	7,448	10,618	8,322	5,279	40	0	41,511

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The High-speed Anti-Radiation Missile (HARM) is an ACAT I joint service program with the Air Force (NAVY lead). The program has been in full production since FY 1983 and this P.E. was used until FY 1990 to develop and test one hardware and two software upgrades to the HARM as Engineering Change Proposals (ECP). Another ECP software program (Block V) is planned that modifies HARM software in order to meet expanding requirements. This joint service upgrade is being developed with Air Force funds under Texas Instrument contract N0001993G0179. The Air Force funds cover all contractor development and contractor Test and Evaluation (T&E) cost. The Navy funds cover all government costs related to development and T&E. The tactical software upgrade will give HARM a Home-On-Jam (HOJ) capability, improved geographic specificity, and improved capability against advanced waveforms. Studies to address corrective actions for documented deficiencies will be conducted. Also, in order to meet Insensitive Munitions (IM) requirements for shipboard compatibility, studies will be conducted regarding the development of a technical data package to verify that a recommended Fast-Cook-Off mitigating material is compatible with the HARM weapons system. The Block VI HARM Upgrade Program is a tri-national (U.S., Italy, Germany) Program designed to: improve the HARM's effectiveness by improving the missile's probability to kill; reducing the potential for fratricide and making the missile easier to employ. The Program consists of significant hardware and software modifications to the missile's control and guidance sections, respectively. The three nations involved agree to jointly fund the design, development, testing and production of hardware kits to be installed in the missile control section along with an improved software version to be installed in the missile guidance section.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205601N PROJECT NUMBER: W1780
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT TITLE: HARM Improvement

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($203) Design development/Systems Engineering for Shutter Aperture Antenna (SAA) Shutter/Switch correction.
- (U) ($480) Government initiated Insensitive Munitions (IM) studies and other weapon system upgrade studies to assess service life, missile performance, deficiencies, and logistics support.
- (U) ($417) Government participated in defining Block V software requirement, supported missile software development and Electronic Intelligence (ELINT) file changes, and supported upgrades to Tactical Aircraft Mission Planning system (TAMPS). Participated in Preliminary Design Review and Critical Design Review (PDR/CDR).
- (U) ($72) Began development of Block V Test and Evaluation Master Plan (TEMP) and began Development Testing/Operational Testing (DT/OT) test plan.
- (U) ($100) Developed Home-On-Jam (HOJ)/Modulated target.
- (U) ($1100) Contractor developed software upgrades to the Advanced HARM Workstation test set.
- (U) ($50) Began Block V OPTEVFOR/VX9 DT/OT test execution development and planning.

2. (U) FY 1997 PLAN:

- (U) ($16) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.
- (U) ($119) Government completes IM studies and continues evaluation of other weapon system upgrades to assess service life, missile performance, deficiencies, and logistics support.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205601N PROJECT NUMBER: W1780
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT TITLE: HARM Improvement

- (U) ($1,385) Continue government participation in defining Block V software requirements, supporting missile software development, and ELINT file changes in support of upgrades to TAMPS.
- (U) ($452) Government begins Block V system integration tests and software Independent Verification, & Validation.
- (U) ($243) Complete HOJ/Modulated target development and upgrades.
- (U) ($78) Continue Block V OPTEVFOR/VX9 DT/OT test execution development and planning.

3. (U) FY 1998 PLAN:

- (U) ($189) Continue government development of ELINT, TAMPS, and avionics update required for the Block V Upgrade.
- (U) ($1,246) Block V Test Readiness Review. Begin NAWCWD China Lake execution of the combined DT/OT program.
- (U) ($235) OPTEVFOR/VX9 operational test support of the Block V combined DT/OT program.
- (U) ($455) HARM System Engineering support of Block V development and systems integration efforts.
- (U) ($200) Continue weapons system upgrade studies assessing weapon service life, missile performance, deficiencies, and logistics requirements.
- (U) ($434) HARM Upgrade (Block V) Government In-House testing.
- (U) ($710) Initiate an Engineering and Manufacturing Development (EMD) contract for the design, development and testing of the HARM Upgrade Program (Block VI) with the Prime Contractor. Contract will require incremental funding from all three co-development partners (U.S. Navy, Italy, Germany) from FY98-02.
- (U) ($200) Government engineering support including system performance definition, specification requirements and design analysis for the HARM Upgrade Program (Block VI).

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205601N PROJECT NUMBER: W1780
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT TITLE: HARM Improvement

- (U) ($150) Initial Government test planning including development of the TEMP and DT/OT test plans for Block VI.

- (U) ($300) Government logistic support efforts for the HARM Upgrade Program (Block VI) including initial logistics support analysis and plans development.

- (U) ($970) Government participation in defining HARM Upgrade Program (Block VI) aircraft integration requirements, including the HARM Mission Planning Module modifications for TAMPS; software requirements for the HARM Command Launch Computer (CLC) and HARM Control Panel (HCP); as well as the initial development of the Interface control documents for the F/A-18 and EA-6B.

4. (U) FY 1999 PLAN:

- (U) ($178) Complete government development of ELINT, TAMPS, and avionics updates required for the Block V Upgrade.

- (U) ($1,117) Government personnel to install Block V Software in HARM Missiles at field sites.

- (U) ($1,453) NAWCWD China Lake completion of the Block V combined DT/OT program.

- (U) ($127) Completion of the OPTEVFOR/VX9 operational test support of the Block V combined DT/OT program.

- (U) ($357) HARM Block V system engineering support of development and systems integration efforts. Continue weapon system upgrade studies assessing weapons service life, missile performance, deficiencies, logistics requirements. Conduct the Functional Configuration Audit/Physical Configuration Audit and development of the Engineering Change Proposal to incorporate the Block V software into the HARM inventory.

- (U) ($484) Continue Navy funding for the HARM Upgrade Program (Block VI) EMD contract.

- (U) ($1,532) Continue Government engineering support of the HARM Upgrade Program (Block VI) including preparation for a PDR; support for the Interface Control Working group in defining interface requirements; supporting contractor subsystem design, analysis and testing; and ELINT development.

- (U) ($300) Continue Government support of contractor testing including evaluation of test plans, reports, and preparation of detailed test planning documentation.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205601N PROJECT NUMBER: W1780
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT TITLE: HARM Improvement

- (U) ($200) Continue Government logistic support including finalizing initial logistics support analyses and evaluating contractor designs.

- (U) ($1,700) Government and contractor participation in developing the aircraft avionics updates required by the HARM Upgrade Program (Block VI) in addition to continued CLC/HCP/TAMPS upgrade efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	2,291	2,395	2,466	1,912
(U) Adjustments from Pres Budget:	+131	-102	+2,623	+5,536
(U) FY 1998/1999 President's Budget Submit:	2,422	2,293	5,089	7,448

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net increase of +$131 in FY96 reflects program increase applied to design development/Systems Engineering for the Shutter Aperture Antenna Shutter/Switch. The FY97 decrease of -$102 thousand reflectsNavy Working Capital Fund and other minor adjustments. Increase in FY98 of +$2,623 thousand and in FY99 of +$4,219 thousand reflect HARM Block VI Upgrade Program initiation. The additional upward adjustment of +$1,317 thousand in FY99 is due to the transfer of funds from Weapons Procurement funding to RDT&E for the retrofit installation of Block V software into the HARM missile.

(U) Schedule: The Block V Integration Test and Independent Validation and Verification (IV&V) were added to schedule. HARM Upgrade Program (Block VI) will initiate EMD phase in FY98 and complete in FY02. Mod kits to be procured for retrofit of 1000 (200/yr) missiles from FY03-FY07. The HARM Improvement Upgrade Program was restructured to start DT/OT in the 1Q/1998 instead of 1Q/1997.

(U) Technical: HARM Upgrade Program (Block VI) will adapt existing technology (IMU/GPS) into HARM control section and add major software upgrade to take advantage of the additional hardware capabilities.

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) WPN HARM MODS	0	0	0	0	0	0	0	11,406	38,040	49,446

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205601N PROJECT NUMBER: W1780
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT TITLE: HARM Improvement

(U) RELATED RDT&E: Not applicable

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones	4Q Block V PDR/CDR	Block V Integration Test and IV & V (1Q97 - 4Q97)		Block V ECP Incorporation (2Q99 - 3Q99)	
Engineering Milestones				Block V FCA/PCA (1Q99 - 3Q99)	
T&E Milestones			Block V DT/OT (1Q98 - 1Q99)		
Contract			2Q Block VI EMD Contract Award		

HARM Block VI Upgrade Program Schedule Profile will be provided upon final agreement with all parties (Italy/Germany/U.S.) in conjunction with a signed Memorandum of Understanding (MOU). This is expected inJuly 1997.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 205601N
PROGRAM ELEMENT TITLE: HARM Improvement

PROJECT NUMBER: W1780
PROJECT TITLE: HARM Improvement

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Engineering Services	1,842	1,349	3,024	5,568
b. Test and Evaluation	122	530	1,905	1,717
c. Furnished Equipment	303	243	0	0
d. Management Support	110	110	115	118
e. Travel	45	45	45	45
f. SBIR Assessment		16		
Total	2,422	2,293	5,089	7,448

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205601N PROJECT NUMBER: W1780
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT TITLE: HARM 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											
NAWC/China Lake	WX	11/97	30,394	30,394	0	742	1,349	2,314	5,084	20,905	30,394
Miscellaneous											
(In-house)	WX	10/97	315	315	0	45	45	45	45	135	315
(Contractor)	C/CPFF	VAR	2,294	2,294	0	1,100	0	710	484	0	2,294
Support and Management											
Miscellaneous	C/CPFF	VAR	821	821	0	110	110	115	118	368	821
Test and Evaluation											
NAWC/China Lake	WX	11/97	7,125	7,125	0	122	530	1,905	1,717	2,851	7,125
SBIR Assessment						16					16

GOVERNMENT FURNISHED PROPERTY

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
Product Development				0	0	0	0	0	0
Support and Management				0	0	0	0	0	0
Test and Evaluation									
Targets	WX	11/96	11/97	303	243	0	0	0	546

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0205601N
PROGRAM ELEMENT TITLE: HARM Improvement
PROJECT NUMBER: W1780
PROJECT TITLE: HARM Improvement

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development		1,887	1,394	3,069	5,613	21,040	33,003
Subtotal Support and Management		110	110	115	118	368	821
Subtotal Test and Evaluation		425	773	1,905	1,717	2,851	7,671
SBIR Assessment			16				16
Total Project	0	2,422	2,293	5,089	7,448	24,259	41,511

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205601N
PROGRAM ELEMENT TITLE: HARM 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
W2211 Joint Advanced Weapons Systems (JAWS)	933	914	1,080	988	0	0	0	0	0	3,915

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Attack Weapon System (JAWS) is a proposed joint service program which will fulfill Army and Marine Corps Mission Needs Statement requirements for the post-2000 force structure. The Army (the TOW/HELLFIRE lead service) is proposed as the lead service for the program. To support an FY 2000 new start decision, the Navy is participating with the Army in joint trade studies and development of Milestone 0 support documentation, including a joint Cost and Operational Effectiveness Analysis (COEA) and Testing. The initial basis for trade studies is improvements to the Army HELLFIRE, including alternative seekers and rocket motor improvements. Proposed TOW follow-on are being evaluated including The Army Combined Arms Weapon System (TACAWS) and Advanced Missile System - Heavy (AMS-H). The Navy is participating in the Army's Battlefield Environment Weapon System Simulation (BEWSS) Test Bed evaluation of the Army's Future Missile Technology Integration (FMTI) advanced developments in guidance, propulsion and warheads. Application of these developments are being assessed simultaneously with the Navy's dual mode seeker technologies in the Advanced Anti-Radiation Guided Missile (AARGM) program. The JAWS Mission Needs Statement requires a state of the art technology solution which counters air and surface threats in the post-2000 battlefield.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205601N PROJECT NUMBER: W2211
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT NAME: Joint Advanced Weapons Systems (JAWS)

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($933) Supported joint trade study, incorporated Navy requirements into Army Battlefield Environment Weapon System Simulation (BEWSS), evaluated HELLFIRE and TOW improvements options, prepared pre-Milestone 0 documentation and initiated joint COEA and Testing. ($743K Army and $190K Government In-House)

2. (U) FY 1997 PLAN:

- (U) ($890) Continue joint trade study and BEWSS evaluation, develop HELLFIRE seeker/rocket motor improvement options, continue pre-Milestone 0 documentation, continue joint COEA and Testing, participate in structuring acquisition program and procurement documentation with Army acquisition lead. ($783K Army and $107K Government In-House)

- (U) ($24) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. (U) FY 1998 PLAN:

- (U) ($1,080) Continue BEWSS evaluation through introduction of fixed wing, Advanced Short Takeoff and Landing (ASTOL), and lethal/non-lethal mission requirements, continue structuring Milestone 0 acquisition program start for FY 2000 decision. Conduct mission effectiveness simulations assessments, complete selection of technology candidates to fulfill multi-mission requirements. ($730K Army and $350 Government In-House)

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT; 0205601N PROJECT NUMBER: W2211
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT NAME: Joint Advanced Weapons Systems (JAWS)

4. (U) FY 1999 PLAN:

- (U) ($988) Complete BEWSS evaluation of fixed wing, ASTOL, lethal/non-lethal missions requirements, complete Milestone 0 documentation, complete mission effectiveness assessments, select mission technologies, transition to Pre-Planned Product Improvement or new start program. ($638 Army and $350 Government In-House)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget Submit:	956	953	0	0
(U) Adjustment from PRESBUDG Submit:	-23	-39	+1,080	+988
(U) FY1998 PRESIDENTS BUDGET SUBMIT:	933	914	1,080	988

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Net decrease of -$23 thousand in FY 1996 reflects -$2 for Jordanian Recision, and -$21 thousand for Small Business Innovation Research transfer. Net decrease in FY 1997 represents DBOF and minor balancing adjustments. Net increases in FY 1998 of $1,080 thousand and in FY1999 of $988 thousand reflect funds required for the completion of BEWSS evaluation of ASTOL and lethal/non-lethal requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: US Army P.E. 0603313A PROJ D263 Future Missile Technology Insertion (FMTI).

D. (U) SCHEDULE PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205601N PROJECT NUMBER: W2211
PROGRAM ELEMENT TITLE: HARM Improvement PROJECT NAME: Joint Advanced Weapons Systems (JAWS)

A. (U) PROJECT COST BREAKDOWN: Not Applicable

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

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

(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
P1743 LINK-16 Improvements	1,754	102	2,596	4,534	4,352	4,365	4,459	4,562	CONT.	CONT.
P1753 LINK-11 Improvements	5,922	2,214	0	0	0	0	0	0	0	0
P1977 Navy JTIDS	9,126	5,795	0	0	0	0	0	0	0	552,113
P2126 ATDLS Integration	25,765	27,463	38,779	40,907	27,748	16,341	16,692	17,076	CONT.	CONT.
TOTAL	42,567	35,574	41,375	45,441	32,100	20,706	21,151	21,638	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element (PE) develops and improves the Navy's tactical data link system. It includes the LINK-16 Improvements program, the LINK-11 Improvements program, the Joint Tactical Information Distribution System (JTIDS), and the Advanced Tactical Data Link Systems (ATDLS) Integration.

(U) The LINK-16 will provide translation between Tactical Digital Information Links (TADILs) and will isolate all tactical data link equipment, message standards and protocols from tactical information processors. This will provide a flexible capability for rapidly exchanging tactical information using a single data base for translating various link formats while remaining completely independent of communications equipment and tactical data computing systems. LINK-16 will also improve existing computer-to-computer digital radio communications in the HF and UHF radio frequency bands among Combat Direction System (CDS) equipped ships, submarines, aircraft and shore sites. Data link improvements will allow more effective employment of fleet units by increasing the timeliness, accuracy, and content of tactical data transfer. In order to ensure interoperability, the U.S. is the Lead Technical Nation for LINK-22 to the NATO Improved Link Eleven (NILE) Office.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

(U) The ATDLS Integration program will integrate the Multifunctional Information Distribution System-Low Volume Terminal (MIDS-LVT) LINK-16 terminal into U.S. Navy platforms. Other Navy platforms will be added with the adaptation of MIDS to shipboard. MIDS-LVT is a multinational cooperative development program that will provide space constrained tactical fighter aircraft with LINK-16 capability through the development of a terminal (MIDS-Low Volume Terminal (LVT)) that is functionally identical to the JTIDS Class 2 terminal, but, through the use of VHSIC and MMIC technology, is one-half the weight and one-third the size of the JTIDS terminal. This project funds the costs to integrate and test MIDS on the F/A-18 and other Navy platforms. The multinational cooperative development of the MIDS terminal is funded in PE 0604771D. ATDLS Integration of MIDS-LVT will also provide selected U.S. Navy tactical aircraft, U.S. Navy ships, and U.S. Marine Corps ground units with crypto-secure, jam resistant, low-probability-of-exploitation communication of tactical data and voice at a high data rate. It will have additional capabilities of common grid navigation and automatic relay inherent in the equipment that will enable long range communication and provide jam resistance. The system will be interoperable among all Services and NATO/Allied users equipped with MIDS-LVT, JTIDS Class II/IIA or NATO MIDS.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

(U) Change in Program: P1743 Command and Control Processor (C2P) has been renamed LINK-16 Improvements. FY 1995 and FY 1996 accomplishments and FY 1997 plan are efforts under the C2P name. FY 1998 and FY 1999 plan is rolled up from the LINK-11 Improvement Program into the new LINK-16 Improvements program. The Multifunctional Information Distribution System (MIDS) has been renamed ATDLS Integration.

000248

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

(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
P1743 LINK-16 Improvements	1,754	102	2,596	4,534	4,352	4,365	4,459	4,562	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The LINK-16 Improvements program develops improvements and new capabilities to Navy TADIL-J users. The Command & Control Processor (C2P) is a software development effort that provides an interface between the Tactical Digital Information Links (TADILs) (LINK 4A, 11 and 16) and major surface ship Command and Control systems (Advanced Combat Direction Systems (ACDS) and AEGIS C&D). Common Data Link Management System (CDLMS) is designated as a Pre-planned Product Improvement (P3I) of the C2P. The CDLMS will provide translation between TADILs and isolate all tactical data link equipment, message standards and protocols from tactical information processors. This will provide a flexible capability for rapidly exchanging tactical information using a single data base for translating various link formats while remaining completely independent of communications equipment and tactical data computing systems. The program includes the LINK-22 program and near term improvements to sustain existing LINK-11 systems. Near term LINK-11 improvements include: Mobile Universal Link Translator System (MULTS) upgrade, Common Shipboard Data Terminal Set (CSDTS), and Link-11 Baseline Freeze message standard work. The LINK-22 program will improve the performance of both LINK-11 and LINK-16 through the combination of the results of the Critical Systems Demonstration (CSD) project and the NATO Improved LINK-11 (NILE) project, now known as LINK-22. LINK-22 will pass TADIL-J data elements beyond the line of sight (HF) using a Time Division Multiple Access (TDMA) protocol and the improved LINK-11 waveform. These projects will allow more effective employment of fleet units by increasing timeliness, accuracy, and content of tactical data transfer.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1743
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: LINK-16 Improvements

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($272) Completed testing to verify fixes to C2P V0 deficiencies identified in TECHEVAL/OPEVAL.
   - (U) ($1,482) Completed C2P V1 development.

2. (U) FY 1997 PLAN:
   - (U) ($102) Complete C2P system documentation.

3. (U) FY 1998 PLAN:
   - (U) ($1,359) Continue efforts of design and development Subphase 2 for the NILE Reference System (NRS). (Began in LINK-11 Improvement; Project 1753)
   - (U) ($577) Continue preparing for U.S. implementation of LINK-22. (Began in LINK-11 Improvement; Project 1753)
   - (U) ($660) Continue Common Data Link Management System upgrades. (Began in LINK-11 Improvement; Project 1753)

4. (U) FY 1999 PLAN:
   - (U) ($1,513) Continue efforts of design and development Subphase 2 for the NILE Reference System.
   - (U) ($2,706) Begin development of U.S. implementation of LINK-22 via upgrades to CDLMS/CSDTS.
   - (U) ($315) Continue Common Data Link Management System upgrades.

0250

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1743
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: LINK-16 Improvements

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	1,267	106	0	0
(U) Adjustments from FY 1997 President's Budget:	+487	-4	+2,596	+4,534
(U) FY 1998 President's Budget:	1,754	102	2,596	4,534

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY96: Reprogramming to fund the Joint Service Deskbook Initiative (-$1K) and Jordan Recission (-$1K), transfer for SBIR (-$6K), and reprogramming from P2126 to cover C2P requirements ($495K)

FY97: General Congressional undistributed reductions (-$4K)

FY98: Functional transfer of project P1753 to project P1743 ($2,144K), transfer of project P1977 to project P1743 ($527K), Navy Working Capital Fund rate and carryover adjustment (-$65K), minor Navy adjustment (-$3K), DOD inflation adjustment (-$6K), and adjustment for Joint Service Deskbook Initiative (-$1K).

FY99: Functional transfer of project P1753 to project P1743 ($4,588K), NAVY WORKING CAPITAL FUND rate and surcharge adjustment (-$32K), minor Navy POM Decision adjustment (-$5K), DOD inflation adjustment (-$16K), and Joint Service Deskbook Initiative adjustment (-$1K).

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1743
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: LINK-16 Improvements

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

OPN Line	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
#02660	3,468	3,169	0	0	0	0	0	0	0	0
#02614	0	0	717	729	784	850	865	885	TBD	TBD

(U) RELATED RDT&E: N/A

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					
Engineering Milestones					
T&E Milestones		ACDS BLK 1 Level 2 TECHEVAL 3Q/97	NRS 3Q/98		Link-22 DT/OT 3Q/01
Contract Milestones					

000252

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1743
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: LINK-16 Improvements

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999	
a. NATO Improved Link Eleven				1,359	1,513
b. LINK-22				577	2,706
c. Common Data Link Management System				660	315
d. C2P Improvements	1,754	102			
Total	1,754	102	2,596	4,534	

000253

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: PI743
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: LINK-16 Improvements

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
PERFORMING ORGANIZATIONS											
Product Development											
NCCOSC R&D Div/ San Diego, CA	WX				0	0	0	2,326	4,076	Cont.	Cont.
	C2P ONLY		63,089	63,089	61,991	1,482	102				
All Other Product Development					0	0	0	0	0	0	3,028
Support and Management											
	C2P ONLY		18,443	18,433	18,433						
All Other Support and Management					0	0	0	270	458	Cont.	Cont.
Test and Evaluation											
	C2P ONLY		11,324	11,324	11,082	272					
All other Test and Evaluation					0	0	0	0	0	0	3,881
Subtotal PERFORMING ORGANIZATIONS					91,506	1,754	102	2,596	4,534	Cont.	Cont.

000254

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1743
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: LINK-16 Improvements

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
GOVERNMENT FURNISHED PROPERTY										
Product Development				0	0	0	0	0	0	0
Support and Management				0	0	0	0	0	0	0
Test and Evaluation				0	0	0	0	0	0	0
Subtotal GOVERNMENT FURNISHED PROPERTY				0	0	0	0	0	0	0
Subtotal Product Development				61,991	1,482	102	2,326	4,076	Cont.	Cont.
Subtotal Support and Management				18,433	0	0	270	458	Cont.	Cont.
Subtotal Test and Evaluation				11,082	272	0	0	0	0	11,354
Total Project				91,506	1,754	102	2,596	4,534	Cont.	Cont.

000255

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

(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
P1753 LINK-11 Improvements	5,922	2,214	0	0	0	0	0	0	0	N/A

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: LINK-11 Improvement Program (LEIP) improves existing computer-to-computer radio communications in the High Frequency and Ultra-High Frequency radio and shore sites. The program includes near term improvements to existing LINK-11 systems (LINK-11 Display System (LEDS), Mobile Universal Link Translator System (MULTS), Common Shipboard Data Terminal Set (CSDTS), and LINK-11 Baseline Freeze message standard work) and a LINK-22 program, to improve the performance of LINK-11, which is a combination of the results of the Critical Systems Demonstration (CSD) project and the NATO Improved Link Eleven (NILE) project. These projects will allow more effective employment of fleet units by increasing timeliness, accuracy, and content of tactical data transfer. In order to insure interoperability and to upgrade LINK-11 to LINK 22, the U.S. is the lead technical nation to the NILE office. The NILE development will occur in two Design and Development subphases. Subphase 1 will validate specifications, using simulation, emulation and modeling, and a testbed developed in this subphase. Subphase 2 involves the acquisition, integration and testing of the NILE Reference System (NRS). The U.S. NILE Companion Program (USNCP) will implement LINK-22 in the USN.

000256

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1753
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: LINK-11 Improvements

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) (N/A) Completed NILE testbed.
- (U) ($423) Began NILE Subphase 2 for the NILE Reference System (NRS).
- (U) ($200) Upgraded MULTS to common, supportable hardware host; upgraded software.
- (U) ($1,911) Continued preparations for U.S. implementation of LINK-22.
- (U) ($779) Conducted CSDTS upgrades.
- (U) ($1,000) Completed LINK-11 portion of Common Datalink Management System.
- (U) ($1,609) Provided updates to LINK-11 message standard baseline.

2. (U) FY 1997 PLAN:

- (U) ($1,238) Continue efforts of subphase 2 for the NILE Reference System.
- (U) ($961) Continue preparing for U.S. implementation of LINK-22.

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

000257

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT NUMBER: P1753 PROJECT TITLE: LINK-11 Improvements

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	6,045	2,308	2,144	4,588
(U) Adjustments from FY 1997 President's Budget:	-123	-94	-2,144	-4,588
(U) FY 1998 President's Budget:	5,922	2,214	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY96: Reprogramming to fund the Joint Service Deskbook Initiative (-$1K) and Jordan Rescission (-$7K), transfer for SBIR (-$104K), and reprogramming for other minor pricing adjustments (-$11K).

FY97: General Congressional undistributed reductions (-$94K).

FY98/99: Functional transfer to project P1743 to reflect consolidation of efforts.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

000258

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1753
PROGRAM ELEMENT TITLE: TACTICAL DATA LINKS PROJECT TITLE: LINK-11 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	TO COMPLETE	TOTAL PROGRAM
OPN Line #02660	3,468	3,169	0	0	0	0	N/A	

(U) RELATED RDT&E: N/A

000259

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1753
PROGRAM ELEMENT TITLE: TACTICAL DATA LINKS PROJECT TITLE: LINK-11 Improvements

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	TO COMPLETE
Program Milestones	USNCP MS II 4Q/96		
Engineering Milestones			
T&E Milestones			
Contract Milestones		NRS 3Q/97	

000260

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: TACTICAL DATA LINK
PROJECT NUMBER: P1753
PROJECT TITLE: LINK-11 Improvements

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

Project Cost Categories	FY 1996	FY 1997
a. NATO Improved Link Eleven	423	1,238
b. LINK-22	1,911	961
c. LINK-11 Baseline Freeze	3,588	
d. SBIR		15
Total	5,922	2,214

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROGRAM ELEMENT TITLE: TACTICAL DATA LINKS

PROJECT NUMBER: P1753 PROJECT TITLE: LINK-11 Improvements

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	To Complete	Total Program
PERFORMING ORGANIZATIONS									
Product Development									
NRL						500	1,206	0	N/A
NRAD/SD						1,000	0	0	N/A
All Other Product Development					3,028	2,332	0	0	N/A
Support and Management									
All Other Support and Management					508	250	100	0	N/A
Test and Evaluation									
All Other Test and Evaluation					3,109	1,840	908	0	N/A
Subtotal PERFORMING ORGANIZATIONS					6,645	5,922	2,214		
GOVERNMENT FURNISHED PROPERTY									
Product Development					0	0	0	0	N/A
Support and Management					0	0	0	0	N/A
Test and Evaluation					0	0	0	0	N/A
Subtotal GOVERNMENT FURNISHED PROPERTY					0	0	0	0	N/A

000262

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1753
PROGRAM ELEMENT TITLE: TACTICAL DATA LINKS PROJECT TITLE: LINK-11 Improvements

Subtotal Product Development	3,028	3,832	1,206	0	N/A
Subtotal Support and Management	508	250	100	0	N/A
Subtotal Test and Evaluation	3,109	1,840	908	0	N/A
Total Project	6,645	5,922	2,214	0	N/A

000263

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: TACTICAL DATA LINKS

PROJECT NUMBER: P1977
PROJECT TITLE: Joint Tactical Information Distribution 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	TO COMPLETE	TOTAL PROGRAM
P1977 Joint Tactical Information Distribution System	9,126	5,795	0	0	0	0	0	N/A

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Combat experience gained during the Southeast Asia conflict, Middle East incidents, Grenada, and Desert Storm exposed several deficiencies in U.S. tactical communication, navigation, and identification systems. Extensive analyses of these combat situations indicate that a joint service, high capacity, secure and jam resistant communication and data link would increase force effectiveness and substantially reduce losses due to hostile action and friend-on-friend engagements. These capabilities are critical in the high speed, long range, and electronically hostile environment envisioned in any substantial modern-day conflict. This includes any engagement with minor or third world powers due to the proliferation of high-technology weaponry.

(U) The Time Division Multiple Access (TDMA) family of Joint Tactical Information Distribution System (JTIDS) terminals and the Tactical Digital Information Link J (TADIL J) Message Standard databases resident in C2P are sub-systems integrated into the LINK-16 system. It will provide selected U.S. Navy tactical air, U.S. Navy ships and U.S. Marine Corps ground units crypto-secure, jam resistant, low-probability-of-exploitation communication of tactical data and voice at a high data rate. It will have the additional capabilities of common-grid navigation and the use of automatic relay inherent in the equipment that will enable long-range communication and provide jam resistance. The system will be interoperable among Distribution System

all Services and NATO/Allied users equipped with JTIDS or the European version, NATO MIDS (Germany, Italy, France, and Spain). This project will fund: (1) the costs to integrate and test JTIDS in the E-2C, F-14D, CV, CG, and DDG; (2) the

000264

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1977
PROGRAM ELEMENT TITLE: TACTICAL DATA LINKS PROJECT TITLE: Joint Tactical Information

development required to accommodate expanded LINK-16 operational capabilities for additional warfare areas; and (3) the development of automated network management aids.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

(U) ($1,475) Continued Joint certification implementation and testing.
(U) ($1,486) Continued Tadil J network implementation and certification testing.
(U) ($1,785) Conducted Systems engineering and EMI/EMC certification.
(U) ($3,447) Conducted FOT&E.
(U) ($933) Started implementation of OPSPEC chg 4.

2. (U) FY 1997 PLAN:

(U) ($594) Continue joint certification implementation and testing.
(U) ($1,855) Conduct LINK-16 ACDS BLK 1 and AEGIS Model 5 testing.
(U) ($701) Continue Tadil J Network implementation
(U) ($1,646) Complete FOT&E.
(U) ($957) Continue implementation of OPSPEC chg 4.
(U) ($42) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638

NOTE: Continuing LINK-16 implementation will be funded in P2126 (ATDLS Integration) commencing in FY 1997.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1977
PROGRAM ELEMENT TITLE: TACTICAL DATA LINKS PROJECT TITLE: Joint Tactical Information

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	9,255	6,104	527	0
(U) Adjustments from FY 1997 President's Budget	-129	-309	- 527	0
(U) FY 1998 President's Budget:	9,126	5,795	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY96: Reprogramming to fund the Joint Service Deskbook Initiative (-$4K) and Jordan Rescission (-$11K), transfer for SBIR (-$152K), and reprogramming for minor program adjustments ($38).

FY97: Congressional undistributed general adjustments (-$309K).

FY98: Functional transfer to project P2126.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

000266

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1977
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: Joint Tactical Information Distribution 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	TO COMPLETE	TOTAL PROGRAM
BA-1 APN #052500	4,404	6,004	6,184	6,369	6,560	6,757	CONT.	CONT.
BA-5 APN #054400	0	0	3,024	4,672	1,609	0	CONT.	CONT.
OPN Line #02614	7,021	11,382	20,583	2,007	2,468	0	CONT.	CONT.
SCN	9,168	9,444	9,729	10,020	10,320	10,629	CONT.	CONT.

(U) RELATED RDT&E:
(U) PE (0205667N) - F-14 Upgrade. Aircraft upgrades include integration with JTIDS.
(U) PE (0204152N) - E-2C Improvements. Aircraft upgrades include integration with JTIDS.
(U) PE (0604771D) - Common JTIDS. Funding develops and procures the Navy's Engineering and Manufacturing Development terminals through the Joint Program Office.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	TO COMPLETE
Program Milestones			
Engineering Milestones			
T&E Milestones	DT-IIIA 1/96 OT-IIIA 3/96 DT-IIIB 8/96 DT-IIIC 9/96	OT-IIIB 1/97 OT-IIIC 1/97	
Contract Milestones			

000267

FY 1997 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P1977
PROJECT TITLE: Joint Tactical Information Distribution System

(U) PROJECT COST BREAKDOWN: ($ in Thousands)

Project Cost Categories	FY 1996	FY 1997
a. Testing exercises	4,943	3,501
b. Joint service work	1,475	594
c. Capability enhancement	2,718	1,658
d. SBIR	0	42
Total	9,126	5,795

000268

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P1977
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: Joint Tactical Information Distribution System

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	To Complete	Total Program
PERFORMING ORGANIZATIONS									
Product Development									
NCCOSC R&D Div San Diego, CA	WX	Oct 96			3,866	2,232		0	
		Oct 97			0		1,468	0	7,566
NADEP NI San Diego, CA	WX	Oct 96			1,766				
		Oct 97				500	0	0	2,266
All Other Product Development					3,418	915	0	0	4,333
Subtotal Product Development					9,050	3,647	1,468	0	14,165
Support and Management									
All Other Support and Management					1,008	546	484	0	2,038
Subtotal Support and Management					1,008	546	484	0	2,038

000269

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P1977
PROJECT TITLE: Joint Tactical Information Distribution System

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total 1995 & Prior	FY 1996 Budget	FY 1997 Budget	To Complete	Total Program
Test and Evaluation									
NCCOSC R&D DIV									
San Diego, CA	WX	Oct 95			2,784	3,385	0	0	
		Oct 96				0	2,357	0	8,526
All Other Test and Evaluation					1,936	1,548	1,468	0	4,952
Subtotal Test and Evaluation					4,720	4,933	3,825	0	13,478
Subtotal PERFORMING ORGANIZATIONS					14,778	9,126	5,777	0	29,681
GOVERNMENT FURNISHED PROPERTY									
Product Development					0	0	0	0	0
Support and Management					0	0	0	0	0
Test and Evaluation					0	0	0	0	0
Subtotal GOVERNMENT FURNISHED EQUIPMENT					0	0	0	0	0
Subtotal Product Development					9,050	3,647	1,468	0	14,165
Subtotal Support and Management					1,008	546	484	0	2,038
Subtotal Test and Evaluation					4,720	4,933	3,843	0	13,515
Total Project					14,778	9,126	5,777	0	29,681

000270

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

(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
P2126 ATDLS Integration	25,765	27,463	38,779	40,907	27,748	16,341	16,692	17,076	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The ATDLS Integration program will integrate the Multifunctional Information Distribution System-Low Volume Terminal (MIDS-LVT) LINK-16 terminal into U.S. Navy platforms. Other Navy platforms will be added with the adaptation of MIDS to shipboard. MIDS-LVT is a multinational (U.S., France, Germany, Italy, and Spain) cooperative development program established to design, develop, and deliver low-volume (LV) (smaller size, same capability), lightweight tactical information system terminals for U.S. fighter aircraft, as well as foreign fighter aircraft, helicopters, ships and ground sites. The terminals will be designed as a Pre-Planned Product Improvement (P^3I) of the Joint Tactical Information Distribution System (JTIDS) Time Division Multiple Access (TDMA) Class 2 terminal. The goal of the MIDS-LVT program is to produce a terminal that is smaller, lighter, fully compatible with, and as capable as the JTIDS TDMA Class 2 terminals, but suitable for use in platforms that cannot accommodate the bulkier, heavier JTIDS TDMA Class 2 equipment. Additional terminal development costs are funded in program element 0604771D. MIDS-LVT is interoperable among all Services and NATO/Allied users equipped with JTIDS or the European NATO MIDS version. This project funds: (1) the costs to integrate and test MIDS-LVT into Navy air and ship platforms and into shore command centers; (2) the development required to accommodate expanded LINK-16 operational capabilities for additional warfare areas; and (3) development of automated network management aids.

000271

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P2126
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: ATDLS Integration

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($21,162) Continued F/A-18 MIDS integration software and aircraft design modifications and testing.
- (U) ($2,073) Began TADIL-J implementation.
- (U) ($2,530) Began MIDS-LVT shipboard implementation.
- (U) (N/A) Conducted Critical Design Review (CDR) for aircraft modification.

2. (U) FY 1997 PLAN:

(U) ($22,333) Continue F/A-18 MIDS integration software and aircraft design modifications and testing.
(U) ($2,047) Continue TADIL-J implementation
(U) ($2,525) Continue MIDS-LVT shipboard implementation.

- (U) ($558) 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) ($30,269) Continue F/A-18 MIDS integration software and aircraft design modifications and testing.
(U) ($4,460) Continue TADIL-J implementation.
(U) ($4,050) Complete MIDS-LVT shipboard implementation.

000272

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P2126
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: ATDLS Integration

4. (U) FY 1999 PLAN:
(U) ($34,597) Continue F/A-18 MIDS integration software and aircraft design modifications and testing.
(U) ($6,310) Continue TADIL-J implementation.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	30,863	28,784	45,620	38,342
(U) Adjustments from FY 1997 President's Budget:	-5,098	-1,321	-6,841	+2,565
(U) FY 1998 President's Budget:	25,765	27,463	38,779	40,907

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:
FY96: Reprogrammed to fund the Joint Service Deskbook Initiative (-$8K), Jordan rescission (-$35K), and GFO shortfall (-$2,000K), transfer for SBIR (-$522K), and various pricing adjustments(-$2,533K).
FY97: General Congressional undistributed adjustments (-$1,321K).
FY98: Navy Working Capital Fund rate and carryover adjustments(-$2,344K), minor Navy adjustment(-$51K), DOD inflation adjustment(-$95K), Joint Service Deskbook Initiative adjustment(-$8K), and RDT&E,N expenditure realignment due to low expenditures in FY1996 (-$4,343K).
FY99: Navy Working Capital Fund rate and carryover adjustments (-$238K), minor Navy adjustment (-$40K), DOD inflation adjustment ($-148K), Joint Service Deskbook Initiative adjustment (-$9K), RDT&E,N expenditure realignment from FY 1998($4,000K), and miscellaneous program reduction (-$1,000K).

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

000273

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P2126
PROJECT TITLE: ATDLS Integration

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

APN LINE	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
# 052500	0	0	0	32,944	69,909	64,660	56,633	53,650	185,900	463,500
# 054400	843	1,931	821	760	772	780	803	818	TBD	TBD
RDT&E DA	42,765	38,911	26,111	14,372	13,212	13,795	14,081	14,390	TBD	TBD
OPN Ln #2614	14,826	17,808	19,863	38,817	27,754	26,890	31,709	36,390	TBD	TBD
SCN	13,100	9,000	7,700	9,400	10,700	8,700	11,500	6,400	TBD	TBD

(U) RELATED RDT&E:

(U) PE (0205604N) - JTIDS: Funds integration and test costs for JTIDS on the following Navy Platforms: E-2C, F-14D, CV, CG/CGN, and DDG.

(U) PE (0604771D) - JTIDS: Funding develops and procures the Navy's JTIDS and MIDS Engineering and Manufacturing Development (EMD) terminals.

(U) PE (0604771D) - MIDS: MIDS-LVT terminal development.

000274

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P2126
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: ATDLS Integration

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones			DAB IIIA 4Q/98	MS IIIB 4Q/98 (FRP)	IOC 2Q/01
Engineering Milestones	13M PDR 1Q/96 13M CDR 4Q/96	13CM SYS GEN 2/Q97		15CM SYS GEN 1Q/99	
T&E Milestones			Ship OT 3Q/98	F/A-18 OT-IIA-3 1Q/99 DT-IIA-5 1Q/99 F/A-18 TECHEVAL 4Q/99 F/A-18 OPEVAL 2Q/00 Ship/Sub FOT&E 3Q/00 F/A-18 FOT&E 3Q/02 PLATFORM DT/OT 02/03	
Contract Milestones	F/A-18/SHIS/SUBS EMD Terminal (16) Award 2Q/96				

000275

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P2126
PROJECT TITLE: ATDLS Integration

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering	2,073	2,047	4,460	6,310
b. Integration	23,692	24,858	34,319	34,597
c. SBIR	0	558	0	0
Total	25,765	27,463	38,779	40,907

000276

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P2126
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: ATDLS Integration

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
PERFORMING ORGANIZATIONS											
Product Development											
McDonnell Douglas	SS/CPIF	Jul 94	56,589	56,589	20,730						
		Nov 95				2,000					
		Nov 96					8,974				
		Nov 97						7,735			
		Nov 98							14,676	Cont.	Cont.
NCCOSC R&D Div Det/ Warminster, PA	WX	Nov 93	6,835	6,835	4,907						
		Nov 95				1,928	0	0	0	0	6,835
NCCOSC R&D Div/ San Diego, CA	WX	Nov 94	49,374	49,374	3,544						
		Nov 95				4,917					
		Nov 96					4,907				
		Nov 97						9,208			
		Nov 98							8,552	Cont.	Cont.

000277

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT NUMBER: P2126 PROJECT TITLE: ATDLS Integration

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
PERFORMING ORGANIZATIONS (Continued:)											
Product Development (Continued:)											
NAVAIRWARCENWPNDIV/ China Lake, CA	WX	Mar 94	37,981	37,981	10,639						
		Dec 95				6,000					
		Dec 96					4,000				
		Dec 97						8,940			
		Dec 98							4,700	Cont.	Cont.
GEC Marconi Electronic Systems Corp, Wayne NJ	SS/CPFF	May 93	6,450	6,450	100						
		Nov 95				2,350					
		Nov 96					2,000				
		Nov 97						2,000	0	0	6,450
All Other Product Development			50,909	50,909	24,143	4,701	3,809	2,135	5,539	Cont.	Cont.
Subtotal Product Development			208,138	208,138	64,063	21,896	23,690	30,018	33,467	Cont.	Cont.

000278

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205604N PROJECT NUMBER: P2126
PROGRAM ELEMENT TITLE: Tactical Data Links PROJECT TITLE: ATDLS Integration

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:)											
Support and Management											
All Other Support and Management			17,453	17,453	7,255	1,715	1,518	1,696	2,158	Cont.	Cont.
Subtotal Support and Management			17,453	17,453	7,255	1,715	1,518	1,696	2,158	Cont.	Cont.
Test and Evaluation											
NAVAIRWARCENAIRDIV/ Patuxent River, MD	WX	Dec 95	20,390	20,390	1,230	1,910					
		Dec 96					1,700				
		Dec 97						4,700			
		Dec 98							3,750	Cont.	Cont.
NCCOSC R&D Div/ San Diego, CA	WX	Nov 95	5,321	5,321	100	244					
		Nov 96					555				
		Nov 97						2,365			
		Nov 98							1,532	525	5,321
All Other Test and Evaluation					0	0	0	0	0	0	0
Subtotal Test and Evaluation			25,711	25,711	1,330	2,154	2,255	7,065	5,282	Cont.	Cont.
Subtotal PERFORMING ORGANIZATIONS			251,302	251,302	72,648	25,765	27,463	38,779	40,907	Cont.	Cont.

