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DEPARTMENT OF THE NAVY JUSTIFICATIONS OF ESTIMATES FOR FISCAL YEAR 1984 (U)

SUBMITTED TO CONGRESS JANUARY 1983

PROCUREMENT

AIRCRAFT PROCUREMENT, NAVY

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THIS VOLUME CONTAINS JUSTIFICATION MATERIAL SUPPORTING THE PRESIDENT'S FISCAL 1984 BUDGET PRESENTATION TO CONGRESS CONCERNING PROCUREMENT, SPECIFICALLY AIRCRAFT PROCUREMENT, NAVY.

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Department of the Navy
Aircraft Procurement, Navy
Justification of Estimates for Fiscal Year 1984 and Fiscal Year 1985

TABLE OF CONTENTS

Aircraft Procurement, Navy

For construction, procurement, production, modification, and modernization of aircraft, equipment including ordnance, spare parts, and accessories therefor; specialized equipment, expansion of public and private plants, including the land necessary therefor, and such lands and interest therein, may be acquired, and construction prosecuted thereon prior to approval of title as required by section 355, Revised Statutes, as amended; and procurement and installation of equipment, appliances, and machine tools in public and private plants; reserve plant and Government and contractor-owned equipment layaway; $10,357,007,000 $11,127,300,000 to remain available for obligation until September 30, 1985 , September 30, 1986 (10 U.S.C. 5012, 5031, 7201, 7341; 31 U.S.C. 718; Department of Defense Appropriation Act, 1983; additional authorizing legislation to be proposed for the fiscal year 1984).

Financing

The FY 1984 budget plan of $11,127,300,000 for the Aircraft Procurement, Navy appropriation is to be financed by new obligational authority. The FY 1985 authorization plan of $14,278,560,000 will also be financed by new obligation authority.

Budget Activity 1: Combat Aircraft

(In Thousands)
FY 1985 Estimate - $7,714,214
FY 1984 Estimate - $6,699,911
FY 1983 Estimate - $6,271,300
FY 1982 Actual - $6,021,890

Purpose and Scope of Work

Navy and Marine Corps combat aircraft are procured under this budget activity. These aircraft include fixed-wing and rotary configurations and are grouped generally into the categories of attack, fighter, and anti-submarine warfare. In addition to these general categories, aircraft which directly support combat operations in specialized missions, such as aerial assault, command and control, search and rescue, reconnaissance, observation, electronic warfare, and early warning are also procured in this budget activity. Funds are budgeted to procure fully equipped aircraft, including engines and avionics equipment, special ground support and training equipment, and technical publications.

Advance procurement funds are also included to finance long lead time effort, materials, and equipments for the following year program, as well as for multiyear procurement of the F/A-18 engine.

Justification of Funds

Funds for procurement of twelve different combat aircraft models, including two attack, two fighter, four helicopter, one patrol, two electronic warfare and one early warning type are either budgeted in FY 1984 or requested for authorization in FY 1985. Funds are also included in this budget request for FY 1984 advance procurement requirements for aircraft scheduled for procurement in FY 1985 and for multiyear procurement. The amounts shown below finance: (1) aircraft procurement; (2) advance procurement which is justified separately at the end of the budget activity; and (3) aircraft initial spares and repair parts which are budgeted and justified in budget activity 6.

A-6E (Attack) INTRUDER

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	6	205.4	6	204.0
Advance Procurement		11.0		12.4
Initial Spares		15.9		-

The A-6E is a highly effective attack aircraft. It is equipped with the Target Recognition Attack Multisensor (TRAM) system which gives the A-6E the capability of very accurate night/all weather delivery of nuclear and non-nuclear weapons as well as a night surveillance and identification capability. The FY 1984 request continues procurement of modern tactical attack aircraft for the Navy and Marine Corps.

EA-6B (Electronic Warfare) PROWLER

	(Dollars in Millions) FY 1984 Qty	FY 1984 Amt	FY 1985 Qty	FY 1985 Amt
Procurement	6	382.0	6	369.1
Advance Procurement		17.6		17.6
Initial Spares		42.7		47.2

The carrier-based EA-6B is an advanced electronic warfare aircraft which provides protection to Navy strike aircraft by jamming enemy radar-controlled weapons. Six aircraft are requested in FY 1984, and authorization is requested for six more in FY 1985. This continues the procurement of modern tactical EW aircraft for the Navy and Marine Corps.

AV-8B (Attack) HARRIER

	(Dollars in Millions) FY 1984 Qty	FY 1984 Amt	FY 1985 Qty	FY 1985 Amt
Procurement	32	810.1	48	1,036.0
Advance Procurement		98.4		106.6
Initial Spares		139.1		179.1

The AV-8B is an improved vectored thrust V/STOL aircraft based on the AV-8A concept and the PEGASUS 11 engine that has twice the range or payload of the current HARRIER. It combines aerodynamic improvements with the Angle Rate Bombing System for increased weapon delivery accuracy and a new stability augmentation system to reduce pilot workload providing a more capable and reliable light attack aircraft. The AV-8B will meet the Marine Corps' requirement for a light attack aircraft to provide responsive offensive air power that can operate from austere forward sites in direct support of ground forces.

The FY 1984 request of $810.1 million is for 32 aircraft, and authorization is requested for procurement of 48 aircraft in FY 1985.

F-14A (Fighter) TOMCAT

	(Dollars in Millions) FY 1984 Qty	FY 1984 Amt	FY 1985 Qty	FY 1985 Amt
Procurement	24	696.5	24	988.6
Advance Procurement		170.8		223.1
Initial Spares		84.3		130.4

The F-14A is a high performance, air superiority/fleet air defense fighter capable of air-to-air combat and air-to-surface attack missions. It is a two-place, tandem seat, variable sweep wing, supersonic, carrier-based airborne weapons system. The F-14A has visual attack and all-weather capability to deliver PHOENIX and SPARROW missiles using the AN/AWG-9 weapons system. It also employs the M-61 gun and SIDEWINDER missiles for close-in air-to-air combat. The FY 1984 budget request includes $886.5 million for procurement of 24 F-14A aircraft, and authorization is requested to procure 24 aircraft in FY 1985. This will continue an orderly Navy fighter modernization program and maintain fighter force levels. An additional 288 aircraft are programmed for future year procurement for total acquisition of 845 aircraft, including 12 RDT&E aircraft.

F/A-18 (Strike Fighter) HORNET (MYP)

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	84	2,150.9	92	2,522.2
Advance Procurement		382.7		355.9
Initial Spares		192.6		122.8

The F/A-18 is a single-seat, twin-engine, carrier-based, multi-mission tactical aircraft that can be configured with fighter or attack capabilities. Employing the SPARROW and SIDEWINDER missiles and the M-61 gun, it will be a lower cost complement to the F-14A, and will be the Navy's primary fighter for tactical air power projection both over land and at sea. The F/A-18 will replace aging F-4 and eventually A-7 aircraft and will be a primary weapons system for the Navy and Marine Corps. The total programmed procurement of F/A-18 aircraft is 1,377, including 11 RDT&E aircraft. The F/A-18 engine is slated for multiyear procurement, beginning with FY 1983 advance procurement for the FY 1984 lot and continuing through FY 1987.

CH-53E (Helicopter) SUPER STALLION

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	11	221.8	11	256.1
Advance Procurement		7.3		8.5
Initial Spares		19.2		28.5

The CH-53E is a shipboard compatible heavy transport helicopter for use by both the Marine Corps and the Navy. Marine Corps missions include the lift of heavy equipment and cargo from ship to shore in the amphibious assault, the lift of equipment and supplies during tactical operations ashore, and the tactical recovery of disabled aircraft and equipment. Navy missions include vertical onboard delivery (VOD) of high priority parts and personnel to ships on station, the movement of heavy and bulky equipment in support of Mobile Construction Battalions, the offload of supplies and equipment in unimproved ports, the transfer of battle-damaged aircraft from carriers, and the movement of nuclear munitions between storage facilities and ships. Budget authority is requested for eleven helicopters at a cost of $221.8 million in FY 1984, and authorization is requested for the procurement of eleven helicopters in FY 1985.

AH-1T (Helicopter) SEA COBRA

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	-	-	22	159.8
Advance Procurement		17.8		15.0
Initial Spares		-		21.2

The AH-1T helicopter is an improved version of the Marine AH-1J, which incorporates an uprated twin-pack engine (T400-WV-402) and improved dynamics for increased performance, reliability and hot day performance. It includes structural provisions for the TOW missile, a 20mm nose-mounted turret gun and a wing stores armament management system for selective release of externally carried weapons. The improved SEA COBRA is 58 feet in overall length and the rotor diameter is 48 feet. Maximum take-off weight is 14,000 pounds. The AH-1T helicopter gunship's mission is the en route escort and protection of troop assault helicopters, landing zone preparation immediately prior to the arrival of assault helicopters, landing zone fire suppression during the assault phase, and fire support during ground escort operations. Authorization is requested for procurement of 22 AH-1T helicopters in FY 1985.

SH-60B (Anti-Submarine Warfare Helicopter) SEAHAWK

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	21	446.9	18	435.4
Advance Procurement		58.8		61.7
Initial Spares		90.3		97.4

The SH-60B SEAHAWK is the air sub-system of the LAMPS MK III weapon system. The LAMPS MK III weapon system also includes a ship sub-system and a Recovery, Assist, Securing and Traversing (RAST) sub-system. The Light Airborne Multi-Purpose System (LAMPS MK III) is a computer integrated ship/helicopter system that increases the effectiveness of surface combatants and is designed for Anti-Submarine Warfare (ASW). LAMPS MK III has a secondary mission of Anti-Ship Surveillance and Targeting (ASST). The LAMPS MK III helicopter is designated the SH-60B. It will carry a crew of three, approximately 2,000 lbs of mission avionics, and have provisions for sonobuoys and MK-46 torpedoes. The helicopter will have a mission gross take-off weight of about 20,000 lbs. The helicopter provides a remote platform for deployment of sonobuoys and torpedoes, processing of acoustic and Magnetic Anomaly Detection (MAD) sensor information, and an elevated platform for radar and Electronic Warfare Support Measures (ESM). The ship provides sensor processing, command and control, integration of LAMPS information gained from other sensors, the landing and traversing system, visual landing aids, and maintenance and support facilities for the aircraft. Budget authority of $446.9 million in FY 1984 is requested for the procurement of 21 helicopters, and authorization is requested for procurement of 18 in FY 1985.

P-3C (Patrol) ORION

	(Dollars in Millions) FY 1984 Qty	FY 1984 Amt	FY 1985 Qty	FY 1985 Amt
Procurement	5	215.1	6	333.0
Advance Procurement		67.7		74.1
Initial Spares		6.8		8.0

The P-3C aircraft is a land-based, four-engine, turboprop patrol aircraft. Its primary mission is anti-submarine warfare (ASW): to detect, classify, track, localize, and destroy conventional and high performance submarines; to conduct long range barrier patrols, convoy escort, hold down, hunter-killer operations, and area search in all weather conditions; and to act as in-flight area coordinator at a scene of action. Secondary missions are aerial mining, maritime surveillance, shipping destruction, and intelligence collection.

The P-3C ASW systems include data processing of directional LOFAR (DIFAR), radar, infrared detection set (IRDS), HARPOON, Sonobuoy Referencing System (SRS), electronic support measures (ESM), and magnetic anomaly detection (MAD) equipment. The tactical system includes integrated displays and inertial doppler navigator. The P-3C, with a central digital computer, has the data handling capacity, flexibility and accuracy through digital data processing, to thoroughly integrate appropriate sensor, display, navigation, communications, and armament equipment. Budget authority of $215.1 million is requested for five aircraft in FY 1984 and program authorization of $333.0 million is requested for six aircraft in FY 1985.

EP-3 (Electronic Warfare)

	(Dollars in Millions) FY 1984 Qty	FY 1984 Amt	FY 1985 Qty	FY 1985 Amt
Procurement	2	77.1	3	121.3
Advance Procurement		12.4		13.3
Initial Spares		0.2		0.6

The EP-3 is a reconnaissance and electronic warfrare patrol type land-based aircraft which has been developed from the P-3 series aircraft. It incorporates electronic and communications intercept equipment needed to cope with the density and complexity of electronic threat environment. Budget authority of $77.1 million is requested in FY 1984 for two aircraft and program authorization of $121.3 million for three aircraft in FY 1985 is requested.

E-2C (Early Warning) HAWKEYE

	(Dollars in Millions) FY 1984 Qty	FY 1984 Amt	FY 1985 Qty	FY 1985 Amt
Procurement	6	309.6	6	306.8
Advance Procurement		25.6		27.0
Initial Spares		10.6		13.2

The E-2C is a carrier-based airborne early warning/command and control system designed for Fleet air defense. It provides forces at sea with a modern early warning strike control and surveillance capability. The E-2C has the same basic airframe as the earlier model E-2A/B but is equipped with new avionics equipment, including new radar antenna and passive detection system. This equipment provides improved capability, including overland detection of air targets. A major feature of the system is greatly enhanced reliability over previous early warning aircraft. Six E-2C aircraft at a cost of $309.6 million are scheduled for procurement in FY 1984. Authorization is also requested for procurement of six E-2C aircraft at a budgeted cost of $306.8 million in FY 1985.

SH-2F (Helicopter) SEASPRITE

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	12	109.8	6	86.7
Advance Procurement		6.6		-
Initial Spares		7.0		4.0

The SH-2F is a two-place, twin-engine helicopter with a single main-lift rotor and anti-torque tail rotor. It is the air subsystem of the LAMPS MK I weapons system, deployed aboard FF1040 and FF1052 class frigates in the primary role of anti-submarine warfare. The SH-2F has secondary missions that include SAR, MEDEVAC, and communications relay. The FY 1984 budget includes $109.8 million for procurement of twelve SH-2F helicopters, and authorization of $86.7 million is requested for six in FY 1985.

Advance Procurement

The FY 1984 budget request includes $884.7 million for advance procurement of material and effort for FY 1985 and for multiyear procurement associated with the F/A-18 engine. Authorization is requested for FY 1985 advance procurement requirements, totalling $915.2 million, in support of FY 1986 and multiyear procurement. An itemization of the requirements follows:

(Dollars in millions)	FY 1985		FY 1986	
Aircraft Model	A/C Qty	A. P. in FY 84	A/C Qty	A. P. in FY 85
A-6E	6	11.0	6	12.4
EA-6B	6	17.6	6	17.6
AV-8B	48	98.4	60	106.6
F-14	24	178.8	30	223.1
F/A-18	92	382.7	106	355.9
CH-53E	11	7.3	14	8.5
AH-1T	22	17.8	22	15.0
SH-60B	18	58.8	18	61.7
P-3C	6	67.7	6	74.1
EP-3	3	12.4	3	13.3
E-2C	6	25.6	6	27.0
SH-2F	6	6.6	-	-

The advance procurement listed is required to ensure timely delivery of the planned FY 1985 and FY 1986 aircraft programs. The amounts budgeted for GFE items, engines and some other major GFE items are required for long leadtime effort and material for the prime contractor and their vendors. This includes items such as castings, forgings, landing gear and production engineering requirements. For most GFE, requirements are calculated for each item of equipment, considering the planned aircraft quantity, production leadtime, and prime contractor installation leadtime (i.e., the amount of time the item is needed at the factory prior to aircraft delivery). As the result of these calculations, certain equipments, primarily avionics items, are budgeted as advance procurement to ensure meeting planned aircraft production schedules.

In addition to conventional advance procurement requirements, the F/A-18 advance procurement includes funds for multiyear procurement of the F/A-18 engine through FY 1987. Of the FY 1984 advance procurement, $121.2 million is for the engine, and in FY 1985, $76.4 million is for the engine. A portion of these funds is for FY 1986 and FY 1987 engine procurement.

Budget Activity 2: Airlift Aircraft

(In Thousands)

FY 1985 Estimate - $322,059
FY 1984 Estimate - $203,238
FY 1983 Estimate - $284,000
FY 1982 Actual - $ 57,200

Purpose and Scope of Work

This budget activity provides for the procurement of Fleet tactical support aircraft needed to fulfill the Navy's airlift support requirements.

Justification of Funds

Funds are requested in FY 1984 for procurement of eight C-2A, Carrier on Board Delivery (COD) aircraft under a multiyear contract. Advance procurement funds are requested in FY 1984 for the procurement of the additional C-2A aircraft covered under this multiyear plan. In FY 1985 authorization is requested for procurement of eight used C-9 aircraft, twenty-four UC-12B aircraft, and eight C-2A aircraft. Authorization is also requested to cover advance procurement for subsequent C-2A buys.

C-9B

(Dollars in Millions)

	FY 1984 Qty	FY 1984 Amt	FY 1985 Qty	FY 1985 Amt
Procurement		$ -	8	$88.7
Advance Procurement		-		-
Initial Spares		-		13.6

The C-9 is a commercial land based aircraft configured to carry cargo and/or personnel.

Authorization is requested in FY 1985 to procure eight used C-9 aircraft in order to meet Navy intra-theater airlift requirements. Seventeen aircraft have been procured through FY 1982; In FY 1983, $16.2 million was authorized for the procurement of two or more used aircraft. Procurement of six additional used C-9 aircraft is planned for FY 1988.

UC-12B

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	-	-	24	$64.5
Advance Procurement	-	-		-
Initial Spares	-	-		-

The UC-12B is a commercial off-the-shelf FAA type certified aircraft. It is a turbine powered aircraft weighing 12,500 lbs. with a capacity to carry 8 passengers. Authorization is requested in FY 1985 to procure twenty-four of these aircraft. Of the total UC-12 requirement for 114 production aircraft, sixty-six aircraft have already been procured; another twenty-four aircraft are scheduled for procurement in both FY 1985 and FY 1986.

C-2A (Greyhound) (MYP)

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	8	$165.7	8	$138.5
Advance Procurement		37.5		30.4
Initial Spares		23.1		31.9

The C-2A is a twin turboprop engine-powered personnel/cargo transport type aircraft, capable of all weather carrier operations. The internal payload configuration is variable, allowing combinations of passengers (28 maximum), MEDEVAC litters (12 maximum), aircraft engines, repair parts, and other high priority cargo.

The C-2 aircraft mission is to provide rapid response Carrier On-Board Delivery (COD) of fleet essential supplies, repair parts, and personnel to deployed carrier battle groups as required to sustain at sea operations.

The thirty-nine aircraft being procured for the C-2A program are the subject of a multiyear procurement contract strategy. Budget authority for $165.7 million is requested in FY 1984 for the second procurement increment of eight aircraft. In FY 1985 authorization is requested for the third increment of eight aircraft at a cost of $138.5 million.

Advance Procurement

$37.5 million is requested in FY 1984 for advance procurement of material and effort for multiyear procurement of the C-2 aircraft for advance procurement to cover this multiyear effort. The C-2 airframe has been chosen for multiyear procurement because it satisfied selection criteria for stability of requirement, funding and configuration; confidence in cost and contractor capability; and savings to the Government. In FY 1985, an additional $30.4 million is requested for authorization.

Budget Activity 3: Trainer Aircraft

(In Thousands)

FY 1985 Estimate - $242,500
FY 1984 Estimate - $105,932
FY 1983 Estimate - $ 57,200
FY 1982 Actual - $ 74,104

Purpose and Scope of Work

The Naval Air Training Command needs modern aircraft specifically designed for aircrew training in order to provide the Navy, Marine Corps, and Coast Guard with well trained and highly skilled pilots, navigators, and other aircrew members. Aircraft procured under Budget Activity 3 are used to train students in basic and advanced flying techniques, navigation, instrument flying and numerous other skills required before the transition to high performance Fleet aircraft.

Justification of Funds

Funds are requested in FY 1984 for procurement of thirty-eight T-34C aircraft, four ADVERSARY aircraft, and twenty-one TH-57 helicopters. In addition, advance procurement funds are required in FY 1984 for the VTX trainer aircraft. In FY 1985 authorization is requested for thirty-eight T-34C aircraft, eight ADVERSARY aircraft, two VTX trainer aircraft, VTX advance procurement, and thirty-six TH-57 helicopters.

T-34C (Trainer) MENTOR

(Dollars in Millions)

	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	38	$40.6	38	$40.9

The T-34 is a single engine, turboprop powered primary training aircraft.

The mission of the T-34 is to train student aviators in primary flight techniques. In FY 1984, authority is requested to procure thirty-eight aircraft and in FY 1985 authorization is requested to procure the same number of aircraft. The T-34 total program is 449 aircraft, including two procured with RDT&E,N funds. In FY 1983 and prior, 335 aircraft have been procured. A balance of 114 aircraft are planned for procurement at a rate of 38 aircraft per year during the FY 1984-FY 1986 time frame.

ADVERSARY (Trainer)

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	4	$29.1	8	$66.8
Initial Spares	-	3.2	-	5.6

The Navy will select a high performance supersonic tactical fighter as an adversary aircraft. The aircraft must closely replicate the operational characteristics of the latest Soviet built MIG series aircraft and will replace the F-5E aircraft which will reach the end of their service life by mid-year FY 1987. Candidate aircraft for the ADVERSARY aircraft are: F-16/J79, F-20 (previously designated F-5G), French Mirage and Israeli KFIR. The ADVERSARY aircraft will be utilized by the Navy Fighter Weapon School.

In FY 1984, authority is requested to procure four ADVERSARY aircraft. In FY 1985, authorization is requested to procure an additional eight aircraft.

VTXTS (FCLP)

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	-	-	2	$92.8
Advance Procurement		$4.9	-	17.7
Initial Spares	-	-	-	2.7

The VTX, a single-engine aircraft, will be a derivative of the British Aerospace HAWK and will be utilized by the Naval Air Training Command to replace T-2 and TA-4J trainers. In FY 1984, authority is requested for advance procurement. In FY 1985, authorization is requested for procurement of two aircraft and for advance procurement of materials and services to support the FY 1986 buy.

TH-57 (Trainer) SEA RANGER

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	21	$31.4	36	$24.3

The TH-57 is a single engine trainer helicopter derived from the Bell Model 206A. It is used to train student aviators in primary helicopter flight techniques.

In FY 1983 and prior, 123 aircraft were procured. Budget authority is requested in FY 1984 to procure twenty-one aircraft. In FY 1985 authorization is requested for procurement of an additional thirty-six TH-57's for a total program of 180.

Budget Activity 4: Other Aircraft

(In Thousands)

FY 1985 Estimate - $391,034
FY 1984 Estimate - $149,766
FY 1983 Estimate - $ 65,900
FY 1982 Actual - $136,792

Purpose and Scope of Work

Under Budget Activity 4 aircraft other than those associated with combat, airlift, and training missions are procured.

Justification of Funds

Funds are requested in FY 1984 for procurement of KC-130T aircraft support, for advance procurement for the FY 1985 ECX program, and for procurement of one FEWSG aircraft. In FY 1985 authorization is requested for two ECX aircraft and advance procurement to support the FY 1986 production effort.

KC-130T

(Dollars in Millions)

	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	-	$15.7	-	-
Advance Procurement	-	-	-	-
Initial Spares	-	-	-	-

Authority is requested in FY 1984 to procure $15.7 million of support including ground support equipment, training equipment and publications for previously approved KC-130T aircraft.

ECX (TACAMO)

(Dollars in Millions)

	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	-	-	2	$292.6
Advance Procurement	-	$107.7	-	98.2
Initial Spares	-	-	-	34.9

The ECX is the replacement for the TACAMO aircraft. Its mission is to provide a survivable communications connectivity between the National Command Post and Fleet Ballistic Missile Submarines. In FY 1984, authority is requested for advance procurement to support the FY 1985 program. Authorization is requested for procurement of two aircraft in FY 1985, as well as for advance procurement for the subsequent year program. A total of fifteen aircraft is planned including one procured with RDT&E,N funds.

FEWSG

	(Dollars in Millions)			
	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
Procurement	1	$26.4	-	-
Initial Spares	-	1.0	-	-

The Fleet Electronic Warfare Support Group (FEWSG) aircraft will be a used B707/DC-8 four engine transoceanic type aircraft with the required modifications to incorporate peculiar electronic warfare and communications equipments. FY 1984 funding is requested for the procurement of one FEWSG aircraft.

Budget Activity 5: Modification of Aircraft

(In Thousands)

FY 1985 Estimate - $2,068,206
FY 1984 Estimate - $1,430,276
FY 1983 Estimate - $1,177,913
FY 1982 Actual - $ 909,808

Purpose and Scope of Work

The Aircraft Modification program funds incorporation of technical improvements which substantially modernize the operational capabilities; improve the maintainability, reliability, and safety; and extend the service life of aircraft which have entered the Fleet. Budget estimates and authorization requests include funds for modernization/conversion programs undertaken in lieu of procurement of new aircraft in order to fill inventory and force level requirements.

Justification of Funds

In order to fulfill inventory requirements, it has become mandatory to operate many older aircraft in the inventory beyond their originally programmed service life and update their weapon systems so that they remain capable of continued effective operation in new threat environments. To accomplish these two objectives, the Navy pursues service life extension and weapons modernization programs. These conversions often involve complex engineering changes which require a major production effort and are usually accomplished at a contractor's facility, with aircraft inducted into an assembly line for the conversion/modernization programs. A substantial portion of the funds requested in FY 1984 and FY 1985 are for modifications in this category.

The FY 1984 budget request and the FY 1985 authorization request also include funds for incorporation of other modifications intended to enhance the operational capabilities of in-service aircraft or their safety-of-flight, maintainability or reliability. Only essential modifications or changes which are necessary to satisfy the most urgent operational requirements are included in this budget request.

Justification for the FY 1984 budget request and for the FY 1985 authorization is provided by a narrative summary highlighting high cost, essential modifications, and a "back-up" section containing a detailed description of most modifications in the budget request. The installation cost of all FY 1980 and subsequent modification programs is budgeted in the Operations and Maintenance, Navy appropriation.

The following narrative summary highlights modification requirements by aircraft series and model.

