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DEPARTMENT OF THE NAVY
JUSTIFICATION OF ESTIMATES
FY 1990/1991 BIENNIAL BUDGET

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PROCUREMENT

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WEAPONS PROCUREMENT, NAVY

DEPARTMENT OF THE NAVY
WEAPONS PROCUREMENT, NAVY

JUSTIFICATION OF ESTIMATES FOR FISCAL YEAR 1990 AND 1991

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WEAPONS PROCUREMENT, NAVY

For construction, procurement, production, modification, and modernization of missiles, torpedoes, other weapons, and related support equipment including spare parts, and accessories therefor; expansion of public and private plants, including the land necessary therefor, and such lands and interests therein, may be acquired, and construction prosecuted thereon prior to approval of title; and procurement and installation of equipment, appliances, and machine tools in public and private plants; reserve plant and Government and contractor-owned equipment layaway [as follows: Ballistic Missile Programs, \$1,872,538,000; Other Missile Programs, \$3,245,154,000; MK-48 ADCAP Torpedo, \$485,000,000; MK-50 Torpedo, \$198,547,000; Vertical Launched ASROC, \$105,000,000; Modification of Torpedoes, \$3,289,000; Torpedo Support Programs, \$48,652,000; Other Weapons, \$108,440,000; Spares and Repair Parts, \$87,412,000; In all: \$6,154,032,000] \$5,725,000,000, to remain available for obligation until September 30, [1991] 1992, of which \$1,000,000 shall be available only for the Navy Reserve and the Marine Corps Reserve.

Further, for the foregoing purposes, \$6,332,900,000, of which \$8,500,000, shall be available only for the Navy Reserve and the Marine Corps Reserve, to become available for obligation on October 1, 1990 and to remain available for obligation until September 30, 1993. (10 U.S.C. 5013, 5063, 7201; Department of Defense Appropriations Act, 1989; additional authorizing legislation to be proposed.)

Weapons Procurement, Navy
Program and Financing (in thousands of dollars) Summary

Identification Code	17-1807-0-1-051	Budget Plan (amounts for PROCUREMENT actions programmed)				Obligations			
		1988 actual	1989 est	1990 est	1991 est	1988 actual	1989 est	1990 est	1991 est
Program by activities:									
Direct program:									
00.0101	Artistic activities	2,048,692	1,870,263	1,816,165	1,538,842	1,533,217	1,795,125	1,853,864	1,612,655
00.0201	Transportation	3,012,421	3,202,486	2,783,337	3,606,494	2,968,792	2,568,191	2,876,475	3,485,031
00.0301	Transportation related equipment	489,030	841,888	858,696	894,324	862,346	935,554	802,484	876,486
00.0401	Other weapons	100,336	105,045	168,381	200,283	100,439	100,369	153,316	180,728
00.0501	Spares and repair parts	174,828	73,308	94,441	92,977	109,481	119,060	91,269	93,172
00.0101	Total direct program	5,765,319	6,092,970	5,725,000	6,332,900	5,373,764	5,518,299	5,780,358	6,280,672
01.0101	Reimbursable program	128,737	276,000	158,000	158,000	79,785	349,210	187,997	187,999
10.0001	Total	5,894,056	6,371,970	5,883,000	6,490,900	5,453,539	5,867,509	5,968,355	6,468,670
Financing:									
Offsetting collections from:									
11.0001	Federal funds(-)	-7,524	-30,766	-30,766	-30,766	275	-30,766	-30,766	-30,766
12.0001	State funds(-)	-98,459	-248,234	-127,234	-127,234	-94,134	-248,234	-127,234	-127,234
13.0001	Local funds(-)	-21,754				-21,754			
14.0001	Non-Federal sources(-)					-5,128			
17.0001	Recovery of prior year obligations		-71,900			-1,448,888	-1,791,170	-2,295,631	-2,240,276
21.0001	Unobligated balance available, start of year:					-459,400			
21.0002	For completion of prior year budget plans					-88,038			
21.0003	Available to finance new budget plans					73,800	71,900		
21.0004	Reprogramming from/to prior year budget plans								
22.0001	Unobligated balance transferred to other accounts					1,791,170	2,295,631	2,240,276	2,322,606
24.0001	Unobligated balance available, end of year:					71,900			
24.0002	For completion of prior year budget plans					12,738			
24.0003	Available to finance subsequent year budget plans								
21.0001	Unobligated balance (ending)								
20.0001	Budget authority	5,376,319	6,092,970	5,725,000	6,332,900	5,376,319	6,092,970	5,725,000	6,332,900
Budget authority:									
40.0001	Appropriation	5,967,019	6,184,032	6,725,000	6,332,900	5,967,019	6,184,032	5,725,000	6,332,900
40.0004	Reduction pursuant to P.L. 100-463								
40.0017	Appropriation rescinded (unobligated balance)								
41.0001	Transferred to other accounts(-)	-389,000	-5,082			-389,000	-5,082		
42.0001	Appropriation (adjusted)	-201,700	-56,000			-201,700	-56,000		
43.0001	Appropriation (adjusted)	5,376,319	6,092,970	5,725,000	6,332,900	5,376,319	6,092,970	5,725,000	6,332,900
Relation of obligations to outlays:									
71.0001	Obligations incurred, net								
72.0001	Obligations incurred, start of year					5,337,928	5,588,509	5,780,355	6,250,570
74.0001	Obligated balance, start of year					7,593,924	8,870,165	9,546,174	10,055,829
74.0002	Obligated balance, end of year					-9,870,165	-9,546,174	-10,055,829	-10,776,199
77.0001	Adjustments in expired accounts					-17,019			
78.0001	Adjustments in unexpired accounts					-5,128			
90.0001	Outlays	4,238,539	4,712,500	5,270,700	5,530,200				

Weapons Procurement, Navy
Program and Financing (in thousands of dollars) FISCAL YEAR 1986

Identification code	17 1507-0-1-001	Budget Plan (amounts for PROCUREMENT actions programmed)				Obligations		
		1988 actual	1989 est.	1990 est.	1991 est.	1988 actual	1989 est.	1991 est.
Program by activities:								
Direct program:								
00 0101	Ballistic missiles					2 470		
00 0201	Other missiles					137 800		
00 0301	Interdices and related equipment					255 186		
00 0401	Other weapons					11 156		
00 0501	Spare and repair parts					22 301		
00 9101	Total direct program					428 893		
01 0101	Reimbursable program					1 349		
10 0001	Total					430 242		
Financing:								
Offsetting collections from:								
11 0001	Federal funds (-)					4 085		
12 0001	Trust funds (-)					4 033		
13 0001	Recovery of prior year obligations					-2 200		
21 4002	Unobligated balance available, start of year, for completion of prior year budget plans							
21 4003	Available to finance new budget plans					-432 278		
21 4007	Reprogramming transfer to other accounts					-191 900		
22 4001	Unobligated balance transferred to other accounts					34 100		
25 0001	Unobligated balance lapsing					12 736		
40 0017	Budget authority (appropriation rescinded) (-)					-191 200		

Weapons Procurement, Navy
Program and Financing (in thousands of dollars) FISCAL YEAR 1987

Identification code	17-1507-0-1-05)	Budget Plan (amounts for PROCUREMENT actions programmed)				Obligations		
		1988 actual	1989 est	1990 est	1991 est	1988 actual	1989 est	1990 est
Program by activities:								
Direct program:								
00 0101	Ballistic missiles					114,182	7,979	
00 0201	Other missiles					318,659	130,897	
00 0301	Torpedoes and related equipment					129,760	147,691	
00 0401	Other weapons					14,747	7,778	
00 0501	Spare and repair parts					22,671	6,178	
00 9101	Total direct program					600,029	300,473	
01 0101	Reimbursable program					11,688	8,211	
10 0001	Total					611,727	308,684	
Financing:								
Offsetting collections from:								
11 0001	Federal funds(-)					3,734		
12 0001	Trust funds(-)					1,292		
13 0001	Recovery of prior year obligations					-2,928		
21 4001	Unobligated balance available, start of year:							
21 4002	Unobligated balance available, end of year:							
21 4003	Available to finance prior year budget plans					-904,410	-308,684	
21 4004	Reprogramming from/to prior year budget plans					-287,500	-71,900	
22 4001	Unobligated balance transferred to other accounts							
24 4001	Per completion of prior year budget plans					39,700	71,900	
24 4002	Available to finance subsequent year budget plans							
24 4003	Available to finance subsequent year budget plans					308,684		
40 0017	Budget authority (appropriation rescinded) (-)					71,900	71,900	
						-227,800	-227,800	

Weapons Procurement, Navy
Program and Financing (in thousands of dollars) FISCAL YEAR 1988