000279

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205604N
PROGRAM ELEMENT TITLE: Tactical Data Links

PROJECT NUMBER: P2126
PROJECT TITLE: ATDLS Integration

Item Description	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Delivery Date	FY 1995 Budget	Total FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
GOVERNMENT FURNISHED PROPERTY										
Product Development				0	0	0	0	0	0	0
Support and Management				0	0	0	0	0	0	0
Test and Evaluation										
MIDSCO INC, Fairfield NJ	SS/CPAF/IF	Mar 94	Jan 98	0						
		Jan 96			6,594					
		Nov 97					1,500	0	0	8,094
Subtotal Test and Evaluation					6,594	0	1,500	0	0	8,094
Subtotal GOVERNMENT FURNISHED PROPERTY				0	6,594	0	1,500	0	0	8,094
Subtotal Product Development				64,063	21,896	23,690	30,018	33,467	Cont.	Cont.
Subtotal Support and Management				7,255	1,715	1,518	1,696	2,158	Cont.	Cont.
Subtotal Test and Evaluation				1,330	2,154	2,255	7,065	5,282	Cont.	Cont.
Total Project				72,648	25,765	27,463	38,779	40,907	Cont.	Cont.

000280

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205620N
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys 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
V0896	ASW Combat System Integration									
	0	0	657	979	4,091	5,833	2,916	2,925	CONT.	CONT.
V1916	Surface ASW System Improvements									
	9,522	6,503	7,334	6,211	9,112	9,828	8,046	8,238	CONT.	CONT.
TOTAL	9,522	6,503	7,991	7,190	13,203	15,661	10,962	11,163	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The objective of this program element is to incrementally modernize the existing AN/SQQ-89(V) system by providing contact fusion capabilities, improved data processing and classification performance, and develop an open system architecture. The open system architecture developed into the AN/SQQ-89(V) will enable further affordable performance growth to meet fleet requirements. Additionally, this PE supports the efforts to develop adjunct processing capability to process SQS-53C transmissions bistatically using the SQS-53C or SQR-19 Towed Array Receive Subsystem (TARS) as the receiver. Adjunct processing capability will be further enhanced by the implementation of the Lightweight Broadband Variable Depth Sonar (LBVDS) which will increase bandwidth over existing SQQ-89(V) sensors and improve Measures Of Performance (MOP) in detection, tracking and classification. These efforts will provide a fully integrated AN/SQQ-89(V) ASW Combat System, with improved performance in the shallow, littoral environment and complete the design of the Undersea Warfare system for the 21st Century Surface Combatant.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V0896
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: ASW Combat Sys Integ

(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
V0896 ASW Combat System Integration	0	0	657	979	4,091	5,833	2,916	2,925	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Surface ASW Combat Systems Integration project will fully support the integration of follow-on adjunct processing capabilities into the AN/SQQ-89(V) and Surface Combatant for the 21st Century in these areas: 1) commencement of the LBVDS Combatant Conversion Phase, 2) implementation of the next incremental active classification improvement that will incorporate environmentally adaptive processing, and, 3) implementation of a follow-on medium frequency bistatics capability to further improve detection, tracking, and classification of shallow water USW targets.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($0) No funding allocated to V0896 in FY 1996.

2. (U) FY 1997 PLAN:

- (U) ($0) No funding allocated to V0896 in FY 1997.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V0896
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: ASW Combat Sys Integ

3. (U) FY 1998 PLAN:

- (U) ($300) Purchase TARS telemetry. Begin integration and test of the ability of TARS telemetry and towed array hardware to function as the receiver for the VDS (Variable Depth Sonar).
- (U) ($357) Perform Handling System Engineering studies. Begin the requisite studies and investigations to resolve engineering issues to support Installation Control Drawings. Conduct engineering analysis trade-off to determine optimum source configuration and material.

4. (U) FY 1999 PLAN:

- (U) ($979) Commence integration and testing of the Lightweight Broadband VDS receive array using TARS telemetry. Purchase and construct remaining array components and receiver. Continue the requisite studies and investigations to resolve engineering issues to support Installation Control Drawings.

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	+657	+979
(U) FY 1998/1999 PRESBUDG Submit:	0	0	657	979

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V0896
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: ASW Combat Sys Integ

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1998 increase to purchase TARS hardware and begin integration and testing of TARS telemetry and towed array hardware to function as the receiver for VDS. FY 1999 increase to continue integration and testing of the LBVDS using TARS telemetry.

(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 44 (CLI 213600, 213605)	22,198	23,719	16,628	35,928	45,307	53,220	65,797	67,567	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603553N (Surface Anti-Submarine Warfare) - Advanced ASW Development
(U) PE 0604212N (Anti-Submarine Warfare & Other Helicopter Developments)
(U) PE 0604507N (Enhanced Modular Signal Processor) - Development of Navy Standards
(U) PE 0604574N (Navy Tactical Computer Resources) - Development of Navy Standard Displays

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V0896
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: ASW Combat Sys Integ

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones				
Engineering Milestones				4Q LBVDS Using TARS Telemetry Integration Complete
T&E Milestones				
Contract Milestones				

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Sys 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
V1916 Surface ASW Systems Improvements	9,522	6,503	7,334	6,211	9,112	9,828	8,046	8,238	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Surface ASW Systems Improvements project will fully support the DDG-51 Flight IIA and follow-on requirements, develop an open system architecture to allow enhanced or new functions to be integrated into the AN/SQQ-89(V) at reduced costs, and will provide: 1) torpedo alertment and countermeasure capability, 2) improved active classification from the development of TARS and the Echo Tracker Classifier (ETC) and mid-frequency Bistatics, 3) the capability to fire the Lightweight Hybrid Torpedo (LHT), and, 4) a full ASW Data Link.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($877) Conducted two at-sea exercises on the USS Hayler and USS Nicholson, tested and evaluated adjunct processor hosting torpedo alertment program and Surveillance Towed Array Sensor System (SURTASS) algorithms.

- (U) ($3,461) Began efforts to develop, test and evaluate AN/SQS-53C / AN/SQR-19 Bistatics prototype software. Continued SURTASS and other systems analysis to assist in development of Full Spectrum Processing (FSP), final Very Low Frequency (VLF) and LFA Bistatics.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Sys Improvements

- (U) ($5,184) Developed, tested and evaluated the initial ETC software. $807K used to forward fund FY 1997 tasks due to low expenditure in FY 1995.

2. (U) FY 1997 PLAN:

- (U) ($2,177) Complete efforts to develop, test and evaluate AN/SQS-53C / AN/SQR-19 Bistatics prototype software.
- (U) ($670) Conduct developmental testing of AN/SQQ-89A(V)6 with torpedo alertment and FSP capabilities.
- (U) ($768) Develop, test and evaluate the final ETC software.
- (U) ($2,390) Begin Towed Array Receive Subsystem (TARS) processor Advanced Development Model (ADM) and Engineering Development Model (EDM) prototype development with "white" ship test. 11/96 - 05/97
- (U) ($66) Portion of extramural program reserved for Small Business Innovative Research (SBIR) assessment in accordance with U.S.C. 638.
- (U) ($432) Forward financing FY 1998 requirements due to low expenditures in FY 1996. 10/97 - 12/97

3. (U) FY 1998 PLAN:

- (U) ($334) Complete SURTASS LFA translation into AN/SQQ-89 adjunct processor software and displays.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Sys Improvements

- (U) ($846) Conduct Follow-on Operational Test & Evaluation, operational testing IIIG, on an AN/SQQ-89A(V)6 system with adjunct processing including torpedo alertment and data fusion capabilities.

- (U) ($3,826) Continue TARS EDM development with the mid-frequency bistatic towed array processor. Begin TARS Pre-production planning and continue sea-testing with "gray" ship test.

- (U) ($655) Continue performance data analysis, modeling and simulation support using MOP and Measures Of Effectiveness (MOE) methods.

- (U) ($267) Analyze requirements to upgrade the MK116 ASWCMS software and the MK331 Torpedo Setting Panel firmware to allow the AN/SQQ-89(V) to fire the LHT.

- (U) ($527) Begin development of Active Classification Functional Baseline 2 to implement the Twin Processor, Multi-Dimensional Adaptive Clutter filter, and Non-Linear Spatio/Temporal Correlation to assist the operator in classification.

- (U) ($829) Establish requirements for and demonstrate feasibility of an ASW Data Link (virtual) to support multi-platform coordinated ASW.

- (U) ($50) Begin studies to reduce the radar cross section of the AN/SRQ-4 antenna.

4. (U) FY 1999 PLAN:

- (U) ($2,083) Complete development and test Active Classification Functional Baseline 2.

- (U) ($2,833) Complete development and testing of the TARS processor.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Systems Improvements

- (U) ($945) Continue performance data analysis, modeling and simulation using MOP and MOE methods.
- (U) ($300) Continue establishing requirements for and demonstrating feasibility of an ASW Data Link (virtual) to support multi-platform coordinated ASW.
- (U) ($50) Continue investigation of options to reduce the AN/SRQ-4 antenna radar cross section.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	9,623	4,901	6,576	5,902
(U) Adjustments from FY 1997 PRESBUDG:	-101	+1,602	+758	+309
(U) FY 1998/1999 PRESBUDG Submit:	9,522	6,503	7,334	6,211

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease due to minor pricing adjustments. FY 1997 increase due to $2.0 million congressional increase for TARS development and minor pricing adjustments (minus $398K). FY 1998 and 1999 changes due to revised requirements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916

PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Systems 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 Line 44 (CLI 213600, 213605)	22,198	23,719	16,628	35,928	45,307	53,220	65,797	67,567	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603553N (Surface Anti-Submarine Warfare) - Advanced ASW Development

(U) PE 0604212N (Anti-Submarine Warfare & Other Helicopter Developments)

(U) PE 0604507N (Enhanced Modular Signal Processor) - Development of Navy Standards

(U) PE 0604574N (Navy Tactical Computer Resources) - Development of Navy Standard Displays

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Systems Improvements

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones				
Engineering Milestones	2Q (V) 6 Integration Development Complete 4Q VLF Development Complete 4Q Full Spectrum Development Complete 4Q ETC Development Complete	4Q ETC Prototype Complete	4Q SURTASS LFA Into AP S/W Development Complete	4Q Active Classification Functional Baseline 2 Development Complete 4Q TARS Development Complete
T&E Milestones	4Q DT-IIIAN Phase I at Sea Test		4Q DT-IIIAN Phase II at Sea Test	1Q OT-IIIG at Sea Test
Contract Milestones				

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Sys Improvements

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software	1,437	1,150	1,421	1,118
b. System Engineering	5,526	3,436	3,544	3,059
c. Program Management	720	405	570	559
d. Integrated Logistics	150	145	160	150
e. T&E	1,524	1,202	1,474	1,160
f. Travel	165	165	165	165
Total	9,522	6,503	7,334	6,211

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Sys 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											
NUWC/NPT	WR	10/96	CONT.	CONT.	13,052	2,379	600	2,610	2,565	CONT.	CONT.
Miscellaneous	Various	Various	CONT.	CONT.	10,720	4,860	4,296	2,630	1,985	CONT.	CONT.
Support and Management											
Miscellaneous	Various	Various	CONT.	CONT.	2,054	759	405	620	501	CONT.	CONT.
Test and Evaluation											
Miscellaneous	Various	Various	CONT.	CONT.	2,196	1,524	1,202	1,474	1,160	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205620N PROJECT NUMBER: V1916
PROGRAM ELEMENT TITLE: Surface ASW Combat Sys Integ PROJECT TITLE: Surface ASW Sys Improvements

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										
AT&T	CPAF	12/93	03/94	112	0	0	0	0	0	112

Support and Management
Not applicable

Test and Evaluation
Not applicable

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY1999 Budget	To Complete	Total Program
Subtotal Product Development	23,884	7,239	4,896	5,240	4,550	CONT.	CONT.
Subtotal Support and Management	2,054	759	405	620	501	CONT.	CONT.
Subtotal Test and Evaluation	2,196	1,524	1,202	1,474	1,160	CONT.	CONT.
Total Project	28,134	9,522	6,503	7,334	6,211	CONT.	CONT.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205632N
PROGRAM ELEMENT TITLE: MK48 ADCAP

(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
V0366 MK48 ADCAP	21,310	12,242	10,786	19,543	16,223	16,460	20,362	33,430	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The MK 48 ADCAP (ADvanced CAPability) torpedo R&D program focuses on two specific areas through FY98: the Guidance and Control (G&C) software block upgrades and the Torpedo Propulsion Upgrade (TPU). Chief of Naval Operations continues to stress shallow water (less than 600 feet) as a critical operating area to counter third world diesel electric submarines. Severe water temperature gradients, reflection of acoustic energy from the ocean surface and bottom, and non-combatant ship traffic are but a few of the factors which make shallow water a difficult operating environment for acoustically guided weapons. Torpedo testing in shallow water has demonstrated that in-service ADCAP has less than full capability in this difficult environment. However, this testing, in conjunction with laboratory simulation efforts, has shown that significant performance improvements can be made by implementing changes to weapon tactics and software algorithms. Development, implementation and testing of these changes is being accomplished under the ADCAP G&C software block upgrade program. As part of this effort, several dedicated shallow water test exercises were conducted to fully characterize the environment and assess weapon performance. ADCAP software is being converted from the CMS-2 programming language to ADA (Navy standard) in a phased approach. Software Block Upgrade II, written in CMS-2, was the first upgrade to enhance shallow water capability. Introduced to the fleet in 1994, Software Block Upgrade II provides a limited increase in shallow water capability through improved P(HIT) probabilities in uncountered (no CMS) scenarios. Advanced sonar waveforms and computer processing techniques, currently in 6.2 funded development, will be used to further improve shallow water performance, scheduled for Fleet introduction in 1998.

(U) The focus of the MK 48 ADCAP torpedo R&D program for FY99 and out has shifted from being primarily concentrated on Software Block Upgrade efforts to an overall thrust for countering evolving threats beyond ADCAP/MODs and Software Block Upgrade IV. Countermeasure sophistication and availability on the open market directly affects ADCAP kill proficiency and its ability to counter rapidly evolving threats. Additional efforts are required to develop hardware and software modifications which will maintain a robust performance against new systems. Wide Band frequency nose array technology is the keystone solution for maintaining robust performance. A wide band capability would provide the torpedo with the capability to identify

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205632N PROJECT NUMBER: V0366
PROGRAM ELEMENT TITLE: MK48 ADCAP PROJECT TITLE: MK48 ADCAP

CMs and track them by frequency, so as to focus on the target only. It will be capable of transmitting and receiving over a broader frequency band and provide the data necessary to isolate the countermeasures from the target. The software algorithm techniques to be incorporated into the MK 48 ADCAP MODs wide band nose array will use a wider band of sonar frequencies to be able to identify and isolate the CMs from the target with frequency separation and, thus, focus the attack on the target. This technology is required to counter the growing threat to ASW Weapon performance posed by widely proliferating CM technology from exporting nations.

(U) The introduction of the Phased Prototyping Program, in FY01, will provide a technology transition opportunity through incremental torpedo improvements and upgrades to the Development and Test of New Technology Concepts from the R&D community (6.2) and contractor IR&D in in-water test torpedoes. It will incorporate Fleet Testing (early OT) of the new concepts allowing greater Fleet input into requirements for future ADCAP upgrades and provide the foundation for a Next Generation Torpedo. These efforts will continue torpedo development investment at a lower cost and shorter term development than traditional torpedo development programs. It will also provide updates to enhance existing torpedo baseline configuration/performance and provide a less costly next generation torpedo development program, when required in the 2005-2010 time frame.

(U) The proposed MK 48 Improved Submarine Launched Mobile Mine (SLMM) program is based upon a dual-warhead MK48 Torpedo body. It responds to the Mission Need Statement (MNS) and resolves the decreasing supportability and limited capability of the MK 67 SLMM Mod II by taking advantage of excess MK48 inventory and the improved MK71 Target Detecting Device (TDD). The demonstration of the dual-warhead MK48 capability will provide a rapid prototype vehicle for in water testing in FY 97. An improved SLMM demo is being funded within the torpedo RDT&E line because it utilizes a modification of the MK 48 torpedo to accomplish the mining mission. The other SLMM components, such as the TDD were developed under a separate program.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing operational systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,386) Completed final testing and close-out of TPU development program.
- (U) ($4,510) Continued G&C Software Block Upgrade III Improvement Program. Block III addresses the software interfaces with the TPU program and shallow water improvements in various tactical environments.

- (U) ($4,738) Continued G&C Software Block Upgrade IV Improvement Program. Block IV addresses continuing improvements in shallow water capabilities through improved algorithms and processor techniques developed by 6.2/6.3A R&D community.

- (U) ($1,945) Continued the design and development of the prototype MK 48 based Submarine Launched Mobile Mine(SLMM) vehicles. Performed a rapid prototype demonstration, in-water test and independent variable cost and effectiveness studies for Milestone II. Planned the follow-on EMD of the MK 48 dual-warhead SLMM concept, and subsequently defined the acquisition approach which would allow for rapid transition for fleet introduction.

- (U) ($1,855) Began initial wide band array efforts for the prototype design and development for Proof of Manufacture(POM). Performed trade-off and comparative analysis on various wide band array alternatives including array technologies being developed through ONR 6.2/6.3 programs. Began the design of transmitter and receiver upgrades required to implement wide band processing capabilities.

- (U) ($3,682) Completed Development Testing of Block Upgrade III and continued to conduct special shallow water exercises.

- (U) ($2,191) Continued to upgrade Weapon Analysis Facility simulator to reflect latest G&C hardware configuration.

- (U) ($405) Continued shallow water upgrade of WAF simulators.

- (U) ($393) Continued efforts toward COMOPTEVFOR validation of WAF simulator, and continued support of Block support of Block Upgrade DT/OT testing.

- (U) ($205) Continued Program management and travel to support the above activities.

2. (U) FY 1997 PLAN:

- (U) ($1,121) Complete G&C Software Block Upgrade III Improvement Program.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205632N
PROGRAM ELEMENT TITLE: MK48 ADCAP

PROJECT NUMBER: V0366
PROJECT TITLE: MK48 ADCAP

- (U) ($1,948) Start Developmental Testing (D/T) of Block Upgrade IV. Complete Operational Testing (O/T) of Block Upgrade III.

- (U) ($4,571) Continue G&C Software Block Upgrade IV Improvement Program.

- (U) ($1,830) Begin development of enhanced G&C software improvements. The software improvements continue beyond the completion of Block Upgrades III and IV to provide improvements and enhancement to torpedo performance in adverse shallow water countermeasure environments and increase bottom targeting capabilities that will address emerging/ evolving threat characteristics and environments. Software improvements will incorporate new improvements to optimize torpedo effectiveness algorithm and processor techniques being developed by the 6.2/6.3 R&D community.

- (U) ($1,001) Continue to support and upgrade Weapon Analysis Facility simulator to reflect latest G&C hardware configuration.

- (U) ($529) Conduct COMOPTEVFOR Operational Testing of Software Block Upgrade III.

- (U) ($479) Prototype new propulsion concepts resulting from 6.2 R&D technology initiatives in alternate fuels and reduced maintenance components.

- (U) ($484) Continue initial wide band array efforts for the prototype design and development for Proof of Manufacture(POM). Perform trade-off and comparative analysis on various wide band array alternatives including array technologies being developed through ONR 6.2/6.3 programs. Begin design of transmitter and receiver upgrades required to implement wide band processing capabilities.

- (U) ($199) Program management and travel to support above activities.

- (U) ($80) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205632N PROJECT NUMBER: V0366
PROGRAM ELEMENT TITLE: MK48 ADCAP PROJECT TITLE: MK48 ADCAP

- (U) ($5,047) Continue G&C Software Block Upgrade IV Improvement Program.

- (U) ($454) Continue the R&D development of G&C software improvements. Torpedo Software Improvements will incorporate new capabilities and enhancements to optimize torpedo effectiveness algorithm and processor. Begin the countermeasure analysis of current performance against evolving threat characteristics.

- (U) ($1,200) Complete Developmental (D/T) Testing of Software Block Upgrade IV.

- (U) ($2,362) Continue the development of a wide band nose array for the ADCAP MODs torpedo that will provide a capability to transmit and receive over a broader frequency band and provide the data necessary to isolate the countermeasures (CMS) from the target. Continue the development and manufacture prototype wide band nose arrays. Continue to perform trade-off and comparative analysis on various wide band array alternatives including array technologies being developed through ONR 6.2/6.3 programs. Begin design of transmitter and receiver upgrades required to implement wide band processing capabilities.

- (U) ($979) Continue to support and upgrade the Weapon Analysis Facility simulator to reflect latest G&C hardware configuration.

- (U) ($546) Continue to develop, design and prototype new propulsion concepts resulting from 6.2 R&D technology. Begin the land based testing of alternative fuels/reduced maintenance propulsion concepts. Continue to evolve the alternative fuels/reduced maintenance propulsion system design.

- (U) ($198) Program management and travel to support above activities.

4. (U) FY 1999 PLAN:

- (U) ($5,784) Complete the R&D development of G&C Software Block Upgrade IV Improvement Program. Continue the software improvements continue beyond the completion of Block Upgrades III and IV to provide improvements and

enhancement to torpedo performance in adverse, shallow water countermeasure (CM) environments and increase bottom targeting capabilities that will address emerging/evolving threat characteristics and environments. Improvements required to integrate the wide band array into the MODs G&C to include digital interfacing, signal processing, and tactics changes. Analyze fleet problems, characterize countermeasure threat and initiate counter countermeasure (CCM) design improvements. Define the software interface architecture between the Guidance Control Box(GCB) and the wide band array.

- (U) ($4,645) Begin and complete the Operational Testing (O/T) of Software Block Upgrade IV and provide for in-water testing against threat countermeasures to validate the initial simulator analysis and baseline the ADCAP MODs capabilities against advanced CM evolving threats.

- (U) ($5,384) Continue the Design/Fabrication of a wide band array hardware for the MK 48 ADCAP MODs torpedo and the corresponding transmitter and receiver. Conduct test planning for developmental test to occur in FY 2000. Continue the design of transmitter and receiver upgrades required to implement wide band processing capabilities.

- (U) ($1,371) Continue to develop, design and prototype new propulsion concepts. Continue land based testing of alternative fuels and reduced maintenance propulsion components. Downselect to best prototype propulsion design.

- (U) ($1,366) Continue to support and upgrade Weapon Analysis Facility simulator to reflect latest G&C hardware configuration.

- (U) ($784) Conduct COMOPTEVFOR Operational Testing (OT) of Software Block Upgrade IV and continue toward validation of WAF simulator to reflect the incorporation of wide band technologies.

- (U) ($209) Program management and travel to support above activities.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205632N PROJECT NUMBER: V0366
PROGRAM ELEMENT TITLE: MK48 ADCAP PROJECT TITLE: MK48 ADCAP

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

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	21,516	12,772	11,740	12,622
(U) Adjustments from FY 1997 PRESBUDG:	-206	-530	-954	+6,921
(U) FY 1998/1999 PRESBUDG Submit:	21,310	12,242	10,786	19,543

(U) PROGRAM CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease of $206K in FY 1996 results from Joint Services Desk Book, SBIR, and the Jordanian rescission. Decrease of $530K in FY 1997 due to Congressional undistributed general reductions. Decrease of $954K in FY 1998 due to NWCF and inflation reductions. Increase of $6,921K in FY 1999 due to Torpedo Improvements.

(U) Schedule:

FY 1998: Due to FY98 funding adjustments the Operational Testing of Software Block Upgrade IV changed from 3rd Qtr. FY 1998 to 4th Qtr. FY 1999.

(U) Technical:

FY 98: Adjustment reflected above will result in a slip of the Operational Testing of Software Block Upgrade IV from 3rd Qtr FY98 to 4th Qtr. FY99 which will in turn delay software development efforts delaying IOC.

FY 99: Adjustment reflected will provide for the completion of Software Block Upgrade IV and continued efforts for the development of software algorithms for wide band processing, developing simulator models of evolving countermeasures and the in-water testing against threat countermeasures.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205632N
PROGRAM ELEMENT TITLE: MK48 ADCAP

PROJECT NUMBER: V0366
PROJECT TITLE: MK48 ADCAP

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

(U) WPN - 322500

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
59,250	62,080	55,392	57,055	57,481	55,876	60,656	80,954	371,335	971,318

(U) RELATED RDT&E:

(U) PE 0603562N (Submarine Tactical Warfare Systems)
(U) PE 0604562N (Submarine Tactical Warfare Systems Eng)

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205632N PROJECT NUMBER: V0366
PROGRAM ELEMENT TITLE: MK48 ADCAP PROJECT TITLE: MK48 ADCAP

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	To Complete
Program Milestones	2Q MODs MS III	4Q Block III MS III		4Q Block IV MS III	
Engineering Milestones	1Q SLMM SRR			3Q W/B CDR	
T&E Milestones	1Q MODS G&C OT-IIIC 1Q MODS TPU OT-IIID 4Q G&C BLK III DT-IIIE	4Q G&C BLK III OT-IIIE 4Q G&C BLK IV DT-IIIF		4Q G&C BLK IV OT-IIIF	
Contract Milestones	2Q MODS P1	2Q MODS P2	2Q MODs P3	2Q MODs P4	2Q MODs P5

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205632N
PROGRAM ELEMENT TITLE: MK48 ADCAP

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering	7,357	5,820	6,245	4,556
b. Software Engineering	2,841	2,019	1,062	3,921
c. Simulation/Modeling	2,596	1,001	1,180	1,371
d. Hardware Development	2,336	721	1,727	4,063
e. Test and Evaluation	4,075	2,476	383	5,429
f. Program Management Support	135	135	130	144
g. MK48 Based SLMM	1,900	0	0	0
h. Travel	70	70	59	59
Total	21,310	12,242	10,786	19,543

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205632N PROJECT NUMBER: V0366
PROGRAM ELEMENT TITLE: MK48 ADCAP PROJECT TITLE: MK48 ADCAP

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											
Sundstrand ROCKFORD, ILL	C,FPI	AUG.88	18,436	18,436	18,436	0	0	0	0	0	18,436
NGC/HAC CLEVELAND, OH	C,FPI	SEP.93	17,288	17,288	15,749	1,539	0	0	0	0	17,288
NUWC NEWPORT	WR	JAN.97	CONT.	CONT.	CONT.	15,061	9,130	10,156	13,670	CONT.	CONT.
ARL/PSU	PD	FEB.97	CONT.	CONT.	CONT.	500	500	500	300	CONT.	CONT.
Support and Management											
PEAT MARWICK WASH DC	C,CPFF	AUG.90	CONT.	CONT.	CONT.	135	135	130	144	CONT.	CONT.
Test and Evaluation											
NUWC NEWPORT	WR	JAN.97	CONT.	CONT.	CONT.	3,298	1,578	0	3,902	CONT.	CONT.
NUWC KEYPORT	WR	JAN.97	CONT.	CONT.	CONT.	384	370	0	743	CONT.	CONT.
COMOPTEVFOR	WR	DEC.96	CONT.	CONT.	CONT.	393	529	0	784	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY

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
Not Applicable				0	0	0	0	0	0	0

FY 1998/1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205632N
PROGRAM ELEMENT TITLE: MK48 ADCAP

PROJECT NUMBER: V0366
PROJECT TITLE: MK48 ADCAP

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	CONT.	17,100	9,630	10,656	13,970	CONT.	CONT.
Subtotal Support and Management	CONT.	135	135	130	144	CONT.	CONT.
Subtotal Test and Evaluation	CONT.	4,075	2,477	0	5,429	CONT.	CONT.
Total Project	CONT.	21,310	12,242	10,786	19,543	CONT.	CONT.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE: AVIATION 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
W0601 Common Ground Equipment	2,449	3,503	2,988	7,370	4,155	3,932	3,496	3,586	CONT.	CONT.
W0852 Consolidated Automated Support System (CASS)	12,647	7,220	8,951	8,969	8,960	9,163	9,321	9,560	CONT.	CONT.
W1041 Aircraft Equipment Reliability & Maintainability Improvement Program (AERMIP)	1,343	1,085	1,479	1,395	931	799	695	702	CONT.	CONT.
W1355 Aircraft Engine Component Improvement Program (CIP)	46,830	46,934	46,607	51,783	27,202	45,150	46,886	53,571	CONT.	CONT.
TOTAL	63,269	52,742	60,025	69,517	41,248	59,044	60,398	67,419	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Common Ground Equipment is a Naval Aviation project to apply new technology to common support equipment necessary to support all aircraft. Consolidated Automated Support System (CASS) develops standardized Automated Test Equipment (ATE) with computer assisted, multi-function capabilities to support the maintenance of aircraft subsystems and missiles. AERMIP is the only Navy program that provides engineering support for in-service out-of-production aircraft equipment and provides increased readiness at reduced operational and support cost. Aircraft Engine CIP develops reliability and maintainability (R&M) and safety enhancements for in-service Navy aircraft engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, fuel systems, and fuels and lubricants.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing for upgrade of existing operational systems.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE: AVIATION 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	TOTOAL PROGRAM
W0601 Common Ground Equipment	2,449	3,503	2,988	7,370	4,155	3,932	3,496	3,586	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project introduces effective, efficient fleet support equipment through the application of new technology, thereby improving fleet supportability and aircraft readiness.

(U) PROGRAM ACCOMPLISHMENTS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,410) Continued US Navy (USN) involvement with US Army (USA) Advanced Boresight Equipment development program.
- (U) ($146) Completed testing of the Dynamic Line Drop Compensator and Aircraft Generator Test Stand and prepared documentation for production approval.
- (U) ($100) Continued development and testing of the Software and System Engineering Environment Test (SEET) standardization of Test Program Set (TPS) software development environment and Automated Test Equipment (ATE) interface.
- (U) ($490) Continued USN involvement with US Air Force (USAF) Joint Service Electronic Combat Tester.
- (U) ($303) Initiated USN involvement with USAF Next Generation Munitions Handler.

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W0601
PROGRAM ELEMENT TITLE: Aviation Improvements PROJECT TITLE: Common Ground Equipment

2. (U) FY 1997 PLAN:

- (U) ($150) Continue USN involvement with US Army Advanced Boresight Equipment development program
- (U) ($114) Complete development and testing of the SEET standardization of TPS software development environment and ATE interface.
- (U) ($600) Continue USN involvement with USAF Joint Service Electronic Combat Tester.
- (U) ($959) Continue USN involvement with USAF Next Generation Munitions Handler.
- (U) ($40) Initiate and complete testing of the Aircraft De-icer.
- (U) ($1,000) Initiate Universal Life Support Tester.
- (U) ($600) Initiate Prototype Test Ultrasonic Pressure Cylinder Tester.
- (U) ($40) Portion of program reserved for Small Business Innovation Research assessment.

3. (U) FY 1998 PLAN:

- (U) ($290) Continue Advanced Boresight Equipment development program.
- (U) ($627) Complete USN involvement with USAF Joint Service Electronic Combat Tester.
- (U) ($850) Continue USN involvement with USAF Next Generation Munitions Handler.
- (U) ($177) Initiate development of Universal Aircraft Axle Jack.
- (U) ($165) Initiate development of an Automated Engine Turning Tool.
- (U) ($130) Initiate development of Armament Handling Equipment (AHE) Proofload Testing.
- (U) (75) Initiate development and testing of the General Purpose O-Level Wire Tester.
- (U) ($95) Initiate Night Vision Goggle and Support Equipment (SE) Compatability.

- (U) ($130) Initiate development of Fuel Purging System.
- (U) ($150) Initiate development of Advanced Shipboard Tow Tractor.
- (U) ($229) Initiate development of Alternate Power Plants/Fuels for Tow Tractor.
- (U) ($70) Initiate and complete development of Common Missile Gel Pad.

4. (U) FY 1999 PLAN:

- (U) ($3,969) Continue Advanced Boresight Equipment development program.
- (U) ($1,056) Continue development of USAF Next Generation Munitions Handler.
- (U) ($375) Continue development of Universal Aircraft Axle Jack.
- (U) ($125) Continue developing Automated Engine Turning Tool.
- (U) ($155) Continue developing AHE Proofload Testing.
- (U) ($66) Complete development and testing of General Purpose O-Level Wire Tester.
- (U) ($115) Continue developing Night Vision Goggle and SE Compatability.
- (U) ($58) Complete developing Fuel Purging System.
- (U) ($155) Continue developing Advanced Shipboard Tow Tractor.
- (U) ($140) Continue developing Alternate Power Plants/Fuels for Tow Tractors.
- (U) ($240) Initiate development of a state-of-the-art Fuel System for Standard Engine Test Systems.
- (U) ($140) Initiate development of One Man Pintle Hook.

- (U) ($236) Initiate development of Rough Terrain Tow Vehicle for USMC Rapid Deployment.
- (U) ($185) Initiate development of Electric Spotting Dolly.
- (U) ($115) Initiate development of Fuel Depuddling System.
- (U) ($115) Initiate development of Fuel Recycling System.
- (U) ($125) Initiate development of Aircraft Engine Test Facility Primary Air Inlet.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	2,482	2,089	2,810	3,415
(U) Appropriated Value:		3,689		
(U) Adjustment from PRESBUDG:	-33	1,414	178	3,955
(U) FY 1998/99 President's Budget:	2,449	3,503	2,988	7,370

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W0601
PROGRAM ELEMENT TITLE: Aviation Improvements PROJECT TITLE: Common Ground Equipment

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease reflects $3 thousand for the F-16 Jordanian Rescission, and $30 thousand for the Small Business Innovation Research (SBIR) assessment. FY 1997 net increase reflects $1,600 thousand due to a Congressional add for the Universal Life Support Tester and the Ultrasonic Pressure Cylinder Tester. This increase is partially offset by a decrease of $186 thousand for Congressional undistributed reductions. FY 1998 net increase reflects $290 thousand for Boresight Equipment, partially offset by decreases of $96 thousand for Navy Working Capital Fund (NWCF) carryover and rate adjustments and $16 thousand for minor pricing adjustments. FY 1999 net increase reflects $3,969 thousand for Advanced Boresight Equipment and $20 thousand for NWCF rate adjustments, partially offset by a decrease of $34 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-7 (47C2)									
164,635	129,942	113,944	154,979	161,717	139,664	140,165	143,701	CONT	CONT
(U) O&MN									
3,785	3,661	5,056	4,807	4,824	4,855	4,958	5,066	CONT	CONT

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W0601
PROGRAM ELEMENT TITLE:Aviation Improvement PROJECT TITLE: Common Ground Equipment

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	1,004	200	0	0
b. Developmental Test & Eval	36	300	200	300
c. Development SE Acquisition	1,409	2,963	2,788	7,070
d. SBIR Assessment	0	40	0	0
TOTAL	2,449	3,503	2,988	7,370

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W0601
PROGRAM ELEMENT TITLE:Aviation Improvement PROJECT TITLE: Common Ground Equipment

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
AAI Corp Cockeysville, MD											
	FP	5/19/94	6,729	6,729	1,510	1,250	0	0	3,969	CONT	CONT
Misc (Gov.)	IPR				8,543	1,160	3,163	2,788	3,101	CONT	CONT
Support and Management - Not applicable											
Test and Evaluation											
Miscellaneous		10/98	10/98	0	700	39	300	200	300	CONT	CONT

GOVERNMENT FURNISHED PROPERTY - Not applicable

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W0601
PROGRAM ELEMENT TITLE:Aviation Improvement PROJECT TITLE: Common Ground Equipment

	Total FY 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	10,053	2,410	3,163	2,788	7,070	CONT	CONT
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	700	39	300	200	300	CONT	CONT
SBIR Assessment	0	0	40	0	0	0	0
Total Project	10,753	2,449	3,503	2,988	7,370	CONT	CONT

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE: Aviation 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
W0852 Consolidated Automated Support System										
	12,647	7,220	8,951	8,969	8,960	9,163	9,321	9,560	CONT	CONT

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Consolidated Automated Support System (CASS) project designs and develops modularly constructed automated test equipment with computer-assisted, multi-functional capability-based, standardized hardware and software elements. CASS responds to Fleet Commanders' expressed requirements to correct serious deficiencies in existing automatic test equipment. Program objectives are: (1) increase material readiness; (2) reduce life cycle costs through standardization; (3) improve tester sustainability at depot and intermediate maintenance levels; (4) reduce proliferation of unique test equipment; and (5) provide test capability for existing and future avionics/electronics systems. Current effort addresses the joint development of a CASS All-Up-Round (AUR) and guidance section missile test capability.

(U) PROGRAM ACCOMPLISHMENTS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,846) Continued development of DoD Automatic Test Systems (ATS) standard interfaces and architectures.
- (U) ($2,393) Commenced development of A Broad Base Environment for Test (ABBET) standards instrument control software.
- (U) ($2,108) Continued development of High Speed Digital Data Bus interfaces and software emulation.
- (U) ($2,200) Commenced development of Radio Frequency (RF) phase noise test, additional switching, and load capability.
- (U) ($2,100) Developed a Bit-Error-Rate test capability.

- (U) ($2,000) Completed development of array processing capability.

2. (U) FY 1997 PLAN:

- (U) ($1,760) Continue development of DoD ATS Standard Interfaces and architectures.
- (U) ($1,000) Continue development of High Speed Digital Data Bus interfaces and software emulation.
- (U) ($2,174) Continue development of ABBET standards for DOD common instrument control software.
- (U) ($1,103) Complete development of RF phase noise test capability.
- (U) ($1,000) Complete development of RF switching, and load capability, and commence development of millimeter wave generation source.
- (U) ($183) 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) ($1,400) Continue development of DoD ATS standard interfaces and architectures.
- (U) ($1,400) Continue development of ABBET standards instrument control software.
- (U) ($612) Complete development of High Speed Digital Data Bus interfaces and commence development on Common Bus Emulater Test (CBET).
- (U) ($2,450) Commence Electro-Optic (EO) upgrades to include tunable lasers and wide-band focal plane arrays.
- (U) ($1,864) Commence development of instrument control upgrades and virtual instruments.
- (U) ($1,225) Commence development of advanced digital/video process.

4. (U) FY 1999 PLAN:

- (U) ($1,406) Continue development of DoD ATS standard interfaces and architectures.
- (U) ($1,400) Continue development of ABBET standards instrument control software.
- (U) ($910) Continue development of CBET.
- (U) ($2,426) Continue EO upgrades to include tunable lasers and wide-band focal plane arrays.
- (U) ($1,820) Continue development of instrument control upgrades and virtual instruments.
- (U) ($1,007) Continue development of advanced digital and video process.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	13,084	7,599	9,157	9,095
(U) Appropriated Value:		7,599		
(U) Adjustments from PRESBUDG:	-437	-379	-206	-126
(U) FY 1998/99 OSD/OMB Budget Submit:	12,647	7,220	8,951	8,969

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease reflects $15 thousand for the F-16 Jordanian Rescission, $147 thousand for general reduction and $275 thousand for the Small Business Innovation Research (SBIR) assessment. FY 1997 decrease reflects $379 thousand for Congressional undistributed reductions. FY 1998 decrease reflects reductions of $45 thousand for minor pricing adjustments and $161 thousand for Navy Working Capital Fund (NWCF) rate and carryover adjustments. FY 1999 decrease reflects reductions of $64 thousand for NWCF rate adjustments and $62 thousand for minor pricing adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W0852
PROGRAM ELEMENT TITLE: Aviation Improvements PROJECT TITLE: Consolidated Automated Supp Sys

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-7 (47C2)									
111,964	108,928	107,162	110,602	116,108	117,332	119,581	122,882	CONT	CONT
(U) O&MN									
2,300	1,100	900	300	0	0	0	0	0	9,000

(U) RELATED RDT&E: PE 0207163F (AMRAAM Air Force)
PE 0207163N (AMRAAM)
PE 0604746A (Automated Test Equipment Development)

(U) A Memorandum of Agreement was executed between Naval Air Systems Command (NAVAIR) and the Air Force Systems Command (October 1988) in which the Navy will provide complete depot level repair for AMRAAM on CASS. A Memorandum of Understanding has also been executed between the U.S. Army and NAVAIR (March 1991) for technical support and procurement of the CASS Electro-optical subsystem for integration with the Army's Integrated Family of Test Equipment (IFTE) program.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W0852
PROGRAM ELEMENT TITLE: Aviation Improvements PROJECT TITLE:Consolidated Automated Supp Sys

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones			III 8/98 EO+		
Engineering Milestones					
T&E Milestones			EO+ FOT&E OT-IIIB 2/98-4/98		
Contract Milestones					

EO+ - Electro-Optic Upgrade
FOT&E - Follow-on Test and Evaluation

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER:W0852
PROGRAM ELEMENT TITLE:Aviation Improvement PROJECT TITLE:Consolidated Automated Supp Sys

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Ancillary H/W Development	2,100	1,700	2,250	2,250
b. S/W Development	9,162	3,556	4,663	4,288
c. Systems Engineering	1,385	1,964	2,038	2,431
TOTAL	12,647	7,220	8,951	8,969

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE:Aviation Improvement

PROJECT NUMBER: W0852
PROJECT TITLE:Consolidated Automated Supp 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 Budget	To Complete	Total Program
Product Development											
Hughes/USAF											
Tucson, AZ	FPI	9/3/95	43,627	43,627	43,627	0	0	0	0	0	43,627
LMC/Orlando FL	FPI	1/15/95	21,000	21,000	1,268	5,346	2,083	3,537	3,823	CONT	CONT
Misc (In house)	WR/PD										
NAWC, Pt Mugu, CA			2,621	2,621	2,621	0	0	0	0	0	2,621
NAWC, Lakehurst, NJ			25,000	25,000	469	6,429	4,536	4,402	4,112	CONT	CONT
Support and Management											
Misc (Govt)	WX/MIPR		8,472	8,472	1,338	872	418	1,012	1,034	CONT	CONT

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: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W0852
PROGRAM ELEMENT TITLE:Aviation Improvement PROJECT TITLE:Consolidated Automated Supp Sys

	Total FY 1995 & Prior	FY 1996 Acutal	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	47,985	11,775	6,619	7,939	7,935	CONT	CONT
Subtotal Support and Management	1,338	872	418	1,012	1,034	CONT	CONT
Subtotal Test and Evaluation	0	0	0	0	0	0	0
SBIR assessment			183				
Total Project	49,323	12,647	7,220	8,951	8,969	CONT	CONT

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE: Aviation 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
W1041 Aircraft Equipment Reliability & Maintainability Improvement Program (AERMIP)	1,343	1,085	1,479	1,395	931	799	695	702	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: AERMIP is the only Navy program which provides Research, Development, Test & Evaluation (RDT&E) engineering support specifically for in-service, out-of-production aircraft equipment. AERMIP increases readiness through Reliability and Maintainability (R&M) and safety improvements to existing systems and equipments installed in Naval aircraft. It provides a cost effective solution to obsolescence problems encountered when service lives are extended, and promotes commonality and standardization across aircraft platform lines and among the services through extension of application and use of non-developmental items. AERMIP also decreases life cycle costs through reduced operational and support costs. AERMIP facilitates the Operational, Safety, and Improvement Program by applying proven low-risk solutions to current fleet problems. AERMIP also funds high priority flight testing which is not associated with any acquisition or development program under the Flight Test General (FTG) task.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($643) Initiated F-14 MXU (Mechanical Fuel Tank Release Mechanism) and Altitude Heading Reference System (AHRS) R&M improvements. Continued SKYFLEX airplane sealant task. Continued identification, analysis and evaluation of AERMIP candidates.
   - (U) ($400) Concluded AAU-31/32, S-3, and H-60 improvement tasks.
   - (U) ($300) Conducted FTG tasks, as directed.