A-3 Series Modification

The FY 1984 budget request contains $4.0 million for A-3 series modificatons including $2.3 million for the AN/ARC-159 Radio. This modification will continue the replacement of the current unreliable vacuum tube radio with a state-of-the art UHF communications system. In a similar vein, $1.4 million in FY 1984 is requested to procure the AN/APS-133 Radar for the KA-3B to achieve significantly higher reliability over the existing AN/ASB-1 Radar for which spare parts are virtually non-existent. Two small modifications totalling $.3 million in FY 1984, the AN/ALR-63 Replacement of Obsolete Parts and the DC Generator Voltage Regulator program, are also included.

A-4 Series Modification

$14.8 million in FY 1984 and $15.0 million in FY 1985 are requested for A-4 series aircraft modifications. Incorporation of MAVERICK missile provisions into the A-4M will provide highly accurate anti-armor/anti-fortification capability for the Marine Corps. $5.8 million and $3.3 million in FY 1984 and FY 1985, respectively, are requested for this procurement. The A-4M has three specialized Air Data Computer (ADC) systems which have various degrees of reliability. In order to improve total reliability of the ADC system by a factor of ten, a single digital system is in development and will be incorporated at a cost of $2.3 million in FY 1984 and $2.0 million in FY 1985. Continuation of the AN/ALQ-162 Countermeasures program, which provides complementary Defensive Electronic Countermeasures (DECM) jamming capability with the AN/ALQ-126 Jammer, is requested ($4.8 million in FY 1984 and $8.3 million in FY 1985) to significantly increase aircraft survivability against radar-directed air defense systems. $1.4 million in FY 1984 and $1.4 million in FY 1985 is requested for the AN/ARN-118 TACAN, a tactical navigation system reliability improvement. Finally, $.5 million in FY 1984 is requested for the VHF/VOR/ILS effort to permit the Navy Flight Demonstration Team to operate out of civilian airports.

A-6 Series Modification

A total of $149.5 million in FY 1984 and $275.7 million in FY 1985 is requested for various A-6 modifications. Paramount among them is the Target Recognition and Attack Multisensor (TRAM). The TRAM program provides the A-6E with improved capability for location and surveillance of opposing Naval Forces and countering of their operations during periods of darkness, allowing maximum night identification and 24-hour strike capability. The system includes a passive imaging infrared sensor and a laser search set located in a 20-inch diameter space stabilized turret. $28.5 million in FY 1984 and $72.8 million in FY 1985 are requested to continue TRAM equipment procurements.

Heavy wing loadings and high-G maneuvers have accelerated the service life completions of older A-6E aircraft necessitating the A-6E Rewing (SLEP) program. An ongoing effort, $28.6 million in FY 1984 and $41.9 million in FY 1985 are requested to continue the program to maintain an adequate inventory of A-6E aircraft and avoid degradation of fleet readiness.

A-6 Series Modification cont'd

Other significant on-going programs include the A-6E Weapon Control System Improvement, the A-6E to KA-6D tanker, and the Vertical Display Indicator. The Weapon Control System Improvement will simplify and consolidate Weapon Control System configurations by modifying the aircraft's 4 Pi computer with a double density memory capability, thus providing the additional capacity required for successful operation of all current weapons (i.e., SIDEWINDER, WALLEYE, etc.). The FY 1984 budget request includes $9.5 million in FY 1984 and $11.3 million in FY 1985 for this program. In order to provide a sufficient quantity of aircraft configured for inflight refueling of other aircraft, $17.0 million in FY 1984 and $19.9 million in FY 1985 are requested for the A-6E to KA-6D tanker program. Once converted, the KA-6D carries 20,000 pounds of fuel which it can transfer at a rate of 350 gallons per minute. The Vertical Display Indicator (VDI) is a dynamic contact analog TV display composed of easily identified ground and sky textures integrated with flight path presentations which assist the pilot during take-off, navigation, attack, and landing. To continue this program, $15.6 million and $10.8 million are requested in FY 1984 and FY 1985, respectively.

$17.5 million in FY 1984 and $24.1 million in FY 1985 are requested to proceed with the KA-6D R&M Update Modification. This program will bring the configuration of older tankers, A-6As converted to KA-6Ds under a previous CILOP effort, up to the latest configuration as well as incorporate improvements to increase reliability and maintainabilty.

The Radar Data Converter (RDC) program continues in FY 1984 ($7.0 million) and FY 1985 ($7.2 million). The program will replace the existing RDC and its related analog technology with a digital system for a major increase in reliability and safety. Another continuing program, the A-6E Weapons Integration, will provide increased capability, compatibility and simplify incorporation of new weapons and avionics systems projected for the A-6E. The FY 1984 budget request and FY 1985 authorization request includes $4.2 million and $7.0 million, respectively, for this effort.

Two smaller modifications will complete in FY 1984. The USH-17/UPQ-5 program is designed to improve the operational characteristics of the Mission Recorder (USH-17) and Display (UPQ-5). $1.3 million in FY 1984 is requested to complete this program. The final increment of the APQ-156 Radar improvement program is planned for FY 1984, and $3.5 million is included in the FY 1984 budget request. Funding for two small modifications, the Stabilizer Shift modification ($.5 million in FY 1984 and $.5 million in FY 1985) and the Battery Improvement program ($.5 million in FY 1984 and $.5 million in FY 1985) is also requested.

The largest new initiative, the AN/ALR-67 Radar Receiving Set Countermeasures Warning and Control System will provide detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. $14.1 million in FY 1984 is requested for this program, and authorization of $25.0 million in FY 1985 is required to continue it. The second new-start in FY 1984 is the A-6 Automatic Flight Control System (AFCS) improvements program for which $1.7 million and $.6 million are requested in FY 1984 and FY 1985, respectively

A-6 Series Modification cont'd

Authorization for seven new programs scheduled to commence in FY 1985 is requested. The largest, the integration of HARM missile capabilities into A-6E TRAM configured aircraft, will require $22.4 million in FY 1985. Incorporation of the HARM missile will provide additional stand-off range and self-protection capability. Other programs for which authorization is requested include the stand-off Air-to-Ground Weapons program, $6.2 million; Anti-Collision Strobe Lights, $4.7 million; Digital Fuel Quantity System, $6.3 million; Flap/Slat modifications, $5.4 million; the Global Positioning System, $5.0 million; and the Analog to Digital Converter effort, $4.1 million.

EA-6 Series Modification

In the FY 1984 budget request and FY 1985 authorization request, $80.9 million and $84.2 million, respectively, are included for EA-6 modifications. Among the most significant is the ICAP II program for which $30.5 million in FY 1984 is budgeted for the final year of this effort. The ICAP II modification will improve jamming techniques, flexibility and frequency coverage, enhance survivabilty in close support via cooperative countermeasures, improve reliability and maintainability, and improve the on-board computing capacity to accommodate the growth of the tactical jamming system.

Another important EA-6 modification, budgeted at $22.0 million in FY 1984 and $37.0 million in FY 1985, is the ALQ-99 Pods modification. This modification consists of the refurbishment of existing pods and the purchase of additional ALQ-99 jammer pods. Refurbishment of existing pods will lessen significantly the damage to pod components which occurs due to circuitry malfunction; additional pods are required to support increased aircraft inventories.

The EA-6A Weapons System Update (ALQ-76/86) program will improve the present manually operated Electronic Countermeasures System (ECM) which has been degraded due to length of service life. Goals of the program include increased reliability and maintainability, increased jammer power output (ALQ-76), increased receiver clarity (ALQ-86), and overall, greater ease of operation. $9.0 million in FY 1984 and $8.3 million in FY 1985 are requested for this effort.

Included in the FY 1984 budget request and FY 1985 authorization request are $11.9 million and $12.7 million, respectively, for the Signal Data Converter (SDC)/Inertial Navigation System (INS). This effort will replace the current dead-reckoning Doppler navigation system to provide the necessary accuracy required for effective employment of the EA-6B weapons system and by doing so, will measurably enhance reliability, improve readiness, and demonstrably lessen life cycle cost.

$4.1 million in FY 1984 and $4.7 million in FY 1985 are requested for the AYK-14 Computer program. Incorporation of this computer will significantly improve capacity, reliability and supportability over the existing system. Additional modifications include the APS-130 and Navigation Update for the EA-6A ($2.6 million and $6.0 million in FY 1984 and FY 1985, respectively) and the final year of the EA-6A DECM provisions, $.8 million in FY 1984.

Authorization is requested for four new starts in FY 1985: the EA-6B AN/ARC-182 Radio, $8.1 million; the Cooling Turbine program, $3.5 million; the CIU/Encoder, $3.2 million; and finally, the EA-6B Structural Improvements, $.7 million.

A-7 Series Modification

For various modifications to A-7 Series aircraft, $138.5 million in FY 1984 and $109.5 million in FY 1985 are requested. Of the total program requested, $24.2 million in FY 1984 and $7.4 million in FY 1985 are associated with the A-7E/TA-7C FLIR. Incorporation of the FLIR (Forward Looking Infrared Radar) system will provide a passive night vision capability to enhance the weapons delivery accuracy of the A-7E during night operations. The FLIR provides the A-7 a first-pass visual attack capability at night with a bombing accuracy two times better than that which can be achieved by true (blind) radar weapon delivery.

$17.7 million in FY 1984 and $21.3 million in FY 1985 are requested for continuation of the A-7 TF-41 HELP effort. The TF-41 Engine Hot Section Extended Life Program (HELP) will incorporate redesigned hot section and control components to improve operational readiness, reduce turbine failure, and minimize the cost of ownership. To achieve logistics commonality and enhance reliability, $56.6 million in FY 1984 and $6.5 million in FY 1985 are requested for the TA-7C Re-engining program. This effort will replace the TF-30-P-408 engines currently in the TA-7C with the TF-41 engine used by the A-7E.

$14.0 million in FY 1984 is requested for the A-7E HARM modification, which will retrofit HARM capability into FLIR configured aircraft. This program will continue the procurement of modification kits HARM peculiar avionics, and the procurement of modified kits for the AERO-5 launcher. For the final increment of this program, authorization of $3.5 million is requested in FY 1985.

For the final program year of the Digital Scan Converter modification, $8.6 million is included in the FY 1984 request. Designed to improve reliability by 45 percent, the modification will also provide improvements in weapons delivery, beacon bombing, and FLIR/WALLEYE display options.

Additionally, $4.1 million in FY 1984 and $30.2 in FY 1985 are requested for the AN/ALQ-162 Countermeasures Set. Working in conjunction with the AN/APR-43 Radar Warning Receiver, the AN/ALQ-162 provides complementary DECM jamming capability to the operational AN/ALQ-126 DECM Jammer installed on tactical aircraft. The addition of the AN/ALQ-162 will result in a significant increase in the survivability for Navy tactical aircraft against radar directed air defense systems.

Continuation of several programs is requested in FY 1984. For the Fuel Quantity Indicator modification, $6.8 million and $9.4 million in FY 1984 and FY 1985, respectively, are requested. This program will improve the indicator, wiring and connectors to improve system reliability. Also, $1.8 million in FY 1984 and $2.4 million in FY 1985 is requested for the APQ-126 radar update and $.5 million in FY 1984 is requested for the Nose Landing Gear "Fail Safe" Steering change.

New starts in FY 1984 include reliability improvements to the ASN-90 ($1.3 million in FY 1984 and $2.9 million in FY 1985), a redesign of major power supply components utilizing state-of-the-art technology. The Air Data System modification, for which $2.0 million and [illegible]3 million are budgeted in FY 1984 and FY 1985, respectively, is another reliability improvement that will provide air data computer commonality with the F-14 and F/A-18. Finally, two smaller efforts, the Bleed Air Manifolds Replacement and the Hydraulic Extension Units change are included in the FY 1984 request and a total of $.9 million in FY 1984 and $1.4 million in FY 1985 are requested. Authorization of $15.2 million in FY 1985 for MAVERICK Provisions is also requested.

AV-8 Series Modification

Of the $7.1 million and $3.3 million budgeted for AV-8 modifications in FY 1984 and FY 1985, $1.4 million in FY 1984 is requested for the Defensive Electronic Countermeasures (DECM) Pod modification which will provide the AV-8A/C with both pulse and CW jamming capability. The aircraft currently has no such defensive ECM capability, and this program will contribute significantly to aircraft survivability in a hostile environment. $2.4 million in FY 1984 is requested for the Sealed Lead Acid Battery Modification. Historically a high maintenance manhour consumer, this change will provide a more reliable battery system with a minimum useful service life of six months.

A one year program to provide a reliable and supportable tactical navigation system is included in the FY 1984 request. The AN/ARN-118 TACAN, for which $2.0 million is requested, is a standard Air Force/Navy Airborne TACAN set that operates on all necessary channels and has full logistics support. Additionally $.8 million in FY 1984 and $2.2 million in FY 1985 are requested for the AV-8 Structural Integrity modification and $.5 million in FY 1984 and $1.1 million in FY 1985 are requested for the TAV-8 Safety, Reliability and Maintainability program.

F-4 Series Modification

In the FY 1984 budget request and FY 1985 authorization request, $18.4 million and $2.2 million, respectively, are identified for F-4 series modifications. The primary effort is directed toward the AN/AWG-10A Obsolesence/Reliability and Maintainability improvement. Due to the age of the AN/AWG-10A, an essential part of the F-4 Weapons System, several critical components and subassemblies are no longer obtainable and must be replaced with qualified substitutes. To insure that the AN/AWG-10A will remain a viable system, $11.2 million in FY 1984 is required for the final year of this program. The final increment of the AN/ARC-159 Radio program is included in the FY 1984 submission and $5.2 million is requested.

Two new starts, the Improved Simulator Doppler Signal ($1.4 million in FY 1984 and $1.8 million in FY 1985) and the Extended Range Visual ID modification ($.6 million and $.4 million in FY 1984 and FY 1985, respectively) are also included in the FY 1984 budget request.

RF-4 Series Modification

Several RF-4 modification programs are listed in the FY 1984 budget request and FY 1985 authorization request totalling $9.0 million and $6.3 million, respectively. The sole continuing program is the RF-4B Low Smoke Provisions which will enable the aircraft to use the smokeless J79-GE-10B engine. This will reduce the visual acquisition range and prevent distant recognition of RF-4B aircraft. A distinct advantage in operational environments, $1.9 million in FY 1984 is requested to complete it.

$3.0 million in FY 1984 and $3.0 million in FY 1985 are requested for the AN/APQ-99 Forward Looking Radar Obsolesence Update modification. Oriented towards improved maintainability, the program will concentrate on redesigning components that are either obsolete or unobtainable. The Combined Altitude Radar Altimeter will greatly improve reconnaissance data through increased reliability. A one year program, $2.8 million is requested in FY 1984. Finally, $1.3 million in FY 1984 and $2.0 million in FY 1985 are requested for the AN/ALQ-162. Authorization in FY 1985 is requested for the Follow-on Structural Fatigue modification, $1.3 million.

F-14 S ries Modification

Budget authority of $170.4 million in FY 1984 and authorization of $230.9 million in FY 1985 are requested for F-14 modification programs. Of major importance is the TF-30 Engine Improvement package budgeted at $98.8 million in FY 1984 and $127.8 million in FY 1985. Because the F-14A aircraft has demonstrated greater than expected capability, the present engine has been exposed to a more demanding environment than envisioned. As a result, the shortcomings of the engine have been revealed and have had a significant detrimental effect on the operational readiness of the aircraft. To alleviate the situation, this program will redesign and replace engine components to achieve improved durability, reliability, and maintainability. $15.5 million in FY 1984 and $12.6 million in FY 1985 are requested to procure Expanded Memory Computer Modules that will reduce the weight, volume, and required cooling of the AWG-9 Computer presently on-board the F-14A. The Television Camera Sight Unit (TCS) will provide the pilot and radar intercept officer (RIO) of an F-14A the ability to visually identify airborne targets at long stand-off ranges during day clear weather conditions. To accomplish this modification, $17.4 million and $18.8 million in FY 1984 and FY 1985, respectively, are requested.

The AN/ARC-182 Radio program is included in the FY 1984 budget request and FY 1985 authorization request. In order to provide the F-14A with VHF and UHF securable voice communications, $1.9 million and $1.9 million in FY 1984 and FY 1985, respectively, are requested. $1.4 million in FY 1984 is requested for the Nose Wheel Steering Damper modification which will significantly enhance the maintainability of the steering shaft unit. Additionally, $1.1 million in FY 1984 and $1.5 million in FY 1985 are budgeted for the AIM-9 Seeker Head, and $4.7 million and $5.4 million in FY 1984 and FY 1985 are requested for the Structural Fatigue Modification.

Funding for a variety of continuing reliability and maintainability improvement programs is requested in FY 1984. The Hydraulic System Cavitation Damper modification, for which $1.8 million and $1.3 million in FY 1984 and FY 1985, respectively, are requested, will incorporate dampers to alleviate hydraulic pump cavitation problems which have resulted in component failures downstream of the pump. Water intrusion in the spoiler actuator has resulted in excessive failure rates. To correct this situation, $1.9 million in FY 1984 and $2.4 million in FY 1985 are requested for the Spoiler Actuator modification. Other reliability improvements include: the Fire Warning change ($.9 million and $1.0 million in FY 1984 and FY 1985, respectively); several Environmental Control Systems modifications totalling $.6 million in FY 1984 and $.4 million in FY 1985; Time Compliance Requirements, $.2 million in FY 1984; Correction of Defects, $.4 million in FY 1984 and $.4 million in FY 1985; the Wing Pivot Bearing change, $.3 million each in FY 1984 and FY 1985, several smaller modifications totalling $.1 million in FY 1984 and $.2 million in FY 1985; and finally, a wiring upgrade which continues the replacement of "Poly-X" wiring and corroded connectors with more deterioration-resistant HALAR wire and cadmium connectors ($1.4 million in FY 1984 and $4.8 million in FY 1985).

F-14 Series Modification cont'd

Several new starts are included in the FY 1984 budget request and FY 1985 authorization request. Largest among them is the Main Landing Gear modification which will increase the inner piston wall thickness to eliminate premature cracking and failures. $14.2 million in FY 1984 and $18.3 million in FY 1985 are requested for this program. Various deficiencies identified during aircraft fatigue tests will be corrected in an omnibus modification program entitled Structural Improvements ($3.6 million and $22.0 million in FY 1984 and FY 1985, respectively). $2.7 million in FY 1984 and $2.8 million in FY 1985 are requested for the Vertical Fin Substructure effort to replace aft nacelle frames and brackets. The remaining new starts address reliability problems as well and total $1.5 million in FY 1984 and $1.1 million in FY 1985. Authorization in FY 1985 is requested for the Weapons Rails ($8.0 million).

F-8 Series Modification

$.2 million in FY 1984 and $.2 million in FY 1985 are requested for the RF-8G Configuration Update.

F-5 Series Modification

Two F-5 series modifications are budgeted in FY 1984: the Structural Fatigue modification ($1.5 million in FY 1984 and $3.0 million in FY 1985) which will correct known structural fatigue items and the Standard Configuration update ($.2 million in FY 1984 and $.2 million in FY 1985). Hence, $1.7 million and $3.2 million are requested for F-5 Series Modifications in FY 1984 and FY 1985, respectively.

OV-10 Series Modification

OV-10 Series modifications account for $8.7 million and $43.6 million of the total FY 1984 budget request and FY 1985 authorization request, respectively. $2.4 million in FY 1984 and $32.0 million in FY 1985 are requested to begin the OV-10 A to D Conversion effort which will bring those OV-10's that were not converted previously up to the latest configuration. The AN/ALQ-144 IR Jammer will provide continuous electronic protection against infrared homing missiles. Developed by the Army for use on its AH-1 and UH-1 helicopters, $1.7 million in FY 1984 and $2.3 million in FY 1985 are requested for this program. A lightweight radar warning receiver, the AN/APR-39, is budgeted for the OV-10 in FY 1984 ($2.0 million and $1.2 in FY 1984 and FY 1985, respectively) and the final year of the LTN-211 OMEGA Navigation system is included at a cost of $1.5 million in FY 1984. Two small modifications, AIM-9 SIDEWINDER provisions and a safety change, anti-collision Strobe Lights, are budgeted for a total of $1.1 million in FY 1984 and $.6 million in FY 1985. To extend the OV-10's expected service life into the late 1990's, $7.5 million in FY 1985 is requested for the OV-10D Service Life Extension Program (SLEP).

F-18 Series Modification

Included in the FY 1984 budget request and FY 1985 authorization request are $30.9 million and $91.2 million, respectively, for F-18 series modifications. Largest of these amounts, $11.0 million in FY 1984 and $23.3 million in FY 1985 are budgeted for the AN/ALR-67 Receiving Set, Countermeasures Warning and Control System which will provide detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. $5.3 in FY 1984 and $8.0 million in FY 1985 are requested for Correction of Discrepancies in delivered F-18 aircraft which will update these aircraft to the present configuration of in-production aircraft. Continuation of the Dual Chamber Landing Gear Improvement is requested, and $1.6 million in FY 1984 and $1.7 million in FY 1985 is included for this purpose. The last increment of the F-404 Engine Bearing Improvement, $7.9 million in FY 1984, is also budgeted.

Other new starts for the F-18 series introduced in the FY 1984 budget request are the Non-Cooperative Target Recognition effort, $2.6 million in FY 1984 and $9.8 million in FY 1985, which will significantly add to the pilot's ability to discern whether an unknown target beyond the visual acquisition range is friend or foe; the One-Box INS (Inertial Navigation Set) reliability change, $1.7 million in FY 1984; the Video Recording System ($.9 million in FY 1984 and $1.0 million in FY 1985); and the Underwater Crash Position Indicator, $.2 million in FY 1984.

Eight programs are scheduled to begin in FY 1985. $32.4 million is designated for AN/ALQ-165 (ASPJ), a reprogrammable defensive electronic countermeasures system consisting of receiver, processor and transmitter units designed to provide combat survivability against modern radar-controlled weapons. The Double Density AN/AYK-14 Mission Computer modification will provide twice the memory capability of the existing AN/AYK-14 computer and, therefore, fully meet future memory requirements and $2.7 million is requested in FY 1985. Additional FY 1985 new starts include: the Pilot Selectable Wingfuel Circulation modification, $2.8 million; the Special Weapons update, $1.0 million; the Beacon Bombing program, $1.6 million; AN/ALQ-126B airframe provisions $1.5 million; the Flight Recorder effort, $1.6 million; and finally, $3.8 million is requested for the Laser Target Designator modification which will provide laser illumination of targets being tracked by the AN/AAS-38 (a pod-mounted infrared imaging sensor) for designation to laser guided weapons or similarly equipped aircraft.

H-46 Series Modification

$117.6 million in FY 1984 and $157.6 million in FY 1985 are requested for various H-46 modifications. The most significant H-46 program, the Safety, Reliability and Maintainability (S,R&M) Update, will require $91.4 million in FY 1984 and $123.4 million in FY 1985. Current planning calls for the use of H-46 series aircraft through the mid-1990's. Needed corrective action must be performed on these aging aircraft to avoid serious impact on safety, fleet readiness, and exorbitant cost of ownership. Planned modifications involve changes to ensure the adequacy of the basic airframe structure as well as improvements to various system components to increase reliability and maintainability. Also requested are $8.5 million in FY 1984 and $.6 million in FY 1985 for the ALQ-157(V) IR Jammer. Procurement of an Infrared Jammer for the CH-46, applicable to all USN/USMC helicopters, will provide a needed system to degrade the tracking capability IR homing missiles.

H-46 Series Modification cont'd

The Night Vision modification will provide the appropriate equipment to permit low altitude helicopter operations in 25 to 75 percent of night conditions. $8.3 million in FY 1984 and $3.1 million in FY 1985 are budgeted for this effort. Additionally, $4.9 million and $4.7 million in FY 1984 and FY 1985, respectively, are budgeted for the Engine Air Particle Separator and $3.4 million in FY 1984 and $2.5 million in FY 1985 are budgeted for the ARN-118 TACAN.

The sole new start in FY 1984 is the Ground Proximity Warning System program. A safety change, $1.1 million in FY 1984 and $3.3 million in FY 1985 are requested.

Authorization of $5.0 million in FY 1985 is requested for the Emergency Flotation System which, through the use of polyurethane flotation bags inflated manually or upon water entry, will allow the helicopter to remain afloat and upright for up to 5 hours. Lastly, $15.0 million in FY 1985 is requested for the final year of the Fiberglass Blade program. Fiberglass rotor blades will not corrode, will have insignificant environmental degradation, and will increase the mean time between removal by 500 percent.

H-53 Series Modification

In the FY 1984 budget request and FY 1985 authorization request, $23.7 million and $29.3 million, respectively, are identified for H-53 modifications. $6.2 million in FY 1984 is requested for the AN/ALQ-157(V), an IR Jammer that degrades the capabilities of IR homing missiles, a serious threat to tactical helicopters against which current defenses are inadequate. Crashworthy Armored Pilot Seats will provide improved helicopter crash survivability and by doing so, save a substantial number of lives. To fund this effort, $3.5 million in FY 1984 and $4.4 million in FY 1985 are requested. The Night Vision program will provide the appropriate equipment to permit low altitude helicopter operations in 25 to 75 percent of night conditions. $4.1 million and $9.2 million in FY 1984 and FY 1985, respectively, are requested. Continuation of the APP Disc Clutch retrofit, $1.9 million in FY 1984 and $.8 million in FY 1985, is requested as well.

Four new programs are scheduled to begin in FY 1984. $2.4 million in FY 1984 is requested for the LTN-211 OMEGA/VLF Navigation System to enhance long-range over-water navigation. A follow-on procurement, $5.6 million in FY 1985, is planned. A Crashworthy Fuel System designed to prevent fuel spillage following a crash and increase the ballistic protection for the fuel tanks is budgeted in FY 1984. $2.9 million and $4.6 million are required for this effort. The remaining new programs, the Ground Proximity Warning System and the Aircraft Survivability Improvement will require $2.7 million in FY 1984 and $4.7 million in FY 1985.