Identification code	17 1507 0 1 051	Budget plan (amounts for PROCUREMENT actions programmed)				Obligations	
		1988 actual	1989 est	1990 est	1991 est	1989 est	1991 est
Program by activities:							
Direct program:							
00 0101	Ballistic missiles	2,048,697				1,416,565	165,797
00 0201	Other missiles	3,012,421				2,511,823	77,189
00 0301	Terpedoes and related equipment	489,039				277,419	148,045
00 0401	Other weapons	100,339				74,536	13,044
00 0501	Spare and repair parts	114,828				64,489	50,339
00 0101	Total direct program	5,765,319				4,344,832	766,358
01 0101	Reimbursable program	128,737				86,738	61,999
10 0001	Total	5,894,056				4,431,570	766,358
Financing:							
Offsetting collections from:							
11 0001	Federal funds()	-7,524				-7,524	
13 0001	Trust funds()	-99,459				-99,459	
14 0001	Non-Federal sources(-)	-21,754				-21,754	
21 4002	Unobligated balance available, start of year:						
	Per completion of prior year budget plans						
24 4002	Unobligated balance available, end of year:						
	Per completion of prior year budget plans					-1,482,486	-766,358
39 0001	Budget authority	5,765,319				1,482,486	766,358
40 0001	Budget authority:					5,765,319	
	Appropriation	5,897,019				5,897,019	
41 0001	Transferred to other accounts(-)	-201,700				-201,700	
43 0001	Appropriation (adjusted)	5,765,319				5,765,319	

Weapons Procurement, Navy
Program and Financing (in thousands of dollars) FISCAL YEAR 1989

Identification code	17-1507-0-1-051	Budget Plan (amounts for PROCUREMENT actions programmed)				Obligations			
		1988 actual	1989 est	1990 est	1991 est	1988 actual	1989 est	1990 est	1991 est
Program by activities:									
Direct program:									
00 0101	Ballistic missiles		1,870,263				1,421,399	205,729	243,135
00 0201	Other missiles		3,202,486				2,360,105	380,260	482,121
00 0301	Torpedoes and related equipment		841,868				639,818	92,607	109,443
00 0401	Other weapons		105,045				79,832	11,556	13,687
00 0501	Spare and repair parts		73,308				62,543	10,785	
00 0101	Total direct program		6,092,970				4,563,697	700,917	828,356
01 0101	Reimbursable program		278,000				278,000		
10 0001	Total		6,371,970				4,842,697	700,917	828,356
Financing:									
Offsetting collections from:									
11 0001	Federal funds(-)		-30,766				-30,766		
13 0001	Trust funds(-)		-248,234				-248,234		
21 4002	Unobligated balance available, start of year:								
	Per completion of prior year budget plans								
24 4002	Unobligated balance available, end of year:								
	Per completion of prior year budget plans								
30 0001	Budget authority		6,092,970				1,829,273	828,356	-828,356
							6,092,970		
Budget authority:									
40 0001	Appropriation		6,154,032				6,154,032		
40 0004	Reduction pursuant to P.L. 100-483		-5,062				-5,062		
41 0001	Transferred to other accounts(-)		-86,000				-86,000		
43 0001	Appropriation (adjusted)		6,092,970				6,092,970		

Weapons Procurement, Navy
Program and Financing (in thousands of dollars) FISCAL YEAR 1990

Identification code	17-1507-0-1-051	Budget Plan (amounts for PROCUREMENT actions programmed)				Obligations		
		1988 actual	1989 est.	1990 est.	1991 est.	1988 actual	1989 est.	1991 est.
Program by activities:								
Direct program:								
00 0101	Ballistic missiles		1,010,105				1,381,005	199,999
00 0201	Other missiles		2,783,237				2,076,756	321,019
00 0301	Interceptors and related equipment		68,185				646,302	93,944
00 0401	Other weapons		189,381				128,716	16,830
00 0501	Stores and repair parts		84,441				80,504	12,937
00 9101	Total direct program		5,725,000				4,313,083	647,129
01 0101	Reimbursable program		158,000				157,997	1
10 0001	Total		5,883,000				4,471,080	647,130
Financing:								
Offsetting collections from:								
11 0001	Federal funds(-)							
13 0001	Trust funds(-)							
21 4002	Unobligated balance available, start of year:		-30,766				-30,766	
21 4002	Per completion of prior year budget plans		-127,234				-127,234	
24 4002	Unobligated balance available, end of year:							
24 4002	Per completion of prior year budget plans							-1,411,920
40 0001	Budget authority (Appropriation)		5,725,000				1,411,920	764,790
			5,725,000				5,725,000	

Weapons Procurement, Navy
Program and Financing (in thousands of dollars) FISCAL YEAR 1991

Identification code	17-1507-0-1-051	Budget plan (amounts for PROGRAMMENT activities programmed)				Obligations			
		1988 actual	1989 est	1990 est	1991 est	1988 actual	1989 est	1990 est	1991 est
Program by activities:									
Direct program:									
00 0101	Ballistic missiles				1,538,862				1,169,521
00 0201	Other missiles				3,506,494				2,701,891
00 0301	Terpedoes and related equipment				894,374				676,499
00 0401	Other weapons				200,263				147,941
00 0501	Spare and repair parts				92,977				78,235
00 9101	Total direct program				6,332,900				4,775,007
01 0101	Reimbursable program				158,000				157,997
10 0001	Total				6,490,900				4,933,004
Financing:									
Offsetting collections from:									
11 0001	Federal funds(-)				-30,766				-30,766
13 0001	Trust funds(-)				-127,234				-127,234
74 4002	Unobligated balance available, end of year:								
	Per completion of prior year budget plans								1,557,816
40 0001	Budget authority (Appropriation)				6,332,900				6,332,900

Weapons Procurement, Navy
Object Classification (in thousands of dollars) Summary

Identification code	17 1507-0-1-051	1988 actual	1989 est	1990 est	1991 est
Direct obligations:					
Other services:					
125 003 Contracts		165,376	164,556	177,000	190,120
125 004 Other		5,596			
126 001 Supplies and materials		848,251	811,289	805,824	791,812
131 001 Equipment		4,533,043	4,847,454	5,797,576	5,668,576
199 001 Total Direct obligations		5,532,754	5,818,299	6,780,350	6,750,512
Reimbursable obligations:					
226 001 Supplies and materials		76,785	222,820	31,607	31,000
231 001 Equipment			126,390	126,390	126,390
299 001 Total Reimbursable obligations		76,785	349,210	157,997	157,390
999 001 Total obligations		5,609,539	6,167,509	6,938,355	6,907,902

**Summary of Requirements
(In Thousands of Dollars)**

	<u>FY 1988 Actual</u>	<u>FY 1989 Estimate</u>	<u>FY 1990 Estimate</u>	<u>FY 1991 Estimate</u>
Ballistic Missiles	2,048,692	1,870,263	1,818,165	1,538,842
Other Missiles	3,012,421	3,202,486	2,783,337	3,606,494
Torpedoes and Related Equipment	489,039	841,868	859,696	894,324
Other Weapons	100,339	105,045	169,361	200,263
Spares and Repair Parts	114,828	73,308	94,441	92,977
TOTAL DIRECT PROGRAM	5,765,319	6,092,970	5,725,000	6,332,900
Reimbursable Program	128,737	279,000	158,000	158,000
TOTAL PROGRAM REQUIREMENTS	5,894,056	6,371,970	5,883,000	6,490,900

Justification of Funds

The following paragraphs provide justification for the FY 1990/91 request for the Weapons Procurement, Navy (WPN) appropriation. Initial spare parts amounts are included for information under each system or line item but are budgeted separately in the spares and repair parts category of the Budget Activity 5 justification.

BUDGET ACTIVITY 1: BALLISTIC MISSILES

(\$ in Thousands)

FY 1991 Estimate	- \$ 1,538,842
FY 1990 Estimate	- \$ 1,818,165
FY 1989 Estimate	- \$ 1,870,263
FY 1988 Actual	- \$ 2,048,692

Purpose and Scope of Work

Funds budgeted under this activity finance the procurement of fleet ballistic missiles, ancillary checkout and test equipment, missile modifications, and support equipment and facilities required to outfit and support the submarines assigned to the sea-based strategic deterrent forces.

BALLISTIC MISSILES:

(\$ in Thousands)

FY 1991 Estimate	- \$ 1,536,464
FY 1990 Estimate	- \$ 1,815,834
FY 1989 Estimate	- \$ 1,867,676
FY 1988 Actual	- \$ 2,048,498

The FY 1990/91 request includes continuing procurement support for the Trident I C-4 missile and for the Trident II D-5 missile, including advance procurement requirements, as noted below.