DATE: FEBRUARY 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROGRAM ELEMENT TITLE: Aviation Improvements PROJECT NUMBER: W1041 PROJECT TITLE: Aircraft Equipment Reliability and Maintainability Improvement Program

2. (U) FY 1997 PLAN:
   - (U) ($960) Continue prior R&M improvements, including AHRS and SKYFLEX. Initiate new improvement tasks such as APX-100 and MA-1 compass improvements. Continue identification, analysis, and evaluation of AERMIP candidates.
   - (U) ($125) Conduct Flight Test General tasks, as directed.

3. (U) FY 1998 PLAN:
   - (U) ($1367) Complete AHRS and SKYFLEX. Continue APX-100 and MA-1 compass improvements. Significantly improve identification, analysis, and evaluation of AERMIP candidates via use of Logistics Management Decision Support System (LMDSS).
   - (U) ($112) Conduct Flight Test General tasks, as directed.

4. (U) FY 1999 PLAN:
   - (U) ($1395) Continue/complete APX-100 and MA-1 compass improvements. Investigate high value payback return on investment candidates.

DATE: FEBRUARY 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W1041
PROGRAM ELEMENT TITLE: Aviation Improvements PROJECT TITLE: Aircraft Equipment Reliability and Maintainability Improvement Program

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	1,464	1,136	1,573	1,948
(U) Appropriated Value:		1,136		
(U) Adjustments from PRESBUDG:	-121	-51	-94	-553
(U) FY 1998 PRESBUDG:	1,343	1,085	1,479	1,395

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 decrease of $121 thousand reflects reprogramming for higher Navy priorities. FY 1997 decrease consists of $51 thousand for Congressional undistributed reductions. FY 1998 decreases reflect $8 thousand for pricing adjustments, $38 thousand for Navy Working Capital Fund (NWCF) carryover and rate adjustments, and $48 thousand for Base Realignment and Closure (BRAC) savings at NAWCAD INDIANAPOLIS. FY 1999 decrease consists of $9 thousand for minor pricing adjustments, $12 thousand for NWCF rate adjustments and $532 thousand for BRAC savings at NAWCAD INDIANAPOLIS.

(U) Schedule: Extend efforts on ongoing R&M improvements based on reduced fund availability starting in FY-99. Delay new start R&M improvements.

(U) Technical: Not Applicable

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

D. (U) SCHEDULE PROFILE: Not Applicable

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE: AVIATION 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
W1355 Aircraft Engine Component Improvement Program (CIP)	46,830	40,934	46,607	51,783	27,202	45,150	46,886	53,571	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Aircraft Engine CIP provides the only source of critical design and development engineering support to resolve safety, reliability and maintainability deficiencies of in-service Navy aircraft propulsion systems. The highest priority issues CIP addresses concern safety-of-flight deficiencies. The program also corrects service-revealed deficiencies, improves Operational Readiness (OR) and Reliability and Maintainability (R&M), and reduces platform Life Cycle Cost (LCC). Specifically, CIP tasks have reduced the rate of in-flight aborts, safety incidents, non-mission capable rates, scheduled and unscheduled engine removals, maintenance work hours, and overall cost of ownership. This is accomplished through the maintainance and validation of specification performance, testing to qualify engineering changes, verifying life limits, and improving the inherent reliability of the propulsion system as an integral part of Reliability Centered Maintenance (RCM) initiatives. Historically, the missions, tactics, and environmental exposure of military aircraft systems keep changing to meet new threats or operational demands, and often result in unforeseen problems, which if not corrected, can cause critical safety/readiness degradation, such as those experienced during DESERT SHIELD/DESERT STORM operations due to sand erosion. In addition, new problems arise through actual use during deployment of the aircraft. Development programs, while geared to resolve as many problems as possible before deployment, cannot duplicate actual operations or account for the vast array of environmental and usage variables, particularly when aircraft missions vary from those the aircraft was designed to perform. Therefore, it has been found that CIP can provide an immediate engineering response to these flight-critical problems and accelerated engine testing can avoid potential problems. CIP starts after development and Navy acceptance of the first production article and addresses usage and life problems not covered by warranties. CIP addresses engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, and fuel and lubricant systems. CIP efforts continue over the system's life, gradually decreasing to a minimum level sufficient to maintain the reliability, and decrease the operating costs, of older inventory. CIP is a highly leveraged and cooperative tri-service program with Foreign Military Sales participation.

DATE: February 1997

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS PROJECT NUMBER: W1355 PROJECT TITLE: AIRCRAFT ENGINE CIP

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($42,432) To ensure fleet safety, executed 182 redesign and analysis tasks and continued unfinished FY 1995 programs. Conducted approximately 4934 engine and component test hours. Conducted major safety programs to resolve safety-related hardware, maintenance and procedural problems and develop corrective engineering proposals. These efforts reduced safety incidents and in-flight aborts. Some of the major safety programs included the following:
  - Completed redesign of AV-8 engine controller which has caused mishaps and is a top safety concern.
  - Completed efforts to eliminate turbine fires from oil leaks in the F-14A engines.
  - Continued comprehensive life analyses on the F-14, F/A-18, AV-8, T-45, EA-6B, H-60, H-46, H-3, H-53, and S-3 engine systems.
  - Continued comprehensive flameout investigation of the T700 installed in the AH-1W
  - Completed redesign of turn-buckle for the F110 engine (F-14) which, when incorporated, will remove afterburner operation restriction
  - Initiated efforts to resolve propeller failures: inspected all high risk propellers and purged all non-conforming items.
  - Initiated redesign of T58 oil line attachment to preclude engine fires.

- (U) ($4,398) Improved system reliability and maintainability, executed 31 redesign and analysis tasks and achieved an estimated 20 year LCC savings/cost avoidance of over $87M. Some of the major programs included the following:
  - (U) Completed efforts to improve F/A-18 engine variable exhaust nozzle and afterburner mixer durability. Completed a bearing redesign to allow engine hot section inspection interval to double.
  - (U) Completed efforts to increase EA-6B engine first stage turbine vane durability.
  - (U) Initiated effort to insert near-term technology to meet increasing electrical power demands of aircraft modification programs.
  - (U) Completed fleet conversion to the new Corrosion Inhibited Gas Turbine engine oil.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W1355
PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS PROJECT TITLE: AIRCRAFT ENGINE CIP

2. (U) FY 1997 PLAN:

- (U) ($36,720) To ensure fleet safety, execute 165 redesign and analysis tasks and continue unfinished FY 1996 programs. Conduct approximately 4614 engine and component test hours. Conduct major safety programs to resolve safety-related hardware, maintenance and procedural problems and develop corrective engineering proposals. These efforts reduce safety incidents and in-flight aborts. Continue comprehensive life analyses on the F-14, F/A-18, AV-8, T-45, EA-6B, H-60, H-46, H-3, H-53, and S-3 engine systems.

- (U) ($4,051) To improve system R&M, execute 28 redesign and analysis tasks and achieve an estimated 20 year LCC savings/cost avoidance of over $78M.

- (U) ($163) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($43,017) To ensure fleet safety, execute 183 redesign and analysis tasks and continue unfinished FY 1997 programs. Conduct approximately 4778 engine and component test hours. Conduct platform-specific programs to resolve safety-related hardware, maintenance and procedural problems in order to achieve higher system reliability and fleet readiness while reducing life cycle costs. Develop corrective engineering proposals. These efforts reduce safety incidents, in-flight aborts, not mission capable rates, engine removal rates, and extend the time between engine and component overhauls. Continue comprehensive life analyses on F-14, F/A-18, AV-8, T-45, EA-6B, H-60, H-46, H-3, H-53, and S-3 engine systems. Begin program support to F/A-18E/F and V-22 propulsion systems.

- (U) ($3,590) To improve system R&M, execute 32 redesign and analysis tasks and achieve an estimated 20 year LCC savings/cost avoidance of over $85M.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS PROJECT NUMBER: W1355 PROJECT TITLE: AIRCRAFT ENGINE CIP

4. (U) FY 1999 PLAN:

- (U) ($46,892) To ensure fleet safety, execute 183 redesign and analysis tasks and continue unfinished FY 1997 programs. Conduct approximately 4778 engine and component test hours. Conduct platform-specific programs to resolve safety-related hardware, maintenance and procedural problems in order to achieve higher system reliability and fleet readiness while reducing life cycle costs. Develop corrective engineering proposals. These efforts reduce safety incidents, in-flight aborts, not mission capable rates, engine removal rates, and extend the time between engine and component overhauls. Continue comprehensive life analyses on F-14, F/A-18, V-22, AV-8, T-45, EA-6B, H-60, H-46, H-3, H-53, and S-3 engine systems.

- (U) ($4,891) To improve system R&M, execute 36 redesign and analysis tasks and achieve an estimated 20 year LCC savings/cost avoidance of over $93M.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	47,646	42,688	47,790	60,281
(U) Appropriated Value:		42,688		
(U) Adjustments from PRESBUDG:	-816	-1,754	-1,183	-8,498
(U) FY 1998/99 Pesident's Budget Submit:	46,830	40,934	46,607	51,783

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 increase reflects $83 thousand for minor pricing adjustments. The increase is offset by decreases consisting of $54 thousand for the F-16 Jordanian rescission, $748 thousand for the SBIR assessment, and $97 thousand reprogrammed for higher Navy priorities. FY 1997 decrease reflects $1,754 for Congressional undistributed reductions. FY 1998 decrease reflects $947 thousand for Navy Working Capital Fund (NWCF) carryover and rate adjustments and $236 thousand for minor pricing adjustments. FY 1999 reflects a decrease of $8,000 thousand for higher funding priorities; $304 thousand for minor pricing adjustments, and $194 thousand for NWCF rate adjustments.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W1355
PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS PROJECT TITLE: AIRCRAFT ENGINE CIP

(U) Schedule: The FY 1998 decrease will delay some analysis and testing, including F/A-18 F404 Accelerated Service Mission Engine Test (ASMET) to identify fleet problems. FY 1999 decrease results in the following: (a) degraded response time to mishaps, safety problems, and fleet questions; (b) delays in analyses and tests planned for identification and correction of fleet problems, producing delays in program schedule, increased costs and delayed change incorporation; and (c) deferment of the "lead the fleet" programs scheduled for the F/A-18E/F (F414 engine), T45 (F405 engine) and V-22 (T406 engine) engines; this program identifies engine problems earlier than they would be experienced in the fleet, allowing for corrective or preventive action before there are fleet-wide maintenance expenses, mission degradations, or flight mishaps.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E:
(U) PE 0203752A (Aircraft Engine CIP Army)
(U) PE 0207268F (Aircraft Engine CIP Air Force)
(U) PE 0603217N (Air Systems Advanced Tech. Dev.)

D. (U) SCHEDULE PROFILE: Not Applicable.

DATE: February 1997

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

BUDGET ACTIVITY:

PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT NUMBER: W1355
PROJECT TITLE: AIRCRAFT ENGINE CIP

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Product Development	46,498	40,416	46,272	51,448
b. Support and Management	12	75	75	75
c. Travel	320	280	260	260
d. SBIR Assessment		163		
Total	46,830	40,934	46,607	51,783

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W1355
PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS PROJECT TITLE: AIRCRAFT ENGINE CIP

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											
MAJOR EFFORTS ($2.0M OR MORE)											
F110 ENGINE PROGRAM											
F3365795C0055 GE CPAF (EVENDALE, OHIO)	CPAF	10/97	CONT.	CONT.	0	3,803	2,356	2,500	2,800	CONT.	CONT.
F402 ENGINE PROGRAM											
N0001995C0170 RR CPAF	CPAF	10/97	CONT.	CONT.	0	1,733	1,815	1,860	2,010	CONT.	CONT.
N0001996C0134 UK CPFF (BRISTOL, ENGLAND)	CPFF	10/97	CONT.	CONT.	0	2,766	2,004	2,270	2,490	CONT.	CONT.
F404/T58/T64 ENGINE PROGRAM											
N0001993C0060 GE CPFF	CPFF	11/93	51,376	51,376	26,955	6,229	0	0	0	0	51,376
N0001995C0129 GE CPFF (LYNN, MASSACHUSETTS)	CPFF	10/97	CONT.	CONT.	0	6,018	8,415	11,400	11,550	CONT.	CONT.
J52 ENGINE PROGRAM											
N6852095C0007 P&W (WEST PALM BEACH, FLORIDA)	CPFF	10/97	CONT.	CONT.	2,937	3,030	3,335	2,800	3,300	CONT.	CONT.
T56 ENGINE PROGRAM											
F4160893C856 ALLISON		4/93	CONT.	CONT.	6,319	1,902	1,833	1,800	2,000	CONT.	CONT.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT NUMBER: W1355
PROJECT TITLE: AIRCRAFT ENGINE CIP

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											
MAJOR EFFORTS ($2.0M OR MORE)											
F405 ENGINE PROGRAM											
N0001995C0170 RR	CPAF	10/97	CONT.	CONT.	0	2,038	716	1,150	1,260	CONT.	CONT.
F414 ENGINE PROGRAM											
N000199XXXXXX GE (LYNN, MASSACHUSETTS)	CPFF	TBD	TBD	TBD	0	0	0	3,300	5,000	CONT.	CONT.
All other contracts under $2.0M (Aggregrate Total):					4,228	4,245	2,662	1,159	3,646	CONT.	CONT.
Subtotal Contracts:					158,314	31,764	23,136	28,239	34,056	CONT.	CONT.
Product Development											
Lab/Field Activity ($2.0M or more)											
NAWC PAX CIP SPT. WX		10/97	CONT.	CONT.	21,753	12,384	15,635	15,025	14,041	CONT.	CONT.
All other in-house support under $2.0M (Aggregate Total):											
VARIOUS	VARIOUS	10/97	CONT.	CONT.	4,130	2,017	1,197	2,508	2,789	CONT.	CONT.
Subtotal Lab\Activity\Other:					54,401	14,401	16,832	17,533	16,830	CONT.	CONT.

DATE: February 1997

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0205633N PROJECT NUMBER: W1355
PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS PROJECT TITLE: AIRCRAFT ENGINE CIP

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										
All other GFP: (FUEL)	MD	INCREMENTAL		1,874	333	448	500	562	CONT.	CONT.
Support and Management				950	332	355	335	335	CONT.	CONT.

Test and Evaluation: Not applicable.

	Total FY 1995 & Prior	FY 1996 Actual	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	214,589	46,498	40,416	46,272	51,448	CONT.	CONT.
Subtotal Support and Management	950	332	355	335	335	CONT.	CONT.
SBIR Assessment			163				
Total Project	215,539	46,830	40,934	46,607	51,783	CONT.	CONT.

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N
PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT NUMBER: W1355
PROJECT TITLE: AIRCRAFT ENGINE CIP

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

BUDGET ACTIVITY: 07
PROGRAM ELEMENT: 0205667N
PROGRAM ELEMENT TITLE: F-14 Upgrade
PROJECT NUMBER: E1408
PROJECT TITLE: F-14 Upgrade

(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
E1408 F-14 UPGRADE	19,816	9,437	11,704	14,839	855	827	817	820	0	1,834,826

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element provides for the development of improvements to the Navy F-14 squadrons in order to counter the projected threat through the year 2000 and beyond. The F-14D has increased capability in three major areas: new engine, new digital avionics, and upgraded radar. These changes yield significant improvements in capability and performance, as well as reliability and maintainability, and will facilitate the total integration and exploitation of related programs i.e., Joint Tactical Information Distribution System (JTIDS), Infrared Search and Track System (IRST), and inclusion of Airborne Self-Protection Jammer (ASPJ) in the electronic warfare (EW) suite for the F-14D operational evaluation. A Pre-deployment Update (PDU) program (primarily software) includes air-to-ground ordnance delivery capability, full Link 16 capability, and radar/Electronic Counter-Countermeasures (ECCM) improvements for the F-14D. The PDU program was created because of concurrent development of the F-14D and the above listed common avionics and weapons. It implements the capabilities inherent in systems incorporated during the full scale development (FSD) program and is a planned integral part of the evolution of the F-14D aircraft. F-14 weapons integration supports integration of EW improvements and correction of OPEVAL deficiencies. Funding is also provided for various software upgrades such as Global Positioning System, and accommodates the realignment of Aviation Depot Level Repairables (AVDLR) from Major Range and Test Facility Bases to direct project funding.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($18,516) Released second PDU tape. Continued development and test of third PDU tape.
- (U) ($1,300) Completed initial flight tests on the Digital Flight Control System.

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

BUDGET ACTIVITY: 07 PROGRAM ELEMENT: 0205667N PROGRAM ELEMENT TITLE: F-14 Upgrade PROJECT NUMBER: E1408 PROJECT TITLE: F-14 Upgrade

2. (U) FY 1997 PLAN:

- (U) ($9,389) Continue development and test of third PDU tape.
- (U) ($48) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. (U) FY 1998 PLAN:

- (U) ($11,704) Continue development and test of third PDU tape.

4. (U) FY 1999 PLAN:

- (U) ($14,839) Complete development and test of third PDU tape.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	17,739	9,879	11,341	13,818
(U) Appropriated amount:		9,879		
(U) Adjustments from Pres Budget:	+2,077	-442	+363	+1,021
(U) FY 1998 President's Budget Submit:	19,816	9,437	11,704	14,839

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The net increase of +$2,078 thousand in FY 1996 is comprised of a +$2,187 for GPS integration and miscellaneous minor adjustments, -$19 thousand reduction for Jordanian Rescission and -$91 thousand reduction for Small Business Innovation Research assessment. The adjustment of -$442 in FY 1997 is for Congressional undistributed general reductions. The net adjustment of +$363 thousand in FY 1998 is comprised of +$904 thousand for AVDLR redistribution and -$541 thousand for Navy Working Capital Fund (NWCF) and other minor adjustments. The net adjustment of +1,021 in FY 1999 is comprised of +$884 thousand for AVDLR redistribution and +$137 for NWCF and other minor adjustments.

(U) Schedule: As a result of a comprehensive F-14 evaluation by Fleet users, the F-14 Pre-Deployment Update (PDU) program was restructured and the integration of Advanced Medium Ranged Air-to-Air Missles (AMRAAM) was cancelled. With the cancelation of AMRAAM, the third software tape was divided into Tapes D03A and D03B.

(U) Technical: N/A

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

BUDGET ACTIVITY: 07 PROGRAM ELEMENT: 0205667N PROJECT NUMBER: E1408
PROGRAM ELEMENT TITLE: F-14 Upgrade PROJECT TITLE: F-14 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
APN-5 F-14 (B.A. 5) Line 20	114,417	229,031	290,500	228,593	103,962	27,122	23,191	17,840	25,515	2,468,854
APN-6	6,108	17,498	14,937	9,029	157	151	0	0	0	48,669

(U) RELATED RDT&E:
(U) PE 0205604N (Tactical Data Links)
(U) PE 0604270N (EW Development)

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones					
Engineering Milestones					
T&E Milestones		3Q/97 - 1Q/98 OT-III(Tape 3A)		4Q/99 - 1Q/00 OT-III(Tape 3B)	
Contract Milestones					

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

BUDGET ACTIVITY: 07
PROGRAM ELEMENT: 0205667N
PROGRAM ELEMENT TITLE: F-14 Upgrade
PROJECT NUMBER: E1408
PROJECT TITLE: F-14 Upgrade

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. PDU Software Development	16,146	9,089	11,404	14,539
b. PDU Systems Engineering/Test and Evaluation	2,370	300	300	300
c. Digital Flight Control System Flight Tests	1,300	0	0	0
d. SBIR assessment		48		
Total	19,816	9,437	11,704	14,839

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

BUDGET ACTIVITY: 07
PROGRAM ELEMENT: 0205667N
PROGRAM ELEMENT TITLE: F-14 Upgrade
PROJECT NUMBER: E1408
PROJECT TITLE: F-14 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:											
CONTRACTS											
Northrop/Grumman, Bethpage, NY											
AMRAAM Int.	SS/CPFF	6/94	9,924	9,924	9,824	100	0	0	0	0	9,924
BLK I/JDAM	SS/CPFF	8/94	6,506	6,506	6,506	0	0	0	0	0	6,506
FSD Cont	SS/FFP	8/84	994,378	994,378	994,378	0	0	0	0	0	994,378
Miscellaneous			3,100	3,100	0	2,100	1,000	0	0	0	3,100
INHOUSE											
NAVAIRWARCENWPNDIV Pt Mugu, CA											
PDU	WX	10/97	221,778	221,778	175,570	14,309	7,269	10,754	13,876	0	221,778
Miscellaneous			29,896	29,896	22,832	2,670	475	300	300	3,319	29,896
Support and Management:											
various	WX	10/97	3,004	3,004	409	637	645	650	663	0	3,004
Test and Evaluation:											
COMOPTEVFOR	PD	6/95	3,760	3,760	3,760	0	0	0	0	0	3,760
SBIR assessment							48				48

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

BUDGET ACTIVITY: 07

PROGRAM ELEMENT: 0205667N
PROGRAM ELEMENT TITLE: F-14 Upgrade

PROJECT NUMBER: E1408
PROJECT TITLE: F-14 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										
REPAIR OF REPAIRABLES	MP	VARIOUS	VARIOUS	11,078	0	0	0	0	0	11,078

Support and Management: Not Applicable.

Test and Evaluation: Not Applicable.

Subtotal Product Development	1,220,188	19,179	8,744	11,054	14,176	3,319	1,276,660
Subtotal Support and Management	409	637	645	650	663	0	3,004
Subtotal Test and Evaluation	3,760	0	0	0	0	0	3,760
Other FY 1995 & Prior costs	551,354	0	0	0	0	0	551,354
SBIR assessment			48				48
Total Project	1,775,711	19,816	9,437	11,704	14,839	3,319	1,834,826

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications 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
C0048	Communications Terminal Improvement[1]									
	194	0	0	0	0	0	0	0	0	27,847
C0049	Unit Level Switches (ULS)[2]									
	2,134	0	0	0	0	0	0	0	0	8,286
C0065	Communications Control (COMM CON)[3]									
	2,365	0	0	0	0	0	0	0	0	7,785
C1931	Communications Ancillary Equipment[4]									
	410	0	0	0	0	0	0	0	0	12,372
C1975	Digital Communications Terminal (DCT) Product Improvement Program[5]									
	1,704	0	0	0	0	0	0	0	0	18,218
C2270	Command Post Systems[6]									
	0	12,194	5,260	6,954	6,404	5,057	4,806	3,370	CONT.	CONT.
C2271	Maneuver C2 Systems[7]									
	0	4,139	1,469	2,121	1,873	453	0	0	0	10,055
C2272	Intelligence C2 Systems[8]									
	0	3,978	3,357	3,576	4,035	4,152	4,274	4,409	CONT.	CONT.
C2273	Air Operations C2 Systems[9]									
	0	6,972	5,328	2,369	6,209	2,638	1,163	1,311	CONT.	CONT.
C2274	C2 Warfare Systems[10]									
	0	3,369	3,390	4,012	3,896	3,341	3,897	4,648	CONT.	CONT.
C2275	Radio Systems[11]									
	0	402	2,507	2,592	5,203	2,399	746	746	CONT.	CONT.
C2276	Communications Switching and Control Systems[12]									
	0	2,720	2,084	2,135	1,784	1,880	0	0	0	10,603

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications 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
C2277 Systems Engineering and Integration[13]	0	14,985	3,312	5,426	4,035	3,991	4,026	4,056	CONT.	CONT.
C2278 Air Defense Weapons Systems[14]	0	809	817	838	865	890	917	944	CONT.	CONT.
C2315 Training Devices/Simulators[15]	0	3,285	10,772	11,151	11,149	10,313	7,670	7,533	CONT.	CONT.
TOTAL	6,804	52,853	38,296	41,174	45,453	35,114	27,499	27,017	CONT.	CONT.

1. FY 1997 through FY 2001 funding is contained in this Program Element (PE), Project C2275, Radio Systems.

2. FY 1997 through FY 2001 funding is contained in this PE, Project C2276, Communications Switching and Control Systems.

3. FY 1997 through FY 2001 funding is contained in this PE, Project C2270, Command Post Systems, Subprogram SPEED and Project C2276, Communications Switching and Control Systems, Subprogram DTC.

4. FY 1997 through FY 2001 funding is contained in this PE, Project C2275, Radio Systems.

5. FY 1997 through FY 2001 funding is contained in this PE, Project C2271, Maneuver C2 Systems.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems

6. FY 1996 funding is contained in various PEs and projects: This PE, Project C0065, Communications Control (COMM CON), subproject System Planning, Engineering, and Evaluation Device (SPEED); PE 0206625M, Marine Corps Intelligence/ Electronic Warfare Systems, Project C0062, Intelligence Analysis Systems (IAS); PE 0206626M, Marine Corps Command/Control/ Communications Systems: Project C2102, Improved Direct Air Support Center (IDASC); and Project C2122, Tactical Combat Operations (TCO); and PE 0604719M, Marine Corps Command/Control/ Communications Systems, Project C1929, Advanced Tactical Air Command Central (ATACC) and Project C2085, Advanced Field Artillery Tactical Data Systems (AFATDS).

7. FY 1996 funding is contained in various PEs and projects: This PE, Project C1975, Digital Communications Terminal (DCT) Product Improvement Program; PE 0604719M, Marine Corps Command/Control/Communications Systems, Project C0053, Joint Tactical Information Distribution System (JTIDS) and PE 0206626M, Marine Corps Command/Control/Communications Systems, Project C2035, Position Location Reporting System (PLRS)/NAVSTAR/Global Position System (GPS).

8. FY 1996 funding is contained in various PEs and projects: PE 0206625M, Marine Corps Intelligence/ Electronics Warfare Systems: Project C0062, Intelligence Analysis System (IAS), subprojects Secondary Imagery Dissemination System (SIDS) and Commanders Tactical Terminal (CTT); Project C1297, Tactical Remote Sensor System (TRSS); and PE 0603635M, Marine Corps Ground Combat/Support System, Project C2247, Coastal Battlefield Reconnaissance and Analysis (COBRA); PE 0603640M, Marine Corps Advanced Technology Demonstrations (ATD), Project C2223, Subproject COBRA; and PE 0605871M, Marine Corps Tactical Exploitation of National Capabilities (TENCAP), Project C1424, TENCAP.

9. FY 1996 funding is contained in various PEs and projects: PE 0206623M, Marine Corps Ground Combat/ Supporting Arms Systems, Project C1120, Air Defense Missile System (ADMS), subprogram Air Defense Communication Platform (ADCP); and PE 0206626M, Marine Corps Command/Control/Communications Systems: project C0103, Tactical Air Operations Module (TAOM) (Operational Systems Product Improvements); and project C1067, Aviation Radar Product Improvement Program.

10. FY 1996 funding is contained in PE 0206625M, Marine Corps Intelligence/Electronics Warfare Systems, Project C1463, Counterintelligence and Security Equipment (CI&SE); Project C1928, Tactical Electronic Reconnaissance Processing and Evaluation System TERPES; and PE 0604270N, Electronic Warfare Development, Project C1961, Mobile Electronic Warfare Support System (MEWSS).

11. FY 1996 funding is contained in this PE: Project C0048, Communications Terminal Improvement and Project C1931, Communications Ancillary Equipment.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems

12. FY 1996 funding is contained in this PE: Project C0049, Unit Level Switches and Project C0065, Communications Control (COMM CON), subproject Digital Technical Control (DTC).

13. FY 1996 funding is contained in PE 0206626M, Marine Corps Command/Control/Communications Systems: Project C0045, Tactical Systems Inter/Intraoperability Program (TACSIIP); Project C1079, Joint Interoperability of Tactical Command and Control Systems (JINTACCS); and Project C2150, Marine Air-Ground Task Force Command, Control, Communications, Computers, and Intelligence Systems Engineering and Integration (MAGTF C4I SE&I).

14. FY 1996 funding is contained in PE 0206623M, Marine Corps Ground Combat/Supporting Arms Systems, Project C1120, Air Defense Missile System (ADMS), Subprojects HAWK and Avenger.

15. FY 1996 funding is contained in PE 0206626M, Marine Corps Command/Control/ Communications Systems: Project C1443, Training Devices/Simulators (Engineering) Program.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element provides funding to develop the command and control (C2) support and information infrastructures for the Fleet Marine Force and supporting establishment. Doctrinally, the C2 support system and the information infrastructure form two parts of a triad of capabilities which permits command and control systems to be transformed into a complete operating system. The third element of the triad is command and control organization and is not covered in this program element. USMC command and control is divided into six functional areas and one supporting functional area as follows: maneuver C2, intelligence C2, fire support C2, air operations C2, combat service support C2, command and control warfare C2, and C2 support (information processing and communications). Within this program element, subprojects have been grouped by C2 functional area for more efficient planning. Combat service support C2 has not been assigned to a project since there are no active subprojects in this functional area during the FY 1997 planning cycle. Air defense weapons systems have been added to facilitate planning and a separate project is used for systems assigned to the supporting establishment. Subprojects which support the commander's decision processes have been collected into the Command Post Systems project since these systems must work in close cooperation to ensure effective C2 of Marine Air Ground Task Forces.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications 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
C2270 Command Post Systems	0	12,194	5,260	6,954	6,404	5,057	4,806	3,370	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Systems assigned to this project are to be used by commanders and their staffs to process, fuse, and tailor information to assist decision-making and enhance situational awareness. They will integrate and share information from sources both internal and external to the Marine Air-Ground Task Force (MAGTF) to provide a shared understanding of the battlespace. Decision support integrates information from the seven Command and Control (C2) functional areas and the support function. The information is tailored to support the users' specific needs. The Tactical Command Operations (TCO) will provide systems to the command post which support Maneuver C2. Maneuver C2 is the executive layer of decision support that pulls and fuses information from other functional areas. The Intelligence Analysis Systems (IAS) supports the employment of reconnaissance, surveillance, and target acquisition resources and the timely planning and processing of all-source intelligence; it ensures that tactical intelligence is tailored to meet specific mission requirements. A Marine Expeditionary Force (MEF) IAS variant will also process signals intelligence. Advanced Field Artillery Tactical Data Systems (AFATDS) will consist of digital fire support command and control automated software, fielded on Marine Corps common hardware. AFATDS will automate for the Marine commander the integration and coordination of his supporting arms. The Advanced Tactical Air Command Control (ATACC)/Command Aviation Command and Control System (CAC2S) will function as the operational command post of the MAGTF ACE. It provides automated assistance for planning and executing tactical air operations, and provides voice and data interface with joint and combined Air C2 agencies. The Improved Direct Air Support Center (IDASC) links information and systems needed to conduct Air Operations C2 with Maneuver C2 of the ground combat element of the MAGTF. The Combat Service Support C2 (CSSC2) system ensures effective administrative and logistics planning and operations, including manpower management and all logistics functions that support deployment, employment, and reconstruction of forces. The Phase I ATACC was fielded 1st Qtr FY96. This project develops and transitions two Command and Control Imperative ATDs (the Expeditionary Integrated Combat Operations Center (ICOC) and the Joint Tactical Communications (JT COMMs) ATDs) into various Marine Corps and Joint Engineering and Manufacturing Development (E&MD) efforts. ICOC development efforts focus on: Cognitive Task Analysis (CTA); enhanced ergonomic physical design; evaluation of advanced multimedia hardware; integration and networking with advanced development communication systems; and advanced software development to support systems integration and advanced battlefield visualization concepts. ICOC developments are tailored to support transition of software and hardware developments as PIPs to the established MAGTF C4I baseline.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2270
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Command Post Systems

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($12,508) is contained in various PEs and projects: This PE, Project C0065, COMM CON, subproject SPEED ($225); PE 0206625M, Marine Corps Intelligence/Electronic Warfare Systems, Project C0062, IAS ($2,241); PE 0206626M, Marine Corps Command/Control/Communications Systems: Project C2102 ($879); IDASC; and Project C2122 ($798), subproject TCO and ($45), subproject MCSSC2; PE 0604719M, Marine Corps Command/Control/Communications Systems, Project C1929 ($6,616), ATACC; and Project C2085 ($1,704), AFATDS. TCO received a favorable Milestone III decision, achieved IOC and continues to be fielded to the FMF.

2. (U) FY 1997 PLAN:

- (U) ($318) TCO: Develop ground-to-air computer-to-computer target hand-off system.
- (U) ($509) TCO: Begin development of Carrier Detect Multiple Access full duplex cellular telephone grid.
- (U) ($161) TCO: Complete LINK-11 Radar to computer software and OT-HT GOLD message format.
- (U) ($309) IAS: Investigate hardware engineering change proposals (ECPs) for MEF IAS, IAS Suites and IAS Workstations Achieve MS III.
- (U) ($720) IAS: Incorporate and test new standard software applications., e.g. intelligence databases.
- (U) ($1,018) IAS: Conduct interoperability testing with system modifications. Meet interoperability and compatibility standards as required by IAS operational requirements document (NO INT 250.1) dated June 1995.
- (U) ($0) Begin MEF IAS signals intelligence software conversion. This effort funded by the National Security Agency.
- (U) ($960) AFATDS: Continue developmental and interoperability efforts with the Army on AFATDS 97 software. This effort will include migration to the Global Command and Control System (GCCS) Common Operating Environment (COE), adding additional fire support functionality.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2270
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Command Post Systems

- (U) ($1,700) AFATDS: Prepare "MEF SLICE" test-bed unit and condict the AFATDS 97 Multi-service Operational Test and Evaluation (MOTE). This effort will include hardware fielding, operator training, and unit/Command Post Exercise (CPX) training.

- (U) ($240) AFATDS: Initiate developmental effort to identify a smaller computer for infantry battalions.

- (U) ($400) ATACC: Complete ATACC Engineering Development Model (EDM) contract for GCCS compliant hardware which when combined with Marine Corps Tactical Systems Support Activity's (MCTSSA) software effort will serve as the Research and Development platform for migrating the Tactical Digital Information Links (TADILs) and other functionality to GCCS.

- (U) ($2,049) ATACC: Complete efforts for development of receive-only TADIL-J software integration required to maintain joint interoperability for Marine aviation command and control (Phase II).

- (U) ($800) ATACC: Integrate meshnet voice communication upgrade into the CAC2S program.

- (U) ($183) IDASC: Complete DASC Phase II software Block upgrade requirement, follow-on effort to complete tailoring software for one hardware platform. Upgraded software will provide seamless automation with other USMC Aviation Command and Control agencies.

- (U) ($109) IDASC: Maximize recently introduced technology for large screen display and over-the-horizon satellite communications. Investigate hardware engineering change proposals for installing large screen displays and satellite communications capabilities

- (U) ($72) IDASC: Update and complete data package/training manuals, developmental testing, and software documentation.

- (U) ($405) MAGTF C4I Baseline: Complete MAGTF C4I Requirement Traceability Matrix (RTM). Develop a relational database for the iteractive development of a transition schedule for each successive version of the MAGTF C4I Software Baseline (MSBL). Prepare consolidated acquisition documentation. (Trace functionality requirements to a specific MSBL version.)

- (U) ($386) SPEED: Develop a Foliage Model that will predict what effect the density, distance and type of foliage will have on the ability of a transmitter to close a radio link. Develop a Circuit Route Planning Module that will generate and analyze primary and alternate circuit routing, generate plots of circuit networks, and the route of specified high internet circuits.

- (U) ($1,719) Forward finance efforts in this project and program element for the IAS, IDASC, TCO, and AFATDS programs. TCO: Complete Phase III ORD requirement. Integrate software and hardware changes into existing system and perform testing (Obligation expected in FY 1998). IAS: Develop and test prototype IAS workstations (Obligation expected in FY 1998). IAS: Continue MEF IAS signals software conversion (Obligation expected in FY 1998). IDASC: Investigate hardware ECPs for the HMD DASC system. These ECPs will be for improved digital communications capabilities and for computer hardware upgrades (Obligation expected in FY 1998). AFATDS: Continue developmental and interoperability efforts with the Army on AFATDS 98 software.This effort will include migration to the Global Command and Control System Common Operating Environment (COE), adding additional fire support functionality (Obligation expected in FY 1998).

- (U) ($136) 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) ($334) TCO: Complete Phase III ORD requirements. Integrate software and hardware changes into existing system and perform testing.

- (U) ($670) TCO: Begin incorporating Phase IV requirements.

- (U) ($280) IAS: Incorporate and test new standard software applications.

- (U) ($50) IAS: Conduct interoperability testing with system hardware and software modifications.

- (U) ($381) AFATDS: Continue developmental and interoperability efforts with the Army on AFATDS 98 software. This effort will include migration to the Global Command and Control System Common Operating Environment (COE), adding additional fire support functionality.

- (U) ($350) AFATDS: Conduct Multi-Service Operational Test of AFATDS 98 software. This effort will include operator training, unit/command post exercises, and pay for consummables.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2270
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Command Post Systems

- (U) ($757) AFATDS: Continue developmental and porting effort of AFATDS 98 software to the smaller computer for infantry battalions (separate requirement from the Army).

- (U) ($100) AFATDS: Initiate search for large screen display, determine interoperability issues, and resolve compatibility problems.

- (U) ($300) IDASC: Investigate hardware ECPs for the HMD DASC system. These ECPs will be for improved digital communications capabilities and for computer hardware upgrades.

- (U) ($229) IDASC: Incorporate and test new standard software applications which will allow automated communication between the DASC and the fire support coordination center.

- (U) ($60) IDASC: Conduct interoperability testing with system modifications to ensure that incorporated modifications will allow automated communications between USMC and joint command and control systems.

- (U) ($523) IAS MODS: Investigate hardware ECPs for MEF IAS and IAS suites.

- (U) ($1,226) Expeditionary Integrated COC: Transition from the technology demonstration phase to DEM/VAL phase. Begin full software development of multiple products in support of Battlefield Visualization.

4. (U) FY 1999 PLAN:

- (U) ($780) TCO: Investigate hardware ECPs for TCO systems.
- (U) ($413) TCO: Complete Phase IV requirements.

- (U) ($230) TCO: Integrate software and hardware changes into existing system and perform testing.

- (U) ($247) IAS: Incorporate and test new standard software applications.

- (U) ($75) IAS: Conduct interoperability testing with system hardware and software modifications.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

PROJECT NUMBER: C2270
PROJECT TITLE: Command Post Systems

- (U) ($431) IAS: Investigate and develop computer based training.

- (U) ($1,040) AFATDS: Continue developmental and interoperability with the Army on AFATDS 99 software. This effort will include migration to the Global Command and Control System Common Operating Environment, adding additional fire support functionality and technical fire direction.

- (U) ($1,053) AFATDS: Complete developmental effort in finding a small computer for infantry battalions (separate requirement from the Army).

- (U) ($160) AFATDS: Conduct test on large display screens for improving situational awareness within operational facilities.

- (U) ($200) AFATDS: Conduct Multi-Service Operational Test of AFATDS 99 software. This will include operator training, unit/command post exercises and will pay for consummables.

- (U) ($408) IDASC: Investigate hardware ECPs for the HMD DASC system for migration towards a common USMC Aviation Command and Control Communications system.

- (U) ($242) IDASC: Incorporate and test new standard software applications. Conduct interoperability testing with system modifications. These efforts will be a continuation of the FY 1998 efforts.

- (U) ($425) IAS MODS: Investigate hardware ECPs for MEF IAS and IAS suites.

- (U) ($1,000) Expeditionary Integrated COC: Continue Software development of multiple products in support of Battlefield Visualization.

- (U) ($250) Expeditionary Integrated COC: Conduct test and evaluation.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2270
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Command Post Systems

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	15,832	20,223	17,419
(U) Adjustments from FY 1997 PRESBUDG:	0	- 3,638	-14,963	-10,465
(U) FY 1998 President's Budget:	0	12,194	5,260	6,954

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 adjustment is due to: realignment of the MAGTF Training Warfare Simulation (MTWS) to project C2315 within this PE in the amount of $3,424; decrease for consolidation of ATACC program functions in the amount of $500 within the System Engineering and Integration program, project C2277 within this Program Element; an increase of $1,000 for IAS Interoperability testing with system modification; and a decrease in the amount of $714 for minor affordability changes. FY 1997 includes $1,719 for forward financed efforts (Obligation expected in FY 1998). FY 1998: Adjustment is due to: Decrease of $9,300 for the realignment of the MTWS; Decrease of $3,170 for the consolidation of ATACC program functions within the Tactical Air Operations Module (TAOM); Decrease of $2,468 for realignment to other Marine Corps programs of higher priority; and a decrease of $25 for minor affordability changes. FY 1999: Adjustment is due to decrease for realignment of the MTWS in the amount of $9,517; decrease for $892 realignment to other Marine Corps programs of higher priority and decrease for $56 for minor affordability changes.

(U) Schedule: IDASC: This program is operating with a MSIII signed Dec 1993. A fielding brief will be accomplished 1st Qtr FY-97, IOC is 2nd Qtr FY-97, FOC is 4th Qtr FY-97. Future upgrades and improvements which will be effected in order to fulfill ORD requirements will be managed as ACAT IV minor upgrades.