H-1 Series Modification

The FY 1984 budget request, $40.0 million, and the FY 1985 authorization request, $108.5 million, includes $10.0 million and $9.8 million, respectively for the AN/ALQ-136 high band defensive electronic countermeasures (DECM) system. Additionally, $2.4 million in FY 1984 is requested to complete the AN/APR-44 program which will provide a continuous wave (CW) warning receiver for the UH-1. A companion AN/APR-44 program for AH-1 helicopters is also scheduled to complete in FY 1984 ($.7 million). Another program reaching completion in FY 1984 is the Battery Fault improvement for which $1.0 million is budgeted. The Night Vision program will provide the appropriate equipment to permit low altitude helicopter operations in 25 to 75 percent of night conditions. Planned procurement of this system for UH-1 and AH-1 helicopters will cost $9.7 million in FY 1984 and $43.8 million in FY 1985.

$9.0 million in FY 1984 is requested to begin the HELLFIRE anti-tank weapon system program. Developed for use on the AAH-64 by the Army, this program will provide retrofit of the HELLFIRE missile system in AH-1J and AH-1T helicopters. Additionally, TOW missile system capability will be introduced into the AH-1J concurrently. The FY 1985 program to continue the HELLFIRE modification will require $46.0 million. Two safety related new starts are also contained in the FY 1984 request: The Crashworthy Fuel System ($2.0 million and $1.8 million in FY 1984 and FY 1985, respectively) and the Load Measuring and Warning System ($1.7 million and $.8 million in FY 1984 and FY 1985, respectively). Smaller new starts include: the Portable Fire Extinguisher, $.2 million in FY 1984; the Radar Altimeter program, $.6 million in FY 1984 and $1.5 million in FY 1985; the Wire Strike Protection modification, $.6 million in FY 1984 and $1.1 million in FY 1985; Crashworthy Pilot Seats, $.8 million and $1.8 million in FY 1984 and FY 1985, respectively; and finally, VH-1 Door and AFCS changes, $1.3 million in FY 1984. Authorization for commencement of the AH-1 FACTS (FLIR Augmented Cobra Tow Sight) is also requested ($1.9 million in FY 1985).

H-2 Series Modification

The $12.1 million in FY 1984 and $34.0 million in FY 1985 budgeted for H-2 series modifications are totally comprised of new initiatives. $2.7 million and $4.2 million in FY 1984 and FY 1985 respectively, are requested for Tail Pylon/Aft Drive Train Improvements. Basically, this modification will redesign the tail rotor gear box housing and substitute a stronger aluminum alloy for the magnesium currently in use to provide greater fatigue and corrosion resistance. Additionally, the horizontal stabilizer will be redesigned and will be manufactured of titanium to prevent sticking and binding, the flapping and pitch bearings will be changed, and a new forged aluminum tail rotor gearbox mounting rib will also be incorporated. The current AC fuel quantity system has been a reliability problem and the use of 60 gallon auxiliary fuel tanks has limited the time on station and combat radius of the SH-2F's ASW mission. To alleviate these problems, $1.9 million in FY 1984 and $2.0 million in FY 1985 are requested for the DC Fuel Quantity System and 100 gallon Auxiliary Tanks modification which, as the title suggests, will make the neccessary changes. A one year program to incorporate a new Fuel Control Actuator is requested at a cost of $2.5 million in FY 1984. The last of the FY 1984 reliability initiatives is the Throttle Quadrant change, $.9 million in FY 1984 and $.9 million in FY 1985.

H-2 Series Modification cont'd

Apart from reliability changes, only two other new starts in FY 1984 are requested. $3.3 million in FY 1984 and $2.6 million in FY 1985 are requested for the ALR-66 update effort which will correct operational discrepancies in this Electronic Support Measure (ESM) used in the Anti-Ships Surveillance and Targeting mission. Besides updating those systems in the Fleet, an additional 20 ALR-66 systems will be procured. Finally, $.8 million in both FY 1984 and in FY 1985 are requested for the AN/AKN-118 TACAN, a new digital/analog navigation system.

Two new starts are requested in the FY 1985 authorization request. Substantial life cycle cost saving over the current rotor blade system will be realized through the Composite Main Rotor Blade program for which $17.4 million is requested. The Composite blades will be completely compatible with the existing rotor system and reliability will be improved through the elimination of corrosive materials. $6.1 million is requested for Main Gear Box Improvement modification also

H-3 Series Modifications

Of the $58.7 million in FY 1984 and $109.4 million in FY 1985 budgeted for H-3 modifications, $37.4 million and $80.3 million, respectively, are included for the SH-3H/G/D Service Life Extension Program (SLEP) which will extend the SH-3's service life past the year 2000. This program will include extensive rework or replacement of dynamic components, degraded structural components, out-moded flight controls and instrumentation, unreliable emergency flotation gear, and a general rewiring of the aircraft electrical system. $.8 million in FY 1984 is requested for the last year of the Nicad Battery Constant-Current Charge/Monitor System which will reduce battery maintenance and prevent possible explosions through thermal runaway.

The major new starts in FY 1984 include the Crashworthy Pilot Seats, Main Gear Box Improvement and several modifications to the VH-3D (Executive transport) helicopters. Foremost among them is the Main Gear Box Improvements ($11.8 million in FY 1984 and $12.7 million in FY 1985). By redesigning the freewheel unit, modifying the lubrication system and improving various subcomponents, a 200 percent increase in main gear box mean time between failures (MTBF) is anticipated. As the name implies, Crashworthy Pilot Seats will increase helicopter crash survivability. For a cost of $1.5 million in FY 1984 and $1.4 million in FY 1985, a substantial number of lives will be saved. Finally, $7.2 million in FY 1984 and $15.0 million in FY 1985 are requested to update the reliability and avionics of the executive mission (VH-3D) helicopters. These aircraft provide world wide executive transportation for the President, Vice President, Foreign Heads of State and others as directed by the military office of the White House.

EP-3 Series Modification

$12.0 million is budgeted in FY 1984 for the final increment of the EP-3E/B SLEP/CILOP program This modification will continue the SLEP inspection program for ten EP-3E aircraft to extend their service life beyond the projected service life expiration in 1984. The CILOP will procure, install, and integrate a number of devices, including an airborne ESM data analysis system, an Automated Radar Pattern Recognition subsystem, and High Resolution Multi-Purpose Displays.

P-3 Series Modification

Included in the FY 1984 budget request and FY 1985 authorization request are $159.0 million and $157.6 million, respectively, for P-3 modifications. Of these amounts, $22.4 million in FY 1984 and $3.6 million in FY 1985 are associated with HARPOON related modifications. HARPOON modified P-3B/C aircraft will be capable of carrying and launching four HARPOON missiles. Provisions for the HARPOON Airborne Command and Launch System include pylon modification, wing wiring, inter-connecting cables and data processor, logic unit control panel and other equipment.

IRDS (Infrared Detecting System), for which $8.3 million in FY 1984 and $13.1 million in FY 1985 are requested, is an electro-optical surveillance system capable of recognizing and identifying surface targets including submarine periscopes and snorkels under night conditions. The system consists of night imaging sensors and associated electronics and display together with a video recorder.

Incorporation of two new capabilities into the P-3B/C AQA-7 acoustic processing system, the Triple Vernier and the DICASS improvements, is greatly needed to meet the submarine threat of the 1980's. Triple Vernier will increase acoustic sensor recognition and classification capabilities, while an improved DICASS will provide an enhanced long-range, single sonobuoy firing capability which presently does not exist. $26.6 million in FY 1984 and $15.4 million in FY 1985 are requested for this program.

The final year of the P-3C OMEGA/Inertial Navigation program, $15.8 million in FY 1984 is also included in the FY 1984 budget request. This program will procure the LTN-72, a sophisticated, highly reliable navigation system which operates independently of ground based navigation aids and will replace the obsolete and unsupportable ASN-84. Additionally, the LTN-211 OMEGA system will be procured.

Continuation of a variety of ongoing modification programs is also requested. The ALR-66 ESM (Electronic Sensor Monitoring) system is a state-of-the-art replacement for the ALD-2B which is obsolete and lacks the required sensitivity, frequency coverage and bearing accuracy for threat warning. Procurement of this system requires $10.1 million in FY 1984 and $25.2 million in FY 1985. Additionally, the P-3C MAD Integration modification, $8.6 million in FY 1984 and $8.1 million in FY 1985 will enhance and in some cases procure the ASQ-81 system. Other continuing programs include the PARKHILL KY-75, $4.0 million in FY 1984 and $4.9 million in FY 1985, which will provide secure voice communications and the Special Project Aircraft effort, $5.9 million in FY 1984 and $2.7 million in FY 1985. Finally, $.2 million in FY 1984 and $.3 million in FY 1985 are requested for the On-Top Position Indicator replacement and $.1 million and $.1 million in FY 1984 and FY 1985, respectively, are requested for Ditching Improvements.

A final year of the Navigation System Improvement, $20.4 million in FY 1984, is included in the FY 1984 budget request. This program provides for major improvements in tactical and geographic navigation, tactical displays, data management, reliability maintenance, crew workload, and system integration. In keeping with these objectives, the LTN-72, ASN-124 computer system, ASA-66 display, ASA-65 CRT and the ARN-99(V)-1 OMEGA navigation receiver converter will be procured for 19 P-3B's. Additionally, the AQA-7 DIFAR will be modified to include the Vernier translator.

P-3 Series Modification cont'd

Five new starts for P-3 aircraft are requested in FY 1984. The major initiative is the Advanced Signal Processor program (ASP). This modification consists of the ASP, AN/USQ-78 Display/Control. AN/ALQ-158 Antenna, AN/ARR-78 Receiver, Auxiliary Power Unit update and the SG-1156/A. When incorporated, these components will provide significantly improved ASW acoustic detection and classification capabilities for target prosecution in average or poor water conditions. To begin this major modification, $23.2 million in FY 1984 and $73.5 million in FY 1985 are requested. The HF Simultaneous Operations (SIMOPS) program commences in FY 1984 and $5.0 million and $4.9 million are requested in FY 1984 and FY 1985, respectively. Through frequency filtering and modification to the aircraft communication switching matrix, this effort will permit independent operation of the two HF radios currently incorporated in P-3C aircraft in transmit and receiver modes simultaneously, without frequency interference. Modification of 9 P-3A's to a cargo/passenger configuration to replace retiring C-118 and C-131 aircraft is scheduled for FY 1984 and will require $4.6 million in FY 1984 and $5.6 million in FY 1985. Finally, $1.3 million in FY 1984 and $.2 million in FY 1985 are requested for the BRU-14/A Bomb Racks and $2.5 million in FY 1984 is requested for the BEARTRAP Retrofit.

S-3 Series Modification

Modifications to the S-3 series aircraft require $39.7 million in FY 1984 and $205.8 million in FY 1985. Largest of the changes in FY 1984 is the Auxiliary Power Unit Replacement, for which $17.2 million is budgeted. This change consists of providing an additional auxiliary power unit that will be capable of producing increased compressed air while simultaneously providing 45 KVA vice 2 KVA electrical power. Increased air and power output will permit S-3A avionics systems to be ground operational for maintenance etc., without external cooling or power. Continuance of the program requires $21.8 million in FY 1985.

Increased reliability and maintainability is the goal of the Display Generator Unit (DGU) modification ($13.0 million and $15.3 million in FY 1984 and FY 1985, respectively). By redesigning the unit and replacing obsolete parts, a 300 percent increase in reliability can be achieved. The ICS Communication Control Group program is also geared toward improved reliability. This effort will replace the existing ICS with a state-of-the-art set utilizing large scale integration and microprocessor technology in place of the current ICS's "hard wire" logic system. The number of components in the new equipment will be reduced as well. $2.7 million in FY 1984 and $6.0 million in FY 1985 are requested. The cause of a number of aborted takeoffs and sortie losses due to duct separations in the environmental control system damping mechanism has been traced to the Non-Ice/Low Limit Control Valve and $1.8 million in FY 1984 and $.9 million in FY 1985 have been designated for remedial action. The AN/APS-116 has experienced reliability problems and approximately 10 percent of the Shop Replaceable Assemblies are responsible for greater than 50 percent of equipment failures. $1.2 million in FY 1984 and $1.3 million in FY 1985 are requested to replace the affected components.

Other modifications include the STCU modification, $1.3 million in FY 1984 and $.4 million in FY 1985; Avionics Shutdown Switches, $1.3 million in FY 1984 and $.6 million in FY 1985; and a variety of programs totalling $1.2 million in FY 1984 and $.8 million in FY 1985.

S-3 Series Modification cont'd

Programs for which authorization is requested to begin total $158.7 million in FY 1985. The most significant initiative is the Weapon System Improvement Program (WSIP), $108.8 million. This program will greatly enhance ASW capability of the S-3A aircraft and on-board processing, display, control, and ESM systems will be expanded. Addition of the Inverse Synthetic Aperture Radar (ISAR) will provide standoff identification of surface targets. Finally, HARPOON launch capability and chaff and flare dispensing will be procured for self defense. Following this massive update, the aircraft will be redesignated the S-3B.

Authorization of $31.5 million in FY 1985 is requested for the Battle Group Passive Horizon Extension System. Battle Group Commanders require the capability to exploit all electromagnetic emissions by detecting, localizing, classifying, identifying and tracking them for timely decision making in order to defend against hostile stand-off weapons. Battle Group Passive Horizon Extension System (BGPHES) will provide that capability beyond FY 1986. The S-3A with BGPHES installed will replace the EA-3B. Finally, authorizaton is requested for the ASA-82 Tactical Display system ($9.6 million), the ASN-130 Inertial Navigation program ($1.7 million), and the FLIR R&M effort ($7.1 million).

US-3A Series Modification

A variety of small modifications totalling $1.1 million in FY 1984 and $1.5 million in FY 1985 are budgeted for US-3 modifications. Largest among them is the Flight Control program, $.7 million in FY 1984 and $1.4 million in FY 1985, which will correct deficiencies in the aircraft that adversely impact aircraft mission capability and safety. The remaining programs in FY 1984, budgeted at $.4 million and the programs included in FY 1985 ($.1 million) are all of a reliability and maintainability nature.

E-2 Series Modification

$63.7 in FY 1984 and $82.2 million in FY 1985 are requested for E-2 modifications. The TRAC-A Weapon Improvement program, for which $40.4 million in FY 1984 and $46.5 million in FY 1985 are budgeted, will procure a new radar antenna and associated interfacing hardware to allow the E-2C to keep pace with the jammer threat. Changes in the nature of the threat since the Passive Detection System (PDS) ALR-59 was designed, and Fleet experience with the operator workload for the present configuration, require increasing the capability of the memory and adding additional functions. For this effort, $14.2 million and $15.1 million in FY 1984 and FY 1985, respectively, are requested. To provide the additional power required for safe climb-out in the event of a single engine failure during takeoff/catapult, $2.8 million in FY 1984 and $3.0 million in FY 1985 are requested for the T56-A-425 Engine Water Injection modification. $.5 million in FY 1984 and $.6 million in FY 1985 are requested to continue the Pylon Fixed Fairing replacement, and $.3 million in FY 1984 and $.3 million in FY 1985 are requested for the PARKHILL (KY-75) Secure Voice initiative. The FY 1984 request includes $2.8 million in FY 1984 and $12.1 million in FY 1985 for the AN/ARC-182, a new radio that provides securable voice communications which is planned for most tactical aircraft. Safety modifications require $.7 million in both FY 1984 and FY 1985, respectively; Refractometers are listed for $.8 million in FY 1984 and $.9 million in FY 1985; the Pilot Gyro is budgeted at $.2 million in FY 1984 and $.3 million in FY 1985; and FY 1984 is the final year of the Rate of Climb modification, $.1 million.

E-2 Series Modification cont'd

New starts include: the PDS modification, Anti-Collision Strobe Lights, and Airframe Readiness Improvements. All three total $.9 million in FY 1984 and $.5 million in FY 1985. Authorization in FY 1985 is requested for continuance of the 10 KVA Generator ($.3 million) and the start of the classified Anti-Jam Link-4A program ($1.9 million).

T-38 Series Modification

$.5 million and $.2 million are requested for two modifications to the T-38 series aircraft: the Structural Fatigue ($.3 million in FY 1984) and the Standard Configuration update ($.2 million and $.2 million in FY 1984 and FY 1985, respectively).

T-34 Series Modification

Several small modifications are budgeted for T-34 series aircraft in FY 1984 and FY 1985. The sole new start is the NICAD Battery program, $.3 million in FY 1984 and $.2 million in FY 1985. The last increment of the Emergency Manual Fuel Control program, a backup for the automatic fuel system in the event of malfunction, is requested ($.3 million in FY 1984), and the Improved Landing Gear Actuation System, $.5 million in FY 1984, is included. Finally, authorization is requested for the FAA Configuration Update, $.2 million in FY 1985. The total T-34 series modification request is $1.1 million in FY 1984 and $.4 million in FY 1985.

T-44 Series Modification

$.1 million in FY 1984 and $.6 million in FY 1985 are requested for the FAA Certification program.

T-39 Series Modification

Safety and reliability improvements comprise the T-39 series FY 1984 budget request ($2.5 million) and FY 1985 authorization request ($.9 million). $1.9 million in FY 1984 and $.3 million in FY 1985 are associated with the omnibus Configuration Update which will incorporate FAA recommended changes into the T-39D aircraft. In a similar vein, $.2 million and $.4 million in FY 1984 and FY 1985, respectively, are included for CT-39 Service Bulletin incorporation that is required to ensure baseline configuration commonality. High Intensity Anti-Collision Strobe Lights are a safety necessity for which $.2 million in FY 1984 and $.2 million in FY 1985 are requested. Last but not least, $.2 million is requested in FY 1984 for the CT-39 Weather Radar and $.1 million in FY 1985 is requested for the Angle of Attack System.

TH-57 Series Modification

Three programs totalling $2.0 million comprise the FY 1984 budget request for the TH-57 series. $.1 and $.4 million in FY 1984 and FY 1985, respectively are requested for Service Bulletins incorporation. $.5 million in FY 1984 and $.2 million in FY 1985 are requested for the Anti-Collision Strobe Light safety program. $1.4 million is requested for the Environmental Control System and Yaw Axis Stability Augmentation System modification in FY 1984. The FY 1985 authorization request totals $.6 million.

T-2 Series Modification

A safety of flight modification for T-2C aircraft, High Intensity Anti-Collision Strobe Lights, is included in the FY 1984 budget request and FY 1985 authorization request at a cost of $.4 million and $.4 million, respectively. Additionally, $.1 million in FY 1984 is requested for the Laser Air-to-Air Gunnery Simulator.

TC-4C Series Modification

Authorization in FY 1985 is requested for the TC-4C Update Program, $1.7 million.

C-9 Series Modification

A total of $2.0 million in FY 1984 and $2.0 million in FY 1985 are requested for C-9 Series modifications. In order to incorporate outstanding FAA service bulletins and correct a wide variety of deficiencies reported by C-9 operators, $.8 million and $2.0 million are requested in FY 1984 and FY 1985, respectively. $.8 million is requested in FY 1984 for the procurement of the AN/ARN-118 Tactical Navigation System and $.4 million is requested for the Canted Thrust Reverser.

C-1 Series Modification

$.1 million in FY 1984 is requested to complete the Nacelle/Wheel Well Rewiring modification. Replacement of deteriorated electrical wiring is necessary in order to preclude numerous electrical problems affecting safety and reliability.

C-2 Series Modification

To provide a supportable communication and navigation system for C-2f's $.6 million is requested for the VHF Comm/Nav program. Additionally, $.5 million in FY 1984 is requested for Airframe Readiness Improvements. Hence, the total request for C-2 modifications in FY 1984 equals $1.1 million.

UC-12 Series Modification

Continuation of the UC-12 FAA Certification program, $.3 million in FY 1984 and $.6 million in FY 1985, is requested.

EC-130 Series Modification

Budget authority of $12.4 million in FY 1984 and authorization of $17.2 million in FY 1985 are requested for EC-130 series modifications. $3.2 million in FY 1984 and $9.4 million in FY 1985 are requested for the Mission Avionics modification. Goals of this program include expansion of the present capabilities of the EC-130 avionics in accordance with the Minimum Essential Emergency Communication Network (MEECN) Master Plan and improved reliability and maintainability. In accordance with the Joint Chiefs of Staff requirement for nuclear hardening in TACAMO aircraft, $4.4 million in FY 1984 and $2.7 million in FY 1985 are requested for the Electromagnetic Pulse (EMP) Layer I program. The program consists of devices designed to improve the electromagnetic shielding of the fuselage as well as general filtering throughout the aircraft. A follow-on effort, EMP Layer II/III, is also included in the FY 1984 budget ($3.7 million in FY 1984 and $1.0 million in FY 1985) which consists of shielding electrical wiring and introducing filters and voltage limiters. Funding for a number of continuing programs is also requested in FY 1984 including: $.1 million in FY 1984 and $.1 million in FY 1985 for the Communications Central Emergency Rocket Communication System (ERCS) Monitor; $.1 million and $.1 million in FY 1984 and FY 1985, respectively, for the LTN-211 OMEGA Navigation System; $.1 million in FY 1984 and $.1 million in FY 1985 for the AN/APX-100 IFF transponder; $.2 million in FY 1984 and $.1 million in FY 1985 for the AN/APN-59E Weather Radar; $.1 million in FY 1984 and $.1 million in FY 1985 for the Short Trailing Wire Antenna; and $.5 million in FY 1984 and $.2 million in FY 1985 for the Narrow Band Encryption modification.

Funding and authorization is requested for two new initiatives in FY 1985. $2.0 million is designated for the Survivable Time Standard, a program which will replace the existing unreliable rubidium frequency and time standard supporting the VERDIN with two crystal standards and one satellite receiver. Additionally, $1.4 million is requested for the Multiple Satellite Access.

C-130/KC-130 Series Modification

In the FY 1984 budget request and FY 1985 authorization request, $23.1 million and $10.9 million, respectively, are budgeted for C-130/KC-130 aircraft. Of the total program requested, $8.3 million in FY 1984 is requested for the final year of the KC-130 SLEP (Service Life Extension Program). Designed to increase the service life of this aircraft by 10,000 flight hours, the program includes replacement of the outer wings and center wing engine truss mounts, rework of known fatigue sensitive areas such as portions of the fuselage, modification of the main landing gear area, and updating the UHF radio equipment.

The AN/APN-59E, a solid state weather radar used as a navigation aid and for severe weather avoidance, is a direct replacement for the existing AN/APN-59B radar which is becoming increasingly unsupportable. To procure this system, $3.0 million in FY 1984 is requested. Additionally, $3.8 million in FY 1984 and $2.6 million in FY 1985 are requested for the Long Range Navigation System. Procurement of the LTN-72 Inertial Navigation System, LTN-211 OMEGA and True Airspeed System will provide the modern, reliable navigation system required if the C/KC-130 aircraft are to have a global all-weather mission capability. $.8 million in FY 1984 and $.6 million in FY 1985 are budgeted for the Fuel Quantity System reliability and maintainability improvement and $1.1 million and $.3 million in FY 1984 and FY 1985, respectively, are included for the ARC-190 Radio.

C-130/KC-130 Series Modification cont'd

of the new starts budgeted for the C-130/KC-130 Series, the largest is the VHF COM/NAV suite for which $2.8 million in FY 1984 and $2.2 million in FY 1985 are requested. The proposed program will replace the old VHF communications and navigation equipment and related wiring with the ARC-186 VHF radio and the VIR-31A VHF navigation system. Incorporation of the ARN-118 TACAN is planned and $.8 million in FY 1984 and $.5 million in FY 1985 are included in the FY 1984 request. Another new start, the Ground Proximity Warning System is essentially a safety modification that will provide warning to flight crews of excessive rates of descent, excessive closure rates to terrain and a variety of other dangerous situations to avoid inadvertent and potentially catastrophic contact with the ground. $1.0 million and $.8 million in FY 1984 and FY 1985, respectively, are requested. Other programs beginning in FY 1984 are the Direct Air Support Center, $.5 million in FY 1984 and and $.3 million in FY 1985; the Anti Collision Strobe Lights, $.8 million in FY 1984 and $.7 million in FY 1985; Emergency Exit Lights, $.1 million in FY 1984 and $.1 million in FY 1985; and the Air Refueler Visual Quantity Indicator System, $.1 million in both FY 1984 and FY 1985.

Authorization for two programs in FY 1985 is requested. The first, the helo Air-to-Air Refueling change, will integrate Air Force HC-130 equipment into the KC-130s to permit low speed aerial refueling of the CH-53E. For this effort, $1.6 million is requested. Also, $1.1 million is requested for the KC-130 Cargo Handling System, a change that will provide greater expediency and safety in air logistics and delivery.

FEWSG Series Modification

The ability to accurately simulate the known and postulated EW characteristics and tactics of different threats is a primary mission element of the Fleet Electronic Warfare Support Group (FEWSG) and its assigned aircraft and equipments. In keeping with this program, a series of jammers capable of increased jamming power and a wide range of frequency and modulation control modes are being procured to support the effort. The latest in the series to be procured are the I/J Band Jammers and of the $31.4 million requested for FEWSG programs in FY 1984, $11.6 million is associated with I/J Band Jammer program. Another continuing program, the ERA-3B ESM Receiver System will facilitate long range detection, direction finding, signal identification and accurate frequency set-on of the FEWSG Airborne Jammer System. $1.8 million in FY 1984 and $.6 million in FY 1985 are requested for this modification. To provide an ECM device that simulates threat defense ECM systems and several types of threat anti-ship missile seeker systems, $2.4 million in FY 1984 and $2.2 million in FY 1985 are requested for the AN/ALQ-167 and AN/AST-4 Pods.

Several new starts are included in the FY 1984 request. $12.4 million in FY 1984 and $16.1 million in FY 1985 are requested for the AN/ALQ-170 Countermeasures Simulator Set. This program will procure a new series of missile simulators which simulate Anti-Ship missiles for Fleet exercises and training. Both specific and non-specific threat simulators will be obtained. A companion program, the AN/ALQ-170 Variant will be initiated in FY 1985 ($7.0 million). Major components of the variant simulators will be totally interchangeable with those of the basic AN/ALQ-170 and each will expand the system's capability to cover state-of-the-art improvements in a particular threat or family of threats. $1.4 million in FY 1984 is requested for the EA-6A FEWSG AN/ARC-153 HF Radio. The aircraft currently operates without a capability to function in the HF mode. $.8 million

FEWSG Series Modification cont'd

is requested for modifications to the EA-6A to permit the incorporation of the AN/ALQ-170 Generic Simulator. The remaining new starts include the ERA-3B INS (LTN-72) ($.7 million and $.8 million in FY 1984 and FY 1985, respectively) and the C^3 Simulators, $.3 in FY 1984 and $.7 million in FY 1985. The total FEWSG request is $31.4 million in FY 1984 and $27.4 million in FY 1985.