Trident I C-4 Missile

(\$ in thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
	\$ 1,196		\$ 1,239
Procurement Cost			

The Trident mission is to provide an undersea missile system in order to ensure that the U.S. continues to maintain a credible deterrent independent of foreseeable threats in the 1990's and beyond. To accomplish this mission, the Trident I missile was developed to support two separate systems. The Trident I system is comprised of Continental United States based nuclear powered submarines equipped with long range Trident I strategic missiles and associated direct support shore facilities. The Trident I Backfit system provides Trident I missiles for backfit into existing POSEIDON submarines, thereby providing these submarines a greater range of patrol in order to insure their survivability in the event of unforseeable enemy breakthroughs in ASW capabilities.

The FY 1990/91 Trident I missile request for \$1.2 million in each year will provide for procurements essential to the continued support of the C-4 flight test program, including MK-5 guidance and and MK-4 reentry system components, which will continue throughout the operational life of the weapon system.

Trident II D-5 Missile

(\$ in thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
63	\$1,598,507	52	\$1,316,597
Procurement			
Advance Procurement	216,131		218,628
Initial Spares	1,546		1,585
Procurement Cost	\$1,816,184	52	\$1,536,810

Trident II D-5 Missile

The Trident II missile will be carried on Trident Fleet Ballistic Missile submarines, ensuring that the United States will continue to maintain a highly survivable strategic deterrent for the 1990's and beyond. Deployment of the Trident II missile will (1) enhance Fleet Ballistic Missile submarine survivability by increasing sea launched ballistic missile range at full payload to exploit the total patrol area available to the Trident submarines, (2) minimize total weapon system costs by increasing sea launched ballistic missile payload to the level permitted by the size of the

Trident submarine launch tube, thereby allowing mission capability to be achieved with a lesser number of submarines, (3) balance the Triad by adding efficient hard target kill capability to the sea launched ballistic missile, and (4) enhance essential equivalence with the Soviets by increasing our warhead inventory, throw weight, and accuracy in the presence of increasing Soviet capabilities and force levels.

Funding in this line is required to support the procurement of an all new Trident II missile, initial production of which commenced in FY 1987 and to which the following key program milestones apply:

- o Equipment procurements in FY 1986 through FY 1991 based on leadtime away requirements
- o SWFLANT installation, test, checkout and equipment/facility integration began in FY 1987
- o Began PEM missile processing at Strategic Weapons Facility, Atlantic (SWFLANT) - July 1988
- o First Performance Evaluation Missile (PEM) flight test - March 1989
- o Trident II missile Initial Operational Capability (IOC) - December 1989

The FY 1990 funding request of \$1,598.5 million will support production of an additional 63 Trident II missiles; production of associated guidance and flight test instrumentation systems; procurement of MK-4 and MK-5 reentry systems; and planning, activation and initial equipment outfitting required to establish a Trident II missile processing capability at the Strategic Weapons Facility, Pacific (SWFPAC). The FY 1991 funding request of \$1,316.6 million will support production of an additional 52 Trident II missiles; production of associated guidance and flight test instrumentation systems; procurement of MK-4 and MK-5 reentry systems; and support required to maintain the missile processing capability at SWFPAC.

Funding requests in both years includes reduced prices for the airframes, rocket motors and guidance systems based on participation by the United Kingdom (U.K.). The combined procurement by the U.S. and U.K. will result in an economic production rate of 66 missiles per year in both FY 1990 and FY 1991. The U.S. production profile over the Five-Year Defense Program has decreased based on a rephasing of the Trident submarine backfit program.

Advance Procurement

The FY 1990 request of \$216.1 million and FY 1991 request of \$218.6 million will provide for procurement of both long lead and production continuity components, subassemblies and raw materials required to support the manufacture in future years of TRIDENT II missiles, MK-6 guidance systems, and special purpose instrumentation used in the TRIDENT II flight test program. Total advance procurement requirements comprise two major subsets of commodity acquisition: traditional, or long

lead, advance procurement, which includes those items having longer manufacturing lead times than the using D-5 end items; and production continuity advance procurement, which entails the purpose of certain critical components earlier than leadtime alone would dictate in order to ensure their continuous production. These latter production continuity procurements encompass a broad range of components and materials which must be produced at minimum, uninterrupted rates on dedicated production lines, as well as life-of-type or one-time quantity buys of items required to support the total planned program. The quality and homogeneity obtained by these means are essential to assure the consistent performance reliability of the missiles to be procured for the Trident II program.

SUPPORT EQUIPMENT AND FACILITIES:

(\$ in Thousands)

FY 1991 Estimate - \$ 2,378
 FY 1990 Estimate - \$ 2,331
 FY 1989 Estimate - \$ 2,587
 FY 1988 Actual - \$ 194

The FY 1990/91 request includes continuing procurement support for capital maintenance projects at government-owned missile industrial facilities.

Missile Industrial Facilities

	(\$ in thousands)	
	FY 1990	FY 1991
Procurement Cost	Qty Amount	Qty Amount
	\$ 2,331	\$ 2,378

Funding for missile industrial facilities provides for capital maintenance projects at Navy-owned Naval Industrial Reserve Ordnance Plants (NIROPs) at Sunnyvale and Santa Cruz, California, and Bacchus, Utah, in support of the Fleet Ballistic Missile program.

Projects planned in FY 1990/91 include additions and modifications to, and rehabilitation of, non-serviceable equipment and real property. The projects include: converting street lights to low pressure sodium, refurbishing fume ducts and vent fans, refurbishing fire sprinkler systems, and repairing and replacing perimeter fencing.

ACTIVITY 2: OTHER MISSILES

(\$ in Thousands)

FY 1991 Estimate	-	\$ 3,606,494
FY 1990 Estimate	-	\$ 2,783,337
FY 1989 Estimate	-	\$ 3,202,486
FY 1988 Actual	-	\$ 3,012,421

Purpose and Scope of Work

Funds budgeted under this activity finance the procurement and modification of strategic and tactical guided missiles, and aerial targets. In addition, funds provide for weapons industrial facilities and for the support of satellites, launches, and associated equipment for the Fleet Satellite Communications program.

Guided missiles are procured for operational inventory requirements to meet combat sustainability objectives, combat usage, quality assurance testing, and training purposes. Aerial targets are required to support training programs and to permit evaluation of missile performance. Procurement funds provide for (1) the components that comprise the end-items, such as guidance, control, motors, warheads, and fuzes, (2) effort and hardware associated with the production and assembly of these items, such as production engineering, production proofing, tools and test equipment, and (3) special handling and test equipment, training materials and other specialized items required for operational fleet support of the item.

STRATEGIC & TACTICAL MISSILES:

(\$ in Thousands)

FY 1991 Estimate	-	\$ 3,035,139
FY 1990 Estimate	-	\$ 2,285,196
FY 1989 Estimate	-	\$ 2,670,061
FY 1988 Actual	-	\$ 2,656,065

Funds budgeted under this category finance the procurement of strategic and tactical air-, surface-, and submarine-launched missiles, other missile support, aerial targets, and drones and decoys.

RCM-109 Tomahawk Cruise Missile

(\$ in Thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
400	\$572,161	400	\$662,570
Procurement			
Initial Spares	32,724		27,310
Procurement Cost	400 \$604,885	400	\$689,880

The Tomahawk Cruise Missile provides four variants--nuclear, anti-ship, unitary warhead and conventional dispenser land attack--capable against targets at sea and on land. Tomahawk is capable of being launched from aircraft, ships, submarines, and ground launchers. The cruise missile can be fitted with either a conventional high explosive or nuclear warhead, and is propelled in flight by a small turbofan engine. The FY 1990 request of \$572.2 million will procure 21 anti-ship and 379 land attack missiles; the FY 1991 request, 400 land attack missiles. The Tomahawk missile is designed to be deployed in submarines and surface ships in a variety of launchers. This missile is competitively procured from General Dynamics and McDonnell Douglas.

The FY 1990/91 request is priced assuming the availability of Ground Launched Cruise Missile (GLCM) assets from the Air Force inventory which have been declared excess material not subject to the Intermediate Range Nuclear Forces (INF) Reduction Treaty. This has provided substantial cost savings.