(U) Technical: N/A.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

PROJECT NUMBER: C2270
PROJECT TITLE: Command Post Systems

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) PMC Line	(BLI# 474700) IAS (MEF)									
	0	6,957	10,289	10,558	0	0	0	0	0	27,804
(U) PMC Line	(BLI#474900) Mod Kits (Intel) IAS MOD									
	924	815	1,406	1,390	1,373	1,336	1,521	1,572	CONT.	CONT.
(U) PMC Line	(BLI# 474700) IAS (TCAC)									
	0	10,964	0	0	0	0	0	0	0	10,964
(U) PMC Line	(BLI# 461300) TCO									
	10,723	0	0	0	0	0	0	0	0	10,723
(U) PMC Line	(BLI# 461100) AFATDS									
	6,622	0	0	0	0	0	0	0	0	6,622
(U) PMC Line	(BLI# 459700) ATACC									
	11,654	0	0	0	0	0	0	0	0	11,654
(U) PMC Line	(BLI# 463100) Command Post Systems									
TCO	0	10,473	9,629	1,613	1,088	913	669	666	CONT.	CONT.
AFATDS	0	0	0	3,643	16,799	16,784	11,016	0	0	48,242
(U) PMC Line	Mod Kits (MAGTF C4I) (BLI#463600)									
IDASC	0	4,084	1,392	1,432	1,587	1,637	1,567	1,619	CONT.	CONT.
(U) PMC Line	(BLI# 496900) Mod Kits (Non-Tel) IDASC PIP									
	7,058	0	0	0	0	0	0	0	0	7,058
(U) O&MMC										
TCO	543	1,131	1,537	1,589	1,605	1,651	1,662	1,609	CONT.	CONT.
ATACC	108	1,227	108	657	677	0	0	0	CONT.	CONT.
AFATDS	493	636	0	968	1,592	1,647	1,694	1,715	CONT.	CONT.
IAS	1,078	1,315	1,421	2,340	3,897	4,055	3,937	3,2135	CONT.	CONT.
IDASC	319	335	427	390	402	412	423	436	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2270
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Command Post Systems

(U) RELATED RDT&E:

(U) PE 0301301L (Department of Defense Intelligence and Information Systems/Military Intelligence Integrated Data System/Integrated Data Base I and II) (Defense Intelligence Agency).
(U) Navy Tactical Flag Communication and Control System.
(U) PE 0206313M, Marine Corps Communications Systems Command/Control.
(U) PE 0206626M, Marine Corps Command/Control/Communications Systems.
(U) PE 0604719M, Marine Corps Command/Control/Communications Systems.

D. (U) SCHEDULE PROFILE: (See Attached milestone charts)

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication 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
C2271 Maneuver C2 Systems	0	4,139	1,469	2,121	1,873	453	0	0	0	10,055

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Maneuver C2 is the executive layer of decision support that retrieves and fuses information from the functional areas. It provides an integrated representation of the battlespace or a specific area of concern. The subprojects below develop systems which report unit status and location to the Tactical Combat Operations (TCO) and Advanced Tactical Air Command Central (ATACC). They also disseminate maneuver information throughout the battlespace. The Joint Tactical Information Distribution System (JTIDS) provides unit location and status in near-real-time, primarily for aircraft, ships, and air defense systems. The Data Automated Communications Terminal (DACT) input/output battlefield situational awareness system and communication terminal handles positions and messaging information for company-sized units and below.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($4,649) is contained in various PEs and projects: This PE, Project C1975 ($1,704), DCT Product Improvement Program; PE 0604719M, Marine Corps Command/Control/Communications Systems, Project C0053 ($2,492), JTIDS; PE 0206626M, Marine Corps Command/Control/Communications Systems, Project C2035 ($453), PLRS/NAVSTAR/GPS. DACT achieved a successful MS I/II decision and has transitioned to engineering and manufacturing development (EMD) phase.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2271
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Maneuver C2 Systems

2. (U) FY 1997 PLAN:

- (U) ($50) JTIDS: Provide engineering support for the Class 2/2H Terminals which will be used in JTIDS common processor.
- (U) ($263) JTIDS: Provide pre-operational support for the Class 2H full scale development terminals which will be used in JTIDS common processor. Upgrade Full Scale Development (FSD) terminals to production models.
- (U) ($2,389) JTIDS: Commence EMD effort of JTIDS common processor and development of host platform interfaces.
- (U) ($40) JTIDS: Travel to attend various Technical Interchange Meetings, Technical Demonstrations and conferences.
- (U) ($30) DACT: Develop positional/navigational Variable Message Format (VMF) application software for use with Contractor off-the-shelf and government off-the-shelf (COTS/GOTS) programs.
- (U) ($60) DACT: Test positional/navigational and VMF software interfaces and their compatibility with emerging hardware developments.
- (U) ($1,262) DACT: Continue to develop the software application program to support operational requirements of the DACT.
- (U) ($45) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638 (f) (1).

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

PROJECT NUMBER: C2271
PROJECT TITLE: Maneuver C2 Systems

3. (U) FY 1998 PLANS:

- (U) ($50) JTIDS: Provide engineering support for the Class 2/2H JTIDS Terminals.
- (U) ($350) JTIDS: Complete EMD effort of JTIDS Common Processor and development of host platform interfaces.
- (U) ($20) JTIDS: Travel to attend various technical interchange meetings, technical demonstrations and conferences.
- (U) ($351) DACT: Complete software development for Phase I system
- (U) ($598) DACT: Complete software and hardware integration efforts.
- (U) ($100) DACT: Perform developmental testing on DACT system.

4. (U) FY 1999 PLANS:

- (U) ($1,305) JTIDS: Perform Defense Information Infrastructure Common Operating Environment migration of JTIDS processor.
- (U) ($20) JTIDS: Travel to attend various technical interchange meetings, technical demonstrations and conferences.
- (U) ($747) DACT: Begin Phase II software development.
- (U) ($49) DACT: Perform regression and software support testing on Phase II software.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

PROJECT NUMBER: C2271
PROJECT TITLE: Maneuver C2 Systems

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	4,806	4,578	4,535
(U) Adjustments from PRESBUDG:	0	-667	-3,109	-2,414
(U) FY 1998 President's Budget:	0	4,139	1,469	2,121

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997: $476K was reduced to realign the PLRS program and $191 was decreased due to minor affordability changes. Changes in FY 1998 and FY 1999 are due to the JTIDs Hardware and Software functions being combined with the Tactical Air Operations Module (TAOM), Tactical Air Data Information Link-Joint (TADIL-J) Module and minor affordability changes.

(U) Schedule: DACT: DT/OT and MS III delayed one year to reduce risk and allow additional time for software development, integration, and testing prior to IOT&E. This schedule change does not affect or change IOC or FOC of the project.

(U) Technical: N/A

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2271
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Maneuver C2 Systems

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

	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
(U) PMC Line (BLI# 421300) JTIDS										
	5,791	0	0	0	0	0	0	0	0	
	12,227									
(U) PMC Line (BLI# 463200) Maneuver C2 Systems										
JTIDS	0	2,733	7,377	6,675	7,151	8,080	1,028	1,062	CONT.	CONT.
DACT	0	975	8,313	12,994	13,351	12,332	5,495	761	CONT.	CONT.
(U) O&MMC										
JTIDS	0	0	208	912	939	966	993	1,024	CONT.	CONT.
DACT	0	0	297	1,271	1,710	1,906	739	648	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603713A (Army Data Distribution System), Net Control Station Down Size.
(U) PE 0604771D and 0604754F (MCE-P3I Joint Program). The Marine Corps is the lead service for the development of the Joint Tactical Air Operations Module (TAOM).
(U) This PE, Project C2270, Command Post Systems; Project C2273, Air Operations C2 Systems.
(U) PE 0206623M, Marine Corps Ground Combat/Supporting Arms Systems.

D. (U) SCHEDULE PROFILE: See Attached.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C2272 Intelligence C2 Systems	0	3,978	3,357	3,576	4,035	4,152	4,274	4,409	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Intelligence Command and Control (C2) supports the employment of reconnaissance, surveillance, and target acquisition resources and the timely planning and processing of all-source intelligence. It ensures that all-source tactical intelligence is tailored to meet specific mission requirements. The systems below collect raw intelligence data on the battlefield, convert raw intelligence data into processed information and deliver the processed products to the Intelligence Analysis Systems (IAS) for analysis. The Secondary Imagery Distribution System (SIDS) is used to distribute processed imagery throughout the Marine Corps Communications Systems. The Tactical Remote Sensor System (TRSS) includes deployable unattended ground sensors, a receiver system to collect signals from the sensors, a processing system to analyze the sensed data, and a communications capability to deliver the processed intelligence to the IAS system. Tactical Exploitation of National Capabilities (TENCAP) is a program designed to enhance the ability of tactical Marine Corps forces to exploit the capabilities of national intelligence-gathering systems. Congressionally directed, it requires close liaison with the intelligence community and involves complex and highly-sensitive activities. Commander's Tactical Terminal (CTT) is a special application ultra high frequency satellite communications (UHF SATCOM) receiver which provides dissemination of intelligence broadcast networks and near-real-time tactical intelligence and targeting information.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2272
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Intelligence C2 Systems

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($6,703) is contained in various PEs and projects: PE 0206625M, Marine Corps Intelligence/ Electronics Warfare Systems: Project C0062, IAS, subprojects SIDS ($733) and CTT ($209); Project C1297 ($68), TRSS; PE 0603640M, Marine Corps Advanced Technology Demonstrations (ATDs): Project C2223 ($2,940), COBRA; and PE 0605871M, Marine Corps TENCAP, Project C1424 ($2,753).

2. (U) FY 1997 PLAN:

- (U) ($50) SIDS: Prepare research, development and testing documentation to be used for the milestone III/fielding decision.

- (U) ($71) SIDS: Develop modifications to Commercial-off-the-shelf (COTS) Scuba Dive-Bags to satisfy Operational Requirements Documents (ORD) requirements for submarine Out-Station entrance, submarine extraction, and use in the surf zone.

- (U) ($353) TRSS: Complete Software Development for the Improved Air-Delivered Sensor (IADS), TRSS MAGTF C4I segment, and stored data retrieval software.

- (U) ($776) TENCAP: Participate in National Intelligence Systems Data (NISD) integration to support the expansion of the direct downlink capability to provide additional signals intelligence (SIGINT) and imagery products building upon MIDAS (classified) and Radiant Mercury in support of broader applications within the Aviation Combat Element (ACE) of the MAGTF.

- (U) ($474) TENCAP: Participate in Real Time In the Cockpit (RTIC) project to explore the technical feasibility and tactical utility of national systems data directly to Marine Corps aircraft for targeting, situational awareness, and threat avoidance to determine most effective support within the ACE of the MAGTF.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2272
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Intelligence C2 Systems

- (U) ($550) TENCAP: Participate in Laptop Imagery/Tactical Transmission via Low-Rate Electronics (LITTLE), a tactical imagery dissemination project to support the down-sizing of various modems used in the tactical environment to a personal computer memory card interface association (PCMCIA). Once downsized, these modems will support the transfer of imagery and other intelligence-related information to the digital automated communications terminal (DACT)..

- (U) ($285) TENCAP: Evaluate RADIANT CLEAR Phase II project which will develop tactically useful exploitation algorithms to develop national imagery products in support of littoral warfare.

- (U) ($220) TENCAP: Assist in the integration of RADIANT TIN imagery compression software within the man-pack SIDS to enhance the capability of transferring imagery via low data rate tactical communications.

- (U) ($160) TENCAP: Continue to support TENCAP training and education efforts by providing various TENCAP simulation, scripting, and processing hardware, software, and exercise support to training centers and Fleet units deployed and in garrison.

- (U) ($102) TENCAP: Continue participation in NISD, evaluate the utility of emerging exploitation, automated and manual target recognition and detection tools, and emerging reconnaissance technologies. Formulate and submit Tactical Impact Statements (TIS) as required by Congress.

- (U) ($937) CTT: Integrate CTT/H3 receivers into the TERPES, Technical Control and Analysis Center (TCAC), and the IAS; and integrate CTT/H-R3 into the Advanced Tactical Air Command Center (ATACC).

3. (U) FY 1998 PLANS:

- (U) ($53) SIDS: Complete modification of the COTS Scuba Dive-Bags.

- (U) ($1,916) TENCAP: Conduct advance technology demonstrations and integration into the established MAGTF C4I architecture.

- (U) ($478) TENCAP: Conduct technical assessments of emerging national data dissemination capabilities.

- (U) ($430) TENCAP: Continue to support operational planning to enhance operating force capabilities to use national intelligence data within the MAGTF C4I architecture.

- (U) ($380) TENCAP: Evaluate the utility of emerging exploitation, automated and manual target recognition and detection tools.

- (U) ($100) TENCAP: Continue TENCAP training and education efforts by providing the Fleet Marine Force (FMF) with various TENCAP simulation, scripting, and processing hardware and software support.

4. (U) FY 1999 PLANS:

- (U) ($209) SIDS: Complete software upgrade to maintain NITFS standards and improve compression algorithms.

- (U) ($1,975) TENCAP: Conduct advance technology demonstrations and integration into the established MAGTF C4I architecture.

- (U) ($367) TENCAP: Conduct technical assessments of emerging national data dissemination capabilities.

- (U) ($475) TENCAP: Continue to support operational planning to enhance operating force capabilities to US national intelligence data within the MAGTF C4I architecture.

- (U) ($450) TENCAP: Evaluate the utility of emerging exploitation, automated and manual target recognition and detection tools.

- (U) ($100) TENCAP: Continue TENCAP training and education efforts by providing the FMF with various TENCAP simulation, scripting, and processing hardware and software support.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2272
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Intelligence C2 Systems

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	12,200	10,748	10,947
(U) Adjustments from FY 1997 PRESBUDG:	0	-8,222	-7,391	-7,371
(U) FY 1998 President's Budget:	0	3,978	3,357	3,576

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Adjustment in FY 1997 is due to the realignment of TRSS, TERPES, and TPCS programs into project C2274 within this PE and the realignment of COBRA into PE 0603640M, Marine Corps Advanced Technology Demonstrations (ATD) and minor affordability changes. Adjustments in FY 1998 and FY 1999 are due to the realignment of TRSS, TERPES, and TPCS programs into project C2274 within this PE and minor affordability changes.

(U) Schedule: N/A

(U) Technical: N/A

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) PMC Line (BLI# 474700) Intell Support Equipment										
SIDS	1,994	10,226	0	0	0	0	0	0	0	12,220
TRSS	636	0	0	0	0	0	0	0	0	636
CTT	12,436	958	2,753	0	0	0	0	0	0	16,147
(U) PMC Line (BLI# 474900 Modification Kits (Intel)										
TRSS	0	317	0	0	0	0	0	0	0	317
(U) O&M,MC										
TRSS	373	369	397	751	771	792	807	825	CONT.	CONT.
SIDS	149	209	400	435	331	351	479	468	CONT.	CONT.

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: September 1996

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2272
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Intelligence C2 Systems

(U) RELATED RDT&E:
(U) PE 0206626M (Marine Corps Command/Control/Communications Systems)
(U) PE 0301301L (Department of Defense Intelligence and Information Systems/Military Intelligence Integrated DataSystem/Integrated Data Base I and II) (Defense Intelligence Agency)
(U) PE 0604270A (Intelligence and Electronic Warfare Common Sensor (IEWCS), TACJAM-A)
(U) PE 0305885G (Tactical Cryptologic Program)
(U) PE 0603730A (Tactical Surveillance System - Advanced Development), Army TENCAP, Project D560
(U) PE 0603766A (Tactical Electronic Surveillance System - Advance Development), Army TENCAP, Project D907
(U) PE 0604740A (Tactical Surveillance System - Engineering Development), OSD TENCAP, Project D662
(U) PE 0902398M (United States Special Operations Command), Chariot Program
(U) PE 0605867N (SEW Surveillance/Reconnaissance Support), Project Z1034

D. (U) SCHEDULE PROFILE: See Attached.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C2273 Air Operations C2 Systems	0	6,972	5,328	2,369	6,209	2,638	1,163	1,311	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Air Operations C2 coordinates and plans Navy and Marine air combat operations and interfaces with joint and combined forces air operations. It also interfaces with fire support C2. The systems in this project are used to detect aircraft and missiles, process the detected information, deliver the processed information to the Advanced Tactical Air Command Central (ATACC), and conduct the air battle. The Tactical Air Operations Module (TAOM) improves the current system; the TAOM is the center for directing aircraft and anti-air systems in real time as part of the joint air battle. The Air Defense Communications Platform (ADCP) provides an interface between the AN/TPS-59 (V)3 radar and the HAWK missile system for tactical ballistic missile defense. Aviation radars are used to detect the location and identity of aircraft and missiles in the battle area. The Common Aviation Command and Control System (CAC2S) will eliminate the current "stovepipe" systems used by the various agencies of the Marine Air Command and Control System (MACCS) and is specifically intended to provide a coordinated modernization effort with common hardware, software, and communication assets for the MACCS agencies.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($6,536) is contained in various PEs and projects: PE 0206623M, Marine Corps Ground Combat/Supporting Arms Systems, Project C1120 ($4,951), ADMS, subprogram ADCP; and PE 0206626M, Marine Corps Command/Control/Communications Systems: Project C0103 ($1,127), TAOM (Operational Systems Product Improvements); and Project C1067 ($458), Aviation Radar Product Improvement Program.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2273
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Air Operations C2 Systems

2. (U) FY 1997 PLAN:

- (U) ($2,826) TAOM: Complete Engineering Manufacturing Development (EMD) effort of Joint Tactical Information Distribution System (JTIDS) and development of TAOM/JTIDS interface.
- (U) ($700) TAOM: Begin development of Defense Information Infrastructure (DII) Common Operating Environment (COE) Tactical Air Data Information Link-Joint (TADIL-J) Common Segment.
- (U) ($1,000) TAOM: Continue closed system (AYK-14) to open system migration.
- (U) ($100) TAOM: Begin cooperative engagement capability (CEC) implementation into the TAOC.
- (U) ($850) TAOM: Program Support, which consists of Contractor Support to provide documentation, hardware/software engineering, and logistics analysis to the program office; support of developmental testing,
- (U) ($50) TAOM: Travel to support Program Office.
- (U) ($504) ADCP: Achieve MS III decision. Continue software enhancement to meet mature ADCP Operational Requirements Document (ORD) requirements.
- (U) ($19) AV RDR: Continue development of updated threat analyses. Analyze/incorporate recommended changes in accordance with Advanced Change Study Notices, and implement engineering change proposals (ECPs) for AN/TPS-59 radar Product Improvement Program.
- (U) ($10) AV RDR: Continue reliability analysis and analysis of field identified deficiencies to Aviation Radars.
- (U) ($10) AV RDR: Conduct/coordinate Life Cycle Management and Logistics Support Analysis.
- (U) ($300) AV RDR: FY 1997 forward finances FY 1998 efforts. AV RDR: Analyze and develop ECP's to increase AN/TPS-59 radar detection and targeting capability within the Antenna Array Transmitters and Receivers. (Obligation expected in FY 1998).

FY1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1997

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT NUMBER: C2273 PROJECT TITLE: Air Operations C2 Systems

- (U) ($103) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638(f)(1).

- (U) ($500) CAC2S: Accelerate the migration of Marine Corps Aviation Command and Control Equipment to the Marine Corps Common Aviation Command and Control System (CAC2S). Conduct tests, demonstrations and protoytping efforts to support ongoing analysis of software migration, common computer resource use and development of a common voice communications subsystem.

3. (U) FY 1998 PLANS:

- (U) ($507) TAOM: Continue development of DII COE TADIL J Common Segment.

- (U) ($912) TAOM: Continue closed system (AYK-14) to open system migration.

- (U) ($100) TAOM: Continue CEC implementation into the TAOC.

- (U) ($25) TAOM: Travel to support Program Office.

- (U) ($213) ADCP: Continue software enhancements concentrating on incorporation of Variable Message Format (VMF) protocol.

- (U) ($2,910) AV RDR: Analyze and develop ECP's to increase AN/TPS-59 radar detection and targeting capability within the Antenna Array Transmitters and Receivers.

- (U) ($250) AV RDR: Fund Marine Corps Tactical Software Support Activity (MCTSSA) Software Support.

- (U) ($411) AV RDR: Program Support, which consists of Contractor Support to provide documentation, hardware/software engineering, and logistics analysis to the program office; support of developmental testing, In Process Review (IPR), and contract management.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

PROJECT NUMBER: C2273
PROJECT TITLE: Air Operations C2 Systems

4. (U) FY 1999 PLANS:

- (U) ($494) TAOM: Complete development of DII COE TADIL-J Common Segment.
- (U) ($781) TAOM: Continue closed system (AYK-14) to open system migration.
- (U) ($100) TAOM: Continue cooperative engagement capability (CEC) implementation.
- (U) ($25) TAOM: Travel to support Program Office.
- (U) ($219) ADCP: Continue software enhancements concentrating on incorporation of CEC interface.
- (U) ($575) AV RDR: Complete design, build prototype interface and test the Antenna Array upgrades.
- (U) ($63) AV RDR: Continue MCTSSA Software Support.
- (U) ($112) AV RDR: Program Support, which consists of Contractor Support to provide documentation, hardware/software engineering, and logistics analysis to the program office; support of developmental testing IPR, and contract management.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2273
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Air Operations C2 Systems

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	7,042	9,876	4,217
(U) Adjustments from FY 1997 PRESBUDG:	0	-70	-4,548	-1,848
(U) FY 1998 President's Budget:	0	6,972	5,328	2,369

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997: Adjustment of +300K is for forward financing efforts for the Aviation Radar PIP and -$370 for minor affordability changes. FY 1998: Decrease of $4,536 is due to Marine Corps unique software developments being decreased during implementation of joint Global Command and Control System (GCCS) upgrades and decrease of $12 due to minor affordability adjustments. FY 1999: Adjustment in the amount of -$1,832 is due to the realignment of the AN/TPS-59 and TAOM funds to other Marine Corps programs of higher profile and -$16 for minor affordability adjustments.

(U) Schedule: The TPS-59 radar Tactical Ballistic Missile Defense (TBMD) upgrade program is atwo phased effort. Shelter electronics with improved data processing is completed in FY98 and FY99. Antenna Array R&D upgrades efforts include transmitters and receiver design improvements efforts in FY98 and FY99.

(U) Technical: N/A

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2273
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Air Operations C2 Systems

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

	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
(U) PMC Line (BLI# 459400) TAOM	4,470	0	0	0	0	0	0	0	0	4,470
(U) PMC Line (BLI# 464000) Air Operations C2 Systems										
TAOM	0	5,296	9,371	10,221	2,784	4,653	2,368	4,226	CONT.	CONT.
(U) PMC Line (BLI# 463700) Items <$2M MAGTF C4I										
ADCP	0	0	55	56	896	291	152	76	CONT.	CONT.
(U) PMC Line (BLI# 463600) Modification Kits MAGTF C4I (AN/TPS-59 Radar)										
AN/TPS-59	0	38,711	5,937	8,509	8,008	9,782	0	0	0	70,947
(U) O&M										
TAOM	0	0	0	0	496	525	453	309	CONT.	CONT.
ADCP	0	0	481	493	508	521	536	488	CONT.	CONT.
AN/TPS-59	0	0	1,195	1,234	897	920	720	739	CONT.	CONT.

(U) RELATED RDT&E:
PE 0603216C (Ballistic Missile Defense Organization, Theater Missile Defense)

D. (U) SCHEDULE PROFILE: See attached.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2273

PROGR
AM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Air Operations C2 Systems

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. System Development	0	5,658	4,450	1,990
b. Support and Management	0	1,244	743	294
c. Travel	0	70	135	85
Total	0	6,972	5,328	2,369

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems
PROJECT NUMBER: C2273
PROJECT TITLE: Air Operation 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:											
APC, Inc. Austin, TX											
ADCP	MIPR	OCT 96			0	0	100	28	34	CONT.	CONT.
Litton, Augora Hills, CA											
TAOM	SS/CPAF	JAN 97			0	0	5,126	1,519	1,375	CONT.	CONT.
Lockheed Martin, Syracuse, NY											
AV RDR	CPIF	JAN 97			0	0	300	2,910	575	CONT.	CONT.
SBIR	TBD	TBD			0	0	103	0	0	0	103
Subtotal Product Development					0	0	5,629	4,457	1,984	CONT.	CONT.
Support and Management:											
SWC, Crane,IN											
ADCP	MIPR	OCT 96			0	0	184	100	100	CONT.	CONT.
AD, TAOM Quantico, VA											
	MIPR	OCT 96			0	0	50	25	25	CONT.	CONT.
AD, ADCP Quantico, VA											
	MIPR	OCT 96			0	0	20	10	10	CONT.	CONT.
SC, Dumfries, VA											
TAOM	CPFF	OCT 96	850	850	0	0	850	0	0	0	850

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2273
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: Air Operations C2

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 (con't):											
MCTSSA, Camp Pendleton, CA											
ADCP		OCT 96			0	0	100	75	75	CONT.	CONT.
CRC, Dumfries, VA											
ADCP	CPFF	OCT 96	100	100	0	0	100	0	0	100	100
MCCDC (TAD), Quantico, VA											
AV RDR		OCT 96			0	0	39	100	50	CONT.	CONT.
MCTSSA, Camp Pendleton, CA											
AV RDR	MIPR	OCT 97			0	0	0	250	63	CONT.	CONT.
CRC, Dumfries, VA											
AV RDR	CPFF	OCT 97			0	0	0	311	62	CONT.	CONT.
Subtotal Support Management					0	0	1,343	871	385	CONT.	CONT.

Test and Evaluation: Not applicable.

Government Furnished Equipment: Not applicable.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

PROJECT NUMBER: C2273
PROJECT TITLE: Air Operations C2

Systems

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development	0	0	5,629	4,457	1,984	CONT.	CONT.
Support and Management	0	0	1,343	871	385	CONT.	CONT.
Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	0	6,972	5,328	2,369	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems

(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									
C2274 C2 Warfare Systems	0	3,369	3,390	4,012	3,896	3,341	3,897	4,648	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Command and Control (C2) Warfare coordinates counter-C2 activity and C2 defense measures of the Marine Corps Communications Systems. The Tactical Electronic Reconnaissance Processing and Evaluation System (TERPES) is used to process, sort, analyze, display and correlate ES and EA data collected by EA-6B aircraft and maintain the Tactical Electronic Orders of Battle. The Mobile Electronic Warfare Support System (MEWSS) will be used to collect an process electronic intelligence and provide electronic attack capability from a mobile ground platform. Tactical Portable Communications Intelligence (Comint) System (TPCS) is a semi-automated, man/team transportable signals intelligence system that provides communications intercept, radio direction finding analysis and reporting to the Marine Air Ground Task Force (MAGTF) Commander.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($5,132) is contained in various PEs and projects: PE 0206625M Counterintelligence and Security Equipment project C1463 ($40), PE 0206625M Tactical Electronic Reconnaissance and Processing and Evaluation System (TERPES) Project (C1928) ($2,438) and PE 0604270N Mobile Electronic Warfare Support System (MEWSS) Project (C1961) ($2,654).

2. (U) FY 1997 PLAN:

   - (U) ($1,000) TERPES: Continue upgrades to TERPES mission planning software to maintain compatibility with EA-68 aircraft software changes.

   - (U) ($852) TERPES: Begin development of Tactical Automated Sanitation capability or similar Multi-Level Security (MLS) device or procedure.

   - (U) ($1,193) TERPES: Complete Developmental Testing and Interoperability Testing of TERPES DOWNSIZE effort.

- (U) ($282) MEWSS: Funds USMC unique cost share of Army's continued subsystem development to target evolving threat communications and non-communications emitters.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M Project Number: C2274
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems Project Title: C2 Warfare Systems

- (U) ($42) Portion of program reserved for Small Business Innovation Research Assessment in accordance with 15 U.S.C. 638 (f) (1).

3. (U) FY 1998 PLANS:

- (U) ($248) MEWSS: USMC unique cost share of Army's continued subsystem development to target evolving threat communications and non-communications emitters.
- (U) ($100) MEWSS: USMC unique integration costs of three-box ELINT System and TACJAM-A.
- (U) ($202) MEWSS: Develop USMC unique SIGINT tasking and reporting data link improvements.
- (U) ($286) TPCS: Fund remaining TPCS upgrade software development to control and exploit special signal receivers.
- (U) ($214) TPCS: Commence transition of TOPHUNTER 2.0 software to JMCIS/GCCS common operating environment (COE).
- (U) ($160) TPCS: Fund IOT&E of TPCS upgrade.
- (U) ($1,000) TERPES: Continue upgrades to TERPES mission planning software to maintain compatibility with the EA-6B aircraft software changes.
- (U) ($605) TERPES: Continue development of Tactical Automation Sanitation capability or similar Multi-Level Security (MLS) device or procedure.
- (U) ($575) TERPES: Begin software development of Link 16 Tadil J to be incorporated into fusion processor.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M Project Number: C2274
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems Project Title: C2 Warfare Systems

4. (U) FY 1999 PLANS:

- (U) ($226) MEWSS: USMC unique cost share of Army's continued subsystem development to target evolving threat communications and non-communications emitters.
- (U) ($230) MEWSS: Develop advanced console/display and operator interface improvements.
- (U) ($724) TPCS: Continue transition of TOPHUNTER 2.0 software to JMCIS/GCCS common operating environment.
- (U) ($305) TPCS: Software revisions to TOPHUNTER 2.0 software.
- (U) ($301) TPCS: Hardware revisions to revisions to TPCS upgrade.
- (U) ($976) TERPES: Continue development of TERPES mission planning software to maintain compatibility with the EA-6B aircraft software changes.
- (U) ($525) TERPES: Complete development of Tactical Automation Sanitation capability or similar Multi-Level Security (MLS) device or procedure.
- (U) ($450) TERPES: Continue software development of Link 16 Tadil J to be incorporated into fusion processor.
- (U) ($275) TERPES: Begin development of advanced communication suite upgrade for Joint interoperability communications suite software changes.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems

Project Number: C2274
Project Title: C2 Warfare Systems

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	109	112	115
(U) Adjustments from FY 1997 PRESBUDG:	0	+3,260	+3,278	+3,897
(U) FY 1998 President's Budget:	0	3,369	3,390	4,012

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FYs 1997-1999 adjustments are due to the realignment of the TERPES, TPCS, and MEWSS from project C2272 within this PE and minor affordability changes. FY 1997 includes a Congressional increase of $885 for TERPES.

(U) Schedule: MEWSS: MSIIA LRIP moved from 1Q97 to 2Q97 to accommodate MSIIA decision meeting scheduled for 24 JAN 1997. Exact date was not known previously. This is an inconsequential "firming up" of the program and has no impact on program execution. TPCS: MS II moved from 4Q96 to 1Q97. This change reflects a rescheduling of the MCPDM briefing to Oct 96 vice Sep 96. This is an inconsequential "firming up" of the program and has no impact on program execution. MS III moved from 2Q98 to 3Q98 to accommodate change in schedule for the MSII.

(U) Technical: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2274
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems PROJECT TITLE: C2 Warfare Systems

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

	FY 1996 ESTIMATE PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
(U) PMC Line (BLI#474900) Modification Kits (Intel)										
TERPES	0	1,125	4,418	0	3,970	0	3,019	0	0	12,532
(U) PMC Line (BLI#463600) Modification Kits MAGTF C4I										
MEWSS	0	11,120	14,672	15,113	22,626	23,391	1,218	0	0	88,140
(U) PMC Line (BLI#474900) Modification Kits (Intel)										
TPCS	0	0	0	3,191	2,910	2,108	0	0	0	8,209
(U) O&M Line										
TERPES	1,783	1,934	2,146	2,325	2,397	2,472	2,540	2,629	CONT.	CONT.
MEWSS	251	632	1,006	1,363	1,777	2,005	2,082	2,155	CONT.	CONT.
TPCS	0	2,423	2,129	2,573	2,886	2,632	2,671	2,349	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0604270A (Intelligence and Electronic Warfare Common Sensor (IEWCS), TACJAM-A).
(U) MEWSS is fully integrated in the IEWCS program as a fourth platform.
(U) PE 0305885G (Tactical Cryptologic Program)
(U) The Mewss program is National Security Agency's tactical Cryptologic Program, which provides a portion of the funds required for the system integration and development of the passive portion of TACJAM-A and the Precision Location System.

D. (U) SCHEDULE PROFILE: See Attached.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C2275 Radio Systems	0	402	2,507	2,592	5,203	2,399	746	746	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides for development and improvement of Single Channel radios to support the Marine Corps Communications Systems Command, Control, Communications, Computers and Intelligence (C4I) infrastructure. The Single-Channel Ground-Air Radio System (SINCGARS) is a single-channel, very-high-frequency (VHF), frequency-hopping joint-service product; RDT&E,N funds are used to accommodate improvements in the basic design as a result of field use. The Ground Mobile Forces (GMF) tri-band satellite terminal provides the Marine Air Ground task Force (MAGTF) with a super-high-frequency (SHF), tri-band (C,Ku, & X-band) satellite capability. The General Purpose Radio Remote (GPRR) will allow all Marine Corps inventory tactical radios to be physically located away from MAGTF Command Posts (CP). This action significantly reduces the electronic signature of the CP, thus, increasing the CP's survivability. The GPRR will be a digital system that will throughput voice and data channels. RDT&E funds will be used to assess current technology, evaluate potential solutions, test selected solutions, and provide engineering and program support. The Joint Tactical Communication System (JTCS) will provide a communications system with a waveform that cannot be detected by current electronic support measure systems; the technology for this system is being developed within the USMC Advanced Technology Demonstration (ATD) program; upon successful completion of the current ATD, we will initiate a joint program with the Army Program Manager Tactical Radio Communications Systems to develop JTCS technology for field use.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($604K) is contained in this PE and various projects. Project C0048 ($194K), Transmission Subsystem Improvement; Project C1931 ($410K), Communications Ancillary Equipment.

2. (U) FY 1997 PLAN:

   - (U) ($220) SINCGARS: Develop and incorporate a SINCGARS Cosite Receiver Analysis Module (SCRAM) for antennas into the Marine Corps Systems Planning Engineering and Evaluation Device. Provide general technical support to the Marine Corps SINCGARS Program Office.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2275
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Radio Systems

- (U) ($171) GMF: Fund contractor support for the development of a final Test and Evaluation Master Plan (TEMP) annex, training plan, and develop to the users integrated logistics support plan.
- (U) ($11) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638(f)(1).

3. (U) FY 1998 PLAN:
- (U) ($348) GMF: Support integrated logistic support document development and program management.
- (U) ($2,159) GPRR: Fund Analysis of Alternatives (AOA) to determine which currently available technologies will best satisfy this requirement; fund engineering and program management support.

4. (U) FY 1999 PLAN:
- (U) ($2,094) GPRR: Fund Early Operational Assessments (EOA) to downselect previously identified technologies; fund engineering, system engineering, and program management support.
- (U) ($498) JTCS: Commence demonstration and validation JTCS under tactical applications identified in the emerging Operational Requirements Document. Assemble system prototypes; establish DT/OT-01 test parameters.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	428	68	144
(U) Adjustments from FY 1997 PRESBUDG:	0	-26	+2,439	+2,448
(U) FY 1998 President's Budget:	0	402	2,507	2,592

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Adjustment in FY 1997 is due to minor affordability changes. Adjustments in FY 1998 and FY 1999 support development of GPRR and JTCS and DBOF surcharge adjustment in FY 1999 of -$10.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2275
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Radio Systems

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

	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
(U) PMC Line (BLI# 451000) SINCGARS Radio System										
	48,283	0	0	0	0	0	0	0	0	48,283
(U) PMC Line (BLI# 402700) Manpack Radios and Equipment (AN/PSC-5 portion only)										
	9,696	0	0	0	0	0	0	0	0	9,696
(U) PMC Line (BLI# 463300) Radio Systems										
SINCGARS	0	48,007	16,907	8,943	5,194	0	0	0	0	79,051
GMF	0	0	0	11,352	27,388	26,898	0	0	0	65,638
(AN/PSC-5)	0	5,796	0	0	0	0	0	0	0	5,796
GBS	0	0	0	563	79	29	0	0	0	671
GPRR	0	0	0	0	0	0	13,525	14,773	0	28,298
SMART-T	0	0	0	15,200	600	0	0	0	0	15,800
(U) O&M										
SINCGARS		445	1,255	1,292	1,410	1,449	1,246	1,281	CONT.	CONT.
GMF		0	0	8	849	2,224	3,309	4,471	CONT.	CONT.
GBS		0	0	0	35	83	85	88	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0303140N (Information Systems Security Plan) Project X0734, Communications Security Research and Development
(U) PE 0604805A (Command, Control, and Communications Systems Engineering Development) SINCGARS (V)

D. (U) SCHEDULE PROFILE: See Attached.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2275
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Radio Systems

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Contractor Engineering Support				
SINCGARS	0	50	0	0
GPRR	0	0	1,829	1,494
b. Program Management Support				
GMF	0	171	268	0
GPRR	0	0	250	200
c. Systems Engineering				
SINCGARS	0	170	0	0
GPRR	0	0	0	250
JTCS	0	0	0	498
d. Travel				
GMF	0	0	80	0
GPRR	0	0	80	150
e. SBIR	0	11	0	0
Total	0	402	2,507	2,592

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2275
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Radio 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											
SINCGARS											
Joint Spectrum Center (JSC), Annapolis, MD											
	C/CPFF	OCT 96	170	170	0	0	170	0	0	0	170
GPRR											
	TBD	OCT 97			0	0	0	1,829	1,744	CONT.	CONT.
JTCS											
	TBD	OCT 98			0	0	0	0	498	CONT.	CONT.
SBIR	TBD	FEB 97	11	11	0	0	11	0	0	0	11
Support and Management											
SINCGARS											
JSC, Annapolis, MD											
	C/CPFF	OCT 96	50	50	0	0	50	0	0	0	50
GMF											
Vanguard, Dumfries, VA											
	RCP	OCT 96	439	439	0	0	171	268	0	0	439
Marcorsyscom, Quantico, VA											
	WR	OCT 97	80	80	0	0	0	80	0	0	80
GPRR											
	TBD	OCT 97			0	0	0	330	350	CONT.	CONT.
Test and Evaluation											
GMF											

GOVERNMENT FURNISHED PROPERTY: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2275
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Radio Systems

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	181	1,829	2,242	CONT.	CONT.
SINCGARS	0	0	170	0	0	0	170
GPRR	0	0	0	1,829	1,744	CONT.	CONT.
JTCS	0	0	0	0	498	CONT.	CONT.
SBIR	0	0	11	0	0	0	11
Subtotal Support and Management	0	0	221	678	350	CONT.	CONT.
SINCGARS	0	0	50	0	0	0	50
GMF	0	0	171	348	0	0	519
GPRR	0	0	0	330	350	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0	0
Total Project	0	0	402	2,507	2,592	CONT.	CONT.

C. (U) FUNDING PROFILE: Not Applicable.

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

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication 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
C2276 Communications Switching and Control Systems	0	2,720	2,084	2,135	1,784	1,880	0	0	0	10,603

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program consists of four interrelated projects: Unit Level Circuit Switch Product Improvement Program (ULCS PIP), Digital Technical Control (DTC), Tactical Data Network (TDN), and Defense Message System (DMS). Together, these systems form an integrated, digital communications backbone for a deployed Marine Air Ground Task Force (MAGTF) which has the capability to manage, control, switch, and multiplex networks providing voice, data, message, imagery, facsimile, and video services to subscribers.

(U) The ULCS PIP will upgrade the ULCS circuit switches (AN/TTC-42 Central Office Telephone radio and switchboard SB-3865). The ULCS PIP is a competitive reprocurement of special purpose circuit card assemblies (CCAs) produced from a government-owned technical data package. The additional CCAs will provide improved access to fixed plant analog and trunk connections. Additional enhancements provide STU-III secure telephone interfaces in the AN/TTC-42 and SB-3865. The ULCS PIP requires low risk/medium technology engineering and development prior to build-to-print production.

(U) The TDN augments existing MAGTF communications infrastructure to provide the commander an integrated data network forming the communication backbone for MAGTF tactical data systems. The TDN consists of a network of Gateways and Servers interconnected with one another and their subscribers via a combination of common user long-haul transmission systems, local area networks, single channel radios, and the switched telephone system. The network provides its subscribers with basic data transfer and switching services; access to strategic, supporting establishment, joint, and other service component tactical data networks; network management capabilities; and value-added services such as message handling, directory services, file sharing, facsimile handling, and terminal emulation support. Required functionality was separated into three blocks of capabilities due to the leading edge technology required in the Operational Requirement Document (ORD). This evolutionary acquisition strategy and funding provide for development of additional capabilities which compose the Block II and Block III upgrades of the system.

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

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2276
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Communications Switching and Control Systems

(U) The DTC facilitates the installation, operation, restoration, and management of individual circuits and digital links consisting of many multiplexed circuits. It provides the primary interface between subscriber systems/networks within a local area and long-haul multichannel transmissions systems to transport voice, message, data, and imagery traffic. It can add, drop and insert digital circuits into multiplexed groups; provide a source of stable timing to connected equipment; condition circuits; and perform analog/digital, 2-wire/4-wire, and signaling conversions. It contains the monitoring, testing, and patching equipment required by technical controllers to troubleshoot and restore faulty circuits and links. This funding provides for the development of interfaces to new technology transmission systems.

(U) DMS is an OSD-mandated program to integrate Automatic Digital Network (AUTODIN) and E-Mail into a single, secure, DoD message communications system. DMS will expand writer-to-reader connectivity, support, and message security services. Organizations and individuals will be able to create, edit, send, receive, read, and process organizational and individual messages, secured with end-to-end protection, direct from desktop terminals/personal computers in their workspaces. DMS will do everything our current Banyan E-Mail and AUTODIN systems do with the following additional capabilities: connectivity to all users in DoD; Secure networking with all classifications (Unclass, Secret, TS, SCI) on a single network; ability to send organizational messages from the desktop.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($4,496) is contained in this PE: Project C0049 ($2,131), Unit Level Switches; Project C0065 ($2,365), Communications Control (COMM CON), subproject Digital Technical Control (DTC).

2. (U) FY 1997 PLAN:

   - (U) ($80) ULCS PIP: Complete ULCS software development for ULCS PIP. Achieve procurement decision.

   - (U) ($929) TDN: Continue Systems engineering, Hardware and Software Development and Integration of Block I, MS-III Documentation Preparation.

   - (U) ($112) TDN: Continue TDN software testing/integration and document review. This effort partially funded by the Joint Communication Support Element (JCSE).

   - (U) ($0) TDN: Conduct TDN Block I interoperability certification testing. This effort funded by the JCSE.

   - (U) ($1,547) DTC: Conduct Operational Test, prepare for MS-III/Approval for Service Use.

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

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2276
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Communications Switching and Control Systems

- (U) ($52) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638 (f)(1).

3. (U) FY 1998 PLANS:

- (U) ($436) DTC: Development and Engineering system technology upgrades. Achieve MS III decision.
- (U) ($360) DMS: Support software and hardware integration/testing. Incorporate evolutionary security products into the unclassified DMS architecture within a Marine Corps-unique network infrastructure.
- (U) ($1,288) TDN: Develop TDN Block II and software/hardware integration/testing. Complete Block I upgrades. Achieve MS III decision.

4. (U) FY 1999 PLANS:

- (U) ($446) DTC: Engineering/testing system technology upgrades. Achieve MS III decision for Block II.
- (U) ($367) DMS: Support software and hardware integration/testing. Incorporate evolutionary security products into the unclassified DMS architecture within a Marine Corps-unique network infrastructure.
- (U) ($1,322) TDN: Develop TDN Block II and software/hardware integration/testing. Achieve MS III decision for Block II.