C-131 Series Modification

$2.7 million in FY 1984 and $.4 million in FY 1985 are requested for C-131 series modifications. The C-131H aircraft are twin, turbo-prop utility transports manufactured in FY 1954; the three aircraft currently in the inventory are expected to be in service for the foreseeable future. Unfortunately, the company which produced the C-131H propellers is no longer in business and the cost of maintaining the remaining propellers is becoming prohibitive. $2.2 million in FY 1984 is requested to convert the aircraft to permit the use of P-3 propellers. To update the C-131 with FAA configuration changes and update the avionics. $.5 million in FY 1984 and $.4 million in FY 1985 are requested.

Various Modifications

Three various modifications are budgeted in FY 1984. $5.1 million in FY 1984 is requested for the Sea Water actuated Release System (SEAWARS). A safety modification, the SEAWARS provides automatic parachute release upon immersion in sea water to preclude aircrew drownings through parachute entanglement and water dragging. A follow-on procurement in FY 1985 is also planned and $4.5 million is budgeted. To greatly improve reliability and maintainability of the AERO-7A/B Racks, $1.9 million in FY 1984 is budgeted for changes to the present racks which will increase safety and decrease maintenance. Funding is requested in FY 1984 for the ASW Pods for Tactical Aircraft ($1.0 million). This modification will enable Carrier Commanders to augment ASW aircraft assets with tactical aircraft when pod-equipped. Additional funding, $3.4 million, is requested in FY 1985 for this program.

Power Plant Changes

This modification program funds procurement of kits for incorporation of a large number of primarily small dollar value power plant changes into the appropriate engine population. For this purpose, $12.0 million in FY 1984 and $16.1 million in FY 1985 are requested.

Miscellaneous Flight Safety and Operational Necessity Changes

The FY 1984 budget request and FY 1985 authorization request includes $6.0 million and $7.0 million, respectively, for safety related modifications. This program provides for the procurement of kits to correct flight safety and operational mission capability deficiencies which are revealed during actual operation of aircraft in the fleet under diverse tactical and environmental conditions.

Common ECM Equipment

A total of $149.4 million in FY 1984 and $209.2 million in FY 1985 are requested for Common ECM equipment. The largest of the two efforts budgeted, the AN/ALQ-126B, consists of an updated ALQ-126A with improved reliability and performance against prevailing threat emitters. $133.3 million in FY 1984 and $177.9 million in FY 1985 are requested for this vital program.

The ALR-45 modification funds the retrofit of the CP-1293/ALR-67 computer/countermeasures and the IP-1276/ALR-67 azimuth display which have been re-designated the AN/ALR-45F(V). At a cost of $16.1 million and $22.9 million in FY 1984 and FY 1985, respectively, the AN/ALR-45F will provide a software reprogrammable analyzer, an alpha-numeric display of threat bearing and identification, and threat data hand-off capability for the AN/ALQ-126 and AN/ALE-39.

Authorization of $8.4 million in FY 1985 is requested for the AN/APR-39 Improvement. This program will update the existing equipment by replacing the analog processor with a digital model, replacing the current receivers and antennas to expand the frequency coverage, and finally, by replacing the cockpit control panel.

Common Avionics Changes

$13.3 million in FY 1984 and $13.6 million in FY 1985 are requested for miscellaneous minor avionics changes. Of the total request, $.9 million and $.6 million in FY 1984 and FY 1985, respectively, are requested for the APN-154 Radar Beacon Improvement program. Essentially a reliability and maintainability effort, the redesigned frequency control portion will reduce scheduled maintenance by a factor of 6 to 1. To improve resistance to the jamming threat, modifications to the AN/APX-76 IFF Interrogator are required and $1.3 million in FY 1984 and $3.3 million in FY 1985 are requested for this purpose. An APX-76 IFF Reliability and Maintainability improvement is also included ($.1 million in FY 1984). Besides the anti-jam and reliability improvements, APX-76 IFF Interrogators are being procured at a cost of $2.2 million in FY 1984 and $2.3 million in FY 1985. $1.5 million in FY 1984 and $1.0 million in FY 1985 are requested for the APN-171 R&M Improvements to the transmitter portion. Procurement of additional APN-171s is also planned. The AN/APN-171 radar altimeter set is a safety-of-flight essential airborne low-altitude terrain tracking and altitude sensing radar system which provides accurate, continuous indication of aircraft altitude and which is in need of reliability and maintainability improvements. In order to accomplish this change, $1.9 million in FY 1984 and $.5 million in FY 1985 are requested. $.8 million in FY 1984 is requested for the TSEC/KY-78. $2.0 million is requested in FY 1984 for the Digital Air Data Converter procurement; $3.8 million in FY 1985 is budgeted. Finally, a large array of small modifications are budgeted in FY 1984 and FY 1985 totalling $2.6 million and $2.1 million, respectively.

Budget Activity 6: Aircraft Spares and Repair Parts

($ in Thousands)

FY 1985 Estimate - $2,744,700
FY 1984 Estimate - $2,139,569
FY 1983 Estimate - $1,987,914
FY 1982 Actual - $1,526,596

Purpose and Scope of Work

APN Budget Activity 6 funds the procurement of the spare equipment and repair parts necessary to support Navy and Marine Corps aircraft procurement and operating programs. The budgeted funds provide for: (1) initial outfitting and pipeline quantities of reparable spares and repair parts for new and modified aircraft; (2) procurement of reparable spare equipments and repair parts to replenish inventories supporting the operating and flying-hour program for aircraft already in the Fleet.

Justification of Funds

The FY 1984 budget request for aircraft spares and repair parts is $151.7 million higher than the amount funded in FY 1983 for the same purpose. The increased request reflects the Navy's continuing concern with the impact of support shortages on overall Fleet readiness. The replenishment spares portion of the FY 1984 budget is being maintained at a high level of funding in order to improve readiness. The following table depicts the FY 1982 through FY 1985 funding profile for the spares account:

($ in Millions)	FY 1982	FY 1983	FY 1984	FY 1985
Initial Spares and Repair Parts	$ 760.4	$ 838.3	$ 834.0	$1,065.5
Replenishment Spares and Repair Parts	766.2	1,149.6	1,305.5	1,679.2
Total Aircraft Spares and Repair Parts	$1,526.6	$1,987.9	$2,139.6	$2,744.7

Totals may not add due to rounding

INITIAL SPARES:

Initial spares requirements reflect the number, type and deployment of aircraft being procured and entering the operating program. The only items being procured under the initial spares category are engines and spares for those equipments and parts which have been recently introduced and therefore have no adequate demand history. Funding requirements for engines and for major avionics and other equipments with a significant unit cost qualifying as initial spares are calculated on an item-by-item basis where possible, considering usage data, failure rates, and engineering estimates based on predicted usage for new items. Requirements for other initial spares and spare parts are determined on a statistical basis, using the same methodology used in calculating major spare equipment requirements.

The following table shows FY 1984 and FY 1985 Initial Spares and Repair Parts support requirements by aircraft model:

($ in millions)	FY 1984						FY 1985					
Aircraft Model	Aircraft Quantity	Spare Engines	Contractor Spares	Navy Spares	PGSE Spares	Total Initial Spares	Aircraft Quantity	Spare Engines	Contractor Spares	Navy Spares	PGSE Spares	Total Initial Spares
A-6E	6	9.2	1.0	5.2	0.5	15.9	6	-	-	-	-	-
EA-6B	6	19.1	0.7	6.4	16.4	42.7	6	25.1	-	5.0	17.1	47.2
AV-8B	32	54.8	41.7	38.6	4.0	139.1	48	112.5	-	60.6	6.0	179.1
F-14A	24	51.4	12.2	11.7	9.0	84.3	24	105.5	9.8	13.5	1.6	130.4
F/A-18	84	58.9	-	105.4	28.3	192.6	92	58.9	5.2	42.6	16.1	122.8
CH-53E	11	10.4	-	8.3	0.5	19.2	11	14.3	1.2	12.7	0.4	28.6
AH-1T	-	-	-	-	-	-	22	4.1	7.5	8.6	0.9	21.2
SH-60B	21	9.5	33.2	45.4	2.2	90.3	18	7.8	16.5	68.8	4.3	97.4
P-3C	5	3.8	-	1.7	1.3	6.8	6	3.1	1.5	2.6	0.8	8.0
EP-3	2	-	0.2	-	-	0.2	3	-	0.6	-	-	0.6
E-2C	6	-	1.4	7.8	1.4	10.6	6	0.5	4.9	7.8	-	13.2
SH-2F	12	-	-	7.0	-	7.0	6	-	-	4.0	-	4.0
C-9	-	-	-	-	-	-	8	-	13.6	-	-	13.6
C-2	8	2.9	19.6	-	0.6	23.1	8	5.4	17.2	9.1	0.2	31.9
Adversary	4	1.9	1.3	-	-	3.2	8	3.9	1.7	-	-	5.6
VTX		-	-	-	-	-	2	1.8	0.9	-	-	2.7
ECX		-	-	-	-	-	2	15.7	12.9	-	6.3	34.9
PEWSG	1	-	1.0	-	-	1.0	-	-	-	-	-	-
CGSE Repair Parts 1/					19.4	19.4					19.5	19.5
Training Device Pts				40.1		40.1				57.8		57.8
Modification Spares						138.6						246.8
TOTAL		221.9	112.4	277.5	82.6	834.0		358.6	93.5	293.1	73.4	1,065.5

Totals may not add due to rounding. 1/ Supports equipment procured in B.A. 7.

Initial spares and repair parts for support of new aircraft are categorized as follows:

(1) Government Furnished Spare Aircraft Engines - (FY 1984 - $221.9 million; FY 1985 - $358.6 million).

Spare aircraft engine requirements are calculated on an actuarial basis to support the aircraft operating program with a confidence level of 80% to 90% that a spare engine will be on site and ready for issue when required by combat aircraft. Requirements are determined by developing a flying hour program for each type/model aircraft and applying against it engine repair and removal rates to determine total engine procurements. On hand and on order assets are deducted from this gross requirement to arrive at a net procurement requirement. Requirements are thus established for initial outfitting of shore sites and carriers, to fill maintenance repair/overhaul pipelines, and to provide replacement for installed engines that are not functioning properly or have reached their maximum authorized operating time.

(2) Contractor Spares Support - (FY 1984 - $112.4 million; FY 1985 - $93.6 million)
Contractor furnished spares and repair parts are provided for suppo. of new, sophisticated weapons systems or subsystems during their development, test and fleet introductory phases until either the Navy Support Date (NSD) or Material Support Date (MSD) is reached, at which time the Navy supply system assumes responsibility for providing all spares and repair parts. Contractor support is designed to preclude procurement of unnecessary or unstable spare parts before usage data is available or aircraft equipment design is frozen. Requirements are calculated by comparing the new weapon system with historical data for a similar/same aircraft and utilizing the Weapon System Planning Document (WSPD) which provides the site activation schedule.

(3) Navy Spares - (FY 1984 - $277.5 million; FY 1985 - $293.1 million)
The Inventory Control Point (Aviation Supply Office) must purchase investment spares and repair parts under its management cognizance to initially outfit shore sites and carriers and pipe-line stock requirements in support of new aircraft, engines, or installed systems. Navy spares support responsibility commences at the beginning of a new program for Government Furnished Equipment and at the Navy Support Date for Contractor Furnished Equipment.

(4) Peculiar Ground Support Equipment (PGSE) - (FY 1984 - $83.6 million; FY 1985 - $73.4 million)
The funding requested here provides for repair parts essential to the support (readiness) of PGSE end items required for the ground testing, servicing, handling and maintenance of specific weapon systems and their sub-systems. These PGSE end items require complete Integrated Logistic Support (ILS), including repair parts, concurrent with delivery in order to adequately support the related weapon systems.

PGSE spares funding requirements are divided into two categories: Initial Outfitting List (IOL) support and augmented support. IOL support is determined by a comparative cost analysis of similar end item demand patterns. Augmented support requirements are determined by the initial quantity of PGSE end items procured, the complexity/cost of the end items, the number of sites to be supported, the proximity/inter-support relationship of shore-based sites, and the period of time between equipment introduction and material support date.

(5) Modification Spares - (FY 1984 - $138.6 million; FY 1985 - $246.8 million)
The investment program also includes procurement of initial reparable spares and repair parts to support modification programs financed under APN Budget Activity 5. Requirements include new procurement and/or the modification of spares and repair parts already in the inventory. Requirements are based on the corresponding elements being procured for the aircraft modification program.

REPLENISHMENT SPARES:
Total funding requested for all replenishment spares programs is $1,305.6 million in FY 1984 and $1,672.2 million in FY 1985. Most of the requirements for replenishment spares for reparable items are budgeted and procured through the Aviation Supply Office and the Ships Parts Control Center, which are the inventory control points (ICP) for aircraft systems and component parts. The rest of the requirements for replenishment spares are procured at the Naval Air Systems Command Headquarters.

The replenishment spares element of the budget funds the procurement of reparable components in support of all Naval Aviation spares requirements subsequent to the end of the initial support period which extends from the date of Preliminary Operational Capability (POC) to a point in time, not in excess of 18 months, when requirements are forecast entirely upon actual demands. The replenishment spares element of the budget is made up of:

(a) The basic replenishment portion which provides for the procurement of spare reparable components to replace components lost through attrition and to establish levels of material to support projected demands for the material.

(b) Follow-on outfittings which are required to provide the spare component support necessitated by aircraft site outfitting subsequent to the demand development period.

The following table displays the funding breakdown for the above replenishment spares programs:

($ in Millions)	FY 1984	FY 1985
Inventory Control Point Support	$1,283.8	$1,658.3
Interservice Support	10.5	10.5
Executive Mission Helicopters	6.9	7.3
Miscellaneous Headquarters	4.4	3.1
TOTAL REPLENISHMENT SPARES	$1 305.5	$1,679.2

Totals may not add due to rounding.

The replenishment spares are categorized as follows:

(1) Inventory Control Point (ICP) Support - (FY 1984 - $1,283.8 million; FY 1985 - $1,658.3 million)

Spare reparable components are managed by the Aviation Supply Office and the Ships Parts Control Center, which have been assigned program support responsibility for specific aircraft/weapon systems. Spares requirements are calculated by an individual line item stratification technique which applies projected assets to forecast requirements over a given future support period into the total number of items in the overhaul programs. The Universal Inventory Control Point (UICP) stratification requirements are computed utilizing DOD logistics guidance, Navy program planning data, and technical, procurement and inventory data maintained by the ICP. Navy program planning data includes total aircraft inventory and siting, the actual and planned flying hour programs affecting aircraft utilization, schedules of aircraft reworks and engine overhauls, and other factors relating to aircraft support. During stratification, these components are evaluated in terms of inventory on hand and on order, demand experience, projected demand, outfitting requirements, and current fleet requests which may not yet have been filled.

(2) Interservice Support (ISS) - (FY 1984 - $10.5 million; FY 1985 - $10.5 million)

Funds are required to reimburse the Army and Air Force for reparable material used during both in house (organic) and service administered commercial overhaul work of Navy aircraft engines, airframes and other reparable components. Material requirements are calculated by the Army and Air Force for the Navy's projected overhaul/rework program and are validated through negotiation between the Naval Air Logistics Center and Army/Air Force representatives.

(3) Executive Mission Helicopters (XM) - (FY 1984 - $6.9 million; FY 1985 - $7.3 million)

Reparable spare components are required to support the VH-3D and VH-1N Executive Mission aircraft. The Executive Mission provides a transportation evacuation capability for the Chief Executive, Heads of State, as well as other visiting dignitaries. Eleven VH-3D and six VH-1N aircraft operate from one primary site and two auxiliary sites. In addition, the helicopters operate for extended periods of time from numerous other locations necessitating selected item pack ups. Material support requirements are calculated based on inputs from the operating squadron, the aircraft contractor and those peculiar requirements set forth by the Executive Branch. Executive Mission helicopters must have 100% spares support for reparable components. These components are procured so that a spare component will be on hand when the component reaches half of its projected service life.

(4) Miscellaneous NAVAIR Headquarters Support - (FY 1984 - $4.4 million; FY 1985 - $3.1 million)

This includes material support requirements for the Fleet Electronic Warfare Support Group (FEWSG), Project Beartrap, Project Churchplate, VH-3A aircraft support, and production compatibility changes. Spares requirements for FEWSG, Project Beartrap and Project Churchplate are developed by the Naval Avionics Center (NAC) in conjunction with the operational activities, based on past usage and anticipated system changes. VH-3A spares requirements are developed by the Fleet operational squadron and NAVAIR, using historical data to project future material requirements. Spares requirements to support production compatibility changes were projected by NAVAIR using past historical data and anticipated future compatibility changes.

Budget Activity 7: Aircraft Support Equipment and Facilities

(In Thousands)
FY 1985 Estimate - $795,847
FY 1984 Estimate - 398,608
FY 1983 Estimate - 424,100
FY 1982 Actual - 313,310

Purpose and Scope of Work

The FY 1984 budget plan of $398.6 million and the FY 1985 authorization request of $795.8 million provide continuing vital effort in the four following categories which support aircraft procurement programs:

(1) Common Ground Equipment, which provides funds for Automatic Test Equipment (ATE), various aircraft systems trainers and training aids, the Maintenance Information Automated Retrieval Systems (MIARS), the Engineering Data Management Information Control System (EDMICS), and other aircraft ground support equipment including Rapid Deployment Force requirements and mobile maintenance facilities for Marine expeditionary forces.

(2) Aircraft Industrial Facilities, which provides for calibration equipment for Navy standards and calibration laboratories. It also provides for capital improvements, modernization, and maintenance of government-owned, but contractor-operated, aircraft-producing industrial plants.

(3) War Consumables, which provides funds for auxiliary fuel tanks, pylons, and ejector racks and for the modification of aircraft fuel tanks. The new procurement items are of a consumable nature and are related primarily to the number of sorties flown by combat and training aircraft.

(4) Other Production Charges, which provides funds for miscellaneous production support and testing services, aircraft cameras, various equipment for United States Coast Guard aircraft, and aircraft pods and instrumentation packages supporting tactical aircrew combat training and mobile sea range systems.

Justification of Funds

Funding requirements for FY 1984 and FY 1985 are outlined in the following table:

	(Dollars in Millions) FY 1984 Funding	FY 1985 Authorization
Common Ground Equipment	$328.2	$667.1
Aircraft Industrial Facilities	26.0	60.4
War Consumables	10.1	14.2
Other Production Charges	34.3	54.1
Total B.A. 7	$398.6	$795.8

Common Ground Equipment - FY 1984 $328.2 million; FY 1985 $667.1 million

The FY 1984 budget plan for the Common Ground Equipment Program totals $328.2 million. The FY 1985 authorization request is $667.1 million. Funding for the various segments of this program is depicted below and described in subsequent paragraphs:

		FY 1984 Funding	FY 1985 Authorization
(a)	Automatic Test Equipment (ATE)	$ 95.9	$190.3
(b)	Training Equipment	50.1	122.2
(c)	Aircraft Common Support Equipment	51.3	103.1
(d)	Mobile Maintenance Facilities	8.1	17.4
(e)	Inventory Control Point (ICP) Managed GSE	38.9	64.3
(f)	Headquarters Managed PSE	7.5	20.6
(g)	Maintenance Information Automated Retrieval Systems (MIARS)	.4	.5
(h)	Electronic Warfare Training Complexes (2D2 Device)	4.1	4.7
(i)	Gas Turbine Compressor Replacement	32.9	37.5
(j)	Avionics Support Equipment	16.7	31.2
(k)	Rapid Deployment Force/Maritime Prepositioned Ships	21.4	65.5
(l)	Engineering Data Management Information Control System (EDMICS)	.9	1.1
(m)	Aircraft Salvage Equipment	-	8.7
	Total Common Ground Equipment	$328.2	$667.1

ATE (Automatic Test Equipment)

The FY 1984 budget request includes $95.9 million for ATE and the FY 1985 authorization request includes $190.3 million for ATE. The ATE segment of the Common Ground Equipment budget line item was established to broaden the category of avionics support equipment acquisition formerly limited to VAST (Versatile Avionics Shop Test). The ATE account funds the procurement of the new MINI-VAST and Tailored MINI-VAST, as well as a family of module testers including the Hybrid Tester, the Digital Tester and the Navigation Set Test System to support Inertial Navigation Systems in the Fleet.

The new six-rack VAST-derived MINI-VAST was designed to accommodate the testing requirements of the advanced avionics systems in the F/TF/A-18A aircraft and other planned avionic systems which incorporate the latest electronic design technology. The new five-rack Tailored MINI-VAST will support the avionics systems of the SH-60B LAMPS MK III aircraft. MINI-VAST and Tailored Mini-Vast program objectives are: (1) to provide support as the principal avionics test equipment for F-18, TF-18, A-18 and LAMPS weapons systems; (2) to maximize commonality with the VAST system; (3) to preclude the development and introduction of new special purpose test equipment, and provide a more cost effective, logistically common and technically superior standard testing system; (4) to reduce the number of avionics technicians required in the avionics shop; and (5) to reduce shipboard avionics support spare requirements. The FY 1984 Budget request will fund the acquisition of six MINI-VAST and three Tailored MINI-VAST systems stations. The FY 1985 authorization amount will fund procurement of ten MV and three TMV stations.

The ATE subline item also funds the acquisition of module testers. This procurement satisfies the requirement for smaller, less expensive automatic test equipment to supplement VAST and MINI-VAST. These module testers will provide fault detection and isolation capability to maintain SRAs (Shop Replaceable Assemblies) in existing avionics facilities and to support F/TF/A-18 and LAMPS simple WRAs (Weapons Replaceable Assemblies).

Training Equipment

The FY 1984 budget request is $50.1 million and the FY 1985 authorization request is $122.2 million. The Training Equipment sub-line item provides funds for acquisition of trainers, training equipment, training parts, GFE/GSE for training purposes, and modifications/changes relating to the above acquisitions. The procurements funded within the Training Equipment sub-line item are limited to: (1) training devices and equipment and related modifications for generalized training programs which provide skills common to more than one weapon system, (2) trainers for out-of-production aircraft, and (3) GFE in support of courses at the Navy Formal Schools. Training on out-of-production aircraft is dependent upon these funds for all acquisitions, specific trainer-peculiar changes, modification/modernization, user-generated changes and replacement. The Training Equipment subline item is broken into two major categories, General Training Equipment and Modification/Modernization of Trainers. The following tables display funding profiles within the Training Equipment subline item:

General Training Equipment

	(In Thousands) FY 1984	FY 1985
Area II Minor Aids and Devices	$ 1,146	$ 1,850
Area III General Trainers	9,833	28,721
Air Combat Maneuvering Trainer	5,384	10,644
Laser Air-to-Air Gunnery Simulator (LATAGS)	272	89
Hostile Air Defense Simulation System (HADSS)	812	-
Landing Signal Officer Trainer (LSO)	1,600	1,177
Physiological Trainers	1,819	3,642
Total General Training Equipment	$20,866	$46,123

Modification/Modernization of trainers requirements, including GFE for out-of-production weapon systems

Program	(In Thousands) FY 1984	FY 1985
TA-4J	$ 220	$ 298
AV-8A	325	600
A-7	2,217	2,218
F-4	2,784	1,542
C-130	252	1,638
T-2C	204	2,360
S-3A	5,930	29,159
E-2B	120	169
H-1	12,378	2,833
H-3	812	16,074
H-46	1,954	8,137
H-53	243	300
Govt. Furnished Equipment for Formal Schools	1,056	2,039
A-3	175	177
A-4	125	154
T-44A	200	440
OV-10A	50	58
EA-6A	160	7,831
Total Modification/Modernization	$29,205	$76,027

Aircraft Common Support Equipment

The Aircraft Common Support Equipment (SE) element under the Common Ground Equipment line item provides for the initial outfitting of Common Support Equipment under NAVAIR inventory and technical management. These SE end items are required for ground testing, servicing, handling, and maintenance of aircraft and their systems. SE items acquired under this budget line item include engine propulsion test systems, mobile air conditioners and generators, and miscellaneous support items such as armament-handling equipment and aircraft firefighting equipment.

A comprehensive acquisition plan has been developed for each FY 1984 SE requirement item to ensure that the equipment is ready for procurement by the budget year; to determine the type of procurement action to be initiated; and to initiate a realistic plan for satisfying the fleet requirement for SE end items.

The equipments to be procured are determined through one of the following processes:

1. The direct result of the SE RDT&E Program (these are equipments required to support advanced aircraft systems developments).
2. Reprocurement of current SE required to respond to deficiencies.
3. Improved versions of current SE required to support expanded airborne equipment capabilities or advanced airborne equipment developments (e.g., Mobile Electric Power Plant).
4. Major modifications of existing equipments (e.g., Engine Test Stand Update).
5. Equipment developed to improve the capability of the Fleet and/or to improve safety.

To fill the minimum acceptable level of established requirements, budget authority for $51.3 million in FY 1984 and authorization for $103.1 million in FY 1985 is requested.

Headquarters Managed Peculiar Support Equipment

This budget subline provides funds to replace certain in-use Peculiar Support Equipment (PSE) assets of the late 1960 and early 1970 vintage that are now marginally effective due to obsolescence or for which logistic support is not available because the applicable vendors no longer manufacture the items or its associated repair parts. Alternate sources are not available. As a consequence, a replacement item that is logistically supportable must be designed and produced.

In addition, this subline provides for the completion of the design and initial production of (1) certain PSE items that for various reasons were not funded during the production phase of the weapon systems and (2) modification of PSE to extend its useful service life.

Budget Authority of $7.5 million in FY 1984 and authorization for $20.6 million in FY 1985 is requested for this program.