AIM-120 AMRAAM Missile

(\$ in Thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
150	\$129,785	800	\$382,512
Procurement			
Initial Spares	1,863		1,013
Procurement Cost	150 \$131,648	800	\$383,525

The AMRAAM (Advanced Medium Range Air-to-Air Missile) missile is the successor to the Sparrow missile and is being jointly procured by the Air Force and the Navy. The Air Force serves as executive service. The missile will provide an all-weather, all-aspect, beyond-visual-range, air-to-air missile compatible with the F-14, F-15, F-16, F/A-18, and A-6E Upgrade aircraft. The AMRAAM missile will enhance Navy var-fighting capability in the 1990's and beyond through significant improvements in operational utility and combat effectiveness. The FY 1990 request will provide for the AMRAAM missiles required for missile systems integration with the F-14D aircraft, with the balance of the procurement going into the Fleet inventory. All FY 1991 quantities are for Fleet inventory loadout.

AIM-54C Phoenix Missile

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
	Amount	Amount
Procurement	420	420
Advance Procurement	\$326,457	\$311,735
Initial Spares	50,000	15,000
Procurement Cost	2,230	5,756
	420	420
	\$378,687	\$332,491

The Phoenix missile system is comprised of a long-range airborne weapon control system (AN/AVC-9) with multiple target-handling capabilities and long-range missiles utilizing semi-active mid-course and active terminal guidance. Its mission is to kill multiple air targets with conventional warheads. Six such missiles can be carried aboard the F-14 aircraft. Near simultaneous launch is possible against six targets in an all-weather and heavy-jamming environment. The improved Phoenix missile, the AIM-54C, provides improved lethality, stream raid discrimination, electronic counter countermeasure (ECCM) performance, high and low altitude performance, and improved reliability and maintainability. As a result of these improvements, the missile has greater capability to counter the projected threat aircraft and cruise missile threats. The Phoenix does not replace any other missile. Competitive procurement began in FY 1989 between Hughes Aircraft and Raytheon Company. The FY 1990-92 quantities are planned to be awarded as a competitive winner-take-all multiyear procurement.

AGM/RGM/UCM-84A/E Harpoon Missile

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
	Amount	Amount
Procurement	190	184
Initial Spares	\$214,141	\$229,769
Procurement Cost	5,795	3,232
	190	184
	\$219,936	\$233,001

The Harpoon is an air-, surface-, and submarine-launched cruise missile which provides an attack capability against targets at sea and on land. It uses an active or passive seeker, radar altimeter, and attitude reference assembly in conjunction with a small digital computer for missile guidance and control. It is propelled by a turbo-jet sustainer engine augmented by a solid booster for ship and submarine launch. The missile has a standard 13.5 inch diameter with a weight of 1,100 pounds for air launch and 1,500 pounds for ship launch. It is compatible with the Tartar, Terrier,

and ASROC ship launchers as well as with aircraft and submarine launch systems. The missile is planned for use aboard the PP-1052, DDG and DD-963, CG, CGN, PHM, BB, and PFG class ships, the P-3, S-3, A-6, F/A-18, and B-52G aircraft and nuclear attack submarines. The FY 1990 request will provide for 190 Harpoon missiles(98 air-launched anti-ship and 92 air-launched Stand-off Land Attack Missiles (SLAM)). The FY 1991 provides for 184 Harpoon missiles(92 air-launched anti-ship and 92 air-launched Stand-off Land Attack Missiles (SLAM)). The FY 1990 and FY 1991 air-launched anti-ship missile procurement quantities, in conjunction with Foreign Military Sales and retrofit program, support economic production rates. These weapons are requested to ensure adequate availability of weapons as new platforms are made operational, and to offset missile expenditures due to training and test requirements.

HARM Missile

	FY 1990		FY 1991	
	Qty	Amount	Qty	Amount
Procurement	1,162	\$292,174	1,400	\$354,881
Initial Spares		3,691		1,567
Procurement Cost	1,162	\$295,865	1,400	\$356,448

The High Speed Anti-Radiation Missile (HARM) is a joint Navy and Air Force air-to-surface missile designed to suppress or destroy land- and sea-based radars supporting enemy air defense systems. HARM is a design evolution of anti-radiation missiles (ARM) such as Shrike and Standard ARM, and is replacing both missiles in the Navy inventory. HARM characteristics include: high speed, large-launch envelope, wide-band-frequency coverage in a single head, high sensitivity and compatibility with various naval aircraft. The HARM has evolved from known and predicted deficiencies in Shrike and Standard ARM missiles in defeating current and future enemy air defense systems. Initial procurement commenced in FY 1981. The FY 1990/91 request continues procurement of this antiradiation missile to fill the Navy requirement. In addition, the Air Force will be procuring 326 missiles in FY 1990 and 200 in FY 1991, providing for a more economic production rate.

Initial procurement of the Low Cost Seeker, developed by the Naval Weapons Center, China Lake, and produced by Ford Aerospace, is budgeted in FY 1990 and FY 1991. Procurement begins in FY 1991 of the competitor Block IV seeker units, produced by the prime contractor, Texas Instruments.

Standard Missiles (SM-2 Medium Range/Extended Range)

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Amount
Procurement	590	\$310,619
Initial Spares		3,435
Procurement Cost	590	\$314,054
	900	\$552,030
		4,347
	900	\$556,377

The Standard Missile is a solid-propellant, tail-controlled, surface-to-air and surface-to-surface missile with mid-course and semi-active homing guidance, home-on jamming capability, and proximity and contact fusing. The SM-2 Block II Medium Range (MR) Missile will be deployed on Tartar New Threat Upgrade ships, Aegis CG 47/51 Cruisers, and Aegis DDG-51 Destroyers. The SM-2 Block II Extended Range (ER) Missile will be deployed on Terrier CG and New Threat Upgrade ships. Competition for the All-Up-Round was initiated in FY 1988, between General Dynamics and Raytheon Company. The FY 1990 and FY 1991 procurement quantities have been reduced to minimum sustaining rates pending introduction of a new configuration. FY 1989 production quantities will be combined and rephased with the lower FY 1990 quantities to maintain a stable production rate. The FY 1990 request provides for procurement of 500 SM-2 MR's for Aegis ships and 90 SM-2's for Terrier ships, completing Terrier requirements. The FY 1991 request provides for procurement of 600 SM-2 MR's for Aegis ships and the initial buy of 300 Aegis Extended Range missiles. The FY 1990 program initiates the procurement of the new MK-45 Mod 9 Target Detecting Device and the MK-125 warhead. The FY 1991 program initiates the MK-72 Aegis booster required for the extended range missile.

Rolling Airframe Missile (RAM)

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Amount
Procurement	580	\$90,265
Initial Spares		886
Procurement Cost	580	\$91,151
	540	\$86,869
		880
	540	\$87,749

The Rolling Airframe Missile (RAM) is a high-power, low-cost, lightweight, complementary self-defense system to engage anti-ship capable missiles. It will be fired from two launching systems: the NATO Sea Sparrow Surface Missile System (NSSMS), of which two cells of the NSSMS system will be modified to hold five (5) RAM rounds each; and a RAM stand-alone Command and Launch System that holds 21 missiles. Components of the missile will be procured competitively between General Dynamics and RAM Systems, a German contractor. The FY 1990/91 budget request provides for the competitive procurement of 580 and 540 missiles, respectively, and associated support costs.

ACM-114A Hellfire Missile

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Amount
Procurement	1,098	\$ 50,444
Initial Spares		1,593
Procurement Cost	1,098	\$ 52,037

Hellfire, developed by the Army, provides the Marine Corps with an extremely effective anti-armor weapon for use on AH-1T/J helicopters. The FY 1990/91 request will competitively procure 1,098 and 1,198 Hellfire missiles, respectively. These missiles are required to build up the inventory to satisfy Marine Corps requirements.

Penguin Missile

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Amount
Procurement	64	\$ 39,634
Advance Procurement		3,719
Initial Spares		985
Procurement Cost	64	\$ 44,338

The Penguin missile is an autonomous short-range, air-to-surface weapon which is controlled by an infrared countermeasures-resistant seeker that is automatically activated when the missile reaches a preset range from the predicted position of the target. The missile is planned for use on the LAMPS MK III SH-60B helicopter as an anti-ship weapon. The MK 2 Mod 7 Penguin missile is a modification of the surface-launched MK 2 Mod 3 missile. This program has been delayed by one year based on a corporate reorganization of the Norwegian prime contractor and development testing. The FY 1990 request provides for the last procurement of 64 missiles and advance procurement to support FY 1992. The FY 1991 request provides for the procurement of 65 Penguin missiles.