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

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2276
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Communications Switching and Control Systems

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	2,877	1,142	1,135
(U) Adjustments from FY 1997 PRESBUDG:	0	-157	+942	+1,000
(U) FY 1998 President's Budget:	0	2,720	2,084	2,135

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease in FY 1997 is due to minor affordability changes. Increases in FY 1998 and FY 1999 are due to funding required to develop and engineer system technology upgrades for Blocks I and II of the DTC program and to support software and hardware integration/testing of the DMS program.
(U) Schedule: N/A
(U) Technical: N/A

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

	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
(U) PMC Line (BLI#463400) Communication Switching and Control Systems										
TDN	0	0	25,636	50,756	40,362	11,274	0	0	0	128,028
DTC	0	0	11,634	18,848	21,701	13,527	0	0	0	65,710
ULCS PIP	0	12,512	0	0	0	0	0	0	0	12,512
DMS	0	4,170	7,471	4,600	7,689	3,384	0	0	0	27,314
(U) O&M										
TDN	0	0	1,697	2,053	2,166	2,610	2,612	2,875	CONT.	CONT.
DTC	0	0	0	379	1,502	1,420	1,367	1,180	CONT.	CONT.
DMS	0	285	1,133	1,302	1,216	938	599	311	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: 4
PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems
PROJECT NUMBER: C2276
PROJECT TITLE: Communications Switching and Control Systems

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	0	80	0	0
b. Software Testing/Integration	0	112	660	665
c. System Design/Development	0	929	593	591
d. Developmental/Operational Testing	0	0	395	431
e. Contract Engineering Support	0	600	426	438
f. Systems Integration	0	947	10	10
g. SBIR	0	52	0	0
Total	0	2,720	2,084	2,135

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

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2276
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Communications Switching and Control 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											
DTC											
ESC, USAF Hanscom AFB, Hanscom, MA	C/FFP/MIPR	OCT 96	912	912	0	0	912	0	0	0	912
TBD	C/CPFF	OCT 97			0	0	0	426	436	CONT.	CONT.
TDN											
CSC, Dumfries, VA	C/CPFF	OCT 96			0	0	764	606	642	CONT.	CONT.
SBIR	TBD	FEB 97	52	52	0	0	52	0	0	0	52
Total Product Development					0	0	1,728	1,032	1,078	CONT.	CONT.
Support and Management:											
DTC											
MCTSSA, Camp Pendleton, CA	WR	OCT 97			0	0	30	10	10	CONT.	CONT.
MCCDC, Quantico, VA	WR	OCT 96	5	5	0	0	5	0	0	0	5
ESC, USAF Hanscom AFB, Hanscom, MA	C/FFP/MIPR	OCT 96	600	600	0	0	600	0	0	0	600
TDN											
MCTSSA, Camp Pendleton, CA	WR	OCT 97			0	0	265	593	591	CONT.	CONT.
MCCDC, Quantico, VA	WR	OCT 96	12	12	0	0	12	0	0	0	12

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

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0206313M PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT NUMBER: C2276 PROJECT TITLE: Communications Switching and Control Systems

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 (Continued):											
ULCS PIP											
MCTSSA, Camp Pendleton, CA	WR	OCT 96	80	80	0	0	80	0	0	0	80
DMS											
MCTSSA, Camp Pendleton, CA	WR	OCT 97			0	0	0	33	34	CONT.	CONT.
Subtotal Support and Management					0	0	992	636	635	CONT.	CONT.
Test and Evaluation											
TDN											
JITC, Ft Huachuca, AZ	MIPR	JAN 98			0	0	0	89	89	CONT.	CONT.
DMS											
MCTSSA, Camp Pendleton, CA	WR	OCT 97			0	0	0	327	333	CONT.	CONT.
Subtotal Test and Evaluation					0	0	0	416	422	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

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

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2276
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Communication switching and Control Systems

	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	1,728	1,032	1,078	CONT.	CONT.
Subtotal Support and Management	0	0	992	636	635	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	416	422	CONT.	CONT.
Total	0	0	2,720	2,084	2,135	CONT.	CONT.

C. (U) FUNDING PROFILE: Not Applicable.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C2277 Systems Engineering and Integration	0	14,985	3,312	5,426	4,035	3,991	4,026	4,056	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides funds for engineering, test, and evaluation activity which ensures that the systems being developed within the Program Element (PE) employ consistent standards for interoperability and, to the maximum extent feasible, use hardware and software which is uniform across programs. The Joint Marine Air-Ground Task Force Command, Control, Communications, Computers, and Intelligence Systems Engineering and Integration (JMAGTF C4I SE&I) subproject is a non-acquisition effort which provides centralized planning and execution of MAGTF C4I Systems; it is also used to develop and test common hardware and software for use in MAGTF C4I Systems; Joint Warrior Interoperability Demos (JWID) is a JCS-mandated program to demonstrate new C4I interoperability concepts for the warrior. JWID offers the opportunity for demonstrations of evolving technologies in interoperability, information dissemination, fusing and digital communications; lastly, it funds USMC participation in joint planning and technical standards development. The Joint Interoperability of Tactical Command and Control Systems (JINTACCS) is a Joint Chiefs-of-Staff (JCS)-mandated program for joint testing of data links under the direction of the Joint Interoperability Engineering Organization (JIEO). Global Command and Control Systems (GCCS) consists of Command and Control subsystems which enable the National Command Authorities (NCA),the Joint Staff, and the commanders at appropriate levels to direct and control the operation of U.S. Military forces. Expeditionary Integrated Combat Operations Center (EICOC) development efforts focus on: Cognitive Task Analysis (CTA); enhanced ergonomic physical design; evaluation of advanced software development to support systems integration and advanced battlefield visualization concepts.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($8,312) is contained in PE 0206626M, Marine Corps Command/ Control/ Communications Systems: Project C0045 ($1), TACSIIP; Project C1079 ($3,224), JINTACCS; and Project C2150 ($5,087), MAGTF C4I SE&I.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT NUMBER: C2277 PROJECT TITLE: System Engineering and Integration

2. (U) FY 1997 PLAN:

- (U) ($1,648) Provide system engineering effort to implement the emerging Joint Technical Architecture including development of change proposals to Variable Message Format (VMF), Tactical Air Data Information Links (TADIL) A, B, C, and J, Army Tactical Data Link-1 (ATDL-1), NATO Link 1, Ship to Shore Ship Buffer (SSSB), and the United States Message Text Format (USMTF) as evolving joint standards. Provide joint testing/certification of Command/ Control/ Communications (C3) Systems through the Joint Tactical Air Operations (JTAO) program. Participate in system engineering to provide integrated Theater Missile Defense (TMD). Provide interoperability testing/certification of C4I systems in the MAGTF C4I software and system engineering services to DOD working/steering groups.

- (U) ($649) Maintain/update MAGTF C4I Interoperability Assurance Tool (MIAT).

- (U) ($651) Provide systems engineering services which support mandated Joint interoperability tests and demonstrations, such as Joint Warrior Interoperability Demonstrations, Roving Sands Exercises, and other-Service initiatives not contained in other USMC RDT&E programs.

- (U) ($2,255) Re-engineer legacy C2 systems to the Defense Information Infrastructure (DII) Common Operating Environment (COE) hardware and software environments to improve interoperability in Joint Operations. Ensure the MAGTF C4I Battlelab is populated with the latest versions of fielded TDSs and developing MAGTF C4I systems to provide a development environment which accurately models the system architecture of the Fleet Marine Forces.

- (U) ($1,333) Provide the Marine Corps' share of DII COE development and maintenance costs, systems engineering support to include implementation of the MAGTF C4I configuration management (CM) process.

- (U) ($794) Provide systems engineering effort to centralize management, ensure proper testing, and provide integrated logistics support planning of hardware.

- (U) ($3,558) Forward finances efforts in this project and PE. Develop USMC-unique hardware/software interfaces between JSTARS Common Ground Station (CGS) and MAGTF C4I architecture (Obligation expected in FY 1998). DII COE migration to include enhanced open system, capabilities, distributed directory service, distributed file service with data replication, enhanced security, and modern desktop manger to include user configured icon and toolbars (Obligation expected in FY 1998).

- (U) ($440) Develop PC-client architecture for UNIX-based network server in MAGTF C4I tactical networks.

- (U) ($724) Provide engineering and technical support in support of the configuration management of the MAGTF C4I system. Provide analyses, studies, and reviews in the development of integrated logistics support documents.

- (U) (2700) GCCS: Accelerate improvements for GCCS system interoperability and functionality. Roll functionality from legacy systems within a Marine Corps Combat Operations Center to the GCCS, initially as mission specific applications which are then proposed as enhancements to the Joint GCCS core.

- (U) (233) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638(f)(1).

3. (U) FY 1998 PLANS:

- (U) ($243) Participate in JWID, a JCS-mandated program, to demonstrate new C4I interoperability concepts. JWID-98 offers the opportunity for demonstrations of evolving technologies in interoperability, information dissemination, fusing and digital communications. This effort forward financed with $500 FY97 funds from this project and PE.

- (U) (3,069) COCI - Support transition of the EICOC Advanced Technology Demonstration (ATD) hardware and software developments as Product Improvement Plans (PIPs) to the established MAGTF C4I baseline and ultimately to GCCS.

4. (U) FY 1999 PLANS:

- (U) ($794) Participate in JWID, a JCS-mandated program, to demonstrate new C4I interoperability concepts. JWID-99 offers the opportunity for demonstrations of evolving technologies in interoperability, information dissemination, fusing and digital communications.

- (U) (1,611) COCI - Complete transition of the EICOC ATD hardware/software development as PIPs to the established MAGTF C4I Baseline and ultimately to GCCS.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROGRAM ELEMENT TITLE: Marine Corps Communication System PROJECT NUMBER: C2277 PROJECT TITLE: System Engineering and Integration

- (U) ($250) Perform software tests and exercises with JSTARS CGS and USMC-specific modification.

- (U) ($2,771) Continue COE migration to open systems, distributed directory service, distributed file service with data replication, enhanced security, and modern desktop manger to include user configured icon and toolbars.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	9,211	7,028	9,154
(U) Adjustments from FY 1997 PRESBUD:	0	+5,774	-3,716	-3,728
(U) FY 1998 President's Budget:	0	14,985	3,312	5,426

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 funding adjustment is due to a decrease of $984 for minor affordability changes; $2,700 increase to accelerate improvements for GCCS interoperability and functionability; forward financing efforts in FY 1998 in the amount of $3,558 and a realignment of $500 within Marine Corps programs. FY 1998 and FY 1999 adjustments are due to MAGTF System Engineering and Integration reduced funding levels for Marine Corps unique software interoperability based upon implementation of joint Global Command and Control System (GCCS) hardware and software which incorporate open software architecture design and an increase for the transition of the COCI ATD hardware and software developments.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C2278 Air Defense Weapons Systems	0	809	817	838	865	890	917	944	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project encompasses two sub-element programs which are part of the Integrated Air Defense System for the Marine Corps. (1) The Expeditionary Air Defense System (EADS, formerly known as HAWK) is the Marine Corps' low-to-medium altitude ground based air defense system. Upgrades include mobility enhancements, expeditionary air defense improvements, and Tactical Ballistic Missile (TBM) defense modifications which are in keeping with the Marine Corps' plan to keep HAWK viable until the year 2007. (2) The Pedestal Mounted Stinger (PMS) - Avenger provides low altitude air defense, day-night, adverse weather, shoot-on-the-move capability with gun/missile mix. Its eight ready-to-fire Stinger missiles and .50 caliber machine gun provides the Marine Corps Communications Systems with an enhanced air defense capability beyond the year 2005.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($2,490) is contained in PE 0206623M, Marine Corps Ground Combat/Supporting Arms Systems, Project C1120, ADMS, Subprojects PMS - Avenger ($2,257) and EADS (HAWK) ($233).

FY 1998/FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1996

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2278
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Air Defense Weapons Systems

2. (U) FY 1997 PLAN:

- (U) ($225) EADS: Continue pursuing Engineering Change Proposals (ECP) for correcting hardware and software deficiencies thereby maintaining system viability. Currently scheduled ECPs include Identification Friend or Foe/Continuous Wave Acquisition Radar (IFF/CWAR) integration, CWAR False First Hits, CWAR Bite diagnostics.

- (U) ($579) PMS - Avenger: Upgrade Passive Sensor (Acoustic) and further develop electronic support measures (ESM) Passive Sensor and Forward Looking Infrared Receiver (FLIR) target identification capability; initially look toward integration of the Block I Upgrade Stinger Missile. Achieve MS III decision for Block I upgrade to Avenger.

- (U) ($5) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638 (f)(1).

3. (U) FY 1998 PLAN:

- (U) ($817) EADS: Continue pursuing ECPs for correcting hardware and software deficiencies thereby maintaining system viability.

4. (U) FY 1999 PLAN:

- (U) ($838) EADS: Continue pursuing ECPs for correcting hardware and software deficiencies thereby maintaining system viability.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems

PROJECT NUMBER: C2278
PROJECT TITLE: Air Defense Weapons System

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	4,182	1,643	2,601
(U) Adjustments from FY 1997 PRESBUDG:	0	-3,373	-826	-1,763
(U) FY 1998 President's Budget:	0	809	817	838

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Adjustments in FY 1997 thru FY 1999 due to the deferral of further improvements for the Avenger based upon reduced Marine Corps funding availability and relative operational capability priorities and decreases for minor affordability changes.

(U) Schedule: N/A

(U) Technical: N/A

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2278
PROGRAM ELEMENT TITLE: Marine Corps Communications Systems PROJECT TITLE: Air Defense Weapons Systems

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

	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
(U) PMC Line (BLI# 300600) HAWK MOD	2,977	2,775	3,475	2,018	1,570	1,619	1,669	1,725	CONT.	CONT.
(U) PMC Line (BLI# 301300) PMS - Avenger	19,299	10,544	217	222	229	236	3,690	3,907	CONT.	CONT.
(U) O&M EADS/HAWK	0	0	2,035	1,673	1,233	1,267	1,303	1,344	CONT.	CONT.
(U) O&M PMS - Avenger	0	0	1,114	1,364	1,402	1,439	1,468	1,519	CONT.	CONT.

(U) RELATED RDT&E:
PE 0603216C (Ballistic Missile Defense Organizations, Theater Missile Defense)

D. (U) SCHEDULE PROFILE: See Attached:

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C2315 Training Devices/Simulators	0	3,285	10,772	11,151	11,149	10,313	7,670	7,533	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Training simulators supported by this program element include the Marine Air Ground Task Force (MAGTF) Tactical Warfare Simulation (MTWS), Joint Simulation Systems (JSIMS), Team Tactical Engagement System (TTES), and Range Instrumentation Systems (RIS). These training systems provide tactical weapons and decision-making skill training from entity level through MAGTF staff level. Together these systems will be interoperable with each other and will allow for mission planning, mission rehearsal and concept evaluation in a valid synthetic environment with objective, timely feedback. Through live, virtual and constructive simulation that these systems operate in, the Marine Corps will have the means to jointly train, educate, develop doctrine and tactics; formulate and assess operational plans, assess warfighting situations and define operational requirements

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($2,843) is contained in Program Element 0206626M, Marine Corps Command/Control/Communications Systems, Project C1443, Training Devices/Simulators (Engineering) Program.

2. (U) FY 1997 PLAN:

   - (U) ($1,206) MTWS: Upgrade resident software to achieve improved tactical simulation; man-machine interface; scenario generation, and tactical planning capabilities.

   - (U) ($1,073) MTWS: Achieve an intermediate level of Distributed Interactive Exercise Capabilities and Joint/Combined simulations interoperability and explore telecommunications options.

   - (U) ($962) MTWS: Continue to refine and enhance at intermediate levels, the integration into the Unified Build of Joint/Naval C3I systems. Emphasize Common Tactical Message protocols and automated intelligence interfaces.

   - (U) ($44) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638 (f) (1).

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206313M PROJECT NUMBER: C2315
PROGRAM ELEMENT TITLE: Marine Corps Communications PROJECT TITLE: Training Devices/Simulators

3. (U) FY 1998 PLAN:
   - (U) ($6,542) JSIMS: Provide technical development expertise to the US Army, US Navy and the US Air Force in the development of the Marine Corps unique specific simulation requirements within the JSIMS Land, Maritime, and Air/Space Domains.
   - (U) ($1,800) JSIMS: Provide Marine Corps portion to the Joint program office to provide for the development of the Joint Mission Space Model and the scenario generator as well as the integration of the mission space objects into the resident baseline software.
   - (U) ($880) JSIMS: Conduct initial verification and validation of the resident baseline software.
   - (U) ($1,000) TTES: Team Target Engagement Simulator (TTES) initiate hardware development of advance development model.
   - (U) ($250) TTES: Begin integration of TTES with family of Marine Corps simulators.
   - (U) ($300) RIS: RIS evaluation; begin system development and integration efforts to other tactical simulators.

4. (U) FY 1999 PLAN:
   - (U) ($913) JSIMS: Achieve initial level of functionality within the resident software to provide an integrated joint warfare functionality and automated C4I interfaces that supports training of JTF Battlestaffs.
   - (U) ($6,530) JSIMS: Upgrade the resident software to improve the tactical simulation, man-machine interface, and the after-action capability of the system.
   - (U) ($1,900) JSIMS: Upgrade the common core services to achieve improved levels of interaction with C4I systems, upgrade of the scenario generator and the communications infrastructure.
   - (U) ($1,008) TTES: Complete DEMVAL hardware development of TTES, test and evaluate, prepare for MSII.
   - (U) ($250) TTES: Continue integration of TTES as common architecture baseline for developing multiple simulator concepts.
   - (U) ($550) RIS: Continue integration efforts and prepare for MS III.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206313M
PROGRAM ELEMENT TITLE: Marine Corps Communication Systems

PROJECT NUMBER: C2315
PROJECT TITLE: Training Devices/Simulators

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	+3,285	+10,772	+11,151
(U) FY 1998 President's Budget:	0	3,285	10,772	11,151

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Adjustments are due to realignment of Command, Control, Communications, Computers and Intelligence (C4I) programs within the Marine Corps. This was due to the maturity and criticality of the warfighting deficiency.

(U) Schedule: N/A

(U) Technical: N/A

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

	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
(U) PMC Line (BLI# 653200) Training Devices/Simulators	54,998	47,767	10,585	2,067	15,215	16,124	36,058	43,150	CONT.	CONT.

(U) RELATED RDT&E: PE 0603832D, Joint Simulation Management USA/USN/USAF/JPO

D. (U) SCHEDULE PROFILE: (See Attached)

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0201623M

PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/Supporting Arms 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 2001 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C0021	Assault Amphibious Vehicle 7A1 (AAV7A1) Program									
	937	922	249	277	404	416	367	378	CONT.	CONT.
C1120	Air Defense Missile System									
	7,441	0	0	0	0	0	0	0	0	71,162
C1555	Light Armored Vehicle (LAV) Program									
	1,323	1,357	1,875	1,920	3,024	1,771	1,822	1,879	CONT.	CONT.
C1901	Marine Corps Ground Weaponry Product Improvement Program									
	1,438	1,506	4,568	7,787	6,859	5,640	2,077	2,140	CONT.	CONT.
C2086	Soldier/Marine Enhancement									
	3,300	1,813	2,594	2,119	2,541	2,853	2,936	3,026	CONT.	CONT.
C2237	Amphibious Vehicle Test Branch (AVTB)									
	0	1,650	1,944	1,992	2,058	2,118	2,179	2,247	CONT.	CONT.
C2317	All Services Combat Identification Evaluation Team (ASCIET)									
	0	1,247	1,338	1,375	1,423	1,473	1,525	1,582	CONT.	CONT.
C2320	Light Armored Combat System (LACS)									
	0	0	0	0	0	8,812	10,501	11,492	44,661	75,466
TOTAL	14,439	8,495	12,568	15,470	16,309	23,083	21,407	22,744	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This PE provides modification to Marine Corps Expeditionary Ground Force Weapons Systems to increase lethality, range, survivability, and operational effectiveness. It also provides for the development of AAV7A1 reliability and safety modifications, improvements in command and control in the ADMS, product improvements to the family of LAVs, and the development effort for the LAV-AD variant. The AVTB provides facilities and personnel which perform a broad range of testing, repair and technical services to amphibious vehicles.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/Supporting Arms Systems

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C0021 Assault Amphibious Vehicle 7A1 (AAV7A1) Modification Kits Sustainment Program	937	922	249	277	404	416	367	378	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program was formerly titled AAV7A1 Program. The AAV7A1 Modification Kits Sustainment Program provides for the development and fielding of reliability and safety improvements to the AAV7A1 family of vehicles. In conjunction with this effort is the integration of the Single Channel Ground-Air Radio System (SINCGARS) radios, Improved Transmission/Improved Reliability and Maintainability (ITRANS/IRAM) transmissions, and upgraded engine and suspension efforts, providing direct improvements to the current fleet.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($308) Continued integration of the Bradley Fighting Vehicle (BFV) 525 Hp de-tuned engine into the AAV7A1.
- (U) ($34) Completed AAV7A1 antenna co-site interference testing and continue providing engineering support for problem resolution.
- (U) ($470) Provided engineering support for reliability and safety related improvements and modifications.
- (U) ($75) Conducted operational validation/verification (V/V) of engine/transmissions.
- (U) ($50) Conducted water operations/safety evaluation of the Bradley derivative suspension.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROJECT NUMBER: C0021

PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT TITLE: AAV7A1 Modification Kits Sustainment Program

2. (U) FY 1997 PLAN:

- (U) ($85) Continue providing engineering support for the transmission end-cap reconfiguration and test.
- (U) ($350) Continue providing engineering support for reliability and safety related improvements and modifications.
- (U) ($25) Continue providing engineering support for electromagnetic/interference problems.
- (U) ($345) Continue integration/development testing of Bradley Fighting Vehicle engine integration. modifications.
- (U) ($100) Reliability/durability testing of transmissions.
- (U) ($17) 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) ($249) Continue providing engineering support for reliability and safety related improvements and modifications.

4. (U) FY 1999 PLAN:

- (U) ($277) Continue providing engineering support for reliability and safety related improvements and modifications.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C0021
PROJECT TITLE: AAV7A1 Modification Kits Sustainment Program

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	964	1,021	1,053	1,077
(U) Adjustments from FY 1997 PRESBUD:	-27	-99	-804	-800
(U) FY 1998 President's Budget:	937	922	249	277

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 funding/program was adjusted to reflect "fact of life" changes. FY1998/1999 funding reductions are due to fiscal constraints and a redefinition of the program.

(U) Schedule: This project underwent a program re-definition. The AAV7A1 Program has been downgraded to the AAV7A1 Modification Kits Sustainment Program; a support program providing only minimal reliability and safety related improvements until the successor vehicle the Advanced Amphibious Assault Vehicle (AAAV) is fielded. Efforts were reduced in scope to eliminate formal Developmental Testing of subsystems and reduce engineering validation.

(U) Technical: Not Applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C0021 PROJECT TITLE: AAV7A1 Modification Kits Sustainment Program

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) PMC (BLI# 202100) AAV7A1 Product Improvement Program	11,533	13,980	13,520	13,784	2,630	2,712	2,978	3,077	CONT.	CONT.
(U) PMC (BLI# 206300) Modification Kits (Tracked Vehicles)	16,772	480	4,483	10,965	17,918	17,683	21,540	2,078	0	140,124

(U) RELATED RDT&E: PE 0603611M (Marine Corps Assault Vehicles)

D. (U) SCHEDULE PROFILE: Not applicable.

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FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206623M

PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems

PROJECT NUMBER: C0021

PROJECT TITLE: AAV7A1 Modification Kits Sustainment Program

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Contractor Engineering Support	472	527	240	269
b. Government Engineering Support	459	385	0	0
c. Ancillary Hardware Development	0	0	0	0
d. Product Development/Program Management Support	6	10	9	8
Total	937	922	249	277

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN DATE: September 1996

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROJECT NUMBER: C0021
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT TITLE: AAV7A1 Modification Kits Sustainment 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 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
JSC, Annapolis, MD											
	MIPR	Various	184	184	150	34	0	0	0	0	184
TACOM, Warren, MI											
	MIPR	VARIOUS			18,488	309	285	0	0	CONT.	CONT.
NOC PacDiv, Fallbrook, CA											
	RCP/WR	VARIOUS	42	42	42	0	0	0	0	0	42
MCLB, Albany, GA											
	WR	Various			1,505	79	0	0	0	CONT.	CONT.
MISC (Includes MCCDC, QUANTICO, VA and MCLB, Barstow, CA)											
	VARIOUS	VARIOUS			2,446	6	10	9	8	CONT.	CONT.
Total Product Development					22,631	428	295	9	8	CONT.	CONT.

FY 1998/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems

PROJECT NUMBER: C0021
PROJECT TITLE: AAV7A1 Modification Kits Sustainment Program

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											
VSE, Alexandria, VA	SS/CPFF	1ST QTR	26,585	26,585	26,585	0	0	0	0	0	26,585
AERA, Arlington, VA	C/CPFF	Various			484	460	527	240	269	CONT.	CONT.
Total Support and Management					27,069	460	527	240	269	CONT.	CONT.
Test and Evaluation											
MISC (Includes MCCDC, QUANTICO, VA)	VARIOUS	VARIOUS	6,396	6,396	6,396	0	0	0	0	0	6,396
TBD	MIPR	4TH QTR			6	0	0	0	0	CONT.	CONT.
AVTB	WR	4TH QTR			0	49	100	0	0	CONT.	CONT.
Total Test and Evaluation					6,402	49	100	0	0	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROJECT NUMBER: C0021
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT TITLE: AAV7A1 Modification Kits Sustainment Program

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	22,631	428	295	9	8	CONT.	CONT.
Subtotal Support and Management	27,069	460	527	240	269	CONT.	CONT.
Subtotal Test and Evaluation	6,402	49	100	0	0	CONT.	CONT.
Total Project	56,102	937	922	249	277	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/Supporting Arms 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	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
C1555 Light Armored Vehicle (LAV) Program	1,323	1,357	1,875	1,920	3,024	1,771	1,822	1,879	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The family of LAVs consists of six fielded configurations with operational capabilities providing significant enhancement to the mobility and firepower of the Marine Air-Ground Task Force (MAGTF). Since the original urgency of need dictated the fielding of essentially off-the-shelf vehicles, this project provides the resources to evaluate, develop, and test designated pre-planned product improvements. This program has the single goal of ensuring the maximum reliability/capability for the fielded family of LAVs.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

(U) ($769) Completed developmental testing of LAV Mobility Block Improvements.

(U) ($206) Conducted study of Current LAV System Enhancements/Improvements.

(U) ($190) Continued development of LAV Capabilities Improvements.

(U) ($158) Evaluated Sub-Caliber Training Device Prototype

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROJECT NUMBER: C1555
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT TITLE: Light Armored Vehicle (LAV) Program

2. (U) FY 1997 PLAN:

(U) ($667) Continue Development of the Light Armored Combat System.

(U) ($350) Evaluate Current LAV System Enhancements/Improvements.

(U) ($338) Continue Development of New LAV Capabilities Improvements.

(U) ($2) 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) ($1025) Continue Development of Light Armored Combat System.

(U) ($450) Continue Evaluation of Current LAV System Enhancements/Improvements.

(U) ($400) Continue Development of New LAV Capabilities Improvements.

4. (U) FY 1999 PLAN:

(U) ($1150) Continue Development of Light Armored Combat System.

(U) ($300) Continue Evaluation of Current LAV System Enhancements/Improvements.

(U) ($470) Evaluate New LAV Capabilities Improvements.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C1555
PROJECT TITLE: Light Armored Vehicle (LAV) Program

B.(U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	1,447	1,438	1,441	1,432
(U) Adjustment from FY 1997 PRESBUD:	- 124	- 81	43 4	488
(U) FY 1998 President's Budget:	1,323	1,357	1,875	1,920

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 and FY 1997 adjustment are due to undistributed congressional reductions and revised economic assumptions. FY 1998 and FY 1999 funding was increased $434 and $488, respectively, in order to support increased activity in the study, evaluation, and testing of the LAV Armor and Suspension System Upgrades and the LAV Firepower and Armaments Improvements.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROJECT NUMBER: C1555
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ PROJECT TITLE: Light Armored Vehicle Supporting Arms Systems (LAV) Program

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

	FY 1996 ACTUAL	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY2000 ESTIMATE	FY2001 ESTIMATE	FY2002 ESTIMATE	FY2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) PMC (BLI# 203800)	LAV-PIP									
	22,364	7,654	600	1,410	1,704	1,321	1,662	1,966	CONT.	CONT.
(U) PMC (BLI# 203900)	LAV --	(LAV-AD)								
	0	0	6,727	0	0	0	0	0	0	6,727

(U) RELATED RDT&E: Not Applicable.

D. (U) SCHEDULE PROFILE: See attached.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/Supporting Arms Systems
(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C1901 Marine Corps Ground Weaponry PIP	1,438	1,506	4,568	7,787	6,859	5,640	2,077	2,140	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops joint and Marine Corps unique improvements to infantry weapons/artillery technology; Marine Corps unique Amphibious Armor Systems (AAS) improvements for the M1A1 Main Battle Tank and support systems; and monitors national/international weapons developments.

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($656) Continued joint participation and Marine Corps unique activities for evaluation of safety, technology and lethality improvements for Marine Corps infantry/reconnaissance weapons and night vision devices. Pursued improvements in accuracy, reliability, and maintainability of the current service rifle, special operations and crew served weapons.

- (U) ($599) Continued joint evaluation and Marine Corps activities for modifications of safety, software and technology improvements for artillery and fire support systems. These activities include a product improvement to the Firefinder AN/TPQ-36 radar, joint participation in the Meteorological Measuring Set (MMS), and evaluation of non-developmental item (NDI) hydrogen generators. Participated jointly with the Army in investigations to improve field survey equipment and M198 Howitzer improvements for sustainment.

- (U) ($183) Continued joint and Marine Corps unique evaluation of modifications for amphibious armor. This included improvements to the M88 Improved Recovery Vehicle (IRV), the Self Cleaning Air Filter (SCAF), wire race ring integration study (the turret turns on a wire race ring instead of bearings), Armament Enhancement Initiative (AEI), Halon replacement, Armored Vehicle Launched Bridge (AVLB) upgrade and other technology improvements to the M1A1 tank, M88 Improvement Recovery Vehicle (IRV) and the Armored Vehicle Launched Bridge (AVLB).

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C1901 PROJECT TITLE: Marine Corps Ground Weaponry PIP

2. (U) FY 1997 PLAN:

- (U) ($780) Continue joint participation and Marine Corps unique activities for evaluation of safety, technology and lethality improvements for Marine Corps infantry/reconnaissance weapons and night vision devices. Pursue improvements in accuracy, reliability, and maintainability of the current service rifle, special operations and crew served weapons. Begin development and testing for Infrared Laser Pointer (ILP) and complete development/operational testing and program documentation for the .50 Cal Heavy Machine Gun Quick Change Barrel and Blank Firing Adapter. Pursue improvements in accuracy, reliability, and maintainability of the current service rifle, special operations and crew served weapons.

- (U) ($601) Continue joint participation for artillery and fire support improvements. Continue M198 Howitzer and Modular Universal Laser Equipment (MULE)sustainment, alternatives for Hydrogen generators, Position Azimuth Determination System (PADS) replacement and field survey improvements.

- (U) ($111) Continue joint evaluation of modifications of amphibious armor including Gen II Fire Control Systems, carbon dioxide fire control systems and others.

- (U) ($14) 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) ($229) Operational testing and procurement documentation for the LAV/AAV procurement of the Armored Vehicle Drivers' Thermal Viewers.

- (U) ($246) Continue joint evaluation of modifications of amphibious armor including CO_2, Advanced Fire Control System, survivability systems and others.

- (U) ($2,114) Continue to reduce technical performance risk for Target Location Designator Hand-off System (TLDHS) and refine system performance specifications through the integration and evaluation of domestic and foreign hardware candidates. Continue to refine and enhance system software to improve system performance and ensure interoperability with tactical communications systems and weapons platforms. Competitively select and subsequently develop production-ready system prototypes for evaluation.

- (U) ($623) Continue joint participation for artillery and fire support improvements. Continue joint participation on M198 Howitzer sustainment, PADS replacement, Survey Information Center (SIC) shelters, and alternatives for hydrogen generators.
- (U) ($1,003) Continue joint participation and Marine Corps unique activities for evaluation of safety, technology and lethality improvements for Marine Corps infantry/reconnaissance weapons and night vision devices. Continue improvements in accuracy, reliability, and maintainability of the current service rifle, special operations and crew served weapons. Complete developmental/operational testing for ILP. Begin testing and program documentation for Mortar Ballistic Computer (MBC).
- (U) ($213) Continue joint participation and Marine Corps unique activities for development of the Thermal Weapon Sight Program (TWS).
- (U) ($50) Gun Laying Position System (GLPS): Initiate Marine Corps unique life cycle cost estimates and logistics support documentation.
- (U) ($90) Meterological Hydrogen Generator (MHG): Initiate Marine Corps unique life cycle cost estimates and logistics support documentation.

4. (U) FY 1999 PLAN:
   - (U) ($236) Integrated Logistics Documentation and testing for the LAV/AAV procurement of the Armored Vehicle Drivers' Thermal Viewers.
   - (U) ($253) Continue joint evaluations of modifications of amphibious armor including inbore subcaliber training device, CO^2, Razorback, Advanced Fire Control Systems, survivability systems and others.
   - (U) ($3,791) Conduct Operational Testing and Evaluation of competitively selected system prototype. Concurrently identify and evaluate off-the-shelf laser designators for subsequent integration into the system design as a pre-planned product improvement for the TLDHS.

   (U) ($1,203) Continue joint participation for artillery and fire support improvements. Continue joint participation on M198 Howitzer sustainment, PADS replacement, Survey Information Center (SIC) shelters, and alternatives for hydrogen generators.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C1901 PROJECT TITLE: Marine Corps Ground Weaponry PIP

- (U) ($1,581) Continue joint participation and Marine Corps unique activities for evaluation of safety, technology, lethality, accuracy reliability and maintainability improvements of Marine Corps Infantry /Reconnaaissance weapons, night vision devices and crew served weapons. Continue program development on MBC.
- (U) ($60) GLPS: Continue unique Marine Corps life cycle cost and integrated logistics support development.
- (U) ($50) MHG: Complete unique Marine Corps life cycle cost estimates and integrated logistics support documentation.
- (U) ($613) Conduct Operational Testing and Evaluation of TWS.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget	1,591	1,653	2,957	3,422
(U) Adjustments from FY 1997 PRESBUDG:	- 153	- 147	+1,611	+4,365
(U) FY 1998 President's Budget:	1,438	1,506	4,568	7,787

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Decrease of $153 in FY 96 is due to decrease in cost of M88 IRV testing. Decrease of $147 in FY97 due to minor program changes. Increase of +1,611 in FY98 and +4,365 in FY99 are due to the addition of the THLDS, TWS, MHG and GLPS programs.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C1901 PROJECT TITLE: Marine Corps Ground Weaponry PIP

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	ACTUAL PROGRAM
(U) PMC (BLI#206300) Modification Kits (Trk Veh)	16,772	480	4,483	10,965	17,918	17,683	21,540	2,078	CONT.	CONT.
(U) PMC (BLI#220900) Modification Kits (Artillery and other)	109	1,112	1,787	2,637	1,697	1,431	1,175	1,215	CONT.	CONT.
(U) PMC (BLI#493000) Near Infrared FAC Pointer (ILP)	0	0	0	837	0	0	0	0	0	837
(U) PMC (BLI#473300) Mortar Ballistic Computer (MBC)	0	0	0	0	0	3,066	0	0	0	3,066
(U) PMC (BLI#473300) Target Location Designation and Hand-off System (TLDHS)	0	0	0	0	4,381	12,108	12,829	11,795	CONT.	CONT.
(U) PMC (BLI#493000) Thermal Weapon Sight (TWS)	0	0	0	0	27,734	28,581	29,460	25,761	CONT.	CONT.
(U) PMC (BLI#219700) Meteorological Hydrogen Generator	0	0	0	0	0	3,069	0	0	0	3,069
(U) PMC Line (BLI#219800) Gun Laying Positioning System	0	0	0	0	0	13,132	13,708	0	0	26,840

(U) RELATED RDT&E:

(U) All Ground Weapons and Ground Ammunition systems: Army, Navy, Air Force, Coast Guard and Commander in Chief, Special Operations Command.

D. (U) SCHEDULE PROFILE: See attached.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/Supporting Arms Systems
(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C2086 Marine Enhancement Program (MEP)	3,300	1,813	2,594	2,119	2,541	2,853	2,936	3,026	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program was formerly titled Soldier/Marine Enhancement. MEP provides Research, Development, Test and Evaluation funding for low visibility, low cost items. It focuses on items of equipment which will benefit the individual Marine by reducing the load, increasing survivability, enhancing safety and improving combat effectiveness. The emphasis of the program is on nondevelopmental/commercially available items which can be quickly evaluated and fielded. This program is coordinated with the Army's Soldier Enhancement Program and the Special Operations Command.

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,031) Continued to explore NDI equipment that will improve the combat effectiveness and enhance the safety and survivability of the individual Marine.
- (U) ($1,269) Explored clothing and individual equipment NDI categories.
- (U) ($1,000) Explored ground weapons, communications, and command and control equipment NDI categories.

2. (U) FY 1997 PLAN:

- (U) ($548) Continue to explore NDI equipment that will improve the combat effectiveness and enhance the safety and survivability of the individual Marine.19

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C2086
PROJECT TITLE: Marine Enhancement Program (MEP)

- (U) ($815) Continue to explore clothing and individual equipment NDI categories.
- (U) ($450) Continue to explore ground weapons, communications, and command and control equipment NDI categories.

3. (U) FY 1998 PLAN:

- (U) ($963) Continue to explore clothing and individual equipment NDI categories.
- (U) ($830) Continue to explore NDI equipment that will improve the combat effectiveness and enhance the safety and survivability of the individual Marine.
- (U) ($801) Continue to explore ground weapons, communications, and command and control equipment NDI categories.

4. (U) FY 1999 PLAN:

- (U) ($612) Continue to explore NDI equipment that will improve the combat effectiveness and enhance the safety and survivability of the individual Marine.
- (U) ($525) Continue to explore ground weapons, communications, and command and control equipment NDI categories.
- (U) ($982) Continue to explore clothing and individual equipment NDI categories.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems

PROJECT NUMBER: C2086 PROJECT TITLE: Marine Enhancement Program (MEP)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget	3,167	1,448	1,562	1,599
(U) Adjustments from FY 1997 PRESBUDG:	+ 133	+365	+1,032	+520
(U) FY 1998 President's Budget:	3,300	1,813	2,594	2,119

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 increase of $133 is due to minor affordability changes. FY 1997 increase of $365 is due to the addition of funds for body armor. FY 1998/1999 increases of $1,032 and $520 respectively are for increases of MEP and Initial Issue items.

(U) Schedule: Due to the FY 1996 funding increase, there are corresponding adjustments to levels of effort. Program schedules have been adjusted to accommodate funding changes and efforts remain on schedule.

(U) Technical: Not Applicable.

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

	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
(U) PMC (BLI#221100) Marine Enhancement Program (MEP)	0	7,682	1,513	2,114	1,832	11,268	11,619	1,761	CONT.	CONT.
(U) PMC (BLI#494000) Marine Enhancement Program (MEP)	1,601	0	0	0	0	0	0	0	0	1,601
(U) O&M Initial Issue	26,321	42,606	24,959	25,659	26,376	27,114	27,872	28,655	CONT.	CONT.

(U) RELATED RDT&E: PE 0604713A (Combat Feeding, Clothing and Equipment)

D. (U) SCHEDULE PROFILE: Not Applicable.

FY 1998/FY99 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206623M

PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems

PROJECT NUMBER: C2086

PROJECT TITLE: Marine Enhancement Program (MEP)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Systems Engineering	330	157	159	118
b. Development Test and Evaluation	702	371	600	404
c. Program Management Support	471	284	476	386
d. Integrated Logistics Support	524	281	523	453
e. Test Samples	165	166	305	252
f. Government Engineering Support	536	371	320	254
g. Miscellaneous	572	183	211	252
Total	3,300	1,813	2,594	2,119

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C2086 PROJECT TITLE: Marine Enhancement Program (MEP)

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											
Lexington-Bluegrass, Lexington, KY	WR	1st Qtr			2,181	90	45	51	35	CONT.	CONT.
NOC PacDiv, Fallbrook, CA	WR	1st Qtr			42	45	45	51	36	CONT.	CONT.
MCTSSA, Camp Pendleton, CA	WR/RCP	1st Qtr			520	64	14	16	12	CONT.	CONT.
NCTRF, Aberdeen, MD	WR/RCP	1st Qtr			247	7	22	23	25	CONT.	CONT.
NATICK, Natick, MA	MIPR	2nd Qtr			953	154	109	112	115	CONT.	CONT.
ARL/APG, Aberdeen, MD	MIPR	1st Qtr			235	0	3	4	5	CONT.	CONT.
PM MORTAR, Ft. Monmouth, NJ	MIPR	1st Qtr	544	542	0	2	0	0	0	544	
PPSC, Philadelphia, PA	MIPR	3rd Qtr	13	13	6	6	1	0	0	0	13

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C2086
PROJECT TITLE: Marine Enhancement Program (MEP)

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 (continued)											
MCAGCC, Twenty-nine Palms, CA	WR/RCP	1st Qtr	104	104	87	14	3	0	0	0	104
NSMA, Washington, DC	MIPR	1st Qtr	175	175	68	73	16	18	0	0	175
TACOM, Warren, MI	MIPR	1st Qtr	75	75	25	25	5	20	0	0	75
NHRC, Crane, IN	MIPR	2nd Qtr			200	135	30	34	23	CONT.	CONT.
2ND MARDIV, Camp LeJeune, NC	WR	1st Qtr			54	7	3	5	5	CONT.	CONT.
NCCOSC, San Diego, CA	WR	1st Qtr			169	12	12	14	9	CONT.	CONT.
NCSS, Panama City, FL	WR	1st Qtr			1,858	4	4	20	10	CONT.	CONT.
NSWC, Crane, IN	WR	1st Qtr			1,688	57	174	191	173	CONT.	CONT.
NAWC Air Division, Patuxent River, MD	WR	1st Qtr			76	65	59	67	46	CONT.	CONT.