Mobile Maintenance Facilities

Budget authority of $8.1 million in FY 1984 and authorization for $17.4 million in FY 1985 for Mobile Maintenance Facilities are requested. This program provides for the acquisition of Mobile Facilities and related equipment to support Marine Corps Expeditionary Force aircraft and weapon system maintenance operations. The concept is to provide rapid-response mobility by the use of relocatable maintenance shelters. Execution of the Marine Corps Aviation mission is dependent on a highly mobile and functionally independent aircraft maintenance support capability.

The basic equipments procured under this subline item are the container (VAN), air conditioner, 60-Herz electric generator, running gear and static converter 60 Hz to 500 Hz.

ICP Managed SE

ICP Managed SE funds the procurement of end items of Peculiar Support Equipment (PSE) for out-of-production aircraft and systems, and Common Support Equipment (CSE). These end items of SE are under the budget, procurement, and inventory control of the Aviation Supply Office (ASO), Philadelphia, and the Ships Parts Control Center (SPCC), Mechanicsburg, PA. CSE end items are normally introduced into the Fleet thru NAVAIR development and initial procurement. The items are turned over to ASO or SPCC inventory management as an Inventory Control Point (ICP) item after the production specification and procurement package has been stabilized. Most PSE items are assigned to ASO management from the outset. These items are associated with a weapon system and are recommended by the aircraft or airborne system contractor, reviewed and approved by the Navy, and assigned to ASO for procurement and inventory management.

The budget requirements for this element are generated as follows:

a. New CSE required for site outfittings incident to employment of new weapon systems or equipments.
b. Replacement CSE resulting from wear-out and attrition
c. Increased quantities of CSE required for allowance augmentation.
d. Increased quantities of CSE, quantities for out-of-production aircraft and systems required due to dispersion changes in base-loading beyond original planning or changes in maintenance policy.
e. Replacement PSE due to attrition.

These SE end items are "principal" items managed by the ICPs with no demand or usage criteria, and require more selective management attention than do the ICP secondary items (spare and repair parts). Sample SE end items procured under this sub-line item include aircraft jacks, aircraft tow bars, hoisting slings, armament handling equipment and maintenance platforms. This program funds the acquisition of some 6000 individual models of CSE and PSE with an inventory value nearing $20.0 billion.

To support this program, $38.9 million in FY 1984 and authorization for $64.3 million in FY 1985 are requested.

Maintenance Information Automated Retrieval System (MIARS)

The FY 1984 budget request for MIARS is $.4 million and the FY 1985 authorization request $.5 million. The MIARS program is designed to meet the objective of converting the existing NAVAIR technical manual inventory from paper to microfilm. The program provides for the progressive conversion to a manageable 16MM microfilm data base, investigates the compatibility of information to insure adequate presentation techniques and data integrity and controls the procurement of specilized update and reading equipment for the enhancement of fault isolation and repair through the use of automated rapid retrieval equipment. The present request will permit continued support of total fleet requirements as identified by a fleet survey.

Engineering Data Management Information Control Systems (EDMICS)

The object of the Engineering Data Management Information Control System (EDMICS) Program, is to provide more timely and complete engineering data and drawings to the Naval Air Rework Facilities (NAVAIREWORKFACs) for support of weapons system and component maintenance and overhaul and to the Aviation Supply Office (ASO) for competitive reprocurement support. To this end the $.9 million required in FY 1984 and the $1.1 million authorization required in FY 1985 will procure the basic hardware system and peripheral equipment to be used in the eletromechanical handling, manipulation, reproduction and electronic submission of actual graphic data (microfilm copy of drawings). Since the primary reason for noncompetitive procurement at ASO, as reported by auditing agencies, is lack of technical data, acquisition of this equipment will substantially alleviate this problem by providing rapid access to the massive technical data bank located at the Naval Air Technical Services Facility (NATSF), Philadelphia.

Electronic Warfare Training Complexes

The FY 1984 budget request of $4.1 million and the FY 1985 authorization request of $4.7 million will finance the updating of two 2D2 devices, one at the Pinecastle Impact Range in Florida and one at NAS Fallon, Nevada.

The 2D2 device, a complex of RF emitters which simulate Electronic Warfare (EW) threat air defense environments, provides training for attack, fighter and reconnaissance aircrews in employment of EW equipment, tactics and techniques. Continuous modification/update of these ten-year-old devices is required to achieve simulation of current enemy threats and to maintain hardware usability/reliability.

Gas Turbine Compressor Replacement

The FY 1984 budget request of $32.9 million and the FY 1985 authorization request of $37.5 million will finance the acquisition of new GTC equipments to replace existing mobile/turbine-powered air start units at all Navy/Marine Corps activities. Currently, 60 shorebased activities and 13 carriers must be supported with air start systems. Present units suffer from poor maintainability and reliability. The acquisition of new, more reliable equipment will enable the Navy to meet its vital support requirements.

Avionics Support Equipment

The FY 1984 budget request of $16.7 million and the FY 1985 authorization request of $31.2 million will fund four pieces of new support equipment, the Armament Programmable Test Set (APTS), the AN/USM-406(V) Countermeasure Test Set, a state-of-the-art TACAN Test Set, and a new Compass Calibrator Test Set. The APTS is a multi-application, microprocessor-controlled test set for support of Missile Launchers, MERS/TERS, and Bomb Racks (conventional and nuclear). The AN/USM-406(V) is a newly-configured electronic warfare counter-measures test set used in organizational level maintenance support of a variety of EW equipments. The new TACAN Test Sets will replace 20-year old test sets and will enable rapid resolution of weapons replacable assembly ambiguities for all TACAN systems. The new Compass Calibrator Test Sets will employ state-of-the-art microprocessors to automate testing of compass calibrators; this process is currently performed in a largely manual fashion. Test times and manpower requirements will be significantly reduced and accuracies substantially improved.

Rapid Deployment Force/Maritime Prepositioned Ships

The FY 1984 budget request of $21.4 million and the FY 1985 authorization request of $65.5 million will fund support equipment for the new Rapid Deployment Force. Common Support Equipment (CSE), Armament-Handling Equipment (AHE), organizational-level Peculiar Support Equipment (PSE) and selected intermediate level PSE will be procured to support a variety of fixed-wing and rotary-wing aircraft. The equipment procured in FYs 1984 and FY 1985 will support the outfitting of the second Marine Amphibious Brigade (MAB). Available information indicates the support equipment items will be stored on USMC Maritime Prepositioning Ships (MPS) at various locations throughout the world.

Aircraft Salvage Equipment

The authorization of $8.7 million requested in FY 1985 will provide for the replacement of existing NS-60 aircraft crash cranes which have been deployed for over 12 years aboard the Navy's CV class carriers, and the NCC-30/50 crash cranes which have been deployed for 13 years aboard LHA/LPH/LPD class ships. During this time, the weight and size of deployed aircraft have increased, such that they exceed the maximum lifting/mobility requirements of these cranes. Aircraft crash removal is seriously debilitated creating an unacceptable operational readiness impact. Further, the aging NS-60 and HCC 30/50 cranes have experienced declining reliability, maintainability and supportability which have seriously degraded their operational effectiveness. An engineering development project was initiated in FY 1980 to develop replacement cranes and ancillary equipments necessary to expeditiously perform salvage operations involving damaged/disabled aircraft aboard CV/LHA/LPH/LPD class ships. Development of the replacement CV crane will be completed during FY 1984. Procurement of 20 CV cranes and ancillary equipment will be effected in FYs 1985/1986. Development of the replacement LPH/LHA/LPD crane will be completed during FY 1986. Procurement of 33 LPH/LPA/LPD cranes and ancillary equipment will be effected in FY 1987/1988.

Aircraft Industrial Facilities - FY 1984 $26.0 million; FY 1985 $60.4 million

The FY 1984 budget request for Aircraft Industrial Facilities is $26.0 million and the FY 1985 authorization request is $60.4 million. These funds are required for the following categories of equipment:

	(Dollars in Millions) FY 1984	FY 1985
Calibration Equipment	$16.2	$41.8
Contractor Facilities	9.8	18.6
Total Aircraft Industrial Facilities	$26.0	$60.4

Calibration Equipment

The calibration program provides the Fleet with a means to ensure that Ground Support Equipment is operational and accurate. Calibration is the process of periodically comparing the performance of items of GSE to that of equipment of higher accuracy called standards and making adjustments to the GSE equipments as required.

Calibration funds are used to procure the initial outfitting of calibration standards and ancillary equipment required to support GSE. Items procured with these funds are used at approximately 100 Fleet "I" level calibration activities, 30 NAVAIR calibration laboratories and annexes, five NAVAIR standards laboratories and the Metrology Engineering Center (MEC).

Standards for "I" level Fleet calibration activities are used to expand capabilities, replace time-worn and obsolete equipment, improve performance, and reduce man-hour efforts. Standards procured for the depot level calibration and standards laboratories are used to automate and improve certain calibration procedures in order to reduce man-hour requirements and to expand calibration capabilities to additional laboratories.

Budget authority of $16.2 million is requested for FY 1984 and authorization for $41.8 million in FY 1985 is requested for this program.

Contractor Facilities

The FY 1984 budget request of $9.8 million for Contractor Facilities and the FY 1985 authorization request of $18.6 million will provide:

Contractor Facilities (cont'd)

(a) Capital maintenance, modernization, improvements, emergency repairs and fire protection for government-owned, aircraft-producing industrial plants. Facilities management contracts require that the government fund capital maintenance projects as required. These projects apply at Naval Weapons Industrial Reserve Plants (NWIRPs) at Bloomfield, Conn.; Columbus, Ohio; Dallas, Texas; Bethpage, New York; and St. Louis, Missouri.

(b) Replacement/restoration and capital maintenance of government-owned production equipment in use on Navy programs. Inefficient equipment is replaced when the contractor is unwilling or unable to fund the project or the projects will reduce end-item costs to the government and improve the industrial readiness posture, or when capital maintenance is required in accordance with contractual obligation. New machine tools procured are peculiar to the aerospace industry, producing complex aerospace parts at reduced costs. The reduced costs permit recovery of the investment in three and one-half years.

(c) Procurement of additional production facilities to support programs for new weapons systems and/or to expand present production capabilities that are not supported by private enterprise.

All of the above must include provisions for compliance with the Occupational Safety and Health Act of 1970, P.L. 91-596, and the Environmental Protection Act as implemented by DOD Instruction 5030.52, 28 April 1972.

War Consumables - FY 1984 $10.1 million; FY 1985 $14.2 million

The FY 1984 budget request of $10.1 million and the FY 1985 authorization request of $14.2 million provide for procurement of bomb racks, Multiple Ejection Racks/Triple Ejection Racks (MER-TER) adapter kits, external fuel tanks, and fuel tank modifications. The procurement programs for these items will buy increments of inventory objectives which consider such factors as numbers and types of using aircraft, mission of aircraft, attrition and pipeline requirements. The following items are requested:

	FY 1984		FY 1985	
	Qty	Amt	Qty	Amt
MER/TER Adapter Kits	-	$ 450	-	$ 500
MER Racks	118	1,054	138	1,304
TER Racks	316	1,546	277	1,443
300-Gallon Ext. Fuel Tank	237	1,270	172	995
650-Gallon Ext. Fuel Tank	64	2,928	-	-
150-Gallon Ext. Fuel Tank	-	-	29	270
Air Refueling Stores	-	-	-	9,020
D-704 Air Refueling Store Modification	-	2,078	-	-
External Fuel Tank Fins Modification	-	282	-	118
Production/Engineering Support	-	520	-	550
Total		$10,128		$14,200

Other Production Charges - FY 1984 $34.3 million; FY 1985 $54.1 million

The FY 1984 budget request for Other Production Charges is $34.3 million. The FY 1985 authorization request is $54.1 million. These funds will provide the following:

(a. $12.9 million in FY 1984 and $24.3 million in FY 1985 for Government-Furnished Equipment (GFE) production support which includes testing services, production data reviews, technical publications, repair of damaged or defective GFE, and procurement of Navy Stock Fund items necessary for Fleet installation of technical directives (i.e. minor modification kits and other hardware changes).

(b) $6.2 million in FY 1984 and $2.6 million in FY 1985 for procurement of certain Navy avionics equipment for installation in Coast Guard aircraft.

(c) $5.0 million in FY 1984 and $12.3 million in FY 1985 for procurement of reconnaissance and other aerial cameras.

(d) $4.7 million in FY 1984 and $1.4 million in FY 1985 for procurement of instrumentation packages used by aircraft participating in Mobile Sea Range exercises.

(e) $5.5 million in FY 1984 funding and $13.5 million in FY 1985 for pods for the Tactical Aircrew Combat Training System (TACTS).

COMPARISON OF FY 1983 PROGRAM REQUIREMENTS AS REFLECTED IN FY 1983
PRESIDENT'S BUDGET WITH FY 1983 PROGRAM REQUIREMENTS SHOWN IN FY 1984 PRESIDENT'S BUDGET

	Total Program Requirements per 1983 Budget	Total Program Requirements per 1984 Budget	Increase (+) or Decrease (-)
Combat Aircraft	$ 7,331,900	$ 6,271,300	-$1,060,600
Airlift Aircraft	284,000	284,000	- -
Trainer Aircraft	57,600	57,200	- 400
Other Aircraft	36,800	65,900	+ 29,100
Modification of Aircraft	1,311,100	1,177,913	- 133,187
Aircraft Spares and Repair Parts	2,080,900	1,987,914	- 92,986
Aircraft Support Equipment and Facilities	480,000	424,100	- 55,900
Reimbursable Program	30,000	30,000	-
TOTAL FISCAL YEAR PROGRAM	$11,612,300	$10,298,327	-$1,313,973

EXPLANATION BY BUDGET ACTIVITY

Combat Aircraft (-$1,060.6 million)

The changes in this budget activity are primarily associated with the following Congressional action:

Program	Quantity	Amount
A-6E		-$19.4
A-6E Adv. Proc.		- 5.0
EA-6B		- 2.7
EA-6B Adv. Proc.		- 9.2
AV-8B	+ 3	+ 21.8
AV-8B Adv. Proc.		- 12.3

Combat Aircraft (cont'd)

Program	Quantity	Amount
F-14		- 54.7
F-18		-328.0
F-18 Adv. Prov.		- 35.5
CH-53E		- 52.0
CH-53E Adv. Proc.		- 30.6
AH-1T Adv. Proc.		- 17.2
SH-60B	-21	-292.3
SH-60B Adv. Proc.		- 79.0
P-3C		- 40.6
E-2C		- 45.8
SH-2F		- 19.3
SH-2F Adv. Proc.		- 7.0
	-18	-$1,028.7

Other adjustments include significant anticipated contract savings listed below of which $24.0 million has been transferred to the Military Pay, Navy appropriation to help finance the military pay raise.

Program	Amount
A-6E	- 8.1
EA-6B	- 4.2
F-14	- 1.0
SH-60B	- 17.4
P-3C	- 1.7
E-2C	- 13.4
SH-2F	- 3.7
	-$49.5

Additionally, an adjustment for the pound/dollar exchange rate reduced the AV-8B program by $7.0 million. Partially offsetting this reduction was a $24.6 million increase EP-3 advance procurement requirements. A DD1415 Reprograming Action is being submitted for this increase.

Trainer Aircraft (-$.4 million)

The $.4 million decrease in this budget activity is due to application of Congressional reductions against the TH-57B program.

Other Aircraft (+$29.1 million)

The changes in this budget activity are attributable to Congressional action including application of $.9 million to the EC-130Q program associated with undistributed general reductions and the addition of $30.0 million by the Congress for two KC-130 aircraft which were appropriated in FY 1983 but not authorized.

Modification of Aircraft (-$133.2 million)

Congressional action resulted in a net $100.3 million reduction as follows:

Program	Amount
A-4 Series	-$ 6.4
A-6 Series	- 9.1
EA-6 Series	- 5.9
A-7 Series	- 10.0
RF-4 Series	+ 19.6
F-14A	- 24.9
F/A-18 Series	- 12.8
H-46 Series	- 7.7
P-3 Series	- 3.4
S-3 Series	- 1.1
US-3 Series	- 2.6
E-2 Series	- 3.2
C-130 Series	- 1.0
EC-130 Series	- 12.6
FEWSG	- 2 9
Common ECM Equipment	- 14.0
Common Avionics	- 2.3
	-$100.3

Modification of Aircraft, cont.

Additionally, $9.6 million from the EP-3 modification program has been included on the DD1415 Reprograming Action for the EP-3 production program's advance procurement requirements and $9.5 million from the S-3 modification program has been transferred to RDT&E,N. Reduction of $25.5 million including $5.9 million associated with the A-6 series modification account, $7.1 million related to the H-53 series modification program, $7.6 million from the P-3 series modification line, and $4.9 million from the Common ECM Equipment account have been applied to enable transfer to the Military Pay, Navy appropriation.

Other decreases include: $11.3 million in the A-6 series due to rephasing the Rewing/SLEP program, slipping the AFCS modification one year and repricing the TRAM and several smaller programs; $2.4 million in the RF-4 series due to slippage in the ALQ-162 modification; $.4 million in the F-8 series resulting from repricing of the AN/ALE-39 program; $.2 million in the TH-57 series as a result of a reduction in requirements for Service Bulletins; $.6 million in the C-9 series due to downscoping the FAA Configuration update; $1.3 million in the Power Plant Changes line as a result of reductions in requirements for follow-on engine change kit procurements; and miscellaneous repricing in the A-4 series ($.1 million), T-34 series ($.1 million), C-130/KC-130 series ($.1 million), and the EC-130 series ($.6 million).

The above decreases are partially offset by the following increases: $3.5 million in the EA-6 series to cover a major repricing of the ICAP II modification; $.3 million in the A-7 series for general repricing; $.3 million in the F-4 series to accelerate the ARN-118 program; $4.0 million in the F-14 series to accomodate the start of the Link-4A classified program; $6.8 million in the F-18 series to cover repricing of the F-404 Bearing Improvement; $3.6 million in the H-46 series for the AN/ALE-39 program continuance; $1.7 million in the H-1 series for SIDEWINDER Provisions repricing; $6.8 million in the S-3 series for the addition of the Auxiliary Power Unit and general repricing of S-3 programs; $.2 million in the E-2 series for overall repricing; $.2 million in the FEWSG series to begin the ALQ-167 Pod procurement; and $1.4 million in the Various series to reprice the AERO-7 Bomb Racks and SEAWARS programs.

Aircraft Spares and Repair Parts (-$93.0 million)

Of the change in this budget activity, $75.0 million is related to Congressional reduction. The additional $18.0 million reduction is due to changes in modification programs of $1.9 million, and $16.1 million for engine repricing based on anticipated contract savings including adjustments for the pound/dollar exchange rate; furthermore, $14.0 million of the $18.0 million was transferred to the Military Pay, Navy appropriation.

Aircraft Support Equipment and Facilities (-$65.9 million)

The Congress made the following adjustments:

Program	Amount
Common Ground Equipment	- 49.7
Other Production Charges	- .3
	-$50.0

Other adjustments increased Other Production Charges by $9.8 million for procurement of special support equipment for the S-3A ($3.5 million), additional reconnaissance cameras ($1.8 million), and instrumentation packages for aircraft participating in exercises on the Mobile Sea Range ($4.5 million). The Common Ground Equipment account decreased by $15.7 million, due to contract savings ($2.7 million), deferring of requirements for common support equipment ($9.6 million) and training equipment ($3.4 million), to accommodate a transfer requirement to fund the military pay raise.

COMPARISON OF FY 1983 FINANCING AS REFLECTED
IN FY 1983 BUDGET WITH FY 1983 FINANCING AS
SHOWN IN FY 1984 BUDGET

(In Thousands of Dollars)

	Financing Per FY 1983 Budget	Financing Per FY 1984 Budget	Increase (+) or Decrease (-)
Program Requirements (Total)	$11,612,300	$10,298,327	- $1,313,973
Program Requirements (Service account)	11,582,300	10,268,327	- 1,313,973
Program Requirements (Reimbursable)	30,000	30,000	
Less:			
Anticipated Reimbursements	30,000	30,000	
Reprogramming from prior year budget plans			
Unobligated balance available from prior year to finance new budget plans			
Transferred from other accounts			
Add:			
Unobligated balance available to finance subsequent year budget plans			
Transferred to other accounts		-88,680	-88,680
Appropriation	$11,582,300	$10,268,327	- $1,313,973

EXPLANATION OF CHANGES IN FINANCING (In Thousands of Dollars)

The $1,313,973,000 decrease to the service account in FY 1983 financing resulted from $1,225,293,000 of Congressional reduction and $88,680,000 pending DD1415 Reprograming Actions including $79.2 million being transferred to the Military Pay, Navy appropriation to finance the military pay raise.

COMPARISON OF FY 1982 PROGRAM REQUIREMENTS AS REFLECTED IN FY 1983
PRESIDENT'S BUDGET WITH FY 1982 PROGRAM REQUIREMENTS SHOWN IN FY 198' PRESIDENT'S BUDGET

	Total Program Requirements per 1983 Budget	Total Program Requirements per 1984 Budget	Increase (+) or Decrease (-)
Combat Aircraft	$ 6,094,100	$ 6,021,890	-$ 72,210
Airlift Aircraft	37,200	37,200	-
Trainer Aircraft	73,700	74,104	+ 404
Other Aircraft	138,600	136,792	- 1,808
Modification of Aircraft	926,700	909,808	- 16,892
Aircraft Spares and Repair Parts	1,541,200	1,526,596	- 14,604
Aircraft Support Equipment and Facilities	328,500	313,310	- 15,190
Reimbursable Program	30,000	27,169	- 2,831
TOTAL FISCAL YEAR PROGRAM	$ 9,170 000	$ 9,046,869	-$123,131

EXPLANATION BY BUDGET ACTIVITY

Combat Aircraft (-$ 72.2 million)

Of the decrease in this budget activity, $33.3 million is associated with DD 1415 Reprograming Actions. $9.1 million of SH-60 advance procurement was tra erred out of the appropriation based on the lower requirements since the FY 1983 aircraft quantity was reduced by Congressional action. The January 1982 estimate anticipated higher escalation and a DD1415 Reprograming Action was submitted to fund a $24.2 million increase. This DD1415 Reprograming Action was later withdrawn resulting in the following decreases:

Program	Amount
A-6E	-$ 1.1
EA-6B	- .9
EA-6B Adv. Proc.	- .1

Combat Aircraft cont'd

Program	Amount
AV-8B	- 2.2
AV-8B Adv. Proc.	- .1
F-14A	- 3.5
F-14A Adv. Proc.	- .7
F/A-18	- 7.6
F/A-18 Adv. Proc.	- .8
CH-53E	- 1.0
SH-60B	- 2.3
SH-60B Adv. Proc.	- .5
P-3C	- 1.5
P-3C Adv. Proc.	- .2
E-2C	- .9
E-2C Adv. Proc.	- .1
SH-2F	- .6
SH-2F Adv. Proc.	- .1
	-$24.2

Other changes include the following increases: $.4 million for increased GFE costs in A-6E advance procurement, $4.8 million for CH-53E advance procurement GFE requirements to support an accelerated aircraft delivery schedule, and $1.7 million for E-2C advance procurement to meet increased cost and leadtime requirements.

The above increases are more than offset by the following decreases: $10.9 million of A-6E contract savings, $1.4 million of F-14A savings from AWG-9 radar negotiations, $11.1 million of anticipated CH-53E contract savings, $9.5 million from reduced SH-60B support requirements, $8.8 million of P-3C contract savings, $2.1 million from revised E-2C GFE requirements, and $2.0 million of SH-2F contract savings.

Trainer Aircraft (+$ .4 million)

The increase in this budget activity results from $1.6 million contract savings in the T-34 program and a $2.0 million increase reprogrammed to cover the TH-57 contract price.

Airlift Aircraft (-$ 1.8 million)

The decrease in this budget activity is the result of savings on the EC-130Q program.

Modification of Aircraft (-$ 16.9 million)

The following decreases have been included on DD 1415 Reprograming Actions and transferred out of the appropriation:

Program	Amount
A-6 Series	- 2.0
P-3 Series	- 15.0
EC-130 Series	- 10.1
Various	- 13.7
	-$40.8

Additional decreases include: $.4 million in the EA-6 series as a result of lower than anticipated prices for the SDC/INS modification; $3.4 million in the RF-4 series due to repricing of the TEREC and APD-10 programs; $1.1 million in the F-5 series due to programmatic slippage of the Structural Fatigue effort as a result of delayed receipt of the ECP; $2.5 million in the H-1 series resulting from cost savings in the Altitude Warning System and slippage in other programs due to delayed receipt of equipments; $.2 million in the H-2 series arising from miscellaneous repricing of various modifications; $3.4 million in the P-3 series attributable to contract savings in the AN/AWG-19 (HARPOON), OMEGA/INS and IACS programs; $1.5 million in the E-2 series due to favorable prices for the ARPS and PDS efforts; $.5 million in the T-34 series and $.5 million in the T-44 series resulting from programmatic slippage; $.1 million in the C-1 series as a result of miscellaneous repricing; $2.8 million in the C-130/KC-130 series related to fortuitous negotiation of the SLEP; $5.0 million in the EC-130 attributable to contract savings in the SLEP and delayed execution of the Mission Avionics and EMP Layers I/II/III programs resulting in programmatic slippage; and $.2 million in the Power Plant Changes account due to a reduction in requirements.

The decreases listed above are offset by the following increases: $.9 million in the A-3 Series to cover a cost growth in the ERA-3B E/F Band Jammers; $.3 million in the A-4 series to procure the CPU-66/A-22 Altitude Encoding Computer; $5.1 million in the A-6 series to cover a cost growth incurred on the TRAM DRS contract; $3.4 million in the A-7 series to cover a cost growth related to the AN/APR-43 modification and the introduction of the Jet Engine Monitoring system; $.7 million in the AV-8 series attributable to cost increases for the AN/APR-43, other GFE and PGSE associated with the CILOP program; $1.4 million in the F-4 series resulting from the requirement to procure a J to S trainer under the CILOP effort; $6.2 million in the F-14 series to cover cost growths in the TF-30 Engine Improvement, Main Landing Gear Bulkhead modification and various small reliability and maintainability programs; $1.0 million in the F-8 series resulting from cost growths in the Stabilator system; $3.9 million in the H-46 series to procure additional fiberglass rotor blades; $2.5 million in the H-53 series to cover cost growths in the Night Vision and other programs; $1.0 million in the H-3 series to complete the CILOP modification; $.9 million in the S-3 series associated with cost increases in the FLIR R&M program; $.2 million in the T-39 series to cover the Weather Radar and an increase related to the Service Bulletins; $.3 million in the C-9 series to cover a cost growth in the FAA Configuration Update; $5.3 million in the FEWSG series associated with cost growths in various Jammer programs and the A-3 to ERA-3 Conversion program; $3.2 million in the Safety account to cover several late-emerging safety requirements; and finally, $9.2 million in the Common ECM Equipment series to cover a classified program.