Maverick Missiles

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Amount
Procurement	560	\$ 59,951
Advance Procurement		2,135
Initial Spares		\$185,361
Procurement Cost	560	6,900
		1,252
	560	\$ 67,703
		2,135
		\$193,223

The Maverick missiles program consists of the two variants employed with Navy and Marine Corps aircraft: the Imaging Infrared (IIR) Maverick (AGM-65F) and the Laser Maverick (AGM-65E). The IIR Maverick (AGM-65F) missile has been developed as a joint service program with the Air Force as executive service. The Navy version of the weapon utilizes an IIR guidance unit optimized for ship tracking, a 300-pound penetrating blast/fragment warhead with cockpit-selectable fuzing, and a reduced-smoke rocket motor. The IIR Maverick missile will provide the Navy and Marine Corps with the capability to attack land and sea targets from a more survivable position below and outside of close-in air defense systems. The FY 1990/91 request supports a three-year multiyear buy out of IIR Maverick missiles by FY 1992, in combination with the Air Force. FY 1988 was the last year of Laser Maverick procurement.

Aerial Targets

(\$ in Thousands)

	FY 1990			FY 1991		
	Qty	Amount	Initial Spares	Qty	Amount	Initial Spares
BQM-34S	50	\$26,821	\$ 200	40	\$22,262	\$ 200
AQM-37C	120	25,080	200	120	23,437	250
BQM-74E	139	33,903	476	117	27,583	442
Tov Targets		8,005	50		14,092	75
Other Targets		13,567	175		16,995	200
Misc Target Eq		17,339	300		16,805	300
Total		\$124,715	\$ 1,401		\$121,174	\$ 1,467
						\$122,641

Aerial targets provide the representative threats needed to properly evaluate weapons systems and to provide for an effective Fleet Training program. The BQM-34S and BQM-74E are both recoverable, subsonic targets that are required for both surface-to-air and air-to-air missile and gunnery exercises. The AQM-37C is a non-recoverable, supersonic target, which replicates high altitude, high speed threats. An upgraded version of the BQM-74C, the BQM-74E, is initially procured in FY 1990. The FY 1990/91 request provides for funding for the larger targets noted, as well as tov targets, modifications for the conversion of F-86 aircraft into QF-86 full-scale aerial targets and TALOS missiles into MQM-8X supersonic full-scale targets, and target auxiliary equipment required for target control and augmentation, and other target support costs.

Other Missile Support

(\$ in Thousands)		
FY 1990		FY 1991
Qty	Amount	Qty
	\$ 14,631	
		\$ 28,782

Procurement

The Other Missile Support Program procures Vertical Launching System (VLS) canisters and provides fleet support material for SUBROC. VLS is a missile launching system for surface combatants, capable of launching missiles for all warfare areas and adaptable to current and future weapons control systems. The FY 1990/91 request procures Types I and II VLS canisters for Tomahawk and SM-2 missiles and the Vertical Launched ASROC (VLA) ASW weapon. SUBROC equipment procurements were completed in FY 1988.

MODIFICATION OF MISSILES

(\$ in Thousands)

FY 1991 Estimate - \$ 73,439
FY 1990 Estimate - \$ 56,816
FY 1989 Estimate - \$ 88,470
FY 1988 Actual - \$ 15,513

The following paragraphs provide justification for the FY 1990/91 request missile modifications.

	(\$ in Thousands)	
	FY 1990	FY 1991
<u>Air-Launched Missiles</u>		
<u>Sidevinder</u>		
Phoenix	\$ -	\$ 7,000
Harpoon *	12,819	15,825
<u>Surface-Launched Missiles</u>		
<u>Tomahawk</u>		
Sparrow *	3,330	25,758
Standard Missile	28,950	8,876
	11,717	13,003
Total	\$ 56,816	\$ 73,439

* Sparrow and Harpoon can both be air and surface launched.

The FY 1991 Sidevinder request provides funds required for the initial tooling and special test equipment of the Sidevinder AIM-9R upgrade to existing missiles.

The FY 1991 Phoenix request provides for insensitive munitions improvements to current AIM-54C inventory missiles.

The FY 1990/91 Harpoon requests provide for continued replacement of improved seekers, miscellaneous minor upgrades and the new Improved Harpoon kits (extended range, reattack mode) for current missiles.

The FY 1990/91 Tomahawk requests provide for missile guidance flight set computers and the new MK-111 rocket booster which will provide submarine launched missiles with a greater thrust capacity.

The FY 1990/91 Sparrow requests continues the RIM low altitude fuze retrofit program (sea launched version only).

The FY 1990/91 Standard missile requests provides for the MK-56 rocket motor and sustainer section modifications, and a low altitude and directional ordnance improvement on SM-1 and SM-2 Block II missile currently in inventory.

SUPPORT EQUIPMENT AND FACILITIES:

(\$ in Thousands)

FY 1991 Estimate	-	\$ 497,916
FY 1990 Estimate	-	\$ 441,325
FY 1989 Estimate	-	\$ 443,955
FY 1988 Actual	-	\$ 340,843

The following paragraphs provide justification for the FY 1990/91 request for support equipment and facilities. This group includes the Weapons Industrial Facilities, the Defense Meteorological Satellite (completed in FY 1989) program, the Fleet Satellite Communications programs, and the Ordnance Support Equipment program.

Weapons Industrial Facilities

(\$ in Thousands)		
FY 1990		FY 1991
Qty	Amount	Qty Amount
	\$ 16,836	\$ 24,704
Procurement Costs		

The FY 1990/91 requests provide for missile and other ordnance producing industrial facilities include funds for capital maintenance, emergency repairs, fire protection improvements, and energy conservation. These funds provide for nonrecurring capital maintenance at government-owned missile and weapon producing industrial plants as well as emergency repairs and improvements designed to reduce fire and other safety hazards. FY 1990/91 initiate a major upgrade of the Navy's industrial facilities which support major weapon systems production.

Fleet Satellite Communications

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
Procurement	2	3
Advance Procurement		\$171,817
Procurement Cost	2	3
		\$200,986
		\$200,986

The Fleet Satellite Communications (FLTSATCOM) system satisfies the Navy's urgent worldwide Ultra High Frequency (UHF) mobile user communication requirements. This includes protected fleet broadcast service to all Navy ships plus a vital command control service to all Anti-Submarine Warfare (ASW) platforms, Fleet Ballistic Missile (FBM) submarines, aircraft carriers, cruisers and other selected aircraft, ships and submarines. The system also satisfies the Air Force equatorial satellite communication requirements including presidential airborne command posts, Strategic Air Command and emergency mission support communications. A constellation of channelized satellites, placed in geosynchronous orbits, is used to meet Navy and Air Force UHF communications requirements. UHF follow-on satellites will replace the existing constellation at the end of its expected operational lifetime beginning in the early 1990's.

The FY 1990/91 program provides for the procurement of five satellites under a multiyear contract (the second through the sixth in the total program), production support and launch services costs. The advance procurement funds requested in FY 1990 provide for the second increment of economic order quantity components and materials procured under the five year multi-year contract that begun in FY 1989. The total profile requires ten satellites (eight plus two spares). Contract delivery occurs after the satellite is placed in orbit. The current FY 1988 contract with Hughes Aircraft Company includes the first satellite, a multiyear option for the next eight, and a fixed priced option for the tenth satellite.

Ordnance Support Equipment

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
Procurement Costs		\$111,672
		\$272,226

Detail justification is classified and is provided separately.

BUDGET ACTIVITY 3: TORPEDOES AND RELATED EQUIPMENT

(\$ in Thousands)

FY 1991 Estimate	- \$ 894,324
FY 1990 Estimate	- \$ 859,696
FY 1989 Estimate	- \$ 841,868
FY 1988 Actual	- \$ 489,039

Purpose and Scope of Work

These funds provide for the procurement of anti-submarine and anti-ship weapons such as torpedoes, mines and underwater targets, torpedo and mine modifications, and associated support equipment items related to production, as well as acquisition of other equipment and support necessary to maintain fleet readiness.

TORPEDOES AND TARGETS:

(\$ in Thousands)

FY 1991 Estimate	- \$ 818,780
FY 1990 Estimate	- \$ 786,836
FY 1989 Estimate	- \$ 782,858
FY 1988 Actual	- \$ 392,863

The following paragraphs provide justification for the FY 1989 torpedoes, targets and related equipment request.

MK-48 Torpedo Advanced Capability (ADCAP)

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Amount
Procurement	320	\$493,642
Initial Spares		4,700
Procurement Cost	320	\$498,342
		\$414,181

The MK-48 ADCAP (Advanced Capability) torpedo was developed as an improvement to the MK-48 torpedo to counter enemy submarine threats through the 1990's. The improvements in the guidance and control systems will significantly improve the MK-48 torpedo's capability. Improvements in the propulsion system will allow the torpedo to go faster, deeper and farther than the current MK-48 torpedo. These improvements will allow the ADCAP torpedo to operate in several adverse environments. The FY 1990/91 program procures 320 ADCAP torpedoes in each year, at a cost of \$493.6 and \$408.8 million respectively, to maintain a competitive dual source acquisition. It also procures exercise sections, production support and ancillary equipment.