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

BUDGET ACTIVITY:7 PROGRAM ELEMENT : 0206623M ROJECT NUMBER: C2086
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ PROJECT TITLE: Marine Enhancement Supporting Arms Systems Program (MEP)

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 (continued)											
II MEF, Camp LeJeune, NC	WR	1st Qtr	80	80	68	5	2	5	0	0	80
NFESC, San Diego, CA	MIPR	2nd Qtr	344	344	340	0	4	0	0	0	344
NSWC IHD, Indian Head, MD	WR	4th Qtr	164	164	162	0	2	0	0	0	164
MISC	Various	Various			4,268	0	7	20	13	CONT.	CONT.
Total Product Development					13,789	763	562	651	507	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C2086
PROJECT TITLE: Marine Enhancement Program (MEP)

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											
MCCDC, Quantico, VA	WR	1st Qtr			1,847	83	61	88	72	CONT.	CONT.
MISC	Various	Various			4,266	84	59	95	60	CONT.	CONT.
Total Support and Management					6,113	167	120	183	132		

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C2086
PROJECT TITLE: Marine Enhancement Program (MEP)

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
Test and Evaluation											
MCTSSA, Camp Pendleton, CA	WR/RCP	1st Qtr			1,525	201	48	54	37	CONT.	CONT.
NCTRF, Aberdeen, MD	WR/RCP	1st Qtr			816	25	5	5	3	CONT.	CONT.
NATICK, Natick, MA	MIPR	2nd Qtr			1,658	271	314	452	450	CONT.	CONT.
ARL/APG, Aberdeen, MD	MIPR	1st Qtr			775	0	12	14	9	CONT.	CONT.
PM MORTAR, Ft. Monmouth, NJ	MIPR	1st Qtr	1,803	1,803	1,795	0	8	0	0	0	1,803
PPSC, Philadelphia, PA	MIPR	3rd Qtr	46	46	18	19	5	4	0	0	46
MCAGCC, Twenty-nine Palms, CA	WR/RCP	1st Qtr			286	44	10	11	8	CONT.	CONT.
NSMA, Washington, DC	MIPR	1st Qtr			220	232	55	62	43	CONT.	CONT.
TEXCOM, Warren, MI	MIPR	1st Qtr			81	78	19	21	15	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C2086
PROJECT TITLE: Marine Enhancement Program (MEP)

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
Test and Evaluation (continued)											
NHRC, Crane, IN	MIPR	2nd Qtr			648	526	83	216	280	CONT.	CONT.
2ND MARDIV, Camp LeJeune, NC	WR	1st Qtr			177	23	12	12	10	CONT.	CONT.
NCCOSC, San Diego, CA	WR	1st Qtr			557	40	41	46	31	CONT.	CONT.
NCSS, Panama City, FL	WR	1st Qtr			6,149	14	14	15	15	CONT.	CONT.
NSWC, Crane, IN	WR	1st Qtr			5,573	428	298	461	375	CONT.	CONT.
NAWC Air Division, Patuxent River, MD	WR	1st Qtr			245	205	175	163	154	CONT.	CONT.
II MEF, Camp LeJeune, NC	WR	1st Qtr	5,506	5,506	5,484	14	8	0	0	0	5,506
NFESC, San Diego, CA	MIPR	2nd Qtr	1,139	1,139	1,123	0	16	0	0	0	1,139
NSWC IHD, Indian Head, MD	WR	4th Qtr			538	0	8	10	10	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C2086 PROJECT TITLE: Marine Enhancement Program (MEP)

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
Test and Evaluation (continued)											
MISC	Various	Various			8,530	250	0	214	40	CONT.	CONT.
Total Test and Evaluation					36,198	2,370	1,131	1,760	1,480	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not Applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C2086
PROJECT TITLE: Marine Enhancement Program (MEP)

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	13,789	763	562	651	507	CONT.	CONT.
Subtotal Support and Management	6,113	167	120	183	132	CONT.	CONT.
Subtotal Test and Evaluation	36,198	2,370	1,131	1,760	1,480	CONT.	CONT.
Total Project	56,100	3,300	1,813	2,594	2,119	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C2237
PROJECT TITLE: Amphibious Vehicle Test Branch

(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
C2237 Amphibious Vehicle Test Branch (AVTB)	0	1,650	1,944	1,992	2,058	2,118	2,179	2,247	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project was formerly titled Advanced Amphibious Test Directorate (AATD). The AVTB is a one-of-a-kind Department of Defense Test Facility for amphibious vehicles and supports the requirements of all services. The AVTB conducts developmental, combined developmental/operational, and follow-on testing and evaluation of production hardware. It also conducts Product Assurance Testing and substitute or alternative parts and material testing for amphibious vehicles and associated equipments. Because of its year-round temperate climate, diverse terrain, and 17 miles of coastline, the AVTB is ideal for amphibious vehicle, as well as ship related testing. The AVTB is in close proximity to San Clemente island which is used frequently for live fire sea-to-shore testing and high-speed water testing. The AVTB is committed to testing product improvement programs, engineering change proposal design changes, and field change requests.

(U) PROGRAM ACCOMPLISHMENTS:

1. (U) FY 1996 ACCOMPLISHMENTS: Funding ($1,816) is contained in PE 0603611M, Project C2237, AVTB.

2. (U) FY 1997 PLAN :
   - (U) ($357) Provide for program support, supplies, and services at AVTB test site to support scheduled Assault Amphibious Vehicle 7A1 (AAV7A1) "rebuild to standard" testing, Advanced Amphibious Asault Vehicle (AAAV) Developmental Testing as well as other Marine Corps mobility and mine warfare programs. Provide on-site support, supplies, and services to support Naval Sea Systems Command and Naval Mine Warfare Command for developmental testing of Navy mine countermeasures systems. Provide services and support to the Department of Defense Common Test and Training Range Architecture workshops. These funds provide organic supply support including management operations, general accounting, and a maintenance float of equipment. Provide intermediate maintenance (third echelon) of organic non-developmental communications electronic and ordnance equipment.

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

Date: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206623M

PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems

PROJECT NUMBER: C2237

PROJECT TITLE: Amphibious Vehicle Test Branch

- (U) ($200) Provide funding for necessary services provided by Marine Corps Base, Camp Pendleton (MCB CAMPEN), California and off-station units for electricity, heating and other power charges; long distance telephone support; and calibration of laboratory test equipment and maintenance equipment.

- (U) ($1,093) Provide AVTB personnel civilian salaries to support scheduled AAV7A1 and AAAV Developmental Testing. Plan and conduct Developmental Tests and report results, identifying any unresolved test issues in accordance with approved test plans and procedures. Prepare analysis of field-reported problems as received. Provide recommendations pertaining to design requirements which affect both operational effectiveness and operation suitability. Perform all echelons of maintenance on developmental items, including all on-hand assets of assault amphibious vehicles, within the capabilities of on-hand personnel, tools, test, and measuring equipment and facilities. Provide technical assistance and recommendations in the test of substitute or alternate parts and materials. Prepare technical analysis of proposed product improvements as requested. Prepare analysis of proposed engineering changes. Conduct hardware testing and evaluation of design changes, including verification of both the design and the technical data in accordance with approved test plans and procedures. Provide technical assistance in writing and revision of Technical Manuals. Provide technical reviews and recommendations regarding proposed Modification, Technical, Retrofit Instructions, and Retrofit Kit Hardware.
Provide Testing expertise to Program Managers to assist in program acquisition strategy development. Provide Technical reviews and recommendation on Test and Evaluation Master Plans (TEMP's) and Detailed Test Plans for Program Managers. Provide technical input as the Marine Corp Developmental Testing representative to the Department of Defense Common Test and Training Range Architecture workshops.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C2237 PROJECT TITLE: Amphibious Vehicle Test Branch (AVTB)

2. (U) FY 1998 PLAN:

- (U) ($476) Provide for program support, supplies, and services at AVTB test site to support scheduled Assault Amphibious Vehicle 7A1 (AAV7A1) "rebuild to standard" testing, Advanced Amphibious Asault Vehicle (AAAV) Developmental Testing as well as other Marine Corps mobility and mine warfare programs. Provide on-site support, supplies, and services to support Naval Sea Systems Command and Naval Mine Warfare Command for developmental testing of Navy mine countermeasures systems. Provide services and support to the Department of Defense Common Test and Training Range Architecture workshops. These funds provide organic supply support including management operations, general accounting, and a maintenance float of equipment. Provide intermediate maintenance (third echelon) of organic non-developmental communications electronic and ordnance equipment.

- (U) ($275) Provide funding for necessary services provided by Marine Corps Base, Camp Pendleton (MCB CAMPEN), California and off-station units for electricity, heating and other power charges; long distance telephone support; and calibration of laboratory test equipment and maintenance equipment.

- (U) ($1,193) Provide AVTB personnel civilian salaries to support scheduled AAV7A1 and AAAV Developmental Testing.Plan and conduct Developmental Tests and report results, identifying any unresolved test issues in accordance with approved test plans and procedures. Prepare analysis of field-reported problems as received. Provide recommendations pertaining to design requirements which affect both operational effectiveness and operation suitability. Perform all echelons of maintenance on developmental items, including all on-hand assets of assault amphibious vehicles, within the capabilities of on-hand personnel, tools, test, and measuring equipment and facilities. Provide technical assistance and recommendations in the test of substitute or alternate parts and materials. Prepare technical analysis of proposed product improvements as requested. Prepare analysis of proposed engineering changes. Conduct hardware testing and evaluation of design changes, including verification of both the design and the technical data in accordance with approved test plans and procedures. Provide technical assistance in writing and revision of Technical Manuals. Provide technical reviews and recommendations regarding proposed Modification, Technical, Retrofit Instructions, and Retrofit Kit Hardware. Provide Testing expertise to Program Managers to assist in program acquisition strategy development. Provide Technical reviews and recommendation on Test and Evaluation Master Plans (TEMP's) and Detailed Test Plans for Program Managers. Provide technical input as the Marine Corp Developmental Testing representative to the Department of Defense Common Test and Training Range Architecture workshops.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems
PROJECT NUMBER: C2237
PROJECT TITLE: Amphibious Vehicle Test Branch (AVTB)

3. (U) FY 1999 PLAN :

- (U) ($508) Provide for program support, supplies, and services at AVTB test site to support scheduled Assault Amphibious Vehicle 7A1 (AAV7A1) "rebuild to standard" testing, Advanced Amphibious Asault Vehicle (AAAV) Developmental Testing as well as other Marine Corps mobility and mine warfare programs. Provide on-site support, supplies, and services to support Naval Sea Systems Command and Naval Mine Warfare Command for developmental testing of Navy mine countermeasures systems. Provide services and support to the Department of Defense Common Test and Training Range Architecture workshops. These funds provide organic supply support including management operations, general accounting, and a maintenance float of equipment. Provide intermediate maintenance (third echelon) of organic non-developmental communications electronic and ordnance equipment.

- (U) ($283) Provide funding for necessary services provided by Marine Corps Base, Camp Pendleton (MCB CAMPEN), California and off-station units for electricity, heating and other power charges; long distance telephone support; and calibration of laboratory test equipment and maintenance equipment.

- (U) ($1,201) Provide AVTB personnel civilian salaries to support scheduled AAV7A1 and AAAV Developmental Testing. Plan and conduct Developmental Tests and report results, identifying any unresolved test issues in accordance with approved test plans and procedures. Prepare analysis of field-reported problems as received. Provide recommendations pertaining to design requirements which affect both operational effectiveness and operation suitability. Perform all echelons of maintenance on developmental items, including all on-hand assets of assault amphibious vehicles, within the capabilities of on-hand personnel, tools, test, and measuring equipment and facilities. Provide technical assistance and recommendations in the test of substitute or alternate parts and materials. Prepare technical analysis of proposed product improvements as requested. Prepare analysis of proposed engineering changes. Conduct hardware testing and evaluation of design changes, including verification of both the design and the technical data in accordance with approved test plans and procedures. Provide technical assistance in writing and revision of Technical Manuals. Provide technical reviews and recommendations regarding proposed Modification, Technical, Retrofit Instructions, and Retrofit Kit Hardware. Provide Testing expertise to Program Managers to assist in program acquisition strategy development. Provide Technical reviews and recommendation on Test and Evaluation Master Plans (TEMP's) and Detailed Test Plans for Program Managers. Provide technical input as the Marine Corp Developmental Testing representative to the Department of Defense Common Test and Training Range Architecture workshops.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C2237 PROJECT TITLE: Amphibious Vehicle Test Branch (AVTB)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	1,720	1,723	1,712
(U) Adjustments from FY 1997 PRESBUD:	0	-70	+221	+280
(U) FY 1998 President's Budget:	0	1,650	1,944	1,992

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 97 change is mandated by DON, Navy Budget Office to fund DBOF surcharge & other general reductions. FY 98 and FY 99 changes fund fact of life salary cost support for the DoD lab testing personnel capabilities required.

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

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

(U) RELATED RDT&E:

(U) PE 0603611M (Marine Corps Assault Vehicles)

D. (U) SCHEDULE PROFILE: Testing conducted AVTB includes all aspects of Marine Corps Assault Amphibious Vehicles and other amphibious systems. Testing planned for FY97 and beyond includes MK 154 Minefield Breaching System and follow-on, M36E3 weapons sight, Driver's Vision Enhancer, IRAM (Improved Reliability and Maintainability) Transmission, Engineering Change Proposals (ECP) as required, Combined Recoil Booster (CRB) for adoption of MILES 2000 system for AAV use, and the improved suspension and engine test for the AAVP7A "Rebuild to Standard". AVTB will also support the testing of the Advanced Amphibious Assault Vehicle (AAAV) for DRPM AAA as directed during the Demonstration and Support and Logistics Equipment especially in mine/countermine systems development as required. AVTB continues to assist Naval Sea Systems Command and Mine Warfare Command in the development of mine countermeasures systems as well as the Department of Defense in the development of the Common Test and Training Range Architecture.

FY 19988/FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

Date: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206623M

PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems

PROJECT NUMBER: C2237

PROJECT TITLE: Amphibious Vehicle Test Branch (AVTB)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Program Support, Supplies, and Services	0	357	476	508
b. Civilian Personnel	0	1,093	1,193	1,202
c. Developmental Test	0	200	275	283
Total	0	1,650	1,944	1,992

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C2237 PROJECT TITLE: Amphibious Vehicle Test Branch (AVTB)

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: Not applicable											
Support and Management											
1st FSSG, Camp Pendleton, Ca	WR	1st QTR				0	12	15	15	CONT.	CONT.
MCLB, Barstow CA	WR	1ST QTR				0	100	135	143	CONT.	CONT.
ISSA MCB Camp Pendleton, Ca	WR	1ST QTR				0	88	125	125	CONT.	CONT.
Total Support and Management						0	200	275	283	CONT.	CONT.
Test and Evaluation											
MCTSSA, Camp Pendleton, Ca	WR	1ST QTR				0	1,450	1,669	1,709	CONT.	CONT.
Total Test and Evaluation						0	1,450	1,669	1,709	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

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

BUDGET ACTIVITY: 7
Supporting Arms Systems

PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Branch (AVTB)

PROJECT NUMBER: C2237
PROJECT TITLE: Amphibious Vehicle Test

	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	0	0	0	0
Subtotal Support and Management	0	0	200	275	283	CONT.	CONT.
Subtotal Test and Evaluation	0	0	1,450	1,669	1,709	CONT.	CONT.
Total Project	0	0	1,650	1,944	1,992	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0206623M
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/Supporting Arms Systems

(U) COST (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1996 ACTUAL PROGRAM	FY 1997 ESTIMATE	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL
C2317 All Services Combat Identification Evaluation Team (ASCIET)	0	1,247	1,338	1,375	1,423	1,473	1,525	1,582	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: All Service Combat Identification Evaluation Team (ASCIET) conducts multi-service tactical air-to-air and surface-to-air evaluations, examines air-to-surface and surface-to-surface combat identification capabilities and provides an environment to exercise and examine developmental combat identification systems. USMC participation in All Services Combat Identification Evaluation Team (ASCIET) is mandated by an existing all service MOA (940914).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: FY 1996 funds of $1,300 were a sub-project in C1929, Advanced Tactical Air Control Central in program element 0604719M, Marine Corps Command Control and Communications Systems. Funds were provided to the Joint Combat Identification Office for joint efforts

2. (U) FY 1997 PLAN:

- (U) ($1,213) Joint service memorandum of agreement (MOA) for direct support of ASCIET to conduct yearly combat identification evaluations.

- (U) ($34) SBIR: Portion of program reserved for Small Business Innovation Research assessment in accordance with U.S.C. 638 (f)(1).

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

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C2317 PROJECT TITLE: All Services Combat Identification

Evaluation Team (ASCIET)

3. (U) FY 1998 PLAN:

- (U) ($38) Support and management to monitor and participate in developments in the Joint Program.
- (U) ($1,300) Direct support of ASCIET to conduct yearly combat identification evaluations.

4. (U) FY 1999 PLAN:

- (U) ($75) Support and management to monitor and participate in developments in the Joint Program.
- (U) ($1,300) Direct support of ASCIET to conduct yearly combat identification evaluations.

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

BUDGET ACTIVITY: 4 PROGRAM ELEMENT: 0206623M PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT NUMBER: C2317 PROJECT TITLE: All Services Combat Identification Evaluation Team (ASCIET)

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	1,247	1,338	1,375
(U) FY 1998 President's Budget:	0	1,247	1,338	1,375

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Administrative adjustment to separately identify the funding requirement.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

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

(U) RELATED RDT&E:

(U) PE 0604817A
PE 0604719M, Marine Corps Command/Control/Communications Systems.

D. (U) SCHEDULE PROFILE: Not Applicable

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROJECT NUMBER: C2317
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT TITLE: ALL SERVICES COMBAT IDENTIFICATION EVALUATION TEAM (ASCIE)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Product Development	0	0	6	8
b. Program Documentation/ Management Support	0	0	32	67
c. Test and Evaluation	0	1,247	1,300	1,300
Total	0	1,247	1,338	1,375

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROJECT NUMBER: C2317
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT TITLE: ALL SERVICES COMBAT IDENTIFICATION EVALUATION TEAM (ASCIET)

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											
MCCDC (Studies and Analysis)					0	0	0	6	8	CONT.	CONT.
Total Product Development					0	0	0	6	8	CONT.	CONT.
Support and Management											
MARCORSYSCOM					0	0	0	12	10	CONT.	CONT.
Radian					0	0	0	20	57	CONT.	CONT.
Total Support and Management					0	0	0	32	67	CONT.	CONT.
Test and Evaluation											
MARCORSYSCOM					0	0	0	1,300	1,300	CONT.	CONT.
Total Test and Evaluation					0	0	0	1,300	1,300	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not Applicable

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206623M PROJECT NUMBER: C2317
PROGRAM ELEMENT TITLE: Marine Corps Ground Combat/ Supporting Arms Systems PROJECT TITLE: ALL SERVICES COMBAT IDENTIFICATION EVALUATION TEAM (ASCIET)

	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	6	8	CONT.	CONT.
Subtotal Support and Management	0	0	0	32	67	CONT.	CONT.
Subtotal Test and Evaluation	0	0	1,247	1,300	1,300	CONT.	CONT.
Total Project	0	0	1,247	1,338	1,375	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Services Support

(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
C2316 Combat Service Support Engineering Equipment	0	469	862	1,820	1,618	847	129	133	CONT.	CONT.
C0076 Medium Tactical Vehicle Remanufacture (MTVR)	6,131	4,468	3,986	1,814	8,559	1,354	1,388	0	0	41,289
C0200 Light Tactical Vehicle Replacement (LTVR)	0	744	200	200	0	0	0	0	0	1,144
C0201 Logistical Vehicle System Replacement (LVSR)	0	0	0	923	1,053	5,648	6,693	1,011	0	15,328
TOTAL	6,131	5,681	5,048	4,757	11,230	7,849	8,210	1,144	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element (PE) provides funding for Marine Air-Ground Task Force requirements for Combat Service Support equipment improvements. It will enhance combat breaching capabalities of the ground combat elements, provide portable water from any available raw water source, reduce support personnel, logistics, maintenance and transportation requirements. It will also determine the reconfiguration of the current Twin Agent Unit firefighting apparatus and provide a portable, highly mobile general purpose automatic tester designed for use by technicians in the garrison and at the forward edge of the battlefield. The PE also provides improvements in all areas of Combat Service Support Equipment Vehicles by determining the replacement for the heavy, medium, and light fleet vehicles.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support

(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
C2316 Combat Service Support Engineering Equipment	0	469	862	1,820	1,618	847	129	133	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project includes improvements in all areas of Combat Service Support Equipment. The Army developed Combat Breacher Vehicle (CBV) will be a fully tracked, armored vehicle capable of keeping pace with the maneuver force. It will breach minefields with a full width mine plow, (14 feet wide), equipped with automatic depth control while maintaining speeds of 4 to 5 miles per hour. The CBV, also referred to as the Grizzly, is a full-tracked, heavy-protection level combat system being developed by the Army to enhance the combat breaching capabilities of the ground combat elements. The overall system is integrated on the M1 chassis to provide commonality with the tank fleet while providing the latest technology in direct fire armor protection and will provide capabilities to breach minefields, neutralize obstacles, demolish berms, and fill in auto-tank ditches. Major subsystems of the CBV include an automatic depth control system, a weapon systems station, a commander's control station, and a power driven arm. The Marine Corps is coordinating with the Army to establish a joint program at the Marine Corps' Milestone I/II scheduled in FY 1997. The Enhanced Reverse Osmosis Water Purification Unit (EROWPU) is capable of providing potable water from any available raw water source. The EROWPU is "state-of-the-art" technology producing 1,200/1,500 gallons per hour (GPH). This system will replace the aging 600 GPH ROWPUs at a 2 old systems to 1 enhanced system ratio. The EROWPU will reduce support personnel, logistics, maintenance, and transportation requirements saving millions of dollars in support costs. The EROWPU is a joint Marine Corps program with the Army as the lead service. The current Twin Agent Unit (TAU) firefighting apparatus is mounted on a modified Commercial Utility, Cargo Vehicle (CUCV). The CUCV has

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support PROJECT NUMBER: C2316 PROJECT TITLE: Combat Service Support Engineering Equipment

reached its service life and is being phased out of the Marine Corps' inventory by FY 1997. Funds will be used to determine the reconfiguration of the current TAU and the Truck, Utility, Cargo, D1180, into a compatible mobile extinguisher. The Third Echelon Test Set (TETS) is a portable, highly mobile general purpose automatic tester designed for use by technicians both in garrison and at the forward edge of the battlefield.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

(U) ($0) TETS: Funding is contained in Project C0076 of this Program Element.
(U) ($0) CBV: Funded with FY 1995 funds.

2. (U) FY 1997 PLAN:

(U) ($451) TETS: Complete RF bid sample testing by Naval Research Laboratory, Washington, D.C. Complete EO test instrumentation with follow-on bid sample testing by the Naval Research Laboratory, Washington D.C. Initiate Formal Qualification Test.
(U) ($18) CBV: Conduct a shipboard compatibility study.

3. (U) FY 1998 PLAN:

(U) ($116) TETS: Complete EO bid sample testing by Naval Research Laboratory, Washington, D.C. Develop new technology testing applications in support of emerging weapon systems. Complete Formal Qualification Test.
(U) ($295) TWIN AGENT UNIT, MOBILE: Complete combined DT and OT&E.
(U) ($451) EROWPU: Design and fabrication of a working EROWPU prototype to confirm the design decisions based on componentry testing.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support

PROJECT NUMBER: C2316
PROJECT TITLE: Combat Service Support Engineering Equipment

4. (U) FY 1999 PLAN:

(U) ($118) TETS: Develop new technology testing applications in support of emerging weapon systems.
(U) ($948) CBV: Evaluation and testing of CBV/minefield marking capabilities/amphibious shipboard compatibility.
(U) ($754) EROWPU: Test and evaluation of the EROWPU prototype to include required changes to componentry to optimize the design hardware.

(U) PROGRAM CHANGE SUMMARY:	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget Submit:	0	0	0	0
(U) Adjustments from FY 1997 PRESBUD:	0	+469	+862	+1,820
(U) FY 1998 President's Budget:	0	469	862	1,820

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 change is due to realignment of Marine Corps Combat Service Support programs. FY 1998 and FY 1999 changes are due in part to realignment of programs within the Marine Corps and adjustment of program funding for the various subprojects.

(U) Schedule: EROWPU: M/S II scheduled for 4Q FY 1997 rescheduled to M/S I/II, 3Q FY 1996. TETS underwent DOD IG Audit. Contract Award subsequently delayed to 3rd QTR FY 97, FQT delayed to 1st QTR FY 98.

(U) Technical: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support

PROJECT NUMBER: C2316 PROJECT TITLE: Combat ServiceSupport Engineering Eequipment

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) PMC Line (BLI# 613300) CBV	0	0	0	0	0	0	56,097	72,427	CONT.	CONT.
(U) PMC Line 33 (BLI# 440200) TETS	2,980	12,153	12,121	19,674	29,868	0	0	0	0	76,348
(U) PMC LINE (BLI# 627400) EROWPU	0	0	0	0	0	34,241	26,445	25,575	CONT.	CONT.
(U) PMC LINE (BLI# 666900) TAU	0	0	0	1,144	0	0	0	0	0	1,144

(U) RELATED RDT&E:

(U) PE 0206623M Marine Corps Ground Combat Supporting Arms Systems
(U) PE 0603640M Marine Corps Advanced Technology Demonstration
(U) PE 0604804A Logistics and Engineering Equpt/Engr Development
(U) PE 0206313M Marine Corps Communications

D. (U) SCHEDULE PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support

(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
C0076 Medium Tactical Vehicle Replacement (MTVR)	6,131	4,468	3,986	1,814	8,559	1,354	1,388	0	0	41,289

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project includes improvements in all areas of Combat Service Support Equipment Vehicle. The Medium Tactical Vehicle Replacement (MTVR) Program will determine the replacement vehicle for the Medium 5-ton fleet. The Light Tactical Vehicle Replacement (LTVR) will determine the replacement vehicle for the Light Fleet. These projects also includes improvements in all areas of motor transportation which will increase mobility, maintainability, and reliability. The Third Echelon Test Set (TETS) is a portable, highly mobile general purpose automatic tester designed for use by technicians both in garrison and at the forward edge of the battlefield.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($5,406) MTVR: Received MS I/II decision which moved the program into the Engineering and Manufacturing Development (EMD) phase. Completed testing of Marine Corps Technical Demonstrators. Completed work on the MTVR EMD specification, completed work on MTVR EMD RFP. Convened source selection board in order to award EMD contract.

- (U) ($222) LTVR: Initiated engineering research and explore component improvements in support of the LTVR program. Provide for Army TACOM program support activities.

- (U) ($503) TETS: Initiated Electro-Optics (EO) test instrumentation. Developed Radio Frequency (RF) test instrumentation with follow-on bid sample testing initiated by the Naval Research Laboratory, Washington D.C.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support PROJECT NUMBER: C0076 PROJECT TITLE: Medium Tactical Vehicle Replacement (MTVR)

2. (U) FY 1997 PLAN:

- (U) ($4,391) MTVR: Award EMD contracts for prototype truck fabrications and initiate Developmental Testing (DT) on EMD vehicle. Provide for Army TACOM program support activities. The TACOM program office will manage testing at Aberdeen Proving Ground.

- (U) ($77) 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) ($3,986) MTVR: Test prototype vehicles provided by contractors. Durability testing, Reliability, Adaptability and Maintainability (RAM) testing, etc. The TACOM program office will manage testing.

4. (U) FY 1999 PLAN:

- (U) ($1,814) MTVR: Down select to one contractor via formal source selection procedures. Award LRIP quantities for all required follow-on operational testing.

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support
PROJECT NUMBER: C0076
PROJECT TITLE: Medium Tactical Vehicle Replacement (MTVR)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget Submit:	7,249	5,211	6,205	4,411
(U) Adjustments from FY 1997 PRESBUD:	-1,118	-743	-2,219	-2,597
(U) FY 1998 President's Budget:	6,131	4,468	3,986	1,814

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 through FY 1999 changes are due to realignment of Marine Corps Combat Service programs and updated estimates.

(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) PMC Line (BLI# 508800) MTVR	0	0	0	159,897	242,275	248,587	278,086	278,203	CONT.	CONT.

(U) RELATED RDT&E:
(U) PE 0206623M Marine Corps Ground Combat Supporting Arms Systems
(U) PE 0603640M Marine Corps Advanced Technology Demonstration
(U) PE 0604804A Logistics and Engineering Equipt/Engr Development
(U) PE 0206313M Marine Corps Communications

D. (U) SCHEDULE PROFILE: (See Attached)

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support

(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
C0200 Light Tactical Vehicle Replacement (LTVR)	0	744	200	200	0	0	0	0	0	1,144

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project includes improvements in all areas of Combat Service Support Equipment Vehicle. The Light Tactical Vehicle Replacement (LTVR) will determine the replacement vehicle for the Light Fleet. This project also includes improvements in all areas of motor transportation which will increase mobility, maintainability, and reliability.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

_ (U) This program is shown in C0076 of this Program Element.

2. (U) FY 1997 PLAN:

_ (U) ($729) Continue engineering research and exploration of component improvements. Provide for Army TACOM program support activities. Preparation of Milestone I documentation.
_ (U) ($15) 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) ($200) Provide for Army TACOM program support activities. Begin corrossion and component reliability testing.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support

PROJECT NUMBER: C0200
PROJECT TITLE: Light Tactical Vehicle Replacement (LTVR)

4. (U) FY 1999 PLAN:

_ (U) ($200) Provide for Army TACOM program support activities. Complete corrossion and component reliability testing. Preparation of Milestone III Documentation.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget Submit:	0	0	0	0
(U) Adjustments from FY 1997 PRESBUD:	0	+744	+200	+200
(U) FY 1998 President's Budget:	0	744	200	200

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 through FY 1999 changes are due to realignment of Marine Corps Combat Service programs and updated program cost estimates.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support PROJECT NUMBER: C0200 PROJECT TITLE: Light Tactical Vehicle Relacement (LTVR)

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) PMC Line (BLI #508900) LTVR	0	0	0	0	57,448	56,581	65,021	80,855	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0206623M Marine Corps Ground Combat Supporting Arms Systems

D. (U) SCHEDULE PROFILE: See attached

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support

(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
C0201 Logistical Vehicle System Replacement (LVSR)	0	0	0	923	1,053	5,648	6,693	1,011	0	15,328

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project includes improvements in all areas of Combat Service Support Equipment Vehicle. The Logistical Vehicle System Replacement (LVSR) will determine the replacement vehicle for the Heavy Fleet. This project also includes improvements in all areas of motor transportation which will increase mobility, maintainability, and reliability.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: N/A

2. (U) FY 1997 PLAN: N/A

3. (U) FY 1998 PLAN: N/A

4. (U) FY 1999 PLAN:

_ (U) ($923) Provide for Army TACOM program support activities. Initiate engineering research and explore componentimprovements in support of the LVSR program, Milestone documentation.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0206624M PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support PROJECT NUMBER: C0201 PROJECT TITLE: Logistical Vehicle System Replacement (LVSR)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget Submit:	0	0	0	0
(U) Adjustments from FY 1997 PRESBUD:	0	0	0	+923
(U) FY 1998 President's Budget:	0	0	0	923

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 increase is due to updated program cost estimates.

(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) PMC Line (BLI #509300) LVSR	0	0	0	0	0	0	0	32,936	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0206623M Marine Corps Ground Combat Supporting Arms Systems

D. (U) SCHEDULE PROFILE: See attached.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0206624M
PROGRAM ELEMENT TITLE: Marine Corps Combat Service Support

PROJECT NUMBER: C0201
PROJECT TITLE: Logistical Vehicle System Replacement (LVSR)

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0207161N
PROGRAM ELEMENT TITLE: TACTICAL AIR INTERCEPT

(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
E0457 AIM-9X	28,103	52,463	60,079	66,040	42,934	20,523	8,940	5,139	0	284,221
RDT&E,N Articles			6	9	11					26

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The AIM-9X Sidewinder program is a joint USN/USAF effort to continue the evolutionary development of the AIM-9 missile. The AIM-9X is the long term evolution of the AIM-9 that will provide a series of modifications to the AIM-9 improving seeker/guidance and kinematic performance which will be fielded in the post-2000 timeframe. Funding for AIM-9X activities beyond FY 1994 will be provided equally in the aggregate by the USN and USAF.

B. (U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for modifying existing, operational systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: (Navy Share Only)

- (U) ($21,657) Continued All-Up-Round design studies and conducted Systems Design Reviews (SDR).
- (U) ($2,370) Provided aircraft interface information to DEMVAL contractors.
- (U) ($2,422) Continued engineering support validating DEMVAL contractors' efforts, released EMD Request for Proposal and supported EMD source selection.
- (U) ($764) Headquarters/field travel in support of EMD source selection.
- (U) ($890) Consulting services support.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0207161N PROJECT NUMBER: E0457
PROGRAM ELEMENT TITLE: TACTICAL AIR INTERCEPT PROJECT TITLE: AIM-9X

2. (U) FY 1997 PLAN: (Navy Share Only)

- (U) ($21,543) Obtain MS-II approval, award EMD contract, fly captive seeker hardware, and conduct Design Review I (DRI).
- (U) ($6,890) Provide aircraft interface information to EMD contractor.
- (U) ($19,007) Monitor EMD contract and begin government DT-IIA.
- (U) ($2,000) Headquarters/field travel.
- (U) ($1,643) Consulting services support.
- (U) ($1,380) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN: (Navy Share Only)

- (U) ($35,030) Continue engineering manufacturing development, conduct Design Review II (DR II), flyCaptive Test Units, and start delivery of safe separation vehicles for DT-IIB.
- (U) ($8,910) Continue providing aircraft interface information to EMD contractor to include any available wind tunnel dat
- (U) ($11,322) Continue monitoring EMD contract, continue preparations for DT-IIB, and start DT-IIB.
- (U) ($1,980) Headquarters/field travel.
- (U) ($1,055) Consulting services support.
- (U) ($1,782) Digital upgrade modification to LAU-7 launcher.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0207161N PROJECT NUMBER: E0457
PROGRAM ELEMENT TITLE: TACTICAL AIR INTERCEPT PROJECT TITLE: AIM-9X

4. (U) FY 1999 PLAN: (Navy Share Only)

- (U) ($32,070) Continue the engineering manufacturing development efforts.
- (U) ($8,050) Continue providing aircraft interface to the EMD contractor. Relate results of wind tunnel testing to missile/platform interface and compatibility efforts.
- (U) ($20,210) Continuation of EMD contractor monitoring, complete DT-IIB and start DT-IIC.
- (U) ($1,917) Headquarters/field travel.
- (U) ($1,023) Consulting services support.
- (U) ($2,770) Continue digital upgrade to LAU-7 launcher.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0207161N PROJECT NUMBER: E0457
PROGRAM ELEMENT TITLE: TACTICAL AIR INTERCEPT PROJECT TITLE: AIM-9X

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	28,787	58,415	63,348	82,916
(U) Adjustments from Pres Budget:	-684	-5,952	-3,269	-16,876
(U) FY 1998/99 President's Budget Submit:	28,103	52,463	60,079	66,040

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 net reduction is for the Jordanian rescission and SBIR transfer. The FY 1997 net decrease of $-5,952 accounts for rebaselining the program to recognize test program efficiencies and acquisition reform related contract savings, Navy Working Capital Fund adjustment and Congressional general reductions. The FY 1998 net decrease of $-3,269 thousand reflects the reprioritization of efforts within available resources to recognize test program efficiencies and acquisition reform related contract savings and various other program adjustments. FY 1999 net adjustment of $-16,876 reflects program rebaselining to recognize test program efficiencies and acquisition reform related contract savings and other minor pricing adjustments.

(U) Schedule: The testing phase of the program was optimized by combining compatible development and operational test objectives. This change in schedule allows LRIP to begin one year earlier, FY00 vice FY01. In addition: The FY 1997 President's Budget displayed an error in the Schedule Profile. The entries under "Contract Milestones" were shifted one column to the left. The are correctly shown as FY 1995-1Q Award DEMVAL Contracts, FY 1996-1Q Release EMD RFP, FY 1997-2Q Award EMD Contract and To Complete-4Q/01 LRIP Contract.

(U) Technical: Not applicable.

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

WPN	FY 2000	FY 2001	FY 2002	FY 2003	TO COMPLETE	TOTAL PROGRAM
Qty	75	125	300	300	4,200	5,000
Dollars	36,241	42,653	70,072	70,824	1,229,805	1,449,595

(U) RELATED RDT&E:
(U) RDT&E, DA PE 0603715D (AIM-9 CONSOLIDATED PROGRAM)
(U) RDT&E, AF PE 0207161F (TACTICAL AIM MISSILE)

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0207161N PROGRAM ELEMENT TITLE: TACTICAL AIR INTERCEPT PROJECT NUMBER: E0457 PROJECT TITLE: AIM-9X

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	TO COMPLETE
Program Milestones		1Q MS-II			2Q/00 LRIP DAB
Engineering Milestones	2Q SDR	4Q DR I	3Q DR II	3Q TRR TECHEVAL	4Q/00 TRR for OPEVAL
T&E Milestones		2Q/97-4Q/98 DT-IIA	4Q/98-4Q/99 DT-IIB/C 4Q/99-1Q/00 OT-IIA	1Q/99-3Q/00 DT-IID 4Q/99-1Q/00 OT-IIA	4Q/00-3Q/01 OT-IIB
Contract Milestones		1Q Award EMD Contract			2Q/00 LRIP

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

DATE: February 19

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0207161N
PROGRAM ELEMENT TITLE: TACTICAL AIR INTERCEPT

PROJECT NUMBER: E0457
PROJECT TITLE: AIM-9X

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Primary Hardware Development	21,657	21,543	35,030	32,070
b. Government Engineering Support	2,066	17,370	9,928	10,730
c. Contractor Engineering Support	2,370	6,890	8,909	8,050
d. Miscellaneous	881	1,180	1,030	1,080
e. Development Test & Evaluation	890	3,290	2,600	10,510
f. Headquarters Travel	239	810	800	830
g. SBIR Assessment		1,380		
h. LAU-7 Launcher			1,782	2,770
Total	28,103	52,463	60,079	66,040

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0207161N PROJECT NUMBER: E0457
PROGRAM ELEMENT TITLE: TACTICAL AIR INTERCEPT PROJECT TITLE: AIM-9X

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											
Tucson AZ	C/CPIF	DEC 94	10,279	10,279	0	10,279				0	10,279
Raytheon											
Bedford MA	C/CPIF	DEC 94	11,378	11,378	0	11,378				0	11,378
Hughes(EMD)											
Tucson AZ	C/CPIF/AF	DEC 96	112,383	112,383	0	0	21,543	35,030	32,070	23,740	112,383
McDonnell-Douglas											
St Louis MO	C/CPFF	JAN 95	34,469	34,469	0	2,370	6,890	8,909	8,050	8,250	34,469
NAWC CL	WR	OCT 97	80,331	80,331	0	2,422	19,827	12,272	21,047	24,763	80,331
MISC I/H (Efforts < $2.0M)											
VARIOUS	VARIOUS		6,914	6,914	0	764	1,180	1,030	1,080	2,860	6,914
GOVT (TBD)	WR	OCT 97	21,691	21,691				1,782	2,770	17,139	21,691
Support and Management											
Various Contracts	TBD	OCT 97	TBD	5,396	0	890	1,643	1,056	1,023	784	5,396

Test and Evaluation (Included in Product Development)

* Funded under P.E. 0603715D.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0207161N
PROGRAM ELEMENT TITLE: TACTICAL AIR INTERCEPT

PROJECT NUMBER: E0457
PROJECT TITLE: AIM-9X

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	N/A	27,213	49,440	59,023	65,017	76,752	277,445
Subtotal Support and Management	N/A	890	1,643	1,056	1,023	784	5,396
Subtotal Test and Evaluation	N/A	0	0	0	0	0	0
SBIR Assessment			1,380				1,380
Total Project	N/A	28,103	52,463	60,079	66,040	77,536	284,221

* Funded under P.E. 0603715D.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0207163N
PROGRAM ELEMENT TITLE: AMRAAM

(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
E0981 AMRAAM	4,306	2,149	5,700	4,855	4,593	4,363	4,413	4,500	Cont.	Cont.
TOTAL										

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This joint Navy/Air Force program is structured in response to the Joint Service Operational Requirement and Mission Element Need Statement to develop an air superiority air-to-air missile with significant improvements in operational utility and combat effectiveness. This program supports the integration of the AMRAAM into Navy aircraft with analysis of Navy unique applications, simulation capability development, aircraft missile integration tasks, pre-planned product improvement (P3I) efforts, and procurement of hardware to support Navy test and evaluation tasks.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($2,550) Completed P3I Phase I. Continued Navy technical efforts in AMRAAM P3I Phase 2 program including Critical Design Review (CDR), flight test activities and development, qualification and flight test of the extended length rocket motor. Emphasis on technical requirements including in-house engineering support and flight test activity (live and captive) and Johns Hopkins University/Applied Physics Laboratory efforts in support of Electronic Counter-Counter-Measures (ECCM) P3I tasks. Efforts will ensure that Navy unique shipboard and aircraft integration requirements are met.

- (U) ($1,756) Provided in-house engineering support and aircraft integration efforts for the extended rocket motor.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0207163N
PROGRAM ELEMENT TITLE: AMRAAM

PROJECT NUMBER: E0981
PROJECT TITLE: AMRAAM

2. (U) FY 1997 PLAN:

- (U) ($2,131) Continue participation in AMRAAM P3I Phase 2 and begin P3I Phase 3 programs with emphasis on Navy unique requirements and aircraft integration compatibility requirements. Participate in technical planning for post Phase 2 RDT&E activities to support Cost Operational Effectiveness Analysis results. Complete flight testing of the extended length rocket motor. Obtain Initial Operating Capability (IOC) of P3I Phase 2 missiles.

- (U) ($18) Portion of program reserved for Small Business Innovation Research assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

(U) ($5,700) Continue participation in AMRAAM P3I Phase 2 and 3 programs with emphasis on Navy unique requirements and aircraft integration compatibility requirements. Accomplish P3I Phase 3 Milestone II.

4. (U) FY 1999 PLAN:

(U) ($4,855) Continue participation in AMRAAM P3I Phase 2 and 3 programs with emphasis on Navy unique requirements and aircraft integration compatibility requirements. Conduct P3I Phase 3 Preliminary Design Review.

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7 | PROGRAM ELEMENT: 0207163N | PROGRAM ELEMENT TITLE: AMRAAM | PROJECT NUMBER: E0981 | PROJECT TITLE: AMRAAM

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	4,330	2,274	5,836	4,776
(U) Adjustments from PRESBUDG:	-24	-125	-136	+79
(U) FY 1998 President's Budget Submit:	4,306	2,149	5,700	4,855

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1996 adjustment of -$24 thousand, FY 1997 adjustment of -$125 thousand, FY 1998 adjustment of -$136 thousand and FY 1999 adjustment of +$79 thousand reflects Navy Working Capital Fund adjustments and various minor pricing adjustments.

(U) Schedule: 1Q/97 MS IV is no longer being obtained, instead IOC will be reached in 2Q/97 and P3I-2 Flight Test will be done in 2Q/97 versus 1Q/97.