Aircraft Spares and Repair Parts (-$14.6 million)

Replenishment Spares were assessed $20.0 million for transfer out of the appropriation. Replenishment Spares were further reduced by $2.5 million which partially offset an increase of $7.9 million to Initial Spares for modification spares and F-18 initial outfittings.

Aircraft Support Equipment and Facilities (-$15.2 million)

The decrease in this budget activity results from a DD 1415 Reprograming Action transferring $26.2 million from the Common Ground Equipment line (Rapid Deployment Force/Maritime Prepositioned Ships subline) and the appropriation, partially offset by the following adjustments:

The Common Ground Equipment (GSE) line was increased by $9.5 million which resulted from an increase in Automatic Test Equipment of $14.5 million including additional ILS effort for test set procurements ($2.3 million), procurement of EW test sets earlier than anticipated ($2.7 million), and procurement of tailored mini VAST to support development of SH-60B avionics test program sets, an increase of $10.0 million to ICP-managed GSE for support equipment requirements including packups, armament support equipment and aircraft jacks; and decreases in Aircraft GSE of $10.5 million and Mobile Maintenance Facilities of $4.5 million.

War Consumables increased $1.8 million to modify MER/TER bomb racks to an improved configuration ($1.5 million) and to procure 150 gallon external fuel tanks ($.3 million).

Other Production Charges decreased $.3 million due to revised GFE production support and peculiar support equipment for the out-of-production A-7 aircraft.

Reimbursable Program (-$2.8 million):

The $2.8 million decrease adjusts the reimbursable program to reflect actual orders received in lieu of those anticipated.

COMPARISON OF FY 1982 FINANCING AS REFLECTED
IN FY 1983 BUDGET WITH FY 1983 FINANCING AS
SHOWN IN FY 1984 BUDGET

(In Thousands of Dollars)

	Financing Per FY 1983 Budget	Financing Per FY 1984 Budget	Increase (+) or Decrease (-)
Program Requirements (Total)	$ 9,170,000	$ 9,046,869	-$ 123,131
Program Requirements (Service account)	9,140,000	9,019,700	- 120,300
Program Requirements (Reimbursable)	30,000	27,169	- 2,831
Less:			
Anticipated Reimbursements	30,000	27,169	- 2,831
Reprogramming from prior year budget plans			
Unobligated balance available from prior year to finance new budget plans			
Transferred from other accounts			
Add:			
Unobligated balance available to finance subsequent year budget plans			
Transferred to other accounts		- 120,300	- 120,300
Appropriation	$ 9,140,000	$ 9,019,700	-$ 120,300

EXPLANATION OF CHANGES IN FINANCING (In Thousands of Dollars)

The $120,300,000 decrease to the service account's financing available for FY 1982 is entirely associated with DD1415 Reprograming Action Transfers out of the Aircraft Procurement, Navy appropriation.

Status of Aircraft Modification Programs
FY 1981 Modification of Aircraft
Programs as of 31 October 1982

(Thousands of Dollars)

Program	Appropriated	Reprograming	Total Program Value	Total Obligations	Total Expenditures
A-4 Series	300	+ 4,790	5,590	5,390	3,316
A-6 Series	93,600	- 8,726	84,874	78,079	44,081
A-7 Series	65,200	+ 2,645	67,845	62,623	32,004
AV-8A	15,457	- 1,460	13,997	13,610	6,244
F-4 Series	57,100	- 6,478	50,622	49,396	22,140
F-8 Series	2,100	- 1,527	573	552	3
OV-10	800	+ 182	982	870	379
H-46 Series	92,210	- 2,986	89,224	88,244	39,316
H-53 Series	6,200	+ 4,589	10,789	10,637	895
H-3 Series	7,866	+ 2,446	10,312	9,966	3,205
P-3 Series	108,452	- 241	108,211	99,454	47,424
E-2 Series	24,200	- 4,685	19,515	15,727	4,647
T-39 Series	300	-	300	216	-
C-2A	200	- 112	88	84	73
C-130 Series	8,587	+ 2,885	11,472	9,666	3,164
H-2 Series	13,800	+ 3,684	17,484	16,550	10,392
Various	3,695	- 3,328	367	365	20
Power Plant Changes	8,300	+ 2,776	11,076	10,842	2,125
Misc. Safety Changes	1,100	+ 4,661	5,761	4,430	1,193
F-14A	43,500	- 2,054	41,446	41,200	17,616
S-3A	17,460	+ 5,585	23,045	21,227	6,290
EA-6 Series	44,970	- 8,656	36,314	31,553	15,762
H-1 Series	4,675	- 324	4,351	3,769	1,059
T-34 Series	200	- 87	287	242	90
A-3 Series	-	+ 1,915	1,915	1,899	988
RF-4 Series	3,400	+ 403	3,803	3,708	950
EP-3 Series	8,400	+ 4,092	12,492	11,157	3,282
EC-130 Series	30,430	-16,050	14,380	11,771	6,398

Status of Aircraft Modification Programs
FY 1981 Modification of Aircraft
Programs as of 31 October 1982

(Thousands of Dollars)

Program	Appropriated	Reprograming	Total Program Value	Total Obligations	Total Expenditures
C-1A Series	200	+ 1,599	1,799	1,548	425
C-9 Series	200	+ 202	402	-	-
F-5 Series	900	+ 182	1,082	895	-
FEWSG	11,800	+ 4,900	16,700	14,113	5,705
Common Avionics Changes	1,100	+ 671	1,771	1,179	801
Common ECM Equipment	23,800	+ 3,545	27,345	20,443	15,597
T-44 Series	100	- 40	60	0	-
TOTAL B.A. 5	701,102	- 4,828	696,274	644,405	298,384

Status of Aircraft Modification Programs
FY 1982 Modification of Aircraft
Programs as of 31 October 1982

(Thousands of Dollars)

Program	Appropriated	Reprograming	Total Program 1/ Value	Total Obligations	Total Expenditures
A-4 Series	46,500	-20,409	26,091	19,408	7,048
A-6 Series	111,100	+ 2,371	113,471	105,655	12,593
A-7 Series	95,000	+ 5,460	100,460	66,854	4,285
AV-8A	13,900	+ 5,150	19,050	13,569	508
F-4 Series	34,400	+ 3,470	37,870	34,450	29
F-8 Series	600	+ 1,010	1,610	1,446	1,193
H-46 Series	42,300	+ 5,907	48,207	43,470	2,625
H-53 Series	6,000	+ 4,234	10,234	8,007	109
H-3 Series	2,200	+ 3,127	5,327	5,174	508
P-3 Series	104,400	-16,927	87,473	78,394	7,744
E-2 Series	24,700	- 2,407	22,293	20,570	1,020
T-39 Series	200	+ 181	381	243	233
C-130 Series	15,100	- 2,984	12,116	11,788	1,572
H-2 Series	7,800	- 21	7,779	6,894	311
Various	19,700	-13,700	6,000	3,000	62
Power Plant Changes	10,200	- 153	10,047	8,175	444
Misc. Safety Changes	1,200	+ 3,159	4,359	3,375	90
F-14A	91,400	- 3,781	95,181	87,280	10,684
S-3	26,500	+ 2,376	28,876	24,843	512
EA-6 Series	49,800	- 1,841	47,959	30,100	1,048
H-1 Series	10,600	- 1,715	8,885	5,303	425
T-34 Series	300	- 300	-	-	-
A-3 Series	22,800	+ 2,500	25,300	16,803	1,288
RF-4 Series	24,500	- 3,304	21,196	9,756	20
EP-3 Series	11,500	- 1,204	10,296	8,473	781
EC-130 Series	37,000	-15,408	21,592	10,674	2,437
C-1A	200	+ 10	210	100	1

1/ FY 1982 Column of FY 1984 President's Budget

Status of Aircraft Modification Programs
FY 1982 Modification of Aircraft
Programs as of 31 October 1982

(Thousands of Dollars)

Program	Appropriated	Reprograming	Total Program 1/ Value	Total Obligations	Total Expenditures
C-9 Series	200	+ 250	450	-	-
F-5 Series	1,100	- 1,058	42	-	-
FEWSG	16,900	+ 9,047	25,947	21,578	334
Common Avionics Changes	1,300	+ 1,152	2,452	897	14
Common ECM Equipment	96,500	+ 9,212	105,712	62,706	5,782
T-44 Series	500	- 500	-	-	-
F/A-18	2,800	+ 142	2,942	2,417	983
TOTAL B.A 5	929,200	-19,392	909,808	711,402	64,683

1/ FY 1982 Column of FY 1984 President's Budget

Status of Aircraft Modification Programs
FY 1983 Modification of Aircraft
Programs as of 31 October 1982

(Thousands of Dollars)

Program	Appropriated 1/	Reprograming	Total Program 2/ Value	Total Obligations	Total Expenditures
T-2	100	-	100		
TH-57	300	- 200	100		
UC-12	200	-	200		
C-131	100	-	100		
A-4 Series	24,723	- 125	24,598		
A-6 Series	175,345	-17,263	158,082		
A-7 Series	95,400	+ 310	95,710		
AV-8A	10,900	-	10,900		
F-4 Series	22,700	+ 276	22,976		
F-8 Series	1,200	- 370	830		
OV-10	1,700	-	1,700		
H-46 Series	51,000	+ 3,614	54,614		
H-53 Series	21,479	- 7,052	14,427		
H-3 Series	20,600	-	20,600		
P-3 Series	116,390	- 7,582	108,808		
E-2 Series	44,887	+ 237	45,124		
T-39 Series	1,500	-	1,500		
C/KC-130 Series	15,187	- 125	15,062	2,408	
H-2 Series	3,900	-	3,900		
Various	10,800	+ 1,358	12,158		
Power Plant Changes	11,700	- 1,300	10,400		
Misc. Safety Changes	5,400	-	5,400		
F-14A	141,924	+ 4,021	145,945		
S-3A	26,152	- 2,726	23,426		
EA-6 Series	85,177	+ 3,490	88,667		
H-1 Series	18,900	+ 1,729	20,629		
T-34 Series	1,500	- 100	1,400		

1/ Includes application of Consultants, Studies and Analyses, BP/IR&D, and General Modification Reductions
2/ FY 1983 Column of FY 1984 President's Budget

Status of Aircraft Modification Programs
FY 1983 Modification of Aircraft
Programs as of 31 October 1982

(Thousands of Dollars)

Program	Appropriated 1/	Reprograming	Total Program 2/ Value	Total Obligations	Total Expenditures
A-3 Series	7,300	-	7,300		
RF-4 Series	29,470	- 2,400	27,070		
EP-3 Series	28,200	- 9,554	18,646		
EC-130 Series	50,079	- 601	49,478	1,215	
C-1A	200	-	200		
C-9 Series	1,400	- 630	770		
F-5 Series	200	-	200		
FEWSG	33,900	+ 200	34,100		
Common Avionics Changes	5,858	-	5,858		
Common ECM Equipment	139,763	- 4,945	134,818		
T-44 Series	200	-	200		
US-3	92	- 28	64		
F-18 Series	4,981	+ 6,872	11,853		
TOTAL B.A. 5	1,210,807	-32,894	1,177,913	3,623	-

1/ Includes application of Consultants, Studies and Analyses, BP/IR&D, and General Modification Reductions
2/ FY 1983 Column of FY 1984 President's Budget

FY 1984 Aircraft Modification Program Index

Page No.	OSIP No.	Title
EA-6 Mod - P-1 Line Item No. 42		
1-127	12-81	ICAP II (EA-6B)
1-128	19-79	ALQ-99 Pods (EA-6B)
1-129	57-70	Defensive Electronic Countermeasures (DECM) Improvement (EA-6A)
1-130	14-81	Signal Data Converter and Digital Display/Inertial Navigation System (INS) Improvement (EA-6B ICAP I)
1-132	13-81	EA-6A Weapons System Update (ALQ-76/86) (EA-6A)
1-134	16-85	AN/ARC-182 Combination Radio (EA-6B)
1-135	33-85	Installation of Supplemental Cooling Turbine (EA-6B)
1-136	15-83	Replacement of AYA-6 Computer with AYK-14 (EA-6B ICAP)
1-137	53-82	EA-6A Radar and Navigation Update (EA-6A)
1-139	32-85	Structural Improvements (SLEP) (EA-6B)
1-140	18-85	Computer Interface Unit (CIU) and Comparator Converter Update (CCU) (EA-6B)
A-7 Mod - P-1 Line Item No. 43		
1-141	9-82	Improvement of Fuel Quantity Gaging System (A-7E)
1-142	52-84	AN/ASN-90 Inertial Measurement Set Update (A-7E/C, TA-7C)
1-143	38-85	I^2R MAVERICK Airframe Provisions (A-7E FLIR Configured)
1-145	16-81	TF-41 Engine Hot Section Extended Life Program (HELP) (A-7E)
1-147	13-80	HARM (A-7E with FLIR Provisions)
1-149	15-80	Digital Scan Converter for AN/APQ-126 Radar (A-7E/TA-7C)
1-150	23-79	A-7E FLIR (A-7E/TA-7C)
1-152	16-83	A-7 Nose Landing Gear "Fail Safe" Steering System (A-7B/C/E, TA-7C)
1-153	38-84	Air Data System Improvements (A-7C/E, TA-7C)
1-155	21-83	AN/ALQ-162 Countermeasures Set (A-7E)
1-156	8-84	Replacement of Bleed Air Manifolds (A-7E)
1-157	10-84	Replacement of Hydraulic Extension Units (A-7B/C/E/TA-7C)
1-158	94-82	AN/APQ-126 Radar Set (A-7E/C, TA-7C)
1-160	139-84	Re-engine Program (TA-7C)
AV-8 Mod - P-1 Line Item No. 44		
1-161	22-83	Sealed Lead Acid Battery (AV-8A/C)
1-162	19-80	DECM Pod (AV-8A/C)
1-163	14-84	S,R&M (T/AV-8A/C)
1-165	15-84	AN/ARN-118 TACAN (T/AV-8A/C)
1-166	16-84	Structural Integrity (AV-8A/C)

Page No.	OSIP No.	Item
H-1 Mod - P-1 Line Item No. 54		
1-260	62-80	H-1 Battery Fault Warning (AH-1J/T, UH-1N)
1-261	24-82	APR-44 (UH-1N)
1-262	117-83	H-1 AN/ALQ-136 (AH-1J/T)
1-263	116-83	APR-44 (AH-1J/T)
1-264	17-84	Portable Fire Extinguisher (UH-1N, AH-1T, AH-1J)
1-265	18-84	Radar Altimeter Readout (AH-1J/T)
1-266	19-84	Crashworthy Fuel System (AH-1J/T)
1-267	20-84	HELLFIRE Weapon System (AH-1J/T)
1-268	68-82	Night Vision Goggles (UH-1N)
1-269	69-82	ANVIS Night Vision System (AH-1J/T)
1-270	23-85	FACTS (FLIR Augmented Cobra TOW System) (AH-1T/J)
1-271	70-84	Load Measuring and Warning System (Accelerometer) (AH-1T/J)
1-272	57-84	Wire Strike Protection (UH-1N, AH-1T, AH-1J)
1-273	71-84	Crashworthy Pilot Seats (UH-1N)
1-275	117-82	VH-1N Automatic Flight Controls/Door Mod (VH-1N)
H-2 Mod - P-1 Line Item No. 55		
1-276	22-84	Tail Pylon/Aft Drive Train Improvements (SH-2F)
1-278	26-85	Composite Main Rotor Blade (SH-2F)
1-279	27-85	Main Gear Box Improvements (SH-2F)
1-280	72-84	DC Fuel Quantity System and 100-Gallon Auxiliary Tanks (SH-2F)
1-282	73-84	Throttle Quadrant Electrical Improvements (SH-2F)
1-284	74-84	New Fuel Control Actuator (SH-2F)
1-286	75-84	AN/ARN-118 TACAN (SH-2F)
1-287	76-84	ALR-66 (SH-2F)
H-3 Mod - P-1 Line Item No. 56		
1-289	46-83	SH-3 Service Life Extension (SH-3H/SH-3G/SH-3D)
1-290	70-82	Ni-CD Battery Constant-Current Charge/Monitor System (HH-3A/UH-3A/VH-3A/SH-3D/VH-3D/SH-3G/SH-3H)
1-291	23-84	Crashworthy Pilot Seats (SH-3H/SH-3D/SH-3G/HH-3A)
1-293	77-84	Main Gear Box Improvements (SH-3H/SH-3D/VH-3A/HH-3A/SH-3G)
1-295	78-84	Vespel Spline Adapters (VH-3D)
1-296	79-84	Improved Tail Rotor Blade (VH-3D)
1-297	50-84	VH-3D Cockpit/Avionics Update (VH-3D)

Page No.	OSIP No.	Title
EP-3 Mod - P-1 Line Item No. 57		
1-299	48-81	EP-3E/B CILOP (EP-3E/B)
P-3 Mod - P-1 Line Item 58		
1-301	31-82	P-3C MAD System Integration (P-3C)
1-302	104-79	HARPOON (P-3A/B/C)
1-304	84-79	AN/AQA-7 Improvements (P-3B/C)
1-305	47-81	P-3C Inertial OMEGA Update (P-3C)
1-307	57-72	Infrared Detecting System (IRDS) (P-3A/B/C)
1-309	71-82	PARKHILL (KY-75) (P-3A/B/C)
1-310	29-82	P-3B Special Project Aircraft (P-3B)
1-311	48-83	ALR-66 ESM System (P-3B/C)
1-312	49-83	Ditching Improvements (P-3C)
1-313	50-83	On-Top Position Indicator (OTPI) Replacement (P-3A/B)
1-314	53-72	Navigation System Improvement (P-3A/B)
1-316	80-84	Advanced Signal Processor Modernization (P-3C)
1-317	81-84	BEARTRAP (P-3C)
1-318	82-84	HF Simultaneous Operations (SIMOPS) (P-3C)
1-320	83-84	BRU-14/A Bomb Rack (P-3A/B)
1-321	84-84	CP-3A (P-3A)

Page No.	OSIP No.	Item
S-3 Mod - P-1 Line Item 59		
1-323	102-79	FLIR Reliability Improvement (S-3A, KS-3A)
1-324	52-83	Environmental Control System (ECS) Turbine Fan Assembly Modification (S-3A, KS-3A)
1-325	102-81	Bleed Air Shut-Off Valve (S-3A, KS-3A)
1-326	54-83	Display Generator Unit (DGU) Mod (S-3A, KS-3A)
1-327	55-83	STCU Reliability Improvement (S-3A, KS-3A)
1-328	57-83	Nose Landing Gear Fail-Safe Steering System (S-3A, KS-3A)
1-329	106-82	Auxiliary Power Unit Increased Power (S-3A)
1-331	25-84	ICS Communications Control Group (S-3A, KS-3A)
1-332	2-85	Weapon System Improvement Program (Redesignated S-3B) (S-3A)
1-334	1-85	ASN-130 Inertial Navigation System (S-3A, KS-3A)
1-336	93-84	Avionics Shut Down Switches (S-3A)
1-337	87-84	Pitch Trim Actuator (S-3A, KS-3A)
1-338	41-85	AN/ASA-82 Tactical Display System (S-3A)
1-339	95-84	AN/APS-116 (S-3A, KS-3A)
1-341	89-84	Non-Ice/Low Limit Control Valve (S-3A, KS-3A)
1-342	90-84	Bleed Air High Stage Regulator Valve (S-3A, KS-3A)
1-343	91-84	Replacement of TSEC/KY-28 with TSEC/KY-58 (S-3A)
1-344	28-85	Battle Group Passive Horizon Extension System (S-3A)
1-345	107-80	Wing Fold System Modification (S-3A, US-3A)

Page No.	OSIP No.	Title
T-44 Mod - P-1 Line Item 64		
1-378	25-84	FAA Configuration Update (T-44A)
T-39 Mod - P-1 Line Item No. 65		
1-379	71-83	Omnibus Configuration Update (T-39D)
1-381	72-83	High Intensity Anti-Collision Strobe Lights (T-39D)
1-382	78-81	FAA Configuration Service Bulletin Update (CT-39E/G)
1-384	108-82	Weather/Mapping Radar RCA-400 System (CT-39E/G)
1-385	3-85	Angle of Attack SL112B600 System (CT-39E/G)
TH-57 Mod - P-1 Line Item No. 66		
1-387	74-83	Service Bulletins (TH-57)
1-388	109-84	Anti-Collision Lights (TH-57A)
1-389	111-84	ECS and Yaw Axis SAS Program (TH-57)
T-2 Mod - P-1 Line Item No. 67		
1-390	65-83	High Intensity Anti-Collision Strobe Lights (T-2C)
1-391	104-84	Laser Air-to-Air Gunnery Simulator (LATAGS) (T-2C)
TC-4C Mod - P-1 Line Item No. 68		
1-392	22-85	TC-4C Mod Update (TC-4C)
C-9 Mod - P-1 Line Item No. 69		
1-394	75-81	FAA Configuration Update (Commercial Service Bulletins) (C-9B)
1-396	114-84	AN/ARN-118 TACAN (C-9B)
1-397	115-84	Canted Thrust Reverser Retrofit (C-9B)
C-1 Mod - P-1 Line Item No. 70		
1-398	62-81	Nacelle/Well Rewire
C-2 Mod - P-1 Line Item No. 71		
1-399	112-84	VIR-31A/VHF-20B Communication/Navigation (C-2A)
1-400	113-84	Airframe Readiness Improvement (C-2A)
UC-12 Mod - P-1 Line Item No. 72		
1-401	77-83	FAA Configuration Update (UC-12B)

Page No.	OSIP No.	Title
EC-130 Mod - P-1 Line Item No. 73		
1-402	64-81	Mission Avionics (EC-130G/Q)
1-403	29-85	Survivable Time Standard (STS) (EC-130G/Q)
1-404	85-83	Communications Central ERCS Monitor for TACAMO (EC-130G/Q)
1-405	86-83	LTN-211 OMEGA (EC-130G/Q)
1-406	87-83	AN/APX-100 IFF (EC-130G/Q)
1-407	88-83	Solid State Weather Radar (AN/APN-59E) (EC-130G/Q)
1-408	30-85	Multiple Satellite Access (EC-130G/Q)
1-409	77-81	EMP Layer I (EC-130G/Q)
1-410	32-82	EMP Hardening (Layers II and III) (EC-130G/Q)
1-411	110-83	Short Trailing Wire Antenna (STWA) Exit Assembly Improvements (EC-130G/Q)
1-412	111-83	Narrowband Encryption (EC-130G/Q)
C/KC-130 Mod - P-1 Line Item No. 74		
1-413	15-78	KC-130F (SLEP) (KC-130F)
1-415	78-83	Long Range Navigation System (C-130F, KC-130F)
1-417	79-83	Fuel Quantity System R&M Improvement (C-130F, KC-130F, KC-130R)
1-419	80-83	Solid State Weather Radar, AN/APN-59E (C-130F, KC-130F, KC-130R)
1-420	81-83	Replacement of AN/ARC-38A with AN/ARC-159 Radio (C-130F, KC-130F)
1-421	117-84	VHF Comm/Nav Equipment (C-130F, KC-130F, KC-130R)
1-423	118-84	Direct Air Support Center (DASC) Provisions (KC-130F, KC-130R)
1-424	119-84	Ground Proximity Warning System (C-130F, KC-130F, KC-130R)
1-426	120-84	Strobe Anti-Collision Lights (KC-130F, KC-130R)
1-428	121-84	Emergency Exit Lights (C-130F, KC-130F)
1-429	19-85	Cargo Handling System (KC-130F)
1-431	20-85	Helo Air-to-Air Refueling (KC-130F, KC-130R)
1-432	122-84	AN/ARN-118 TACAN (C-130F, KC-130F)
1-433	123-84	Air Refueler Tank Quantity Indicator (KC-130F, KC-130R)

Page No.	OSIP No.	Item
FEWSG Mod - P-1 Line Item No. 75		
1-434	31-84	AN/ARC-153, HF Radio (EA-6A FEWSG)
1-435	137-84	AN/ALQ-170 Generic Simulator (EA-6A FEWSG)
1-437	138-84	LTN-72R Inertial Navigation System (ERA-3B FEWSG)
1-438	94-83	I/J Band Jammer (ERA-3B FEWSG)
1-440	95-83	ESM Receiver (ERA-3B FEWSG)
1-441	33-84	Simulator Set, Countermeasures, AN/ALQ-170 (Various FEWSG Aircraft)
1-443	14-85	Simulator Set, Countermeasures, AN/ALQ-170 Variant (Various FEWSG Aircraft)
1-445	119-83	AN/ALQ-167 and AN/AST-4 Pods (A-4, A-6, A-7 FEWSG Aircraft)
1-446	7-84	FEWSG C3 Simulator (ERA-3B FEWSG)
C-131 Mod - P-1 Line Item No. 76		
1-448	98-83	C-131 Modernization for Safety, Reliability and Maintainability (S,R&M) (C-131H)
1-450	116-84	Propeller Replacement Program (C-131H)
Various Mods - P-1 Line Item No. 77		
1-452	96-83	Sea Water Actuated Release System (SEWARS)
1-453	97-83	AERO-7A/B Rack Improvement
1-454	125-84	AN/ULQ-16 Pulse Analyzer Set (MITSI)
Power Plant Changes - P-1 Line Item No. 78		
1-455		Miscellaneous Power Plant Changes
Flight Safety Changes - P-1 Line Item No. 79		
1-456		Miscellaneous Emergent Safety Requirements
Common ECM - P-1 Line Item No. 80		
1-457	110-79	AN/ALQ-126B (A-4, A-6, A-7, F-4, F-14, F-14, EA-6B)
1-458	109-79	AN/ALR-45F (A-4M, OA-4M, F-4S, RF-4B, A-7E, KA-6D, AV-8C)
1-459	31-85	AN/APR-39 Improvement (AH-1J/T, CH-53A/D/E, CF-46E, CH-10A/D)

Page No.	OSIP No.	Item
Common Avionics - P-1 Line Item No. 81		
1-461	77-82	ASH-20 Flight Crash Recorder
1-462	78-82	Angle of Attack Indicator
1-463	90-82	APX-76 IFF (R&M)
1-464	127-82	APN-154 Radar Beacon
1-465	101-83	APN-171 Radar (Receiver)
1-467	133-84	APX-76 Anti-Jam Mod
1-468	104-83	ARC-51 Radio
1-469	106-83	ID-663 Indicator
1-470	89-82	Antenna for APN-194
1-471	34-84	ADC Replacements
1-472	114-83	APN-182 Doppler Radar
1-473	113-83	TSEC/KY-58
1-475	112-83	APN-153 Doppler
1-476	127-84	APN-171 R&M Imp. (Transmitter)
1-478	129-84	APX-76 IFF Interrogator

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARC-159 UHF Transceiver (OSIP 1-83)

Models of Aircraft Affected: ERA-3B, VA-3B, TA-3B, and KA-3B

Description/Justification:

In recent years re-analyses of mission requirements, non-availability of a replacement weapon system for the A-3 aircraft and sufficient remaining airframe life has lead to the decision to extend the planned service life of the A-3 aircraft. As the A-3 aircraft were originally sheduled for retirement in Fiscal Year 1975 many of the Avionics Systems need replacement or upgrading. Limited use of these older systems in modern aircraft degrade the A-3 support posture and A-3 utilization rates. Out of production end assemblies and components, unique training requirements, maintenance capability, ground support equipment and ground support equipment support all contribute to poor system reliability and maintainability, reduced mission capability and operational effectiveness of the aircraft.