Sea Lance

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Amount
Procurement		\$ 1,799
Initial Spares		\$ 46,328
Procurement Cost		\$ 1,799
		\$ 46,328

The Sea Lance ASV Standoff Weapon system is a long range, quick reaction, antisubmarine weapon capable of being launched from either a submarine or vertical launch system (VLS) configured surface ship. This Sea Lance will carry a MK-50 Advanced Lightweight Torpedo (ALWT) as a payload and will replace the current submarine rocket (SUBROC) system in the mid-1990's.

The FY 1990 request of \$1.8 million supports second source producer selection costs. The FY 1991 request of \$46.3 million supports second source qualification costs, payload installation, submarine trainers, missile test sets, miscellaneous support equipment and engineering production support. The initial Sea Lance hardware procurement is planned for FY 1992.

MK-50 Advanced Lightweight Torpedo (ALWT)

	FY 1990		FY 1991	
	Qty	Amount	Qty	Amount
Procurement	200	\$269,130	270	\$328,521
Initial Spares		3,200		5,176
Procurement Cost	200	\$272,330	270	\$333,697

The MK-50 Advanced Lightweight Torpedo (ALWT) is the successor to the MK-46 lightweight torpedo. The MK-50 is an acoustic homing torpedo, which can be employed from either fixed-wing anti-submarine warfare (ASW) aircraft, ASW helicopters, surface ships equipped with either torpedo tubes or Vertical Launched ASROC, and submarines equipped with the Sea Lance ASW weapon system. The FY 1990 request for \$269.1 million procures 200 torpedoes from two sources, with the FY 1991 request of \$328.5 million for 270 torpedoes being competitively procured from the two sources.

ASW Targets

	FY 1990		FY 1991	
	Qty	Amount	Qty	Amount
Procurement		\$ 12,983		\$ 25,028

The ASW Targets program was established to provide training exercise capability for torpedo firings and ASW detection and tracking. This program procures two types of ASW targets, the heavyweight MK-30 Mobile Target and the lightweight, portable MK-39 Expendable ASW Training Target (EMATT).

The MK-30 Mobile Target provides air, surface and submarine ASW units with the means to conduct realistic exercise firings on three-dimensional underwater ranges. This target provides the basic training capability to exercise surface ship and submarine sonars, actively and passively fired torpedoes, and aircraft equipped with sonobuoys and Magnetic Anomaly Detection (MAD) gear. The FY 1991 funding requests the procurement of 5 MK-30 Mobile Targets to replenish systems currently in use at the four Navy underwater ranges.

The MK-39 EMATT is a small, self-propelled underwater vehicle in continuous operation and whose trajectory is programmable. EMATT is detectable and trackable by passive towed arrays, active and passive sonobuoys, active sonars, the MK-46 torpedo in an active mode, and MAD-equipped aircraft. The FY 1990 budget requests the initial procurement of 1,105 EMATT units as an option to a current development contract. The FY 1991 request for 1,460 units will be competitively procured.

ASROC Component Replacement

(\$ in Thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
	\$ 9,282		\$ 10,075

Procurement Cost

The Anti-Submarine-Rocket (ASROC) is a weapon system designed around a range-controlled, unguided rocket missile which carries a torpedo or a depth charge as a payload. ASROC is utilized by most surface combatants to defend against high performance enemy submarines. The FY 1990/91 request provides for procurement for ASROC components to replace those that were expended during fleet training exercises. The principal element of cost in this program is the continued procurement of rocket motor and Ignition Separation Assemblies (MK-4 ISA). The ISAs are being procured in a new design which makes them safe from the hazards of accidental detonation caused by shipboard electromagnetic equipment (designated HERO: Hazards of Electromagnetic Radiation to Ordnance). Procurement of the HERO-safe MK-4 ISA is required in order to replenish inventories of the older non-HERO safe MK-3 ISAs depleted by training losses and will eventually replace the entire inventory of the older components. ASROC will be required until all Navy ships are equipped with either the Vertical Launched ASROC (VLA) or Sea Lance ASV weapon system.

MODIFICATION OF TORPEDOES AND RELATED EQUIPMENT:

(\$ in Thousands)

FY 1991 Estimate -	\$ 12,638
FY 1990 Estimate -	\$ 9,653
FY 1989 Estimate -	\$ 13,314
FY 1988 Actual -	\$ 42,190

The following paragraphs provide justification for the FY 1990/91 request for torpedo modifications and related equipment.

MK-46 Torpedo Mods

(\$ in Thousands)		
	FY 1990	FY 1991
	Qty	Qty
Procurement	Amount	Amount
	\$ 8,682	\$ 11,609

The MK-46 torpedo is a lightweight torpedo launched from surface vessel torpedo tubes, ASROC, and fixed and rotary wing aircraft. The FY 1990/91 request for \$8.7 and \$11.6 million, respectively, procures block upgrade modifications, including an anti-tampering mechanism.

Swimmer Weapon System

(\$ in Thousands)		
	FY 1990	FY 1991
	Qty	Qty
Procurement	Amount	Amount
Initial Spares	\$ 971	\$ 1,029
Procurement Cost	38	39
	\$ 1,009	\$ 1,068

This program procures unique weapons and equipment required by the Navy Special Warfare Groups One and Two (SEAL teams) to carry out beach clearance, underwater and direct action missions. Currently, there are eight SEAL teams deployed within the Fleet. Current equipment includes the MK-32 standoff weapon assembly, consisting of the MK-31 standoff weapon and MK-5 weapon control system.

SUPPORT EQUIPMENT:

(\$ in Thousands)

FY 1991 Estimate -	\$ 62,906
FY 1990 Estimate -	\$ 63,207
FY 1989 Estimate -	\$ 45,696
FY 1988 Actual -	\$ 53,986

The following paragraphs provide justification for the FY 1990/91 request for torpedo support equipment.

Torpedo Support Equipment

(\$ in Thousands)		
FY 1990	FY 1991	
Qty	Amount	Qty
	\$ 39,002	Amount
		\$ 38,796

Procurement Cost

The program procures components necessary to restore weapons used to conduct fleet training exercises (which involves the actual firing of torpedoes) back to a ready-for-issue varshot status. This request supports combat-ready deployment of anti-submarine warfare forces. The funds requested procure such expended components as batteries, pressure cylinders, propellant assemblies and various air-launch accessories; equipment and components worn out or lost during repeated service such as exercise heads and fuel tanks; and production support efforts associated with the above procurements. Procurement quantities of these items vary each year and are dependent upon fleet training requirements and the tempo of operations. The FY 1990/91 request procures material required to support Fleet training exercises and operational inventories for the MK-46, MK-48/MK-48 ADCAP torpedoes and exercise turnaround kits for the MK-50 Advanced Lightweight Torpedo.

ASV Range Support

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
	Amount	Amount
Procurement	\$ 24,205	\$ 24,110
Initial Spares	257	229
Procurement Cost	\$ 24,462	\$ 24,339

The Anti-Submarine Warfare Range Support program provides for the procurement of range proofing and fleet support equipments required for use on the Navy's underwater ranges and for the fixed costs of on-range proofing services. This includes the procurement of pingers, transponders, MK-30 and MK-27 target exercise components and other related items. This program supports fleet exercises and torpedo firings and provides equipment to maintain ASV readiness.

BUDGET ACTIVITY 4: OTHER WEAPONS

(\$ in Thousands)

FY 1991 Estimate - \$ 200,263
FY 1990 Estimate - \$ 169,361
FY 1989 Estimate - \$ 105,045
FY 1988 Actual - \$ 100,339

Purpose and Scope of Work

Funds budgeted under this activity finance the procurement of guns and gun mounts for Navy and Coast Guard ships, as well as modifications and support equipment.

GUNS AND GUN MOUNTS:

(\$ in Thousands)

FY 1991 Estimate - \$ 86,628
FY 1990 Estimate - \$ 83,401
FY 1989 Estimate - \$ 35,621
FY 1988 Actual - \$ 41,682

Funds budgeted under this activity finance the procurement of guns and gun mounts for Navy and Coast Guard ships, as well as modifications and support equipment.

MK-15 Close-In-Weapon System (CIWS)

(\$ in Thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
20	\$ 59,990	19	\$ 62,046
Initial Spares	696		539
Procurement Cost	20 \$ 60,686	19	\$ 62,585

The MK-15 Close-In-Weapon System (CIWS) Phalanx is a fast reaction, terminal defense against low flying aircraft and anti-ship missiles penetrating other fleet defensive systems. The system is an automatic, self-contained unit consisting of search and track radar, a digital fire control system and a 20mm M61A1 gun which automatically detects, evaluates, tracks, engages, assesses kill and returns to search mode. The system will be installed in over 300 ships, both new construction and retrofit. The FY 1990/91 requests procures 20 and 19 retrofit systems, respectively. This system is competitively procured from General Dynamics and General Electric. Sufficient quantities are budgeted in Weapons Procurement, Navy (WPN) and Shipbuilding and Construction, Navy (SCN), to maintain economic production rates at both facilities.