(U) Technical: Not Applicable

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

WPN/P1#6	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	115	100	100	100	100	100	100	100	656	2,419
$	68,757	56,425	57,066	66,024	66,941	67,698	68,285	71,495	553,462	1,864,983

DATE: February 1997

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0207163N
PROGRAM ELEMENT TITLE: AMRAAM

PROJECT NUMBER: E0981
PROJECT TITLE: AMRAAM

(U) RELATED RDT&E:
- (U) PE 0207130F F-15
- (U) PE 0204136N F/A-18 Squadrons
- (U) PE 0207163F AMRAAM P3I
- (U) PE 0207133F F-16
- (U) PE 0604239F F-22
- (U) PE 0207134F F-15E

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999	To Complete
Program Milestones		2Q IOC P3I-2	3Q P3I-3 MSII		
Engineering Milestones	2Q P3I-2 CDR			2Q P3I-3 PDR	
T&E Milestones	1Q P3I-1 FLT TEST	2Q P3I-2 FLT TEST			
Contract Milestones					

DATE: February 1997

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0207163N
PROGRAM ELEMENT TITLE: AMRAAM
PROJECT NUMBER: E0981
PROJECT TITLE: AMRAAM

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. System Integration	330	330	340	300
b. Pre-Planned Product Improvement	2,261	981	3,646	2,571
c. Systems Engineering	1,493	560	1,434	1,704
d. Travel	222	260	280	280
e. SBIR Assessment		18		
Total	4,306	2,149	5,700	4,855

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0207163N
PROGRAM ELEMENT TITLE: AMRAAM

PROJECT NUMBER: E0981
PROJECT TITLE: AMRAAM

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											
ALLIANT TECH	C/FFP	Sep 95	3,549	3,549	3,549	0	0	0	0	0	3,549
NAWC WD Various	WX	Oct 97	Cont.	Cont.	31,559	3,106	836	3,991	3,325	Cont.	Cont.
Misc	Var	Oct 97	Cont.	Cont.	2,604	485	890	1,059	900	Cont.	Cont.
Support and Management											
Misc	WX	Oct 97	Cont.	Cont.	5,481	715	405	650	630	Cont.	Cont.
Test and Evaluation											
NAWC WD Pt Mugu,CA	WX	Nov 95	12,755	12,755	12,755	0	0	0	0	0	12,755

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										

600478

DATE: February 1997

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0207163N
PROGRAM ELEMENT TITLE: AMRAAM

PROJECT NUMBER: E0981
PROJECT TITLE: AMRAAM

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Production Development	37,712	3,591	1,726	5,050	4,225	Cont.	Cont.
Subtotal Support and Management	5,481	715	405	650	630	Cont.	Cont.
Subtotal Test and Evaluation	12,755	0	0	0	0	0	12,755
SBIR Assessment			18				18
Total Project	55,948	4,306	2,149	5,700	4,855	Cont.	Cont.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0207163N
PROGRAM ELEMENT TITLE: AMRAAM

PROJECT NUMBER: E0981
PROJECT TITLE: AMRAAM

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303109N
PROGRAM ELEMENT TITLE: Satellite Communications

(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
X1880 Joint Terminal Project Office	2,855	2,924	0	0	0	0	0	0	CONT.	CONT.
X0728 EHF SATCOM Terminals	13,405	14,416	16,177	25,161	24,081	17,822	17,834	18,176	CONT.	CONT.
X0731 Fleet Satellite Communications	17,591	19,020	849	2,247	2,914	1,547	1,537	1,572	CONT.	CONT.
TOTAL	33,851	36,360	17,026	27,408	26,995	19,369	19,371	19,748	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program supports development of shipboard and shore based equipment operating through six communication satellite systems: Fleet Satellite (FLTSAT) Communications, Leased Satellite (LEASAT) Communications, Defense Satellite Communications System (DSCS), Ultra High Frequency Follow-On Program (UFO), NATO Allied, and Air Force Satellite Communications (AFSATCOM). The Navy Extremely High Frequency (EHF) Satellite Communications (SATCOM) Program (NESP) provides for the development and production of terminals to provide anti-jam, low probability of intercept/detection communications capability for Command and Control of the fleet. NESP operates with FLTSAT EHF packages and UFO EHF Satellite packages and is the Navy's portion of Milstar. The Milstar program is comprised of satellites, control stations, and aircraft, ship, and ground terminals to provide assured worldwide, secure, anti-jam, survivable communications for the National Command Authority, CINCs, and operational commanders. The Joint Terminal Project Office (JTPO) chartered by tri-service Memorandum of Understanding (MOU) coordinates and directs cross-service interoperability engineering in the individual Service development of EHF satellite terminals; oversees cross-service logistics and infrastructure supportability planning and execution; provides technical support to the Joint Chiefs and Service Staffs, CINCs, and operational commanders; and coordinates MILSATCOM terminal technology transfer among the Services and agencies.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303109N
PROGRAM ELEMENT TITLE: Satellite Communications

(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
X1880 Joint Terminal Project Office	2,855	2,924	0	0	0	0	0	0	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Milstar program is comprised of satellites, control stations, and aircraft, ship, and ground terminals to provide assured worldwide, secure, anti-jam, survivable communications for the National Command Authority, CINCs, and operational commanders. The Joint Terminal Program Office (JTPO) chartered by tri-service Memorandum of Understanding (MOU) coordinates individual Service development of MILSATCOM terminals in four areas: (1) cross service terminal interoperability engineering; (2) joint integrated logistics and C3 infrastructure support planning; (3) technical support to the Office of the Secretary of Defense (OSD), the Office of Joint Chiefs of Staff (OJCS), the Commanders in Chief (CINCs), and users and developers; and (4) identification, application and transfer of advanced technology into MILSATCOM terminals. The first Milstar satellite was placed into orbit in February 1994; the second satellite (of six) in November 1995.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS: The JTPO coordinates and directs the development of Milstar and MILSATCOM terminal s in four areas: Interoperability, Logistics/Infrastructure support, User Support and Technology.

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($1,484) Resolved interoperability issues, identified and tested new user devices and equipment to ensure MILSATCOM interoperability; provided leadership and coordination between Service terminal developers and the Joint Interoperability Test Command (JITC) in executing CJCS interoperability certification policy; planned for and conducted joint interoperability testing with crosslinked satellites on-orbit, and evaluated and recommended interoperability certification of MILSATCOM terminals to support acquisition and/or production decisions.

- (U) ($ 422) Lead inter-service EHF SATCOM terminal installation planning, maintained the EHF SATCOM terminal Joint Training Plan and Joint ILSP, identified and resolved joint logistic and infrastructure support issues within MILSATCOM terminal segments.

- (U) ($ 519) Supported AFSPC, the OJCS, CINCs, and users in technical network operation, and assisted in resolution of system technical issues. Refined Milstar I communications management system; and supported engineering of Milstar II communications management system. Supported engineering of Milstar communications management systems.

- (U) ($ 430) Facilitated and exploited opportunities for MILSATCOM terminal technology transfer by identifying emerging technologies, maintaining MILSATCOM technology database, recommending appropriate technology insertion points for using NDI/COTS. Participated in design of follow-on advanced EHF system, DoD Space Architecture development, provided appropriate terminal segment systems engineering to ensure user-to-user interoperability and use of emerging terminal technologies.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303109N
PROGRAM ELEMENT TITLE: Satellite Communications

2. (U) FY 1997 PLAN:

- (U) ($ 1,441) Conduct interoperability engineering for additional user interface devices and equipment identified for use with Service MILSATCOM terminals; identify and test user baseband devices to ensure interoperability through MILSATCOM systems; interoperability with DII/DISN, including STEP program; provide leadership and coordination between Service terminal developers and the Joint Interoperability Test Command (JITC) in executing CJCS interoperability certification policy; plan for and conduct joint interoperability testing in conjunction with on-orbit testing of Milstar I payloads and pre-launch testing of Milstar II payloads; and evaluate interoperability and terminal segment specification compliance of MILSATCOM terminals prior to acquisition and/or production and fielding decisions.

- (U) ($ 455) Coordinate cross-service EHF terminal installation planning, maintain Joint Training Plan and Joint ILSP for Low Data Rate (LDR) and Medium Data Rate (MDR) EHF terminals; participate in logistics and infrastructure integrated product teams for emerging multiband MILSATCOM terminals; identify and resolve joint logistics and infrastructure support issues for MILSATCOM terminals.

- (U) ($ 463) Support AFSPC, the OJCS, CINCs, and users in technical network planning, and assist in refining system technical applications and expanding operational use of Milstar.

- (U) ($ 492) Finalize advanced EHF system documentation, with focus on user-to-user interoperability system engineering in the terminal segments. Continue Space Architecture development supporting DoD Space Architect. Maximize opportunities for MILSATCOM terminal technology transfer by identifying emerging technologies, maintaining MILSATCOM technology database, and recommending appropriate technology insertion points for NDI/COTS. Participate in international efforts to achieve user-to-user interoperability standardization in MILSATCOM.

- (U) ($ 73) 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: 7

PROGRAM ELEMENT: 0303109N
PROGRAM ELEMENT TITLE: Satellite Communications

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:	2,920	3,060	3,106	4,642
(U) Adjustments from FY 1997 PRESBUDG:	-65	-136	-3,106	-4,642
(U) FY 1998 President's Budget:	2,855	2,924	0	0

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 ($-65K): Reduction for administrative and personal service rescission ($-7K),and FY 1996 SBIR Transfer ($-58K).
FY 1997 ($-136K): Congressional undistributed general adjustments.
FY 1998 ($-3,106K): Navy Working Capital Fund (NWCF) carryover adjustment ($-48K), minor POM Navy adjustme nt ($-3K), and realignment to the APN appropriation for FA-18 E/F Program ($-3,055K).
FY 1999 ($-4,642K): NWCF adjustment ($-25K), minor POM Navy adjustment ($-5K) and reduction to fund higher priority Navy programs ($-4,612K).

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

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

D. (U) SCHEDULE PROFILE: Not applicable.

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303109N
PROGRAM ELEMENT TITLE: Satellite Communications

A. (U) PROJECT COST BREAKDOWN: Not Applicable.

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

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

(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
X0728 EHF SATCOM Terminals	13,405	14,416	16,177	25,161	24,081	17,822	17,834	18,176	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Navy Extremely High Frequency (EHF) Satellite Communications (SATCOM) Program provides for the development and production of terminals to provide anti-jam, low probability of intercept/detection communications capability for Command and Control of the fleet. The terminals will provide physical and electromagnetically survivable, worldwide communications in the current and projected electromagnetic and nuclear threat. Navy EHF terminals are interoperable with Army and Air Force terminals and will operate with Milstar as well as EHF packages on-board Ultra High Frequency (UHF) Follow-On (UFO) Satellites 4 through 10 and FLTSATCOM Satellites 7 and 8. Navy terminals operated during Desert Storm with EHF packages on-board Fleet Satellite 8 and supported fleet operations in Haiti. The increased capability provided by EHF terminals is accomplished by use of the wider bandwidths available at extremely high frequencies, narrow antenna beamwidths, spread spectrum techniques, on-board satellite processing, and advanced signal processing technology.

(U) A Medium Data Rate (MDR) capability is current ly under development to utilize the capabilities on Milstar satellites DFS-3 through DFS-6. MDR will provide the only protected (jam resistant and low probability of intercept/detection) MDR data rates from 4.8 kilobits per second (Kbps) to 1.544 megabits per second (Mbps) to the majority of the fleet.

(U) The Navy EHF Communications Controller (NECC) provides automated, netted tactical data Information Exchange Subsystems (IXS) over jam resistant EHF satellite links. The NECC will provide for load and channel sharing, resource management, communications management and planning, network control and monitoring, and services including circuit switching, packet switching, and backward compatibility to UHF SATCOM.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. U) FY 1996 ACCOMPLISHMENTS:

- (U) ($ 7,547) Began integration of MDR EDMs and continued software development. Began prototype testing MDR Units with the Milstar MDR satellite simulator on-ground (MST-3500).
- (U) ($ 2,792) Corrected deficiencies identified during NECC development testing and early operations on the George Washington Battlegroup. Conducted NECC FOT&E. Developed additional functionality.
- (U) ($ 3,066) Continued Milstar terminal and MDR development engineering analysis and management.

000486

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

2. (U) FY 1997 PLAN:

- (U) ($ 8,674) Continue EDM MDR modem and modification kits development and deliver initial kits. Commence ILS development for MDR. Develop and fabricate a ten foot MDR Shore antenna. Begin MDR SATSIM development.
- (U) ($ 916) Conduct MDR on-ground cover test (MST 3600) and conduct development testing with the Navy MDR terminal, Army MDR terminals and the Milstar MDR satellite design verification model (MST 4000).
- (U) ($ 1616) Commence development of MDR mods to NECC.
- (U) ($ 2,866) Continue Milstar terminal and MDR development engineering analysis and management.
- (U) ($ 344) 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) ($ 8,954) Deliver additional EDM MDR modem and modification kits; continue MDR ILS development; complete MDR software development; continue MDR SATSIM development; and perform system integration testing to meet MST testing schedule.
- (U) ($ 1,553) Perform developmental and interoperability testing (MST-6000) with Navy MDR terminal, Army MDR terminal, and the on-ground flight model Milstar MDR satellite to verify compatibility prior to launch of first Milstar satellite in FY 99.
- (U) ($ 1,031) Continue development of NECC interface with MDR appliqués to support High Data Rate (HDR) communications to the submarine fleet.
- (U) ($ 1,139) Commence development of Submarine Reportback Compression/Encryption capability to provide transmit and receive message processing for reportback messages to support tactical brevity coding, reportback message compression, and KGV-11 time of day encryption.
- (U) ($ 3,500) Continue Milstar terminal and MDR development eng ineering analysis and management.

4. (U) FY 1999 PLAN:

- (U) ($ 5,620) Perform MDR software corrections resulting from MST-6000 testing with flight model MDR satellite. Continue MDR ILS development; prepare MDR software documentation; perform software configuration management; perform system testing; support installation, checkout, and integration of EDM antenna/pedestals on operational platforms, EDM MDR modems, and field change kits in support of MST testing; and complete MDR SATSIM development and modifications.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

- (U) ($ 1,500) Perform MST-8000 development testing with initial AN/USC-38(V) with MDR, Army MDR terminal, and on-orbit Milstar satellite with MDR to verify compatibility.
- (U) ($ 3,700) Perform TECHEVALs/OPEVALs for Navy MDR and participate in Milstar MDR IOT&E.
- (U) ($ 1,100) Continue development of NECC modifications. Conduct developmental and operational testing of MDR capable NECC units.
- (U) ($ 6,771) Continue development and testing of Submarine Reportback Compr ession/Encryption. Develop Submarine Satellite Information Exchange System (SSIXS) operational concepts and training and definition of SSIXS baseband equipment and documentation requirements. Develop EHF MDR DAMA capability and architecture to ensure joint service interoperability and fleet optimization; begin requirements definition of software/hardware development. Begin Polar MILSATCOM/Adjunct engineering development for permanent submarine EHF coverage (EHF Polar Adjunct) in polar region.
- (U) ($ 1,330) Develop modifications required to maintain compatibility with future EHF satellite constellations (i.e., Advanced EHF). Investigate antenna technology advancements including phased array and flat plate antennas. Begin investigation of Radar Cross Section (RCS) vulnerability reduction measures.
- (U) ($ 2,150) Develop technology insertion upgrades which improve terminal Reliability, Maintainability, and Availability (RM&A). Develop VME and RM&A improvements in order to transition the current MIL-STD terminal to an Open Systems Architecture (OSA) and COTS environment.
- (U) ($ 2,990) Continue Milstar terminal and MDR development engineering analysis and management. (Oct 98 through Aug 99)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	13,872	15,184	23,627	25,522
(U) Adjustments from FY 1997 PRESBUDG:	-467	-768	-7,450	-361
(U) FY 1998 President's Budget:	13,405	14,416	16,177	25,161

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 ($-467K): Jordanian rescission ($-16K), minor Navy adjustment ($-5K), reduction for administrative and personal service rescission ($-35K), FY 1996 SBIR transfer ($-230K), and reflects other minor Navy fiscal adjustments ($-181K).
FY 1997 ($-768K): Congressional undistributed general adjustments.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

FY 1998 ($-7,450K): NWCF carryover adjustment ($-1,112K), reallocation to higher priority Challenge Athena ($-5,800K), minor Navy adjustment ($-21K), NWCF rate adjustment ($-80K), Inflation ($-41K), and other minor adjustments ($-396K).
FY 1999 ($-361K): NWCF carryover adjustment ($-45K), NWCF surcharge reduction ($-105K), minor Navy adjustment ($-31K), NWCF rate adjustment ($-16K), Inflation ($-93K), other minor adjustments ($-71K)

(U) Schedule: The FY 1998 adjustment of -$7,450K delays development of SSIXS and EHF DAMA to FY 1999 and out.

(U) Technical: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

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 SHIP* 3321000	44,192	55,288	36,293	58,728	73,469	54,477	58,701	47,433	CONT.	CONT.
OPN SHORE* 3322000	8,642	18,113	2,304	15,628	38,263	19,203	21,295	34,577	CONT.	CONT.

*Includes EHF terminal installation costs.

(U) Related RDT&E:
(U) PE 0303603F, Milstar
(U) PE 0303601F, Air Force Satellite Communications
(U) PE 0303142A, Army Extremely High Frequency Commun ications Terminal

000490

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones				MS IV (MDR Full Rate Prod) 2/99
Engineering Milestones		Deliver MDR EDMs 5/97 Commence NECC MDR development 7/97		
T&E Milestones	MDR MST3500 6/96 NECC FOT&E 7/96	MDR MST4000 3/97	MDR MST6000 7/98	MDR MST8000 12/98 MDR OT 1/99
Contract Milestones		Follow-On RFP Release 4/97	MDR Initial Prod Award 10/97	

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management	375	465	504	715
b. Systems Engineering	2,200	2,369	2,578	4,213
c. Prime Mission Equipment	8,726	9,289	10,140	15,303
d. System Test & Evaluation	920	944	1,337	2,720
e. Integrated Logistics Support	557	669	794	1,161
f. Site/Platform Integration	627	680	824	1,049
Total	13,405	14,416	16,177	25,161

000492

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

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	SS/CPFF	1/94	53,943	53,943	8,313	7,120	7,288	7,927	13,098	CONT.	CONT.
F/O EHF Studies/Upgrades											
NRaD	WR	10/93	N/A	N/A	3,866	1,718	2,297	2,640	4,225	CONT.	CONT.
Other	Var	Var	Var	Var	2,294	590	787	1,082	1,550	CONT.	CONT.
Support and Management											
NRaD	WR	10/93	N/A	N/A	1,552	1,191	1,378	1,445	2,352	CONT.	CONT.
NUWC	WR	10/93	N/A	N/A	1,350	1,178	1,091	1,163	1,340	CONT.	CONT.
Other	Var	Var	Var	Var	1,056	790	909	993	998	CONT.	CONT.
Test and Evaluation											
Other	Var	Var	Var	Var	1,267	818	666	927	1,598	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0728
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: EHF SATCOM Terminals

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				14,473	9,428	10,372	11,649	18,873	CONT.	CONT.
Subtotal Support and Management				3,958	3,159	3,378	3,601	4,690	CONT.	CONT.
Subtotal Test and Evaluation				1,267	818	666	927	1,598	CONT.	CONT.
Total Project				19,698	13,405	14,416	16,177	25,161	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0731
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: Fleet SATCOM

(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
X0731 Fleet Satellite Communications	17,591	19,020	849	2,247	2,914	1,547	1,537	1,572	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Fleet Satellite Communications is the principle carrier of Naval communications for Fleet operations worldwide. The project supports development of shipboard and shore based equipment operating through six communication satellite systems: Fleet Satellite (FLTSAT) Communications, Leased Satellite (LEASAT) Communications, Defense Satellite Communication System (DSCS), Ultra High Frequency (UHF) Follow-On Program (UFO), NATO Allied, and Air Force Satellite Communications (AFSATCOM). The principal mission is to provide global, continuous, secure communications between U.S. and Allied Forces via UHF and DSCS satellites and to provide secure anti-jam communications between joint command centers and Fleet commanders using DSCS satellites and Extremely High Frequency (EHF) capable satellites. A secondary mission is to provide rapid transfer of administrative and logistics messages over commercial and military satellites.

(U) Specifically, the efforts of this program develop UHF and Super High Frequency (SHF) communications, network controllers, time division multiplexers, and tactical applications. The FLTSAT/LEASAT/UFO Communications Systems provide Fleet broadcast service to all Navy Ships, Over-the-Horizon Targeting data for TOMAHAWK and Flag configured ships, submarine communications intelligence data, and various other battle group and joint task force communications services.

(U) The Miniature Demand Assigned Multiple Access (Mini-DAMA (M-D) AN/USC-42(V)) system will provide a similar satellite channel utilization efficiency for aircraft and submarines that are now enjoyed by surface ship and shore stations equipped with the larger TD-1271 DAMA Multiplexer and AN/WSC-3. M-D, however, provides greater capacity (8 half duplex networks) vice 4 provided by TD-1271s. M-D will also embed many encryption and data transfer functions which currently require separate equipment. M-D is being developed in two variants: the (V)1 is the submarine ship/shore application and the (V)3 is the airborne version.

(U) Closely aligned with the fielding of M-D is the transition of DAMA operations from the Distributed Control (DC) mode to the Automatic Control (AC) mode. Originally identified as "Auto-DAMA," the control system for the AC mode will provide for dynamic assignment of DAMA slots and will result in an estimated four-fold increase in satellite channel utilization efficiency. Auto-DAMA has become a joint interest program referred to as the Joint (UHF) MILSATCOM Network Integrated (JMINI) control system which will be included as part of Automated Digital Network System (ADNS). The DAMA Semi-Automatic Control (SAC) program is a stepping stone in this process and will provide an estimated two-fold utilization increase; DAMA SAC controllers will be installed during FY 96 - FY 97 with cutover to AC mode in FY 97. JMINI control system is targeted for fielding in FY 00.

(U) The Tactical Intelligence Information Exchange Subsystem (TACINTEL II+) implements the Integrated Special Intelligence Communications portion of the Copernicus and ADNS architecture, to provide services for transfer of Special Intelligence (SI) information between ships, aircraft, and shore activities in support of joint and combined operations. TACINTEL II+ will support real time indications and warning support to joint and component commanders through reliable high speed transfer of sensor data and

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0731
PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: Fleet SATCOM

intelligence information. Enhanced interoperability with other services, agencies, and allies will permit a level of integration of SI operations not achievable with current systems.

(U) The SHF terminals operate within the DSCS. SHF provides high capacity, two way communicat ions for principle Navy ship types and provides Navy connectivity to Allied and Joint Force Command Networks via the DSCS. The Universal Modem is a joint U.S./U.K. development to provide U.S. force and Allied interoperability and anti-jam, protected communications for command and control networks.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($ 1,412) Commenced Functional Configuration Audit (FCA)/ Physical Configuration Audit (PCA) for TACINTEL II Build 1.
- (U) ($ 1,981) Continued software development and test and evaluation of TACINTEL II Build 1.
- (U) ($ 594) Conducted OPEVAL for TACINTEL II Build 1 software.
- (U) ($ 2,033) Continued software development for INTELNET.
- (U) ($ 1,000) Integrate, test, and deliver Mini-DAMA (V) 1 systems for DT/OT II for subsequent production options.
- (U) ($ 2,004) Conduct Mini-DAMA (V)1 testing (DT/OT II).
- (U) ($ 7,441) Continue development of the JMINI Control System Capability.
- (U) ($ 708) Obtained Mini-DAMA production approval for second production options for (V)1 and (V)3 units.
- (U) ($ 568) Commenced development of SHF SATCOM Architecture for MILSATCOM, COPERNICUS, and CSS.
- (U) ($ -150) Reflects an erroneous reduction which was the result of a double posting error for a BTR adjustment.

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2. (U) FY 1997 PLAN:

- (U) ($ 1,260) Complete OPEVAL for TACINTEL II Build 1 software.
- (U) ($ 1,019) Achieve Milestone III (MS III) for TACINTEL II Build 1.
- (U) ($ 1,200) Initiate Phase II Build 2 development of INTELNET.
- (U) ($ 1,537) Complete testing of Mini-DAMA (V)3 (DT/OT II) systems.
- (U) ($12,142) Obtain MS 0/I/II decision. Complete Phase I Build 1 of JMINI software and associated functions. Commence development of Phase II Build 2 JMINI software.
- (U) ($ 402) Commence software development and test and evaluation of ADNS implementation.
- (U) ($ 785) Complete Mini-DAMA SSA IV&V.
- (U) ($ 585) Conduct SHF SATCOM interoperability and certification t ests with evolving joint MILSATCOM architecture.
- (U) ($ 90) 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) ($ 849) Implementation of advanced Special Intelligence (SI) TACINTEL II into Automated Digital Network System (ADNS). An additional $979K is forward financed with FY 97 funding due to low expenditures in FY 96.

4. (U) FY 1999 PLAN:

- (U) ($ 2,247) Continue implementation of TACINTEL II into ADNS.

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B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	19,536	20,013	13,783	4,797
(U) Adjustments from FY 1997 PRESBUDG:	-1,945	-993	-12,934	-2,550
(U) FY 1998 President's Budget:	17,591	19,020	849	2,247

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 ($-1945K): Jordanian rescission ($-22K), reduction for administrative, personal service rescission ($-51K), SBIR transfer ($-350K), other Navy adjustments ($- 1,372K) and double posting error ($-150K).
FY 1997 ($-993K): Congressional undistributed general adjustments.
FY 1998 ($-12,934K): Reflects Navy POM decision to fund higher priority Navy requirements ($-11,071K), reallocation to higher priority Challenge Athena and Global Broadcast Systems programs ($-2,712K), TACINTEL II+ plus up ($1,375K), BRAC Correction ($500K), reduction due to low expenditures in FY 96 ($-979K), minor pricing Navy adjustments ($-9K), NWCF rate adjustment ($-36K) and Inflation ($-2K).
FY 1999 ($-2,550K): Program rebalancing ($-2,492K), NWCF carryover adjustment ($-27K), minor pricing adjustment ($-4K), NWCF rate adjustment ($-19K) and Inflation ($-8K).

(U) Schedule: Not Applicable.
(U) Technical: Use of existing TD-1271/WSC-5 DAMA hardware and optimize use of previously planned Air Force 5-kHz DAMA controller installations at the NCTAMS.

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 SHIP* 3321000	41,866	37,288	17,393	35,242	35,342	30,077	33,168	31,867	CONT.	CONT.
OPN SHORE* 3322000	3,121	4,030	2,485	60,487	28,428	1569	712	0	CONT.	CONT.

*Includes terminal installation costs.

(U) RELATED RDT&E:

(U) PE 0303142A, Satellite Communications Ground Environment
(U) PE 0204163N, Communications Automation
(U) PE NSA 0301055, Project Embroidery

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BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303109N PROJECT NUMBER: X0731
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D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program				
Milestones	M-D Prog Rvw 3/96	TAC II+ 1 MS III 8/97 M-D(V)1 IOC 3/97 M-D(V)3 IOC 6/97	TAC II+ 2 MS III 7/98	
Engineering Milestones	TAC II+ 1 FCA/PCA 2/96	TAC II+ 2 PCA 7/97		
T&E Milestones	M-D(V)1 DT/OTII 5/96	TAC II+ 1 DT 11/96 TAC II+ 1 OT 3/97 M-D(V)3 DT/OTII 5/97		
Contract Milestones	Contract Award JMINI 9/96			

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DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303109N
PROGRAM ELEMENT TITLE: Satellite Communications

PROJECT NUMBER: X0731
PROJECT TITLE: Fleet SATCOM

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management	305	360	50	222
b. Systems Engineering	4,322	3,245	675	1,752
c. Prime Mission Equipment	10,075	9,469	0	0
d. System Test & Evaluation	1,996	4,079	0	0
e. Integrated Logistics Support	1,043	1,867	124	273
f. Site/Platform Integration	0	0	0	0
Total	17,741*	19,020	849	2,247

* Assumes correction of the erroneous posting reduction ($+150K)

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PROGRAM ELEMENT TITLE: Satellite Communications PROJECT TITLE: Fleet SATCOM

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											
Titan	FPI	07/89	N/A	N/A	1,252	5,241*	8,017	0	0	CONT.	CONT.
SRC	FFP	10/94	6,305	6,305	10,805	1,096*	0	0	0	CONT.	CONT.
NAVSUP/SRC	PD	10/94	N/A	N/A	1,023	2,085*	566	192	661	CONT.	CONT.
Other	Var	Var			3,485	2,754*	3,403	483	1,091	CONT.	CONT.
Support and Management											
CSC	CPFF	Var	N/A	N/A	1,582	1,380*	638	0	0	CONT.	CONT.
NAVAIR/ISC	PD		N/A	N/A	1,176	0*	0	124	273	CONT.	CONT.
Other	Var	Var	N/A	N/A	2,909	2,071*	4,885	50	222	CONT.	CONT.
Test and Evaluation											
Other	Var	Var	N/A	N/A	4,738	3,114*	1,511	0	0	CONT.	CONT.

* Assumes correction of the erroneous posting reduction ($+150K)

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303109N
PROGRAM ELEMENT TITLE: Satellite Communications

PROJECT NUMBER: X0731
PROJECT TITLE:. Fleet SATCOM

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				16,565	11,176	11,986	675	1,752	CONT.	CONT.
Subtotal Support and Management				5,667	3,451	5,523	174	495	CONT.	CONT.
Subtotal Test and Evaluation				4,738	3,114	1,511	0	0	CONT.	CONT.
Total Project				26,970	17,741*	19,020	849	2,247	CONT.	CONT.

* Assumes correction of the erroneous posting reduction ($+150K)

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N
PROGRAM ELEMENT TITLE: Information Systems Security 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
X0734 Information Systems Security	*21,383	25,525	20,291	25,301	25,727	26,034	25,601	25,213	CONT.	CONT.
TOTAL	*21,383	25,525	20,291	25,301	25,727	26,034	25,601	25,213	CONT.	CONT.

* Reflects an erroneous reduction of (-600K) due to the double posting of a BTR

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The goal of the Navy Information Systems Security (INFOSEC) Program is to ensure the continued protection of Navy and Joint communications and computing systems from hostile exploitation in order to provide Information Assurance (IA) for Navy strategic and tactical systems. With the advent of the information age, the network environment, and the proliferation of distributed systems, the Navy is making profound changes in the way it has traditionally approached communications and computer security. The current operating environment has virtually eliminated the traditional distinction between telecommunications and information systems. Contributing factors to the new systems-oriented approach to security are: the development of more complex systems; the networking of systems; and rapid technological advances. The RDT&E program accomplishes this systems-oriented approach by: developing a technical strategy and framework to guide and integrate Navy efforts with DOD and NSA efforts; evaluating and tailoring standards, processes, and tools for Navy application; assessing available technology and products; developing missing technology and integrating the available technology with the newly developed technology into prototype products and systems; providing INFOSEC expertise and engineering/certification support to Department of the Navy (DON) development programs; developing standard INFOSEC products and systems to meet DON and, by agreement, Joint requirements. Because INFOSEC is a cradle-to-grave discipline, this program develops the technology and methodology to protect the confidentiality, integrity, and availability of systems in development, production and operation. It also develops the infra-structure needed to support and evaluate the security of deployed systems. These objectives are pursued for equipments/systems focusing on cryptographic technology and its use and impact on secure

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BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N
PROGRAM ELEMENT TITLE: Information Systems Security Program

systems. Another focus is on providing security for tactical and non-tactical computer-based systems with emphasis on multilevel security and the use and impact of trusted computer technology (both hardware and software) on the security of systems.

The COMSEC and COMPUSEC Projects were funded separately through FY-94. With today's proliferation of information processing networks, and the need to take a systems view of these network security requirements, the COMSEC and COMPUSEC projects were combined under the Information Systems Security Project starting in FY95.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N PROJECT NUMBER: X0734
PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

(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
X0734 Information Systems Security	*21,383	25,525	20,291	25,301	25,727	26,034	25,601	25,213	CONT.	CONT.

* Reflects an erroneous reduction of ($-600K) due to the double posting of a BTR

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The INFOSEC project analyzes existing COMSEC/COMPUSEC equipments and develops improved, interoperable communications security equipment and methods to protect classified communications from exploitation and provide Information Assurance (IA) for critical Navy systems. The project is a continuing effort to modernize obsolete cryptographic equipment and ancillaries with state-of-the-art replacements in order to meet the evolving threat. Replacement COMSEC, in most cases, will be implemented using embedded modules (using National Security Agency (NSA) approved crypto engines). The technical strategy and framework efforts are focused on the use of COMSEC technology to counter a wide variety of INFOSEC threats in a Navy environment. Processes and tools are being developed and tested to design and evaluate the security of systems that integrate COMSEC products. Technology base efforts are: developing new secure voice prototypes; developing technology for a new family of programmable COMSEC modules (Programmable Embeddable INFOSEC Product (PEIP)); and assessing a variety of potentially high pay-off NSA and industry products. The resulting expertise is applied to a wide variety of Navy development programs that must integrate COMSEC technology. The expertise is also applied to the development of Navy INFOSEC products and systems. Under the Navy Key Management System (NKMS) program, the Navy COMSEC program will revolutionize the Navy's COMSEC Material Control System. The overall objectives of the NKMS are to: (1) increase security for all on-line and off-line information processing systems and (2) eliminate workload associated with cryptographic key management. The NKMS program provides for the electronic distribution of cryptographic keying material and includes the development of the NKMS and supporting efforts for benign key fill with the eventual goal of end-to-end encrypted key to eliminate the Walker-Whitworth type insider threat. The NKMS Program will satisfy the Joint Key Management System (JKMS) requirements. Another specific product under development is the Embeddable INFOSEC Product (EIP), designed to

meet the In-line Network Encryption (INE) requirements for Navy networked systems. Starting in FY95, this project also included those efforts previously funded under X0911 (Computer Security) for a total Information Systems Security approach. These efforts are focused on the integration of computer processes into DON systems and their impact on systems security. The objectives are similar to those described above for COMSEC and equally applicable to secure computer technology (i.e., threat assessment, development of missing technology (i.e., Multilevel Security (MLS) and certification methods), development of standards, processes and tools, etc). Specific emphasis is being placed on evaluation, integration and test of Contractor off-the-shelf (COTS)/Non-developmental Item (NDI) network security products into prototype capabilities such as firewalls, guards and monitoring systems to provide for monitoring, detecting, isolating and reacting (MDIR) to network intrusions throughout the DON.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 Plan:

- (U) ($676) Continued development of PEIP specification/prototype. This crypto on a card will support a number of algorithms for use in tactical systems deployed throughout the Navy, Marine Corps, and Coast Guard.
- (U) ($4,008) Continued development of the EIP.
- (U) ($5,360) Continued development of Common Tier 1, to provide for Joint interoperability and electronic key distribution and management (October 1995 through November 1996).
- (U) ($1,000) Began development of local holders (Tier 2) and end COMSEC (Tier 3) segments of NKMS.
- (U) ($4,380) Provided systems security engineering, certification, and accreditation support to Navy information systems such as the Defense Message System (DMS) and the Multilevel Information Systems Security
- Initiative (MISSI). This includes systems security engineering support to Navy tactical and non-tactical

systems (such as the Navy Tactical Command System (NTCS)), shipboard local area networks (LANs), and Fleet Commander-in-Chief (CINC)/Type Commander (TYCOM) Command Headquarters systems, that are performing systems engineering required to incorporate DMS and MISSI evolving security technology.

- (U) ($2,806) Developed/tested network security solutions for Navy information systems such as MISSI.

- (U) ($112) Refined INFOSEC Master Plans to reflect latest operational requirements, technological opportunities and new threat information. Refined technical strategy.

- (U) ($1,963) Developed integrated security architectures for Naval INFOSEC systems for C4I and non-C4I systems. This includes development of interim, incremental security architectures that display how MISSI, EKMS, and Secure Terminal Equipment (STE) security technology will be integrated into Navy systems over a period of time, as the technology becomes available. The architecture includes analysis of all technical issues and related concepts of operations associated with the architectures. Developed requirements for mid-term INFOSEC products that were required. Began to analyze achieved INFOSEC performance in operational systems.

- (U) ($203) Participated in revising/refining INFOSEC standards to reflect evolving capabilities. Refined INFOSEC engineering guideline documents as directed by the CNO/Marine Corps co-chaired Navy INFOSEC Steering Group, with focus on providing a guideline for Navy designated Approving Authorities. In coordination with NSA, continued refinements to NSA INFOSEC Systems Engineering Automated Tool and developed automated tool to accomplish systems certification and accreditation, using the NSA Certification and Accreditation Handbook for Certifiers as a foundation.

- (U) ($1,475) Supported secure voice and biometric access consortia. Continued laboratory tests/assessments of the latest NSA and industry COTS/NDI INFOSEC technology and demonstrations of prototype systems. Continued research into new INFOSEC technology.

- (U) ($-600K) Reflects erroneous reduction of ($-600K) due to double posting of a BTR.

2. (U) FY 1997 PLAN:

- (U) ($1,505) Complete development of the EIP.
- (U) ($800) Continue development of PEIP prototype.
- (U) ($10,248) Continue development of NKMS Tier 1 Phase 1.
- (U) ($1,155) Continue development of NKMS Tier 2 and 3 components.
- (U) ($5,067) Provide systems security engineering, certification, and accreditation support to Navy information systems such as DMS and MISSI. This will include systems security engineering support to Navy tactical and non-tactical systems, that are required to incorporate DMS and MISSI evolving technology. Particular emphasis will be directed to systems engineering associated with implementation of DMS and MISSI technology into tactical systems, including those associated with Top Secret and SCI systems.
- (U) ($2,230) Develop and test network security solutions using available COTS/NDI and government off-the-shelf (GOTS) products to provide integrated capabilities for Navy information systems such as MISSI. This will include high assurance components associated with Top Secret and SCI system solutions
- (U) ($1,562) Continue development of integrated security architectures for Naval INFOSEC systems, both for C4I systems and non-C4I systems. This will include refinements of interim, incremental security architectures that display how MISSI, EKMS, and STE security technology will be integrated into Navy systems. The architectures will include analysis of all technical issues and related concepts of operations associated with the architectures. Develop requirements for mid-term INFOSEC products that may be required. Continue to analyze achieved INFOSEC performance in operational systems. Include latest operational

requirements, technical opportunities and new threat information.

- (U) ($649) Continue to participate in revising/refining INFOSEC standards to reflect evolving capabilities. Refine INFOSEC engineering guideline documents as directed by the CNO/Marine Corps co-chaired Navy INFOSEC Steering Group. In coordination with NSA, continue refinements to Systems Engineering Automated Tools and other automated tools to accomplish systems certification and accreditation.

- (U) ($1,930) Continue to support secure voice and biometric access consortia. Continue laboratory assessments of the latest NSA and industry INFOSEC technology and demonstrations of prototype voice systems. Continue research into new INFOSEC voice technology.

- (U) ($379) 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) ($1,179) Continue development of PEIP prototype.

- (U) ($8,144) Perform development demonstrations, software design reviews, and development, integration and system testing for Tier 1 Phase 1.

- (U) ($1,185) Continue development and begin testing of Tiers 2 and 3 components.

- (U) ($4,010) Provide systems security engineering, certification, and accreditation support to Navy information systems such as DMS and MISSI. This will include systems security engineering support to Navy tactical and non-tactical systems, that are required to incorporate DMS and MISSI evolving technology. Particular emphasis will be directed to systems engineering associated with implementation of DMS and MISSI technology into tactical systems, including those associated with Top Secret and SCI systems.

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BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N PROJECT NUMBER: X0734
PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

- (U) ($1,293) Develop and test network security solutions for Navy information systems. This will include the high assurance components associated with Top Secret and SCI system solutions.

- (U) ($1,396) Continue development of integrated security architectures for Naval INFOSEC systems, both for C4I systems and non-C4I systems. This will include refinements of interim, incremental security architectures that display how MISSI, EKMS, and STE security technology will be integrated into Navy systems. The architectures will include analysis of all technical issues and related concepts of operations associated with the architectures. Develop requirements for mid-term INFOSEC products that may be required. Continue to analyze achieved INFOSEC performance in operational systems. Include latest operational requirements, technical opportunities and new threat information.

- (U) ($405) Continue to participate in revising/refining INFOSEC standards to reflect evolving capabilities. Refine INFOSEC engineering guideline documents as directed by the CNO/Marine Corps co-chaired INFOSEC Steering Group. In coordination with NSA, continue refinements to automated tools to accomplish systems certification and accreditation.

- (U) ($1,717) Develop secure voice integrated shipboard architecture incorporating NSA STE products and integrating COTS assessments of the latest NSA and industry INFOSEC technology and demonstrations of prototype voice systems. Continue research into new INFOSEC voice technology.

- (U) ($962) Reflects realignment of Navy Vulnerability Assessment and Countermeasures (NVACM) under the INFOSEC Program. Continue vulnerability assessments and information warfare threat assessments in support of critical developing information systems. Continue development, evaluation, integration and prototype of COTS/NDI network countermeasures capabilities to monitor, detect, isolate and react (MDIR) to unwanted intrusions into Navy information systems.

4. (U) FY 1999 PLAN:

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PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

- (U) ($2,289) Continue development of PEIP prototype and begin integration and system testing.
- (U) ($1,355) Complete development of EKMS Tier 1 phase I.
- (U) ($2,167) Complete development, integration and testing of Tiers 2 and 3 components with Tier 1 system.
- (U) ($6,185) Begin development of Tier 1 Phase 2, incoporating Defense Message System (DMS), MISSI, Global Command and Control System (GCCS), and other key management requirements.
- (U) ($5,056) Provide systems security engineering, certification, and accreditation support to Navy information systems such as DMS and MISSI. This will include systems security engineering support to Navy tactical and non-tactical systems that are required to incorporate DMS and MISSI evolving technology. Attention will be directed to systems engineering associated with implementation of DMS and MISSI technology into tactical systems, including those associated with Top Secret and SCI systems.
- (U) ($2,144) Continue developing and testing network security solutions for Navy information systems. This will include the high assurance components associated with Top Secret and SCI system solutions.
- (U) ($1,668) Continue development of integrated security architectures for Naval INFOSEC systems, both for C4I systems and non-C4I systems. Continue development of requirements for mid-term INFOSEC products and analysis of achieved INFOSEC performance in operational systems.
- (U) ($540) Continue revising/refining INFOSEC standards, engineering guideline documents and automated tools.
- (U) ($2,453) Continue development of secure voice integrated shipboard architecture. Continue research into new INFOSEC voice technology and conduct laboratory assessments of the latest NSA and industry INFOSEC technology and demonstrations of prototype voice systems.

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BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N PROJECT NUMBER: X0734
PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

- (U) ($1,444) Continue vulnerability/threat assessments and development and systems integration of network countermeasures tools (NVACM) efforts.

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BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N PROJECT NUMBER: X0734
PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	24,036	26,936	20,848	25,146
(U) Adjustments from PRESBUDG:	-2,653	-1,411	-557	+155
(U) FY 1998 President's Budget Submission:	21,383	25,525	20,291	25,301

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

(U) FY 1996 was decreased by $2,653K to reflect: (1) -$1,607K K internal Navy reprogramming for other higher priority programs; (2) ($-600K) erroneous reduction due to double posting of a BTR; (3) -$348K SBIR transfer; (4) -63K reduction for administrative and personal services rescission; (5) -$27K Jordan rescission; and (6) -8K to partially fund the Joint Service Deskbook Initiative reprogramming.

(U) FY 1997 was decreased by $1,411K to reflect Congressional undistributed general reductions.