The existing ARC-51 UHF system presently installed in most A-3 aircraft is exhibiting low reliability and requires excessive maintenance man hours to keep operable. The system is aging and uses vacuum tubes which reduce the mean time between failure (MTBF) of the UHF system and adds to an excessive heating problem in some models.

Installation of two (2) modern state-of-the-art UHF communications system such as the ARC-159 in each aircraft will provide improved reliability through the projected life of the aircraft.

Development Status: This modification will use equipment that is currently in the Navy inventory. Nonrecurring engineering is required to adapt the new equipment to the A-3 aircraft. Equipment approval for service use (ASU) has been granted, but Navy testing is required to verify the installation. Current plans include system integration, kit manufacture and installation by the Naval Air Rework Facility (NARF) Alameda and Contractor Field Teams.

OSIP 1-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	$836	18	$2,320			21	$3,156
O&MN Install.			(9)	$141	(12)	$204		345
O&MN Factory Trng.				$30				30
APN-6 Spares		$16		$106				122
GRAND TOTAL								$3,653

Installation Data: Collins Radio production leadtime is 12 months. Naval Air Rework Facility (NARF) Alameda kit production leadtime is 9 months. Installations will be accomplished by contractor field teams. Three prototypes will be required to account for the three type/model/series of A-3 aircraft and will be accomplished by (NARF) Alameda.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALR 63 Improvement (OSIP 2-84)

Models of Aircraft Affected: EA-3B

Description/Justification:

This change to the AN/ALR-63 will replace the Tunnel Diode Amplifier (TDA) in the R-1919 RF Unit with a Gallium Arsenide Field Effect Transistor (GAS-FET). The TDA is anticipated to be out of production by 1985. The replacement GFET is expected to increase reliability by 200 percent, decrease maintenance manhours by 50 percent for each repair, and decrease turn-around time at the depot by 120 days.

Development Status: The Naval Avionics Center (NAC) and the Naval Air Rework Facility (NARF), Alameda analysis of the problem indicates the TDA can be replaced by a currently available GAS-FET technology device. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	14	$173			14	$173
O&MN Install.			(14)	$60		60
O&MN Factory Trng.		$20				20
APN-6 Spares		$30				30
GRAND TOTAL						$283

Installation Data: Retrofit will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: D.C Generator Voltage Regulator (OSIP 3-84)

Models of Aircraft Affected: EA-3B, ERA-3B, TA-3B, KA-3B, NRA-3B, RA-3B, NA-3B, A-3B, VA-3B

Description/Justification:

The D.C. generator voltage regulators used in A-3 aircraft are the old carbon pile type which are unreliable and costly to maintain. These voltage regulators are frequently written-up for action by the A-3 Integrated Logistic Support (ILS) Management Team. An engineering investigation by the Naval Air Rework Facility (NARF), Alameda, found that it is relatively easy and cost-effective to replace these units with new solid state voltage regulators.

Development Status: No development or Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	47	$83	47	$83
O&MN Install. "O" Level		-0-		-0-
APN-6 Spares		$7		7
GRAND TOTAL				$90

Installation Data: Installation will be accomplished at the organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APS-133(V) Radar (OSIP 94-84)

Models of Aircraft Affected: KA-3B

Description/Justification:

The AN/ASB-1 Radar was installed as original equipment during KA-3B production over 25 years ago. The reliability has degraded to an unacceptable level, and the system is frequently inoperable. Since it is out of production, replacement parts are not available. The Aviation Supply Office (ASO) can no longer provide material support. Replacement of this system is the only available solution to maintain KA-3B operational readiness. The AN/ASB-1 will be replaced with the AN/APS-133(V)2 Radar which is in use on EA-3B aircraft. This new Radar meets all operational requirements and has a mean time between failure (MTBF) of 500 flight hours.

Development Status: No development is required. The AN/APS-133(V)2 has Provisional Approval for Service Use (PASU) on all A-3 aircraft.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	$1,420			10	$1,420
O&MN Install.			(10)	$365		365
O&MN Training				$6		6
APN-6 Spares		$285				285
GRAND TOTAL						$2,076

Installation Data: Two kits will be installed by the Naval Air Rework Facility (NARF) Alameda during Standard Depot Level Maintenance (SDLM). Eight kits will be installed by contractor field te[illegible].

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AGM-65 MAVERICK Missile System Provisions (OSIP 35-84)

Models of Aircraft Affected: A-4M

Description/Justification:

Incorporation of MAVERICK Missile provisions into the A-4M will give the Marines a highly accurate anti-armor/anti-fortification capability which is consistent with DOD direction. This program will install electro optical and laser missile capability in the A-4M.

Development Status: Two FY-7T/77 production aircraft were prototyped with MAVERICK provisions by the contractor. One prototype aircraft has completed structural testing with MAVERICK missile on Stations 1 and 5.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	53	$5,774	22	$3,342	34	$3,811	109	$12,927
O&MN Install.			(13)	$155	(96)	$1,108	(109)	1,263
APN-6 Spares		$836		$467		$328		1,631
GRAND TOTAL								$15,821

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) concurrently with Standard Depot Level Maintenance (SDLM). Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Air Data Computer System Improvement (OSIP 1-84)

Models of Aircraft Affected: A-4M

escription/Justification:

There are three different air data devices in the A-4M. The AXC-666 air data computer's primary function is to provide attitude and airspeed information to the HUD display and to weapons system. The mean flight hours between failure (MFHBF) will fluctuate depending upon how actively the A-4 is being used in bombing practices and derbys. A second air data device is the AFCS air data sensor. This device is located in the tail section. It is reported to be unreliable. The AFCS is not flight essential thus it is not necessarily operational for each flight. There has been some mention of removing the system. The third air data device is the AIMS CPU-66 altitude computer, the sole purpose of which is to satisfy the Air Traffic Control automatic altitude reporting requirement. The altitude displayed on the HUD provided by the AXC-666 and the altitude displayed on the pilots AAU-19 provided by the CPU-66 are not synchronous and have been reported as a problem.

Incorporation of the digital air data computer being developed under the AVCS program would be a single air data computer replacing the AXC-666, the CPU-66, and the AFCS air data sensor. Reliability of the single air data device as compared to the three air data devices is expected to be 10 times better. Similar improvements in maintainability can be reasonably anticipated. The new air data system would provide airspeed and altitude outputs to the HUD suitable for primary flight. The DADC provides for MIL-STD-1553 MUX in anticipation of CILOP programs.

Development Status: A prototype AFC kit and digital air data computer will be installed in an A-4M aircraft with ARBS incorporated between October 1982 and February 1983. TECHEVAL and OPEVAL testing to be accomplished between February 1983 and September 1983. RDT&E Program Element No. 25633A applies. Approval for service use is expected in October 1983.

OSIP 1-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	35	$2,289	39	$1,947	38	$2,063	112	$6,299
O&MN Install.			(13)	$186	(99)	$1,414	(112)	1,600
O&MN Factory Trng.		$20		$40				60
APN-6 Spares		$478		$357		$230		1,065
GRAND TOTAL								$9,024

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM). Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-162 Countermeasures Set (OSIP 4-83)

Models of Aircraft Affected: A-4M

Description/Justification:

The AN/ALQ-162 provides complementary DECM jamming capability to the operational AN/ALQ-126 DECM Jammer installed on tactical aircraft. The AN/ALQ-162 will accept threat handoff data from the AN/APR-43 Radar Warning Receiver and utilize a common transmit/receive antenna which is integral to the AN/APR-43 antenna assembly. The AN/ALQ-162 also provides a stand alone capability allowing for defensive electronic countermeasures in event of AN/APR-43 failure. The AN/ALQ-162 design exhibits flexibility in reprogrammability to handle future threat parameter changes. The addition of the AN/ALQ-162 results in a significant increase in the survivability for Navy Tactical aircraft against radar directed air defense systems.

Development Status: Northrop Corporation is under contract and provided preproduction engineering development models in the second quarter of FY 1981 for test and evaluation. The TEMP (No. 593) is presently in review to support Navy test and evaluation. TECHEVAL was completed in the fourth quarter of FY 1982. OPEVAL is scheduled to begin in the second quarter FY 1983 with Approval for Full Production (AFP) expected in the third quarter FY 1983. RDT&E,N Program Element Number 64224N applies.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qt	Cost	Qty	Cost	Qty	Cost
APN-5	1	$557	4	$4,831	42	$8,312	46	$8,143	93	$21,843
O&MN Install.			(1)	$21	(4	$86	(88)	$1,886	(93)	1,993
APN-6 Spares		$28		$440		$1,485		$473		2,426
GRAND TOTAL										$26,262

Installation Data: Installation of the airframe change kit will be accomplished during Standard Depot Level Maintenance (SDLM). Kit lead time is 15 months.

MODIFICATION AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARN-118 TACAN (OSIP 6-83)

Models of Aircraft Affected: TA-4F/TA-4J

Description/Justification:

The AN/ARN-118 TACAN set is the airborn unit of the tactical navigation system (TACAN). The set was developed as a low cost, high reliability replacement for the older tube type equipments. It is a direct replacement for the current AN/ARN-52 TACAN and uses the same mounting provisions and aircraft wiring. Specified/demonstrated reliability is 1200 hours vice 150 hours for the AN/ARN-52.

Development Status: The system is already installed in the A-4M aircraft. Approval for service use has been received.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	88	$1,443	82	$1,394	79	$1,427	25	$482	274	$4,746
O&MN Install			(41)	$15	(86)	$32	(147)	$56	(274)	103
APN-6 Spares		$8		$8						16
GRAND TOTAL										$4,865

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM). Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: VHF/VOR/ILS Installation (OSIP 4-84)

Models of Aircraft Affected: TA-4J

Description/Justification:

The Navy Squadron (VC-8) based at the Naval Station, Roosevelt Roads, has requested VHF/VOR/ILS capability because of the general aviation operating environment in the Puerto Rico/Virgin Islands area. The Navy Flight Demonstration Team (NFDT) has also requested VHF/VOR/ILS capability in their TA-4J because of the requirement to operate out of civilian airports.

Development Status: A similar VHF/VOR/ILS system has been installed in the TA-4KU's by McDonnell-Douglas. No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	7	$536			7	$536
O&MN Install.			(7)	$294		294
APN-6 Spares		$60				60
GRAND TOTAL						$890

Installation Data: Installation will be accomplished by Naval Air Rework Facility drive in Mod and field team Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: A-6E Tanker Conversion (CILOP) (OSIP 3-81)

Models of Aircraft Affected: A-6E

Description/Justification:

The KA-6D aircraft fulfills the operational requirement for Navy aircraft inflight refueling. This refueling requirement is increasing with the introduction of new aircraft. Increased demand and lack of a replacement aircraft have reduced the KA-6D inventory to an unacceptable level. The KA-6D aircraft carries 26,000 pounds of fuel which can be transferred to another aircraft at the rate of 350 gallons per minute. This conversion from A-6E aircraft to KA-6D aircraft requires the modification of some avionics and the installation of an integral refueling package.

Development Status: Originally 78 A-6A aircraft were converted to KA-6D aircraft. No further development is required to initiate the A-6E to KA-6D conversion program.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	8	$8,610	8	$12,201	8	$16,986	8	$19,857	16	$43,222	48	$100,876
O&MN Install.	(2)	$1,442	(4)	$2,901	(6)	$8,375	(8)	$13,482	(28)	$49,434	(48)	75,634
APN-6 Spares						-0-						-0-
GRAND TOTAL												$176,510

Installation Data: Installation will be accomplished by the contractor and the Naval Air Rework Facility (NARF).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: KA-6D Reliability, Maintainability (R&M) and Service Life Extension Program (SLEP) (OSIP 5-82)

Models of Aircraft Affected: KA-6D

Description/Justification:

The KA-6D is the only carrier aircraft dedicated to the mission of inflight refueling. With the introduction of new fighter and attack aircraft to the fleet there will be an increase in the requirement for inflight refueling. In order to meet fleet tanker needs through the mid-1990's, the existing tanker assets must be upgraded in order to maintain readiness requirements. The existing KA-6D tanker force consists of older A-6 aircraft which were converted to the KA-6D configuration. This program will bring the configuration of the older tankers up to the latest configuration as well as incorporate improvements to extend the service life, and increase reliability and maintainability. The SLEP improvements will consist of the following:

a. Install new wings/wing material as required which includes new FS227 and FS288 bulkheads (made with 7050-T73 material which is more resistant to stress corrosion) and a new drag linkbrace which will approximately double the service life of the aircraft.

b. Increase the arresting hook strength to the same strength as the A-6E.

c. Modify the stabilizer shift mechanism and provide electrical switching to prevent failure and inadvertent actuation of spin assist in flight.

d. Improve flap/slat system by: (1) providing improved sealing of flap switch box, slat gear box and slat cam, (2) providing hermetically sealed switches, (3) replacing flap box cam and switches with more wear-resistant material, (4) providing higher strength slat actuator attach lugs, and (5) eliminating the 40 degree flap position.

e. Improve the integrity of the fuel system.

f. Complete rewire.

Development Status: All development is complete.

OSIP 5-82

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$10,587	6	$5,098	12	$17,478	12	$24,103	17	$39,682	49	$96,948
O&MN Install.					(2)	$3,707	(5)	$9,999	(41)	$61,772	(48)	$75,478
APN-6 Spares		$86		$300		-0-						386
GRAND TOTAL												$172,812

Installation Data: Installation will be accomplished at the contractor's plant.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 198-

Appropriation: APN - Activity 5

Modification Title and No.: Target Recognition and Attack Multisensor (TRAM) (OSIP 1-76)

Model of Aircraft Affected: A-6E

Description/Justification:

This program will provide the A-6E with improved capability for location and surveillance of opposing naval forces, and the countering of operations during periods of darkness. In cold war, reconnaissance requires maximum night identification and surveillance capability. In limited war, accurate 24-hour strike capability against enemy sea and sea support targets will be the highest priority mission of the A-6E. This system, developed under SOR W11-93, includes a passive imaging infrared sensor for target classification and identification of a laser target designator/ranger boresighted with the infrared sensor for delivery of laser guided weapons, and a laser search set to locate targets illuminated by external laser designators. All equipment is collocated in a 20-inch diameter turret which is space stabilized and cued to suspected targets by the search and acquisition radar. The TRAM components do not replace or degrade existing A-6E equipments and weigh less than 500 pounds.

In order to achieve an effective force level of TRAM capable aircraft and ensure commonality of configuration and support, the TRAM system is being installed in both A-6E production aircraft and A-6E aircraft being modified to production configuration under the A-6 ASN-92 (CAINS) and CNI Combined (Configuration Update) OSIP 2-77. A6E aircraft delivered since CY 1976 have TRAM wiring and cockpit provisions for CAINS and Communication, Navigation, Identification (CNI) equipment.

Development Status: The development program was funded by RDT&E. Approval for service use was granted in March 1980 and full production release was issued in April 1980.

OSIP 1-76

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 Proc.	71	$169,757	20	$51,019	14	$28,467	30	$ 72,751	41	$110,431	176	$432,425
APN-5 Install.		268		287		326		345		780		2,016
APN-6 Spares		58,867				-0-						58,867
GRAND TOTAL												$493,308

Installation Data: Installation of TRAM is being accomplished by the contractor under an integrated A-6E configuration update program which includes the retrofit of TRAM/CAINS/CNI equipments in 163 of the original versions of the A-6E. In addition, TRAM will be backfitted into 101 A-6E aircraft already delivered with CAINS/CNI equipments. GFE leadtime for the AAS-33 DRS is 30 months for FY 1982.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: A-6E Weapon Control System Improvement (OSIP 102-80)

Models of Aircraft Affected: A-6E

Description/Justification:

The A-6 all-weather attack aircraft was introduced in the Navy in 1963. Numerous modifications have been incorporated in the aircraft since its introduction primarily to improve its reliability, safety, and operational capability. The latest model of the aircraft, the A-6E, is being purchased as a new production article as well as a Conversion in Lieu of Procurement (CILOP) program which converted the older A-6A to the A-6E. The CILOP program completed in FY 1979.

Throughout the years, as new ordnance/weapons have been introduced into the inventory, the A-6 has been adapted to ensure compatibility so that the aircraft will remain current in its weapon delivery capability. In most instances, the adaptations to the aircraft have consisted of the addition of avionics packages/wiring/software dedicated to the specific weapons. As a result, there is a proliferation of weapon control system configurations in Fleet aircraft which are difficult to maintain. Further adaptations to the weapon control system, utilizing the approach of adding major processing packages/ wiring dedicated to a specific weapon can no longer be tolerated.

The 4 Pi computer in the A-6E aircraft series is limited in memory capacity. Modifying the computer with a double density memory capability will provide the additional capacity required for current weapons, as well as those postulated in the future, thus eliminating the need for dedicated processing packages for each weapon. The armament wiring complexity of the aircraft can also be greatly simplified, leading to a universal wiring concept of implementation. The overall result will lead to higher operational reliability in the fleet and a reduction in ordnance maintenance manhours, as well as provide all A-6 aircraft with full capability to carry and deliver current weapons such as SIDEWINDER, SHRIKE, etc. Ample growth is inherently available for such follow-on weapons as LASER/IR MAVERICK, HARPOON, HARM and the follow-on stand off weapon.

With this as the basis, the program consists of the installation of improved armament wiring in all aircraft which will be accomplished during the configuration update of the to A-6E TRAM (described in OSIP 1-76) to minimize installation costs. Production A-6E TRAM aircraft received the new wiring installation commencing with the FY 1979 procurement. A-6E TRAM configured aircraft (101) delivered prior to the initiation of this program will have the wiring provisions installed during rewing (SLEP) in FY 1983 through FY 1986. In addition, this program will install modified computers (double density memory) in all aircraft.

OSIP 102-80

Development Status: The improved armament wiring completed engineering and is being installed in FY 1979 new production aircraft. The double density memory computer modification has completed all testing and commenced installation in E-121 (FY-1979).

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	102	$6,114	13	$8,477	20	$ 9,519	32	$11,314	98	$27,337	265	$62,761
O&MN Install.	(52)	3,543	(32)	$2,446	(15)	$1,200	(22)	$ 1,750	(144)	11,520	265	20,459
APN-6 Spares		$2,336				-0-						2,336
GRAND TOTAL												$85,566

Installation Data: The wiring installation commenced during the integrated configuration update of A-6E aircraft to the A-6E TRAM commencing with the induction of aircraft for this program in FY 1981. A-6E TRAM aircraft delivered prior to initiation of this modification will receive installation during scheduled Rewing (SLEP) conducted by the contractor in FY 1985 through FY 1990.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/IP-722F Vertical Display Indicator (VDI) (OSIP 1-78)

Models of Aircraft Affected: A-6E/KA-6D

Description/Justification:

The Vertical Display Indicator (VDI) is a dynamic contact analog TV display, composed of easily identified ground and sky textures integrated with flight path presentations and other visual flight cues. The cues assist the pilot in flying the aircraft during takeoff, navigation, attack and landing. Through the use of this display the pilot is able to fly his aircraft under all conditions as though he were in actual contact flight.

The present VDI, the IP-722/AVA-1, was designed in the mid 1950's using the latest technology of that era. The circuit technology, reliability and maintainability are archaic by present day standards. The discrete components (resistors, capacitors, transistors, etc.) that make up this display are no longer available. Substitute components are not directly replaceable requiring extensive redesign when they must be substituted. Nonavailability of parts is escalating the cost of the unit while decreasing the already poor reliability and maintainability.

The proposed system is a direct replacement for all A-6 aircraft. Improved technology will increase the reliability from 50 hours to 400 hours and decrease the mean-time-to-repair from 5 hours to 1 hour. It will also provide increased brightness, accuracy and stability. The redesigned unit includes the capability to put FLIR video on the VDI and provides additional symbology for automatic carrier landing system (ACLS). Airframe wiring provisions for FLIR video will be installed during the TRAM retrofit program. Weight of the new unit will be 45 pounds vice 56 pounds of the current indicator. This equipment can be installed at organizational level.

Development Status: This equipment was developed using FY-75/76 AERMIP funding. Four prototype indicators were built for test and evaluation. Development testing was completed in May 1978. Approval for service use was issued in February 1979.

OSIP 1-78

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	116	$8,846	46	$6,710	106	$15,362	72	$10,788	36	$5,959	376	$47,865
O&MN Install. ("O" Level)						-0-						-0-
APN-6 Spares		$267				-0-						267
GRAND TOTAL												$48,132

Installation Data: This indicator is a direct replacement and will be installed at the organizational level. The wiring provisions for FLIR video will be included in the TRAM retrofit program.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: APQ-156 Radar Improvement Program (OSIP 51-82)

Models of Aircraft Affected: A-6E

Description/Justification:

The APQ-156 radar is a complex state-of-the-art radar system providing a unique capability of simultaneous multi-mode operation giving the A-6E aircraft the unique capability of performing the all-weather attack mission. The APQ-156 has been approved for service use and is in full production. Because of its complexity the APQ-156 radar is a major contributor to readiness degradation of the A-6E weapons systems. The reliability and mission readiness improvements of this modification are the result of several years of engineering investigations and development. The following changes are the most cost effective ways of improvement. A 15 percent radar reliability improvement is expected along with many thousands of maintenance hours saved as a result of the incorporated changes.

This program covers the manufacture of new direct replacement antenna/receiver modules designed to improve maintainability/reliability by using fewer and more reliable components. Expected individual module improvements are as listed below:

	Reliability MFHBF		Maintenance Annual Hours Saved
	Old	New	
Amplifier (AFC)	756	15,126	3,589
Rcvr (TC)	1,323	6,762	1,641
Search/Rcvr	701	7,315	3,377

Development Status: The new designs for antenna/receiver modules and all non-production engineering were accomplished by AERMIP funds and completed in February 1979. Production incorporation commenced in FY 1980.

OSIP 51-82

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	150	$4,245	57	$1,711	123	$3,527	330	$ 9,483
O&MN Install. "O" & "I" Level						-0-		-0-
APN-6 Spares		$1,363		$545		$1,078		2,986
GRAND TOTAL								$12,469

Installation Data: Installation will be by direct replacement of cards at the intermediate/organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: A-6E Rewing (SLEP) (OSIP 10-77)

Models of Aircraft Affected: A-6E

Description/Justification:

The A-6 all-weather attack aircraft was introduced in the Navy in 1963 and is still being produced. In 1972, the Navy initiated a Conversion-in-Lieu-of-Procurement (CILOP) program (OSIP 5-72) to convert the earlier models (A-6A) to the new production configuration (A-6E). The CILOP program completed in FY 1979 with the last of the A-6A's being converted. The aircraft has a 3,000-hour wing life which, depending on actual wing loading and utilization, equates to a service life of between 9 and 13 years. Heavy wing loadings and high 'g' maneuvers in combat have accelerated service life completions due to fatigue. Onboard accelerometers have been installed on all aircraft to verify the service life available. As a result, and in order to avoid degradation of Fleet readiness and maintain an adequate inventory of all-weather attack resources, it is necessary that those aircraft approaching their fatigue life limit be rewinged. This rewing effort will approximately double the original service life expectation of the aircraft. This program was originally funded in OSIP 5-72, A-6E Modification (CILOP) and has been continued under the A-6E configuration update, OSIP 9-77, and this OSIP since the CILOP program completed in FY 1979.