MK-75 76mm Gun

(\$ in Thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
2	\$ 7,177		\$ 2,725
Initial Spares	2,500		2,725
Procurement Cost	2 \$ 9,677		\$ 2,725

The FY 1990 MK-75 76mm gun program provides systems to be used as rotatable pool mounts (RPM's) to support the revork of 25 gun systems during U.S. Coast Guard ship overhauls.

MK-19 40mm Machine Gun

Procurement	(\$ in Thousands)			
	FY 1990		FY 1991	
	Qty	Amount	Qty	Amount
	25	\$ 523	25	\$ 547

The MK-19 Mod 3 40mm machine gun provides a more effective, safe and reliable grenade firing weapon for arming surface ships and small craft. The FY 1990/91 request procures 25 weapons in each year to replace the Navy's older inventory of 40mm machine guns. New requirements include outfitting the 36-foot Seafox craft, construction battalions and special warfare units.

MK-38 25mm Gun System

Procurement Initial Spares Procurement Cost	(\$ in Thousands)			
	FY 1990		FY 1991	
	Qty	Amount	Qty	Amount
	22	\$ 4,930	55	\$ 9,688
		190		200
	22	\$ 5,120	55	\$ 9,888

The MK-38 25mm gun system is a single barrel, 25mm M242 automatic gun mounted on a manually operated MK-88 deck mount and is the planned replacement weapon for the MK-16 20mm machine gun. The MK-38 system serves as a short range defensive and offensive armament for surface ships and small craft. The FY 1990/91 request procures 22 and 55 systems, respectively.

Small Arms and Weapons

(\$ in Thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
	\$ 9,553		\$ 13,129

Procurement

This program procures a wide variety of small arms and weapons, including rifles, 9mm pistols, shotguns, .50 caliber machine guns, and 7.62mm machine guns. These small arms support security training, over 2,600 ship and shore activities, mobile construction battalion units, special warfare units, and crisis response teams throughout the Navy.

Small Arms and Weapons (SOF)

(\$ in Thousands)			
FY 1990		FY 1991	
Qty	Amount	Qty	Amount
	\$ 1,228		\$ 1,218

Procurement

This program procures a wide variety of small arms and weapons, including rifles, 9mm pistols, shotguns, .50 caliber machine guns, and 7.62mm machine guns. These small arms support the Navy's Special Operations Forces (SOF) special warfare units.

MODIFICATION OF GUNS AND GUN MOUNTS:

	(\$ in Thousands)
FY 1991 Estimate -	\$ 108,277
FY 1990 Estimate -	\$ 81,532
FY 1989 Estimate -	\$ 68,591
FY 1988 Actual -	\$ 57,589

Funds budgeted under this activity finance the procurement of gun and gun mount modifications.

MK-15 Close-In-Weapon System (CIWS) Modifications

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
	Amount	Amount
Procurement Cost	\$ 63,771	\$ 80,680

The MK-15 Close-In-Weapon System (CIWS) modifications requested in FY 1990/91 provides for upgrading to the Baseline 2 configuration, and includes increased magazine capacity, search elevation angle, and various other modifications, such as reliability and maintainability improvements. Improvements are backfit into MK-15 CIWS systems procured prior to FY 1985, as well as trainers. These systems are competitively procured from General Dynamics and General Electric.

5"/54 Gun Mount Modifications

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
	Amount	Amount
Procurement Cost	\$ 9,240	\$ 15,543
Initial Spares	2,675	2,968
Procurement Cost	\$ 11,915	\$ 18,511

This program procures hardware to improve the operability, reliability, maintainability and availability of all in-service 5 inch/54 caliber gun mounts.

3"/50 Gun Mount Modifications

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
Procurement Cost	Amount	Amount
	\$ 279	\$ 287

This program procures hardware to improve the operability, reliability, maintainability and availability of all in-service 3 inch/50 caliber gun mounts.

MK-75 76mm Gun Mount Modifications

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
Procurement Cost	Amount	Amount
Initial Spares	\$ 5,812	\$ 9,430
	265	404
Procurement Cost	\$ 6,077	\$ 9,834

This program procures hardware to improve the safety, operability, reliability, maintainability, survivability and shock and vibration capabilities for all in-service MK-75 76mm gun mounts.

Modifications Under \$2 Million

	(\$ in Thousands)	
	FY 1990	FY 1991
	Qty	Qty
Procurement Cost	Amount	Amount
	\$ 2,430	\$ 2,337

This program procures hardware to improve the safety, operability, reliability, maintainability and availability of all in-service 16 inch/.50 caliber and 5 inch/.38 caliber gun mounts.

SUPPORT EQUIPMENT:

	(\$ in Thousands)
FY 1991 Estimate -	\$ 5,358
FY 1990 Estimate -	\$ 4,428
FY 1989 Estimate -	\$ 686
FY 1988 Actual -	\$ 1,068

The following paragraph provides justification for the FY 1990/91 request for gun support equipment.

Gun Support Equipment

	(\$ in Thousands)	
	FY 1990	FY 1991
Procurement Cost	Qty	Qty
	Amount	Amount
	\$ 5,358	\$ 4,428

This program procures match grade small arms, saluting mounts, and relining equipment for the 16 inch/.50 caliber gun barrels on the U.S.S. Iowa class battleships.

BUDGET ACTIVITY 5: SPARE AND REPAIR PARTS

(\$ in Thousands)

FY 1991 Estimate - \$ 92,977
FY 1990 Estimate - \$ 94,441
FY 1989 Estimate - \$ 73,308
FY 1988 Actual - \$ 114,828

Purpose and Scope of Work

Funds budgeted under this activity finance the procurement of spare and repair parts for Weapons Procurement, Navy (UPN) weapons systems. These spare parts are required to maintain the weapon system prior to the Material Support Date (MSD) where sparing is provided through the Navy Supply System.

Initial Spares

(\$ in Thousands)		
	FY 1990	FY 1991
	Qty	Amount
Procurement Cost		\$ 75,104
		\$ 70,542

These funds provide initial spare and repair parts for missile, torpedo and weapon systems procured in this appropriation. Requirements are determined by detailed provisioning procedures that include a wide range of factors about end item usage, usage rate trends, engineering judgment and repairable item turnaround time.

Replenishment Spares

(\$ in Thousands)		
	FY 1990	FY 1991
	Qty	Amount
Procurement Cost		\$ 19,337
		\$ 22,435

These funds provide replenishment spare and repair parts for missile, torpedo and weapon systems procured in this appropriation. Requirements are determined by stratification techniques which include the number of end items in the fleet, repair usage data, Ready-for-Issue (RFI) spares returning from revwork/repair programs and equipment lead times.

**Comparison of FY 1989 Program Requirements as Reflected
In Amended FY 1988/1989 Budget With FY 1989 Program Requirements as
Shown in FY 1990/1991 Budget**

Summary of Requirements (In Thousands of Dollars)

	<u>Total Program Requirements Per Amended FY 1989 Budget</u>	<u>Total Program Requirements Per FY 1990/91 Budget</u>	<u>Increase (+) or Decrease (-)</u>
Ballistic Missiles	1,872,538	1,870,263	-2,275
Other Missiles	3,504,356	3,202,486	-301,870
Torpedoes and Related Equipment	699,054	841,868	+142,814
Other Weapons	108,440	105,045	-3,395
Spares and Repair Parts	87,412	73,308	-14,104
Subtotal Direct Program	6,271,800	6,092,970	-178,830
Reimbursable Program	157,988	279,000	+121,012
Total Fiscal Year Program	6,429,788	6,371,970	-57,818

Explanation by Budget Activity

1. Ballistic Missiles (\$-2,275)

The decrease results from a transfer to support the U.S. Coast Guard Law Enforcement Detachments on Navy ships (Transfer of \$2,200) and a reduction based on revised inflation estimates (\$-39) and minor adjustments (\$-36).