(U) FY 1998 was decreased $557K to reflect: (1) +$962K - realignment to include Navy Vulnerability Assessment and Countermeasures (NVACM) efforts under the INFOSEC Program; (2) -$1,399K NWCF Adjustments; (3) -$68K Navy POM Adjustment; and (4)-$52K inflation adjustment.

(U) FY99 was increased $155K to reflect (1) +$967K NVACM realignment; (2) $-500K partial Challenge Athena/GBS/SABRE offset; 3) -$185k NWCF Adjustment; (4) -$94K inflation; and (5) -$33K Navy POM Adjustment.

(U) Schedule: Not Applicable

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BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N PROJECT NUMBER: X0734
PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

(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 3410 Secure Voice Systems	6,699	15,144	TRANSFERRED TO ISSP							
(U) OPN 3412 Secure Data Systems	5,890	14,205	TRANSFERRED TO ISSP							
(U) OPN 3486 Key Management Systems	11,744	12,298	TRANSFERRED TO ISSP							
(U) OPN 3415 Information Systems Security Program (SSP)	0	0	31,667	56,409	78,676	69,939	71,755	73,531	CONT	CONT
(U) O&MN 4A6M	15,697	15,556	15,641	15,878	16,266	16,747	17,120	17,714	CONT.	CONT.

(U) RELATED RDT&E:
(U) PE 0303140G (Cryptographic Equipments)

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BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N PROJECT NUMBER: X0734
PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

D. SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
EKMS				
Program Milestones				
Engineering Milestones	3Q-SDR	1Q-SSR 3Q-Build Review 1 4Q-Build Rev 2	1Q-Build Rev 3 4Q-IOC	
T&E Milestones			3Q-In plant test 4Q-GAT	
Contract Milestones				
EIP				
Program Milestones				
Engineering Milestones				
T&E Milestones		2/3/4Q-GOVT TEST	1/2Q-CONTR TEST	
Contract Milestones		1Q-EMDM Proto Del	3Q-EMDM Cert/ Delivery	

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N PROJECT NUMBER: X0734
PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Security Science & Technology	1,873	3,720	2,112	3,468
b. System Security Engineering	6,325	7,278	5,857	7,264
c. Security Guidance & Assessments	797	819	1,814	2,573
d. INFOSEC Products & Subsystems	12,988	13,708	10,508	11,996
Total	*21,983	25,525	20,291	25,301

*assumes restoral of erroneous ($-600) reduction

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											
VIASAT	CPFF	9/93	7,582	7,582	3,459	3,123	1,000	0	0	0	7,582
Contractor/	Contract										

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303140N PROJECT NUMBER: X0734
PROGRAM ELEMENT TITLE: Information Systems Security Program PROJECT TITLE: Information Systems Security (INFOSEC)

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
Product Development (con't)											
SAIC	CPAF	8/95	25,258	25,258	6,558	2,300	8,525	6,975	900	0	25,258
Various	Various	Various	Various	Various	N/A	13,348	12,350	10,342	21,082	CONT.	CONT.
Support and Management											
Various	Various	Various	Various	Various	N/A	3,212	3,650	2,974	3,319	CONT.	CONT.
Test and Evaluation			Not applicable								
GOVERNMENT FURNISHED PROPERTY			Not Applicable								
Subtotal Product Development						18,771	21,875	17,317	21,982	CONT.	CONT.
Subtotal Support and Management						3,212	3,650	2,974	3,319	CONT.	CONT.
Subtotal Test and Evaluation											
Total Project						*21,983	25,525	20,291	25,301	CONT.	CONT.

*assumes restoral of erroneous ($-600K) reduction

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303150N
PROGRAM ELEMENT TITLE: Global Command and Control 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
X2304 Global Command and Control System (GCCS)	0	0	498	508	524	536	550	563	CONT.	CONT.
TOTAL	0	0	498	508	524	536	550	563	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Global Command and Control System (GCCS) (formerly Worldwide Military Command and Control System (WWMCCS)) is an operational, strategic joint/multi-service program that provides support to the National Command Authority (NCA) and the Joint Staff by providing C3 data processing capabilities that facilitate national security decision making, force preparation, and operations planning and execution. GCCS replaced WWMCCS and extends the strategic C3 capabilities to the tactical user level, as well as providing all sites with enhanced tactical capabilities that did not exist in WWMCCS.

The Defense Information Systems Agency (DISA) is the lead agency for GCCS, however each service is responsible for designing and developing essential core components of the GCCS Common Operating Environment (COE). Each component must be created to ensure interoperability, backward compatibility, and effective interface with all other core components.

Operationally, the Navy supported sites are USACOM, USPACOM, CINCLANTFLT, CINCPACFLT, CINCUSNAVEUR, CNO, and COMUSJAPAN, as well as associated remote and afloat GCCS users. Additional GCCS server/user sites include COMNAVCENT, NAVSPECWARCOM, and NAVSPACECOM.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303150N
PROGRAM ELEMENT TITLE: Global Command and Control 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
X2304 Global Command and Control System (GCCS)	0	0	498	508	524	536	550	563	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: : The Global Command and Control System (GCCS) (formerly Worldwide Military Command and Control System (WWMCCS)) is an operational, strategic joint/multi-service program that provides support to the National Command Authority (NCA) and the Joint Staff by providing C3 data processing capabilities that facilitate national security decision making, force preparation, and operations planning and execution. GCCS replaced WWMCCS and extends the strategic C3 capabilities to the tactical user level, as well as provide all sites with enhanced tactical capabilities that did not exist in WWMCCS.

The Defense Information Systems Agency (DISA) is the lead agency for GCCS, however in addition to service/site unique applications each service is responsible to design and develop essential core components of the GCCS Common Operating Environment (COE). Each component must be created to ensure interoperability, backward compatibility, and effective interface with all other core components.

Operationally, the Navy supported sites are USACOM, USPACOM, CINCLANTFLT, CINCPACFLT, CINCUSNAVEUR, CNO, and COMUSJAPAN, as well as associated remote and afloat GCCS users. Additional GCCS server/user sites include COMNAVCENT, NAVSPECWARCOM, and NAVSPACECOM.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0303150N PROJECT NUMBER: X2304
PROGRAM ELEMENT TITLE: Global Command and Control System PROJECT TITLE: GCCS

(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 migrate the required Navy GCCS COE segments and migrate Navy site unique GCCS applications to GCCS DII version 4.0. Efforts will include initial development and required upgrades to Navy segments to accommodate changes between GCCS DII COE versions 3 and 4. Navy site unique applications, (Reserve Data Unit Data Resource System version 4.0 (RUDRS) and PACOM Frequency Management System version 4.0 (PFMAS)), will also require updating to accommodate GCCS CDII version 4.0, developing new code to support emergent user requirements and migration to Oracle database. (October 97 through July 98)

4. (U) FY 1999 PLAN:

   - (U) ($508) Develop and migrate the required Navy GCCS COE segments and migrate Navy site unique GCCS applications to GCCS DII version 5.0. Efforts will include initial development and required upgrades to Navy segments to accommodate changes between GCCS DII COE versions 4 and 5. Develop RUDRS 5.0 and PFMAS 5.0 and integrate with GCCS DII version 5.0. (October 98 through July 99)

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	508
(U) FY 1998 PRESIDENT'S BUDGET SUBMIT:	0	0	498	508

FY 1998 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0303150N
PROGRAM ELEMENT TITLE: Global Command and Control System

PROJECT NUMBER: X2304
PROJECT TITLE: GCCS

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1998: +$500K added to fund GCCS development efforts; -$1K reduced for minor adjustments; -$1K DoD inflation adjustment.

FY 1999: +$513K added to fund GCCS development efforts; -$3K reduced for minor adjustments; -$2K 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 3350	2,298	1,677	1,560	4,509	4,595	4,783	4,889	5,008	CONT.	CONT.
(U) OMN	2,032	1,603	5,157	5,476	5,598	5,712	5,869	6,028	CONT.	CONT.

(U) RELATED RDT&E: Not applicable

D. (U) SCHEDULE PROFILE: Not Applicable

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite 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
X0524 DMSP - Navy Support	770	772	2,789	8,745	16,026	19,966	20,905	21,385	Cont.	Cont.
X1452 GEOSAT	24,501*	12,362	376	390	378	376	384	393	Cont.	Cont.
Total	25,271	13,134	3,165	9,135	16,404	20,342	21,289	21,778	Cont.	Cont.

* Reflects an erroneous adjustment which was the result of a double posting error for a BTR.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) includes two projects - the DMSP Navy Support project and the Geodetic/Geophysical Satellite (GEOSAT) project. The Defense Meteorological Satellite Program (DMSP) is a Joint Service use program which supports sensor and satellite engineering and technology. The DMSP Navy Support project provides for Navy participation in current DMSP and future Navy unique sensor development efforts in support of the Fleet operational requirements on the converged National Polar-orbiting Operational Environmental Satellite System (NPOESS). These efforts are not funded within the AF PE for DMSP/NPOESS, and are in accordance with current inter-service agreements. The GEOSAT satellite provided ocean topography information from 1985 until it failed in January 1990. In FY 1991, the Navy began the development of a follow-on capability to continue providing this required ocean topography information via the GEOSAT follow-on (GFO) project.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite Program

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
X0524 DMSP - Navy Support	770	772	2,789	8,745	16,026	19,966	20,905	21,385	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The DMSP Navy Support project provides for Navy participation in current DMSP and future Navy unique sensor development efforts in support of the Fleet operational requirements on the converged National Polar-orbiting Operational Environmental Satellite System (NPOESS). These efforts are not funded within the AF PE for DMSP/NPOESS, and are in accordance with current inter-service agreements. The project also acquires the information necessary to keep Navy ground receiving equipment compatible with future satellite data formats and data transfer rates. The project also provides for Navy participation as a voting member of the DMSP Configuration Control Board (CCB).

(U) PROGRAM ACCOMPLISMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($130) Continued participation on the DMSP CCB.
- (U) ($150) Monitored sensor and program developments.
- (U) ($160) Participated in Polar-orbiting Environmental Satellite convergence system studies.
- (U) ($330) Assessed Navy-unique sensor requirements for surface wind speed and direction over the ocean (wind fields) and begin systems engineering of recommended sensors.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite Program

2. (U) FY 1997 PLAN:

- (U) ($180) Continue systems engineering of Navy-unique sensor requirements for surface wind fields.
- (U) ($119) Continue participation on the DMSP CCB.
- (U) ($160) Continue to monitor sensor and program developments.
- (U) ($300) Participate in convergence system studies and systems engineering trade-off evaluations for the overall operational requirements.
- (U) ($13) Portion of extramural program reserved for Small Business Innovation Business Innovation Research Assessment in accordance with 15 U.S.C. 638.

3. (U) FY 1998 PLAN:

- (U) ($512) Participate in convergence system studies and systems engineering trade-off evaluations for the overall operational requirements.
- (U) ($130) Continue participation on the DMSP CCB.
- (U) ($180) Continue monitor sensor and program developments.
- (U) ($1,967) Begin wind-field sensor design and development.

4. (U) FY 1999 PLAN:

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite Program

- (U) ($700) Prepare for validation effort associated with the expected launch of the first DMSP SSMIS (Microwave Imager/Sounder).
- (U) ($190) Continue participation on the DMSP CCB.
- (U) ($180) Continue monitoring sensor and program developments.
- (U) ($7,675) Continue wind-field sensor design and development. Begin wind-field satellite design.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	784	807	10,832	17,447
(U) Adjustments from FY 1997 PRESBUDG:	-14	-35	-8,043	-8,702
(U) FY 1998 President's Budget submission:	770	772	2,789	8,745

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

(U) FY 1996: Jordan Rescission (-$1K). (-$2K) reflects reduction for administrative and personal services rescission. (-$14K) for SBIR assessment. (+$3K) reflects other minor Navy fiscal adjustments.

(U) FY 1997: Congressional NWCF adjustment (-$16K). Congressional Undistributed general adjustments (-$19K).

(U) FY 1998: Navy realigns funding consistent with sensor development for a planned NPOESS Launch in FY 06 (-$8,000K). NWCF adjustment (-$36K). Inflation adjustment (-$7K).

(U) FY 1999: Navy realigns funding consistent with sensor development for a planned NPOESS launch in FY 06

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite Program
(-$8,500K). NWCF adjustment (-$170K). Inflation adjustment (-$32K).

(U) Schedule: See above.

(U) Technical: Not applicable.

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

(U) RELATED RDT&E: PE 0305160F, Air Force DMSP - provides AF program management for DMSP
PE 0604218N, Air/Ocean Equipment Engineering - AN/SMQ-11 satellite receiver/recorder system engineering to receive data from DMSP onboard selected ships and shore sites.

D. (U) SCHEDULE PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite Program

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Sensor Engineering/Development	539	530	2,499	8,455
b. Contractor Engineering	231	242	290	290
Total	770	772	2,789	8,745

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

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development											
Various	Various		CONT.	CONT.	6,748	770	772	2,789	8,745	CONT.	CONT.
Support and Management											
Test and Evaluation											

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite Program
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										

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	6,748	770	772	2,789	8,745	CONT.	CONT.
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project	6,748	770	772	2,789	8,745	CONT.	CONT.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N PROJECT NUMBER: X1452
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite PROJECT TITLE: GEOSAT 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
X1452 GEOSAT	24,501	12,362	376	390	378	376	384	393	Cont.	Cont.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides a satellite-borne radar altimeter sensor to obtain ocean topography measurements from which tactically significant features such as ocean fronts, eddies, and sea-ice edges are derived. Topography provides a unique and important data source in support of a number of Naval warfare areas such as anti-submarine and undersea warfare, as well as providing other agencies such as NOAA and NASA with valuable inputs to studies involving global warming and climate change. The data was previously provided by GEOSAT from 1985 until that satellite failed in January 1990. The GEOSAT Follow-On (GFO) satellite is intended to provide interim altimetry data until altimetry data becomes available on a future environmental satellite.

(U) PROGRAM ACCOMPLISMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:

- (U) ($3,948) Reflects an erroneous adjustment which was the result of a double posting error for a BTR.
- (U) ($14,400) Procured launch vehicle and complete launch vehicle interfaces.
- (U) ($6,153) Continue GFO satellite development.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N PROJECT NUMBER: X1452
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite PROJECT TITLE: GEOSAT Program

2. (U) FY 1997 PLAN:

- (U) ($360) Fund on-orbit performance incentive.
- (U) ($1,349) Begin GFO-2 effort.
- (U) ($328) Continue to monitor satellite and launch operations.
- (U) ($10,000) Complete GFO spacecraft and launch.
- (U) ($325) 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) ($376) Fund on-orbit performance incentive.

4. (U) FY 1999 PLAN:

- (U) ($390) Fund on-orbit performance incentive.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N PROJECT NUMBER: X1452
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite PROJECT TITLE: GEOSAT Program

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	16,994	388	377	392
(U) Adjustments from FY 1997 PRESBUDG:	7,507	11,974	-1	-2
(U) FY 1998 President's Budget submission:	24,501*	12,362	376	390

* 3,948 double posting error

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding:

FY 1996: Reprogramming to fund the Joint Service Deskbook initiative (-$6K). Jordan Rescission (-$20K). -$43K reflects reduction for administrative and personal services rescission. -$381K for SBIR assessment. $3,948K cost growth for GFO-1. (+$61K) reflects other minor Navy fiscal adjustments. $3,948 double posting error.

FY 1997: $12,500K for GFO Congressional plus up. Congressional NWCF adjustment (-$257K). Congressional Undistributed general adjustments (-$269K).

FY 1998: DoD inflation adjustment (-$1K).

FY 1999: NWCF adjustment (-$1K). DoD inflation adjustment (-$1K).

(U) Schedule: Not applicable.

(U) Technical: FY 97 Congressional plus up funds provided to begin GFO-2 effort.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N PROJECT NUMBER: X1452
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite PROJECT TITLE: GEOSAT Program

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

(U) RELATED RDT&E: PE 0604218N, Air/Ocean Equipment Engineering AN/SMQ-11 satellite receiver/recorder system engineering to receive altimetry from GFO.

D. (U) SCHEDULE PROFILE:

	FY 1996	FY 1997	FY 1998	FY 1999
Program Milestones		Launch Sat #1		
Engineering Milestones	FRR 4Q			
T&E Milestones		On Orbit Tests		
Contract Milestones				

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N PROJECT NUMBER: X1452
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite PROJECT TITLE: GEOSAT Program

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Satellite Development	19,383	12,034	376	390
b. Sensor Development	820	0	0	0
c. Contractor Engineering Support	350	328	0	0
Total	20,553*	12,362	376	390

* Assumes correction of the erroneous posting adjustment ($3,498K)

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											
Ball Aerospace w/Options	CPIF	8/92	79,251	79,251	47,068	19,383	12,034	376	390	0	79,251

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N PROJECT NUMBER: X1452
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite PROJECT TITLE: GEOSAT Program

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
Various	Various	N/A	CONT.	CONT.	5,541	820	0	0	0	0	6,361
Support and Management											
Various					2,203	350	328	0	0	0	2,881
Test and Evaluation											
GOVERNMENT FURNISHED PROPERTY											

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305160N PROJECT NUMBER: X1452
PROGRAM ELEMENT TITLE: Defense Meteorological Satellite PROJECT TITLE: GEOSAT Program

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				52,609	20,203	12,034	376	390	0	85,612
Subtotal Support and Management				2,203	350	328	0	0	0	2,881
Subtotal Test and Evaluation										
Total Project				54,812	20,553*	12,362	376	390	0	88,493

* Assumes correction of the erroneous posting adjustment ($3,948K).

C. (U) FUNDING PROFILE: Not Applicable.

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

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0305192N
PROGRAM ELEMENT TITLE: JDISS

(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
R2295 JDISS/LOCE Integration	0	2,508*	2,412	2,293	2,094	1,893	1,935	1,977	CONT.	CONT.

*Funded in Program Element 0604231N project R2295 in FY 97.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program is established under the Joint Military Intelligence Program reflecting the combination of Joint Deployable Intelligence Support Systems (JDISS) program and the Linked Operations Intelligence Centers Europe (LOCE) program. The goal is to use the best functionality from LOCE and develop the system into the JDISS common intelligence baseline thereby eliminating different systems with near duplicate functionality and centering on JDISS as the DoD common intelligence workstation baseline. The RDT&E funding will be used to work on the development of LOCE functionality onto JDISS, develop LOCE tools as a model of intelligence services for a JDISS coalition system, develop all functionality to the Defense Information Infrastructure (DII), development of JDISS segments in the Global Command and Control System and the serviced systems Command, Control, Communications, Computers and Intelligence (C4I) systems, and adopt new technology as it becomes available into the JDISS intelligence environment.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0305192N
PROGRAM ELEMENT TITLE: JDISS

PROJECT NUMBER: R2295
PROJECT TITLE: JDISS/LOCE Integration

(U) PROGRAM ACCOMPLISHMENTS AND PLANS

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

2. (U) FY 1997 PLAN: Funded in Program Element 0604231N project R2295 in FY 1997.
   - (U) ($2,442) Work will begin to create a centralized office that provides a single solution for interoperability for intelligence sharing at special compartmented information, collateral and NATO levels and sustains current capabilities. JDISS/LOCE research and development is required to develop interfaces to new theater and national intelligence platforms and sources. The JDISS/LOCE development will ensure interoperability with the Navy's Joint Maritime Command Information System, Army's All Source Analysis System Warlord system, Air Force's Combat Information System, and USMC's Interactive Analysis System, while all systems continue to evolve to a common DII. Effort will also focus on development of a coalition system integration that allow for varying releasability levels on a single network.
   - (U) ($66) Portion of extramural program reserved for Small Business Innovation Research Assessment in accordance with 15 USC 638.

3. (U) FY 1998 PLAN:
   - (U) ($2,412) RDT&E funding will focus on the continued development and implementation of intelligence tools for a DII based system with functionality to deliver a robust and flexible capability for use in both U.S. and coalition warfare. Continued developments in security, collaborative computing, and communications technology will require ongoing RDT&E funding to support the greater than 2000 JDISS users worldwide. Ongoing technical integration will also be required to continue development of enhanced JDISS interoperability with service C4I systems.

4. (U) FY 1999 PLAN:
   - (U) ($2,293) RDT&E funds will continue to provide for the development and implementation of intelligence tools for a DII based system for use in both U.S. and coalition warfare. Ongoing RDT&E funds will be required to

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

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0305192N PROJECT NUMBER: R2295
PROGRAM ELEMENT TITLE: JDISS PROJECT TITLE: JDISS/LOCE Integration

provide for continued developments in security, collaborative computing, communications technology and technical integration to continue development of enhanced JDISS interoperability with service C4I systems.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	0	2,614	2,415	2,304
(U) Adjustments from FY 1997 PRESBUDG:	0	-106	-3	-11
(U) FY 1998/1999 PRESBUDG Submission:	0	2,508	2,412	2,293

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 funding adjustment is due to Congressional Undistributed Reductions (-106). FY 1998 funding adjustment is due to internal Navy adjustment (-3). FY 1999 adjustment is due to NWCF and minor adjustments (-11).

(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: 0305192N
PROGRAM ELEMENT TITLE: JDISS

PROJECT NUMBER: R2295
PROJECT TITLE: JDISS/LOCE Integration

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Software Development	0	1,702	1,476	1,304
b. Systems Engineering	0	515	613	700
c. Operational Test and Evaluation	0	291	323	289
Total	0	2,508	2,412	2,293

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

C. (U) FUNDING PROFILE: Not applicable.

000540

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0305927N
PROGRAM ELEMENT TITLE: Naval Space Surveillance

(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
R0125 Naval Space Surveillance	712	677	399	529	855	873	892	913	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Naval Space Surveillance Fence is an integral component of the U. S Space Command Space Surveillance Network. This system provides continuous surveillance and unalerted detection of space objects crossing the Continental United States (CONUS). The fence is also the only space surveillance system which provides satellite vulnerability and space control data to the fleet units. It is a multistatic continuous wave radar fence consisting of three transmitter sites, six receiver sites, and a computation/communication center. The transmitter and receiver sites are located on a great circle across the southern CONUS, and the computation/communication center is located at Naval Space Command.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineer and manufacturing development for upgrade of existing operational systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS:
   - (U) ($250) Prototype and testing completed on fence improvements in accuracy, sensitivity and modeling.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305927N PROJECT NUMBER: R0125
PROGRAM ELEMENT TITLE: Naval Space Surveillance PROJECT TITLE: Naval Space Surveillance

- (U) ($150) Completed initial study on integration of optical and fence detection.
- (U) ($232) Demonstrated improved calibration techniques for fence operations.
- (U) ($80) Developed improved atmospheric drag prediction.

2. (U) FY 1997 PLAN:
   - (U) ($121) Complete development of integrated and optical fence sensors.
   - (U) ($182) Prototype high risk components of next generation fence.
   - (U) ($150) Initiate development of prototype transmitter module.
   - (U) ($206) Improve accuracy and consistency of angular resolution and chirp processing techniques.
   - (U) ($18) Portion of extramural program reserved for Small Business Innovation Research Assessment in accordance with USC 638.

3. (U) FY 1998 PLAN:
   - (U) ($200) Develop and evaluate prototype X-band feed assembly as part of antenna array.
   - (U) ($100) Evaluate site distibution impacts to current system of X-band implementation.
   - (U) ($99) Demonstrate impact of high volume processing (10-100 times) on multiple site integration.

4. (U) FY 1999 PLAN:
   - (U) ($529) Initiate integrated prototyping and evaluation of next generation fence capability. Demonstrate and protot remote processing of observation data. Evaluate transmitter module improvements.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305927N PROJECT NUMBER: R0125
PROGRAM ELEMENT TITLE: Naval Space Surveillance PROJECT TITLE: Naval Space Surveillance

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	729	706	707	860
(U) Adjustments from FY 1997 PRESBUDG:	-17	-29	-308	-331
(U) FY 1998/1999 PRESBUDG Submission:	712	677	399	529

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 adjustment is due to administrative and personal services rescission (-5) and SBIR assessment (-12). 1997 adjustment is due to Congressional Undistributed Reductions (-29). FY 1998 adjustment is due to internal navy adjustm (-307) and inflation (-1). FY 1999 adjustment is due to NWCF and other minor adjustments (-329) and inflation (-2).

(U) Schedule: Not applicable.

(U) Technical: The funding decrease in FY 1998 eliminates efforts to integrate sensors on a near real-time basis, reducin ability to analyze orbital anomalies and reduce drag modelling, currently the biggest variable in low orbit and re-entry predictions. FY 1999 funding reductions reduce efforts towards fence replacement acquisition increasing the technical and risk for the required FY 2003 implementation.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.
(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

000543

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0305927N
PROGRAM ELEMENT TITLE: Naval Space Surveillance
PROJECT NUMBER: R0125
PROJECT TITLE: Naval Space Surveillance

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Project Management	21	20	12	16
b. Product Development	691	657	387	513
Total	712	677	399	529

000544

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0305927N PROGRAM ELEMENT TITLE: Naval Space Surveillance PROJECT NUMBER: R0125 PROJECT TITLE: Naval Space Surveillance

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											
Miscellaneous					UNK	712	677	399	529	CONT.	CONT.

Support and Management: Not applicable.

Test and Evaluation: Not applicable.

GOVERNMENT FURNISHED PROPERTY: Not applicable.

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0305927N
PROGRAM ELEMENT TITLE: Naval Space Surveillance
PROJECT NUMBER: R0125
PROJECT TITLE: Naval Space Surveillance

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	UNK	712	677	399	529	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	UNK	712	677	399	529	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

000546

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0708011N
PROGRAM ELEMENT TITLE: Manufacturing Technology 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
R1050 Manufacturing Technology	83,139	84,397	*36,000	35,348	25,917	26,794	27,371	27,993	CONT.	CONT.
R2322 Acquisition Center of Excellence	0	480	**	**	**	**	**	**	**	480
TOTAL	83,139	84,877	*36,000	35,348	25,917	26,794	27,371	27,993	CONT.	CONT.

*Budgeted at $0, but will execute at $36,000 thousand in FY 1998 using carryover from FY 1997.
**Funded in P.E. 0605804N project R0835 beginning in FY 1998.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Manufacturing Technndogy (MANTECH) Program is intended to improve the productivity and responsiveness of the U.S. defense industrial base by funding the development of manufacturing technologies. The MANTECH program, by providing seed funding for the development of moderate to high risk process and equipment technology, permits contractors to upgrade their manufacturing capabilities. Ultimately, the program aims to produce high-quality weapon systems with shorter lead times and reduced acquisition costs. Major areas of endeavor both underway and planned include: advanced manufacturing technology for electronics assembly, laser metalworking, flexible computer manufacturing, composites, metalworking and welding technology. The MANTECH program is being integrated into the Joint Mission Area/Support Area and Joint Warfare Operational Capability process and will utilize the results of these initiatives as appropriate in the program planning process.
The MANTECH program is aimed at achieving affordability in the acquisition of weapons systems by inserting manufacturing process solutions early into the design phase to reduce lifecycle costs, improve schedules and ensure quality.

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

DATE: February 1997

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0708011N
PROGRAM ELEMENT TITLE: Manufacturing Technology Development

(U) This program element funds the Acquisition Center of Excellence in FY 1997.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing, operational systems.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0708011N
PROGRAM ELEMENT TITLE: Manufacturing Technology 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
R1050 Manufacturing Technology	83,139	84,397	*	35,348	25,917	26,794	27,371	27,993	CONT.	CONT.

*Funded at $36,000 thousand in FY 1998 using carryover from FY 1997.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Manufacturing Technology (MANTECH) Program is intended to improve the productivity and responsiveness of the U.S. defense industrial base by funding the development of manufacturing technologies. The MANTECH program, by providing seed funding for the development of moderate to high risk process and equipment technology, permits contractors to upgrade their manufacturing capabilities. Ultimately, the program aims to produce high-quality weapon systems with shorter lead times and reduced acquisition costs. Major areas of endeavor both underway and planned include: advanced manufacturing technology for electronics assembly, laser metalworking, flexible computer manufacturing, composites, metalworking and welding technology. The MANTECH program is being integrated into the Joint Mission Area/Support Area and Joint Warfare Operational Capability process and will utilize the results of these initiatives as appropriate in the program planning process.

The MANTECH program is aimed at achieving affordability in the acquisition of weapons systems by inserting manufacturing process solutions early into the design phase to reduce lifecycle costs, improve schedules and ensure quality.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Manufacturing Technology Development PROJECT TITLE: Manufacturing Technology

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1996 ACCOMPLISHMENTS: (While the control amount for FY 1996 is $83,139 thousand, the actual execution amount is $73,542 thousand. This includes $27,803 thousand of FY 1995 carryover and $45,739 thousand of FY 1996 funds. $37,400 thousand of FY 1996 funds is being forward financed to FY 1997.)

(U) The Navy MANTECH program executes a significant amount of its projects through its Centers of Excellence. The technical efforts performed are reflected throughout the taxonomy.

- (U) ($500) Manufacturing and Engineering Systems: Completed efforts in development and implementation of Product Data Exchange System conformance testing. Initiated efforts for a National Advanced Manufacturing Testbed.

- (U) ($15,928) Composites Processing and Fabrication: Initiated effort for Phase II of the Advanced Fiber Placement project. Initiated efforts to start the Composite Affordability Initiative. Completed fabrication of composites electronics enclosures; high thermal conductivity pitch fibers; and recycling of scrap materials. Continued efforts in Low Observable technology; resin transfer molding; topside structures; and in-situ fiber placement.

- (U) ($8,457) Electronics Processing and Fabrication: Initiate a call for White Papers on the Mercury Cadmium Telluride Sensors for Bulk Manufacturing. Initiate a Broad Agency Announcement for the Power Electronics Building Bl effort. Continue process improvement projects for the EA-6B aircraft. Replicated hybrid optics in durable materials low cost manufacture of focal plane arrays. Continued efforts in automated assembly of fine pitch devices.

- (U) ($34,407) Metals Processing and Fabrication: Completed efforts in automated deburring and chamfering of turbine engine components. Continued efforts for laser processing of Nickel Aluminum; laser processing techniques for naval materials; surface engineering thrusts; micro and nano fabrication; wear and corrosion resistant systems; electron bea physical vapor disposition; spray metal forming, modeling of clamping distortions and prediction of gear accuracy in g

grinding; performance testing of ausformed finished gears; rapid response for drive trains; and navy metrology lab. Continued efforts in advanced fabrication techniques such as semi-solid processing, power consolidation and welding su of ship and submarine applications.

- (U) ($7,452) Advanced Industrial Practices: Continued factory surveys of defense and commercial companies, defense laboratories and activities and academia. Continued developing enhancements of the Program Managers Workstation to fu support technical risk assessment for the Surface Ship Torpedo Defense program, the Standard Missile II program, and others.

- (U) ($6,798) Other: Continued work on the Multi-Function Self-Aligned Gate project supporting the Cooperative Engager Capabilities program office. Completed the Supercritical Fluid Processing of Energetics project. Continued the Ammon Dinitramide Manufacturing Technology initiative in support of energetic materials. Continued efforts for the nine Shi Panels for the National Shipbuilding Research Program. Satisfied termination costs for a cost-shared contractual arrangement with Amoco Corporation due to a Termination for Convenience of the Government from FY92. Provided enginee technical support funding to various field activities and laboratories to support ongoing MANTECH projects.

2. (U) FY 1997 PLAN: (While the control amount for FY 1997 is $84,397 thousand, the actual execution amount is $85,797 thousand. This reflects the $37,400 thousand being forward financed from FY 1996 and $48,397 thousand in FY 1997 funds. $36,000 thousand of FY 1997 funds is being forward financed to FY 1998.)

- (U) The Navy MANTECH program executes a significant amount of its projects through its Centers of Excellence. The technical efforts performed are reflected throughout the following taxonomy.

  -- (U) ($157) Manufacturing and Engineering Systems: Continue work on STEP Conformance Testing.

  -- (U) ($14,500) Composites and Processing Fabrication: Continue the Composites Affordability initiative, Rapid Response projects, Composites Shipboard Electronic Cabinets, Ship Topside Structure Demonstration, Composite

Ventilation Ducting for Shipboard Applications, Carbon-Carbon Manufacturing Improvement, and Z-Direction Reinforcement for Composite Laminates. Complete Manufacturing Technology for Composites Marine Control Surfaces, Advanced Fiber Placement (Phase II), In-Situ Fiber Placement, Low Observable Honeycomb Core Manufacturing and Injection Molded Thermoplastic Composite Bearing Cages.

-- (U) ($18,079) Electronics Processing and Fabrication: Initiate the following electro-optics projects: Sapphire Dome Coatings, Diode Pump Erbium Glass Laser Range Finders, Low Cost Manufacture of Infrared Focal Plane Arrays, Fiber Optic Velocity Sensor Manufacturing, and Manufacture Automation of Monolithic Ring Gyros. Continue Diamond Film Packaging for Transmit/Receive Modules, Simulation and Modeling for Electronically Steerable Arrays, Enhanced Fault Isolation, Flexible Manufacturing of Microwave Vacuum Electronic Devices. Continue manufacturing work on the Power Electronics Building Block program.

-- (U) ($28,361) Metals Processing and Fabrication: Complete final documentation on the Cast Ductile Iron Projectiles and Bombs efforts. Continue Condition Based Maintenance, Gear Hob Wear/Breakage Monitoring, Marine Corps Rotocraft, Cutting Tools Coatings, Net Shape Finishing of Gears by Ausforming and Laser Processing of Nickel Aluminum. Continue Titanium Welding, Weld Fumes, Weld Residual Stress and Distortion, and the Programmable Automated Welding System projects. Complete Superplastic Forming of Aluminum Aircraft Assemblies, Advanced Optimized Weldment Properties, and Knowledge Integrated Solution Heat Treatment Process for Turbine Engines. Complete Development of Hot Isostatic Pressing Modeling System for Large Complex Parts, Powder Injection Molding of Naval Weapon Systems, Optimized Atomization of Magnesium Power and Computer Prediction of Hot Tears and Hot Cracks in Precision Casting. Continue Semi Solid Forming Technology for Titanium Fluid Handling Components, Centrifugally Cast Titanium Bronze Components, and Commercialization of Advanced Welding Consumables.

-- (U) ($8,970) Advanced Industrial Practices: Continue identification of best management and manufacturing practices to be utilized in achieving acquisition reform. Continue enhancements of the Program Managers Workstation and update as needed. Continue Program Managers Workstation courses at Defense Systems

Management College. Continue the identification of environmental best practices for use in partnership with EPA, University of Maryland and White House Environmental Office. Continue Shock Reduction of Hull Planing Boats, Research in Shipboard Sensors, Integrating Fire-Tolerant Design and Fabrication of Composite Ship Structures, Motion Sickness and Anti-Motion Sickness Treatment, and the Environmental Resource Information Center in support of the MANTECH shipbuilding initiatives.

-- (U) ($13,512) Other: Finish Phase II of Spray Metal Forming project. Complete manufacturing effort on the Transmit Receive Modules for the Cooperative Engagement Capabilities program. Continue repair technology rapid response projects, Ball Valve Repair Process Improvement, Shearography System Development in support of the depots and shipyards. Continue Low Cost Charge Munitions Manufacturing, Improved Technology for Line Charge Manufacturing and Ammonium Dinitramide Manufacturing in support of energetics materials.

- (U) ($2,218) Portion of extramural program reserved for Small Business Innovation Research Assessment in accordance with 15 USC 638.

3. (U) FY 1998 PLAN: (While the control amount for FY 1998 is $0, the actual execution amount is $36,000 thousand. This reflects FY 1997 carryover to FY 1998.)

- (U) The Navy MANTECH program executes a significant amount of its projects through the Centers of Excellence. The technical efforts performed are reflected throughout the following taxonomy:

-- (U) ($9,800) Composites and Processing Fabrication - continue efforts in composite shipboard electronic cabinets, continue the Composites Affordability Initiative, initiate a Topside Structure project, continue efforts with the NAVSEA Lean Ship initiative. Continue work supporting the F414 Engine Demonstration with GE.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Manufacturing Technology Development PROJECT TITLE: Manufacturing Technology

-- (U) ($6,100) Electronics Processing and Fabrication - Continue Phase I efforts on the Power Electronic Building Block manufacturing plan, continue the AEGIS electronics demonstration, continue Flexible manufacturing of microwave vacuum electronic devices, continue Diamond Film Packaging for Transmit Receive Modules, continue Enhanced Fault Isolation project, continue Sapphire Dome Coatings, continue Diode Pump Erbium Glass Laser Range Finders, continue Low Cost Manufacture of Infrared Focal Plane Arrays, continue Fiber Optic Velocity Sensor Manufacturing, and continue Manufacture Automation of Monolithic Ring Gyros.

-- (U) ($7,300) Metals Processing and Fabrication - Continue efforts in Centrifugally Cast Titanium Carbide Bronze Implements, continue Semi-Solid Metalworking Technology for Titanium Fluid Handling Components, continue Commercialization of Advanced Welding Consumables, continue Titanium Welding, continue Weld Residual Stress and Distortion, continue Modeling of Clamping Distortions and Prediction of Gear Accuracy, continue laser Processing of Nickel Aluminum Bronze, and continue Non-Contract Highspeed Gear Inspection, continue Adhesive Bondline Integrity, continue Programmable Automated Welding System, and continue Underwater Wet Welding.

-- (U) ($5,500) Advanced Industrial Practices - Continue efforts in identifying best commercial practices to be incorporated into the Acquisition Reform regime. Initiate efforts with NAVSEA to support the Lean Ship Initiative. Continue Non-Toxic Pigment Substitute for Chromium in Primer for Aluminum Substrates, continue Simulation Based Design initiatives, continue Environmental Resource Information Center, continue Research in Shipboard Sensors and continue Effective Aluminum Catamaran Structure Extrusions.

-- (U) ($7,300) Other - Continue projects in the repair technology arena that support the depots and shipyards such as Supercritical CO2 Parts Cleaning, Ball Valve Repair Process Improvement, Shearography System Development, and Reverse and Re-Engineering Technical Data Generation System. Continue the Ammonium Dinitramide and Composite Propellants projects in support of energetic materials. Continue enhancing technology transfer efforts at the Technology Transfer Center. Provide funding for the shipboard circuit breaker manufacturing initiative for qualification of new circuit breaker suppliers.

4. (U) FY 1999 PLAN:

- (U) ($35,348) The funding provided will be allocated to high priority efforts as approved by the MANTECH Executive Steering Committee. High priority projects will fall within the three top areas: Composites, Electronics and Metalworking. Efforts will be continued in energetics materials, repair technology, shipbuilding, and best manufacturing practices.

B. (U) PROGRAM CHANGE SUMMARY:

	FY 1996	FY 1997	FY 1998	FY 1999
(U) FY 1997 President's Budget:	85,228	35,526	31,771	27,539
(U) Adjustments from FY 1997 PRESBUDG:	-2,089	+48,871	-31,771	+7,809
(U) FY 1998/1999 PRESBUDG Submission:	83,139	84,397	*	35,348

*Being funded with $36,000 thousand of FY 1997 carryover funding.

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1996 adjustment is due to Jordanian rescission (-98), administrative and personal services rescission (-282), SBIR assessment (-1,777), and update to reflect actual execution (+68). $37,400 thousand of FY 1996 funds are being forward financed to fund FY 1997 efforts. FY 1997 adjustment is due to Congressional increase (+52,474) and Congressional Undistributed Reductions (-3,603). FY 1998 adjustment (-31,771) is due to $36,000 thousand of FY 1997 funds being used to forward finance FY 1998 efforts. FY 1999 was increased (+8,073) to

fund the program at $36M with reductions due to Navy Working Capital Fund and a minor pricing adjustment (-133) and inflation (-131).

(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: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Industrial Preparedness and Manufacturing Technology PROJECT TITLE: Manufacturing Technology

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

Project Cost Categories	FY 1996	FY 1997	FY 1998	FY 1999
a. Process Development	68,977	79,364	33,000	33,000
b. Program Management Support	4,565	6,433	3,000	2,348
Total	73,542*	85,797**	36,000***	35,348

*Reflects FY 1996 actual execution. This includes $27,800 thousand of FY 1995 carryover and $45,739 thousand of FY 1996 funds.
**Reflects FY 1997 actual execution. This includes $37,400 thousand of FY 1996 carryover and $48,397 thousand in FY 1997 funds.
***Funded at $36,000 thousand in FY 1998 using carryover from FY 1997.

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

BUDGET ACTIVITY: 7
PROGRAM ELEMENT: 0708011N
PROGRAM ELEMENT TITLE: Industrial Preparedness and Manufacturing Technology
PROJECT NUMBER: R1050
PROJECT TITLE: Manufacturing Technology

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											
GLCC	C/BAA	1995	CONT.	CONT.	57,000	15,928	14,000	6,500	TBD	CONT.	CONT.
CTC	SS/CPFF	1988	CONT.	CONT.	128,495	20,000	20,000	5,800	TBD	CONT.	CONT.
EWI	C/BAA	1996	CONT.	CONT.	2,017	2,983	3,100	1,000	TBD	CONT.	CONT.
ACI	C/BAA	1995	CONT.	CONT.	0	3,500	4,500	5,776	TBD	CONT.	CONT.
UNO	C/BAA	1994	CONT.	CONT.	14,000	5,252	6,000	2,000	TBD	CONT.	CONT.
PSU	C/CPFF	1992	CONT.	CONT.	28,320	7,500	3,600	800	TBD	CONT.	CONT.
BFTC	C/CA	1994	CONT.	CONT.	750	0	9,000	2,500	TBD	CONT.	CONT.
PTI	C/IDIO	1992	CONT.	CONT.	17,541	2,300	3,500	3,500	TBD	CONT.	CONT.
Amoco	C/CPFF		UNK	UNK	UNK	2,395	0	0	0	0	UNK
TBD	TBD	TBD	UNK	UNK	UNK	0	2,000	0	0	0	UNK
NSWC-D	WX	1996	UNK	UNK	UNK	2,000	250	0	0	0	UNK
NAWC-WD	WX	1996	UNK	UNK	UNK	2,000	250	0	0	0	UNK
IPI	C/CPFF	1995	UNK	UNK	4,000	274	2,700	3,000	0	0	9,974
Miscellaneous						9,410	16,897	5,124	TBD	CONT.	CONT.

Support and Management: Not applicable.

Test and Evaluation: Not applicable.
GOVERNMENT FURNISHED PROPERTY: Not applicable.

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

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0708011N PROJECT NUMBER: R1050
PROGRAM ELEMENT TITLE: Industrial Preparedness and Manufacturing Technology PROJECT TITLE: Manufacturing Technology

	Total FY 1995 & Prior	FY 1996 Budget	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	321,618	73,542	85,797	36,000	35,348	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	321,618	73,542	85,797	36,000	35,348	CONT.	CONT.

C. (U) FUNDING PROFILE: Not applicable.

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

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0708011N
PROGRAM ELEMENT TITLE: Industrial Preparedness and Manufacturing Technology

PROJECT NUMBER: R1050
PROJECT TITLE: Manufacturing Technology

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