Explanation by Budget Activity

2. Other Missiles (\$-301,870)

The decrease results from Congressional actions totalling \$-259,202 to the Sparrow missile (\$-57,500), ANBAAM missile (\$-24,800), Phoenix missile (\$-67,583), Standard Missile (\$-99,582), Hellfire missile (\$-26,042), Penguin missile (\$-38,579), Weapons Industrial Facilities (\$+3,000) and Ordnance Support Equipment program (\$-115,200). Other decreases included a transfer of \$3,800 from Trident I missile (\$-2,200) and Other Missile Support (\$-3,800), based on revised requirements, to support the U.S. Coast Guard Law Enforcement Detachments on Navy ships; a major reprogramming from the Standard Missile (\$-8,000) and Other Missile Support programs (\$-2,100), based on revised requirements, to the MK-67 Submarine Launched Mobile Mine (SLMM) program; a reprogramming reduction from the Sparrow missile (\$-4,704), required for last year of production support but now covered with FY 1989 funds and Sidevinder Mods (\$-2,396), based on deferring these modifications until the AIM-9R upgrade beginning in FY 1992, to support Operations and Maintenance, Navy (O&MN); an inflation reduction based on the latest estimates (\$-18,107); a transfer for consultant services (\$-2,372), contractor travel (\$-963) and a reduction for minor reprogrammings (\$-257).

3. Torpedoes and Related Equipment (\$+142,814)

The increase results from Congressional adjustments to the MK-48 ADCAP torpedo program (\$+53,986) and the Vertical Launched ASROC (\$+87,448), and a major reprogramming to the MK-67 Submarine Launched Mobile Mine (SLMM) program (\$+10,100), required to support the assembly of delivered components delayed by contractor manufacturing problems; offset by a reprogramming reduction to Torpedo Support Equipment (\$-2,600) based on revised requirements to support Operations and Maintenance, Navy (O&MN); an inflation reduction based on the latest estimates (\$-4,760); a transfers for consultant services (\$-915), contractor travel (\$-371) and a reduction for a minor reprogramming (\$-74).

4. Other Weapons (\$-3,395)

The decrease results from a reprogramming from the MK-15 CIWS program (\$-2,300) based on repricing to support Operations and Maintenance, Navy (O&MN); an inflation reduction based on the latest estimates (\$-606); reductions for consultant services (\$-313), contractor travel (\$-128) and a reduction for a minor reprogramming (\$-48).

5. Spares and Repair Parts (\$-14,104)

The decrease results from a reprogramming from initial and replenishment spares (\$-14,000), based on poor FY 1988 obligation performance, to support Operations and Maintenance, Navy (O&MN); an inflation reduction based on the latest estimates (\$-488); offset by a minor reprogrammings (\$+384).

Comparison of FY 1989 Financing As Reflected
In Amended FY 1988/89 Budget With FY 1989 Financing As
Shown in FY 1990/91 Budget

(In Thousands of Dollars)

	Financing Per Amended FY 1989 Budget	Financing Per FY 1990/91 Budget	Increase (+) or Decrease (-)
Program Requirements (Total)	6,429,788	6,371,970	-57,818
Program Requirements (Service Account)	6,271,800	6,092,970	-178,830
Program Requirements (Reimbursable)	157,988	279,000	+121,012
Less:			
Anticipated Reimbursements	157,988	279,000	+121,012
Budget Authority:			
Appropriation	6,271,800	6,154,032	-117,768
Transferred to other accounts		-56,000	-56,000
Reduction pursuant to P.L. 100-463		-5,062	-5,062
Appropriation (adjusted)	6,271,800	6,092,970	-178,830

Explanation of Changes in Financing

1. Program Requirements (TOTAL)

The net decrease reflects a decrease in the service account requirements and an increase in the reimbursable program to reflect unanticipated Foreign Military Sales.

2. Program Requirements (Service Account)

The decrease reflects reprogrammings to cover additional costs required for operations and maintenance (\$-50,000) and support of the U.S. Coast Guard Law Enforcement Detachments on Navy ships (transfer of \$6,000). Additionally, major decreases resulted from Congressional actions totalling \$259,202. Other adjustments and transfers include revised inflation estimates (\$-24,000), consultant services (\$-3,600) and contractor travel (\$-1,462).

3. Program Requirements (Reimbursable)

The net change reflects an unanticipated increase in sales of Sidevinder and Sparrow missiles to foreign military customers requiring reimbursable contract authority.

4. Anticipated Reimbursements

In addition to the previously unanticipated reimbursable orders, the total VPN and OPN Rolling Airframe Missile (RAM) program is being financed through VPN in accordance with Department of the Navy policy to maintain a clearer audit trail.

5. Budget Authority

The decrease represents approved Congressional FY 1989 authorization and appropriation actions.

6. Transferred to Other Accounts

The decrease reflects reprogrammings for \$56,000 to support additional costs required for operations and maintenance (\$-50,000) and to support the U.S. Coast Guard Law Enforcement Detachments on Navy ships (transfer of \$6,000).

7. Reduction Pursuant to P.L. 100-463

This \$5,062 reduction decreases amounts budgtd for consultant services and contractor travel in accordance with Congressional direction.

8. Appropriation Adjusted

The net of adjustments to the VPN appropriation since approval by the Congress.

Comparison of FY 1988 Program Requirements as Reflected
In Amended FY 1988/1989 Budget With FY 1988 Program Requirements as
Shown in FY 1990/1991 Budget

Summary of Requirements (In Thousands of Dollars)

	<u>Total Program Requirements Per Amended FY 1989 Budget</u>	<u>Total Program Requirements Per FY 1990/91 Budget</u>	<u>Increase (+) or Decrease (-)</u>
Ballistic Missiles	2,048,692	2,048,692	-
Other Missiles	3,085,621	3,012,421	-73,200
Torpedoes and Related Equipment	489,039	489,039	-
Other Weapons	100,339	100,339	-
Spares and Repair Parts	110,928	114,828	+3,900
Subtotal Direct Program	5,834,619	5,765,319	-69,300
Reimbursable Program	63,230	128,737	+65,507
Total Fiscal Year Program	5,897,849	5,894,056	-3,793

Explanation by Budget Activity

1. Ballistic Missiles

No change.

Explanation by Budget Activity

2. Other Missiles (\$-73,200)

The net change is the result of DD 1415 reprogramming actions: from the Tomahawk missile program (\$-4,000) based on reduced time-phased requirements, to support additional costs required for Persian Gulf operations (88-44 PA: O&MN); a total of \$8,600 from Tomahawk (\$-1,600), Phoenix missile (\$-2,000), Harpoon missile (\$-1,000), HARM missile (\$-1,000) and Aerial Targets (\$-3,000) based on reductions in time-phased requirements, to cover increases in oversea station and variable housing allowances (88-45 PA: MPN and MPHC); from Sparrow missile (\$6,500), based on contract savings, as an additional offset required for Champus (88-46 PA: O&MN); a total of \$51,100 from Tomahawk (\$-6,100) based on revised time-phased requirements, Standard Missile (\$-15,000) resulting from contract savings and Ordnance Support Equipment (\$-30,000) based on obligation delays, to cover the DoD civilian pay raise (88-47 PA: O&MN); and a transfer of \$3,000, available from Standard Missile contract savings, to support the U.S. Coast Guard Law Enforcement Detachments on Navy ships.

3. Torpedoes and Related Equipment

No change.

4. Other Weapons

No change.

5. Spare and Repair Parts (\$+3,900)

The net change is the result of DD 1415 reprogramming actions: from initial spares (\$-7,800) based on poor obligation performance, to support additional costs related to Persian Gulf operations (88-44 PA: O&MN); from initial spares (\$-1,400) based on poor obligation performance, to cover increases in oversea station and variable housing allowances (88-45 PA: MPN and MPHC); from initial spares (\$-400), based on poor obligation performance, to cover the Navy's share of increased costs at DoD Section 6 Schools (88-48 PA: PDA); offset by a reduction in Champus reprogramming requirements (\$+13,500), which revert to the original source, the initial spares program.

Comparison of FY 1988 Financing As Reflected
In Amended FY 1988/1989 Budget With FY 1988 Financing As
Shown in FY 1990/1991 Budget

(In Thousands of Dollars)

	Financing Per Amended FY 1989 Budget	Financing Per FY 1990/91 Budget	Increase (+) or Decrease (-)
Program Requirements (Total)	5,897,849	5,894,056	-3,793
Program Requirements (Service Account)	5,834,619	5,765,319	-69,300
Program Requirements (Reimbursable)	63,230	128,737	+65,507
Less:			
Anticipated Reimbursements	63,230	128,737	+65,507
Budget Authority:			
Appropriation	5,967,019	5,967,019	0
Transferred to other accounts	-132,400	-201,700	-69,300
Appropriation (Adjusted)	5,834,619	5,765,319	-69,300

Explanation of Changes in Financing

1. Program Requirements (TOTAL)

The slight net decrease reflects the decrease in the service account requirements and an increase to the reimbursable program to reflect unanticipated Foreign Military Sales.