Development Status: Development complete.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 Proc.	48	$60,629	8	$18,683	22	$28,570	24	$41,902	120	$255,912	222	$405,696
O&MN Install.							(4)	3,546	(163)	144,485	(167)	148,031
APN-6 Spares						-0-						-0-
GRAND TOTAL												$553,727

OSIP 10-79

Installation Data: The rewing of A-6E aircraft is being conducted at the contractor's plant. The first 76 wing installations are being performed in conjunction with A6A to A6E Modification, the retrofit of TRAM/CAINS/CNI systems and the backfit of TRAM equipments in an integrated A-6E configuration update program. Leadtime for the CFE kits is 24 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Mission Recorder USH-17 and UPQ-5 Display Performance Improvement (OSIP 47-82)

Models of Aircraft Affected: A-6E

Description/Justification:

The USH-17 mission recorder was developed to simultaneously record the APQ-148 radar and A-6C TRIM electro-optical sensors. A-6C TRIM sensors provided TV format imagery and the recorder was designed accordingly. The current A-6E TRAM FLIR's unusual signal format requires precise video tape recorder (VTR) alignment to provide quality imagery and airborne playback. In view of the unique capability of the TRAM system and VTR to provide standoff target identification, intelligence data and bomb damage assessment, it is essential that improvements be made to the USH-17(V) recorder to provide consistent, high quality FLIR recordings. This modification will improve image quality and greatly reduce adjustments and maintenance manhours. The changes included are as follows:

a. Auto Tracking and Time Base Corrector (TBC). This change eliminates the need for alignment or manual adjustment of head tape penetration and phase tracking during playback and electronic synchronization of the display raster for improved image quality.

b. USH-17(V) Airframe Mounts. This change provides a new design VTR mount to replace the original aircraft racks. Failure of the isolator foam and structural problems with the existing rack requires frequent, costly repairs and reduces reliability.

UPQ-5 to support USH-17(V) will require related modification to provide hard copy imagery from video tape and to provide tape duplication capability.

Development Status: The automatic tracking and time base correction units have completed prototype design and breadboard testing and are similar to existing RCA equipment. Prototype disk recorders have been used throughout the TRAM development program and have proven of great value in early TRAM developments. The tape duplication mod is a minor change to three PCB's in the UPQ-5. Design of the new mount is complete. No further testing is required.

OSIP 47-82

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	219	$950		$2,601		$1,291	219*	$4,842
O&MN Install.			(219)	$383				383
APN-6 Spares		$134		$346		$263		743
GRAND TOTAL								$5,968

* Quantity represents kits vice aircraft.

Installation Data: 1. The USH-17(V) auto tracking and the TBC; VTR units will be modified by contractor. 2. PGSE Mod: organizational level installation. 3. Airframe mounts: organizational level installation.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Stabilizer Shift Mechanism (OSIP 6-82)

Models of Aircraft Affected: A-6E, KA-6D

Description/Justification:

Numerous failures of the stabilizer shift cable and pulleys have resulted from either simultaneous actuation of spin assist and shift in stabilizer gearing or from material failure. Also, numerous incidents have occurred in which spin assist inadvertently actuated in flight. Failure of stabilzer shift mechanism or inadvertent actuation of spin assist represents potential flight hazards. This change will provide electrical switching of the stabilizer shift mechanism to prevent the above noted problems.

Development Status: No development required. This change has been incorporated in production aircraft.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	68	$430	92	$464	102	$506	110	$547			372	$1,947
O&MN Install.			(34)	$244	(63)	$474	(91)	$684	(184)	$1,382		2,784
APN-6 Spares		$140		$48		-0-						188
GRAND TOTAL												$4,919

Installation Data: Installation will be accomplished by the contractor and the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: A-6 Weapons Integration (OSIP 8-83)

Models of Aircraft Affected: A-6E

Description/Justification:

A variety of weapons and avionics subsystems are programmed for integration into the A-6E including stand-off air-to-ground weapons. The load carrying capacity, mission roles and aircraft capabilities indicate that additional systems such as I^2R and Laser MAVERICK will be programmed. To improve electronic management and systems control, common control units and management bus are required for reduction of weight and maintenance workload, economy of available space, and improved efficiency in control and data management. These improvements will include incorporation of a common control panel for projected weapons (with growth for compatibility with other new weapons), and incorporation of multiplex bus capability for weapons management.

Development Status: Prototype of the integrated missile panel (IMP) and multiplex bus configuration will be conducted in relation to incorporation of HARM missile capability under Program Element Number 24134N in FY 1983. Production of the IMP will be the result of ECP action.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$4,637	20	$4,200	32	$6,969	219	$55,808	272	$71,614
O&MN Install. "O" Level				-0-						-0-
APN-6 Spares		$308		$488		$828				1,624
GRAND TOTAL										$73,238

Installation Data: AFC kit installation will be at intermediate/organizational level. Aircraft wiring will be incorporated concurrently with ALR-67 under OSIP 51-84.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Radar Data Converter Improvements (OSIP 9-83)

Models of Aircraft Affected: A-6E

Description/Justification:

The Radar Data Converter (RDC) converts radar elevation/range data into a TV terrain clearance presentation. This allows the A-6 to operate at low altitude and avoid terrain during all weather conditions. The existing RDC was designed in the late 1950's using analog technology of that era. Consequently the old design is no longer producible and replacement components are unavailable. The new RDC utilizes modern digital technology to provide a factor of 10 increase in reliability (1,200 hrs vice 120) and built in test (BIT) for improved maintainability (approximately 12,000 manhours savings per year). The new unit provides increased safety with 256 azimuth bins vice 20 allowing small vertical objects such as radio towers to be displayed. Flight safety will also be enhanced with implementation of continuous BIT which provides the crew with an immediate warning of radar failure.

Development Status: AERMIP development contract was awarded to Kaiser Electronics in April 1980. Qualification testing commenced in December 1981. Flight testing completed in December 1982.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	$3,408	108	$7,019	108	$7,157	55	$3,798	281	$21,382
O&MN Install. "O" Level				-0-						-0-
APN-6 Spares		$183		$1,559		$1,615		$408		3,765
GRAND TOTAL										$25,147

Installation Data: Installation will be accomplished by organizational level personnel. Installation time is approximately one hour.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALR-67 Radar Receiving Set, Countermeasures (OSIP 51-84)

Models of Aircraft Affected: A-6E

Description/Justification:

The AN/ALR-67 Radar Receiving Set, Countermeasures Warning and Control System is a replacement for current AN/ALR-45 and AN/ALR-50 Radar and Missile Warning Equipment in certain tactical aircraft. The AN/ALR-67 provides detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. The ALR-67 includes a firmware reprogrammable signal processor and a high intensity alpha numeric CRT azimuth display. Handoff of threat data to other on board EW equipment via a MIL-STD-1553 digital data bus is also provided. The AN/ALR-67 is a significant DF coverage as well as an improvement in capability and maintainability/ reliability over equipments in current use.

Development Status: Seven engineering development model ALR-67's have been fabricated and are in various stages of test and evaluation. The reliability development test program, along with the environment qualification test program is continuing at the contractor's facility. The ALR-67 has been integrated with the ALQ-99/EA-6B and has successfully completed all required lab and ground testing prior to starting TECHEVAL. OPEVAL is scheduled to start in the first quarter of FY 1983. Approval for service use is anticipated in mid FY 1983.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	$14,116	32	$25,000	229	$152,410	271	$191,526
O&MN Install.					(271)	$15,461	(271)	$15,461
APN-6 Spares		$1,841		$4,359				$ 6,200
GRAND TOTAL								$213,187

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and during contractor modification at Grumman.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: A-6 Automatic Flight Control System Improvements (OSIP 59-84)

Models of Aircraft Affected: A-6E, KA-6D, and EA-6A

Description/Justification:

This program incorporates design changes for the AN/ASW-40 Automatic Flight Control System (AFCS) to increase operational safety and reliability. Engineering investigation conducted as a result of AFCS reported incidents and equipment failures has identified an auto trim failure mode which is potentially hazardous. Navy flight tests have verified the severity of this failure mode. A redundant relay AVC design change has been developed to insure autotrim is disabled while in the ACLS mode. As an interim step, AFCS pre-flight and in-flight check procedures have been incorporated in the A-6 Naval Air Training and Operating Procedures Standardization (NATOPS) manuals to detect AFCS failures. This program will also incorporate design changes for the command coupler module to improve reliability and maintainability. Command coupler failures account for over 30 percent of the reported failures against the AN/ASW-40 air navigation computer.

Development Status: The design change has been developed to insure autotrim is disabled in ACLS mode of operation. An engineering investigation was conducted to determine the detailed design changes required for the command coupler module. The Navy/contractor investigation completed in June 1980.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	235	$1,727	121	$617			356	$2,344
O&MN Install.			(164)	$467	(192)	$554		1,021
APN-6 Spares		$122		$48				170
GRAND TOTAL								$3,535

Installation Data: Installation will be accomplished at the Naval Air Rework Facility (NARF) and contractor during Standard Depot Level Maintenance (SDLM) and by NARF field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: A-6 Battery System Improvements (OSIP 12-83)

Models of Aircraft Affected: A-6E, KA-6D, EA-6A

Description/Justification:

The A-6 family of aircraft utilizies one MS90447-2, 18-cell nickel-cadmium battery. The battery provides power for the emergency spin-recovery system, and to electrically operate an auxiliary hydraulic pump for operation of the canopy, nose radome, and an extendable equipment platform when ground power is unavailable. Numerous battery failures have resulted from reverse charging and overcharging on the aircraft. A large number of these failures have resulted in batteries with burned cells which could cause fire/fumes and possible explosion in the battery compartment of the A-6 aircraft. The existing battery is directly connected to aircraft at all times. This results in constant slow discharge while the aircraft is unpowered and overcharging if an external power source exceeds 115 volts. Consequently, annual A-6 battery replacement costs exceed $800,000 per year. Two solutions to this problem are being tested: (1) Use of a larger 19 cell NICAD battery and a battery protection circuit, and (2) Use of a new sealed lead-acid battery (common with F/A-18) and a battery protection circuit. The lower cost lead-acid battery maintenance requirements of these systems is expected to reduce battery malfunctions and maintenance thus providing improved readiness and total cost savings of over $500,000 per year.

Development Status: Fleet testing of the 19 cell battery and protection circuit commenced in FY 1981. Qualification of the sealed lead-acid battery commenced in December 1981, aircraft testing completed in November 1982.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	95	$1,059	92	$496	122	$464	46	$321	355	$2,340
O&MN Install.			(46)	$232	(70)	$372	(239)	$1,228	(355)	1,832
APN-6 Spares		$68		$46		$65				179
GRAND TOTAL										$4,351

Installation Data: Installation will be accomplished at the Naval Air Rework Facility (NARF) and contractor during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FLAP/SLAT System Improvement (OSIP 7-85)

Models of Aircraft Affected: A-6E, KA-6D, EA-6A

Description/Justification:

Various problems have been experienced in the flap and slat systems: (1) water intrusion and corrosion of components in the flap switch box and wear of the switch cam, (2) water intrusion and wear of components in the slat gear box, (3) structural failure of the slat actuator attach lugs, and (4) water ingress and freezing resulting in failure of the slat can. This change will correct these deficiencies by: (1) providing improved sealing of the flap switch box, slat gear box, and slat can; (2) providing hermetically sealed switches in the flap switch box and slat box and slat gear box; (3) replacing cam and switch wear surfaces with more wear-resistant material; and (4) providing slat actuator lugs of higher strength which are fabricated to revised tolerances to prevent induced bending loads due to clamp-up. In addition, the slat gear box will be designed to be removable for ease of maintenance and the front wing cam will be revised to provide a thicker web to permit installation/removal of the slat can from the front of the beam.

Development Status: Development is complete. This change was incorporated in FY 1982 production aircraft.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	93	$5,452	264	$12,588	357	$18,040
O&MN Install.			(357)	$2,626	(357)	2,626
O&MN Training		$40				40
APN-6 Spares		$923		$1,930		2,853
GRAND TOTAL						$23,559

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) at the Naval Air Rework Facilities (NARF's), Norfolk and Alameda, and during the TRAM update and KA-6D conversion programs at Grumman.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: HARM (OSIP 17-85)

Models of Aircraft Affected: A-6E TRAM

Description/Justification:

Integration of the HARM Missile in the A-6 TRAM aircraft will provide the fleet an improved anti-radiation missile for the A-6 with additional stand-off range and self-protection capability. Addition of HARM in the A-6E TRAM aircraft requires interface with Weapon Control System Improvement (WCSI) configured aircraft equipped with the CP-3B mission computers. This modification will provide the necessary nonrecurring effort for retrofit of HARM capability into the A-6E TRAM, procure modification kits and HARM peculiar avionics for retrofit, provide for the procurement of Peculiar Ground Support Equipment (PGSE) and provide the procurement of LAU-118 launchers for retrofit aircraft. The HARM avionics designated AWG-( ) consists of the Command Launcher Computer (CLC) and the Control Indicator (CI). The HARM avionics will also interface with the ALR-67 which is being provided for A-6E TRAM installation under a separate OSIP program.

Development Status: RDT&E,N funding under Program Element Number 64360N has been budgeted through FY 1982. System Navy Technical Evaluation (NTE) is to be completed in Program Element Number 24134N in FY 1984. Evaluation is planned to start in October 1983 and OPEVAL will complete in November 1984. HARM will already be approved on the A-7 aircraft, so formal Approval for Service Use (ASU) for the A-6 integration is not a requirement.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	32	$22,433	233	$81,390	265	$103,823
O&MN Install			(265)	$3,753	(265)	$3,753
O&MN Factory Training				$86		$86
APN-5 Spares		$3,319		$6,066		$ 9,385
GRAND TOTAL						$117,047

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) at the Naval Rework Facility (NARF) and at the contractor's plant.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Stand-off Air-to-Ground Weapons (OSIP 15-85)

Models of Aircraft Affected: A-6E TRAM

Description/Justification:

The command guidance schemes for follow-on standoff air-to-surface weapons projected for use with the A-6E aircraft require data-link commands from the aircraft to the missile in flight, and for receipt of feedback signals from the missile to the aircraft. This feedback includes video signals from the weapon seeker for display on existing A-6E TRAM displays to provide target selection and aimpoint refinement through operator control inputs. The A-6 will utilize an enhanced WALLEYE II data link pod mounted on the centerline bomb station for data link and video monitoring of follow-on standoff air-to-surface weapons. This OSIP provides the enhanced WALLEYE II pods for use on the A-6E.

Development Status: Development of the Walleye II data link pod is complete. MUX bus capability to the centerline pylon for digital data link pod capability and video cabling to the centerline will be provided by OSIP 8-83, Weapons Integration.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	15	$6,201	255	$57,178	270	$63,379
O&MN Install. "O" & "I" Level		-0-				
APN-6 Spares		$1,242		$8,419		9,661
GRAND TOTAL						$73,040

Installation Data: Installation will be accomplished at intermediate and organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Strobe Lights (OSIP 4-85)

Models of Aircraft Affected: KA-6D/A-6E

Description/Justification:

The present anti-collision lights are mechanically oscillating units with incandescent bulbs. They operate in non-sealed assemblies which are vulnerable to contamination and water intrusion. Consequently, these lights are extremely unreliable, requiring constant maintenance. Strobe lights are visible at a greater distance providing increased safety margins. This is especially important now that camouflage paint schemes are being implemented. This improvement will replace the obsolete lights with modern, solid state strobe light systems. The strobe lights have the same size and form factors as the present anti-collision lights.

Development Status: Grumman has procured A-6 configuration strobe lights from Grimes. Testing will be completed in FY 1983.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	80	$4,743	286	$12,865	366	$17,608
O&MN Install.			(366)	$819	(366)	$819
APN-6 Spares		$585		$495		$1,080
GRAND TOTAL						$19,507

Installation Data: This item is a one-for-one replacement at Naval Air Rework Facility (NARF) Standard Depot Level Maintenance (SDLM) Field Team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Digital Fuel Quantity (OSIP 5-85)

Models of Aircraft Affected: A-6E, KA-6D

Description/Justification:

The current fuel quantity system (FQS) uses capacitance probes and low level capacitance signals which are prone to error due to moisture and corrosion-induced resistance changes in connectors, splices and sensing lines. System problems cause numerous aborted sorties and require over 13,000 maintenance manhours per year for trouble shooting and repair efforts. Throughout FY 1981 the fuel and fuel quantity system problems continued to rank as number one or two in the list of equipments which cause the A-6E and KA-6D aircraft to be "not mission capable." Additionally, the existing mechanical fuel quantity indicator is unreliable. The proposed system will use digital signals from the fuel probes to the indicator and a solid state indicator with built-in test. The projected advantages of the new FQS are improved reliability, increased accuracy and improved maintainability.

Development Status: A preliminary design has been completed by the Naval Air Rework Facility, Norfolk. A prototype system is being fabricated in FY 1983 under an AERMIP program.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	56	$6,337	320	$17,516	376	$23,853
O&MN Install.					(376)	2,740
O&MN Training		$43				43
APN-6 Spares		$1,059		$2,417		3,476
GRAND TOTAL						$30,112

Installation Data: The Digital Fuel Quantity System will be installed during Standard Depot Level Maintenance (SDLM) at the depot and during the drive-in modification programs at Grumman.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Analog-to-Digital Converter (OSIP 6-85)

Models of Aircraft Affected: A-6E

Description/Justification:

The A-D converter provides a primary analog-to-digital interface between the ASQ-155 computer and the major weapons systems components. The existing AN/CV-3163 A/D and D/A converter was designed in the 1966 timeframe using now obsolete diode-transistor logic. Consequently, due to its poor reliability and corrosion problems, it is becoming increasingly difficult to repair. This is evidenced by its decreasing Mean Time Between Failure (MTBF) which was greater than 200 hours in CY 1978 and less than 120 hours in CY 1980. Due to its obsolete DTL logic, the CV-3163 converter will require extensive redesign or it will be completely unsupportable in the late 1980's. The new converter is being designed using modular avionic program (MAP) standard module technology which will increase reliability tenfold and should result in life cycle cost savings approximately $50 million greater than the acquisition costs of the new converter.

Development Status: Development will commence in FY 1983. Qualification and flight testing will be completed in FY 1984.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$4,095	221	$80,150	222	$84,245
O&MN Install, "O" Level		-0-				
APN-6 Spares				$6,614		$ 6,614
GRAND TOTAL						$90,859

Installation Data: Installation will be a one for one replacement of the present A to D converter at the Organizational (Fleet) level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ICAP II (OSIP 12-81)

Models of Aircraft Affected: EA-6B

Description/Justification:

The ICAP II change will modify the expanded capability EA-6B aircraft to improve jamming techniques, flexibility and frequency coverage, enhance survivability in close support via cooperative countermeasures, improve reliability and maintainability, and improve the onboard computing capacity to accommodate the growth of the tactical jamming system. The update of the tactical jamming system (TJS) centers on a universal exciter which provides multiple cockpit programmable jamming modulations over all frequency bands. Onboard computing capacity is achieved through replacement of the existing 4 Pi computer with the Navy standard computer AN/AYK-14, which provides increased memory and processing speed. An onboard program loader will be incorporated allowing the operator to perform inflight loading or changing of mission as well as maintenance tapes. A new display system ASN-123 and an inertial system (ASN-130) will also be installed in these aircraft as well as an automatic carrier landing system (ACLS); an updated communications/navigation and intercommunications (CNI) system; an improved defensive electronic countermeasures system (ALQ-126); and all other modifications previously approved for FY 1975 and subsequent ICAP production aircraft, which will standardize aircraft configuration and minimize support requirements.

Development Status: Provisional approval for service use was granted in April 1982. OpEval completed July 19, 1982 and extended previously granted approval for limited production (formerly PASU).

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$16,322	6	$30,013	6	$30,491					16	$ 77,426
O&MN Install.			(3)	$2,000	(5)	$19,961	(8)	$26,685		$15,244	(16)	62,990
O&MN Training				$900								900
APN-6 Spares		$2,605		$5,307		$2,946						10,861
GRAND TOTAL												$152,177

Installation Data: Installation will be accomplished at the contractor's plant.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ALQ-99 Pods (OSIP 19-79)

Models of Aircraft Affected: EA-6B

Description/Justification:

The refurbishment of existing pods will increase operational capability and system readiness, and enhance flight safety. During 1976/1977, 60 unsatisfactory reports (UR's) were generated due to ALQ-99 pod anomalies. These improvements will reverse this trend and will lessen significantly the damage to pod components which occurs due to circuitry malfunction. Typically arcing damage of this type requires more than $300,000 for repair of each pod at the depot. Timely address of ALQ-99 anomalies will impact life cycle cost and operational readiness very favorably. Major improvements will include the universal exciter which will improve exciter reliability and capability, the transmitter reliability improvement program which updates band 7 transmitters to the latest configuration, and the low band improvement program which updates bands 1/2 to the latest configuration.

This program will procure additional ALQ-99 jammer pod components peculiar to the EXCAP to ICAP II update and ICAP I MOD. These assets are required because of current inventory objective shortages, requirements of the U.S. Marine Corps (upon acquisition of the EA-6B), threat spectrum revision, and reliability/maintainability improvements in existing pods.

Development Status: Development is complete.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$8,118		$22,173		$21,952		$37,022		$70,729		$159,994
O&MN Install.						$240		$250		$1,000		1,490
APN-6 Spares		$987		$2,742		$3,620		$6,424		$1,890		15,663
GRAND TOTAL												$177,147

Installation Data: Installation will be accomplished by Naval Weapons Support Center (NWSC) Crane, Indiana during Pod refurbishment.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Defensive Electronic Countermeasures (DECM) Improvement (OSIP 57-70)

Models of Aircraft Affected: EA-6A

Description/Justification:

The DECM system presently installed in the EA-6A aircraft is archaic, unsupportable, and unreliable. Moreover, the frequency coverage of the present system is inadequate for the modern battle scenario. The incorporation of the AN/ALR-45/50 and the AN/ALQ-126 will provide significantly enhanced self-protection to the EA-6A aircraft and flight crew. This installation of a Navy standard deception system will make the EA-6A logistically compatible with A-6 series aircraft and will provide an improved support posture over the system currently installed.

Development Status: The AN/ALR-45/50 and the AN/ALQ-126 have been approved for service use and are being used in operational aircraft.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	7*	$2,229	4	$621	5	$779					16	$3,629
O&MN Install.					(7)	$504	(4)	$288	(5)	$360	(16)	1,152
O&MN Training				$100								100
APN-6 Spares				$148		$90						238
GRAND TOTAL												$5,119

* Includes one (1) prototype.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by field mod team (FMT).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Signal Data Converter and Digital Display/Inertial Navigation System (INS) Improvement (OSIP 14-81)

Models of Aircraft Affected: EA-6B (ICAP I)

Description/Justification:

This is a combined effort to install the AN/ASN-123 signal data converter (SDC)/digital display group (DDG) and the AN/ASN-130 inertial navigation system (INS) in the EA-6B ICAP aircraft. The SDC weapon replaceable assembly (WRA) is the highest failure component. Alone it accounts for 20 percent of all system failures. Despite the incorporation of eight separate engineering improvements, reliability is still not adequate to support minimal readiness standards. Also, the maintainability factors preclude improvements with existing equipments. This effort will provide for installation of the AN/ASN-123 navigational display system presently installed in the SH-3 helicopter.

The AN/ASN-130 inertial navigation system is a modern, accurate navigation system that will replace the present dead-reckoning doppler navigation system currently installed in the EA-6B. The doppler navigation system has not proven to be reliable and fails to provide the necessary accuracy for more effective employment of the EA-6B weapon system. The AN/ASN-130 is being installed in the EA-6B/F-18 production aircraft. This commonality will provide improved integrated logistic support, thereby enhancing system readiness while providing greatly increased operational effectivity.

This combined effort will reduce total installation cost while at the same time measurably enhance reliability, improve readiness and lessen life cycle cost requirements.

Development Status: This installation will be a retrofit application of the existing ASN-123 with a form-fit-function installation developed by Grumman. The ASN-123 is approved for service use and has Provisional Approval for Service Use (PASU) in the EA-6B. The AN/ASN-130 will be procured under a SECNAV waiver. Approval for service use in the fourth quarter of FY 1983 is anticipated for both systems.

OSIP 14-81

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	11	$11,060	12	$11,151	12	$11,935	12	$12,723	12	$13,551	59	$60,420
O&MN Install.							(11)	$2,546	(48)	$7,008	(59)	9,554
O&MN Training						$50						50
APN-6 Spares		$3,711		$1,301		$1,880						6,892
GRAND TOTAL												$77,006

Installation Data: Installation will be accomplished by the contractor during EA-6B Structural Improvement.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: EA-6A Weapons System Update (ALQ-76/86) (OSIP 13-81)

Models of Aircraft Affected: EA-6A

Description/Justification:

The present EA-6A weapon system is a manually operated electronic countermeasures system (ECM) which has been degraded due to length of service life. The present system has the potential of being a viable asset in the electronic warfare environment if the passive and active systems are updated to function as they were originally intended to do. Contemplated improvements to the AN/ALQ-86 passive ECM system and the AN/ALQ-76 active system are as follows:

a. ALQ-76: Incorporation of the reliability and maintainability (R&M) improvements as well as minor changes to the present system will provide increased jammer power output and allow the operator greater ease of integrating jammer status and control with the ALQ-86 panoramic indicator.

b. ALQ-86: Improved reliability and maintainability, and update of the ALQ-86 passive receiver system will provide increased clarity, operator controllability and flexibility of the present system.

Development Status: R&M improvements have been identified by the Pacific Missile Test Center (PMTC). Due to outdated components, producibility of replacement items is no longer feasible. Technical testing will be accomplished at the Naval Air Test Center by follow-on test and evaluation. The Airframe Change is being installed in accordance with AFC-504. ALQ-76 and ALQ-86 development will be completed on FY 1982 Contracts and ECP's will be requested for updated equipment commencing in FY 1983.

OSIP 13-81

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$11,343	6	$8,978	6	$8,971	6	$8,343			19	$37,635
O&MN Install.			(1)	$168	(6)	$2,736	(6)	$2,616	(6)	$2,730	(19)	8,272
O&MN Training		$50		$500								550
APN-6 Spares		$1,302		$1,101		$1,052		$398				3,944
GRAND TOTAL												$50,401

Installation Data: Installation will be accomplished by assembly of components at PMTC/NAC and contractor. The airframe change (AFC) will be installed by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by field mod team (FMT).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARC-182 Combination Radio (OSIP 16-85)

Models of Aircraft Affected: EA-6B

Description/Justification:

The AN/ARC-182 combination radio is a new radio designed for use in all tactical aircraft. This system will allow for secure voice communications for VHF-FM (30-88 MHZ), VHF-AM (108-156 MHZ), UHF-AM/FM (225-400 MHZ). The form factor of the AN/ARC-182 is the same as the AN/ARC-159 UHF-VHF radio, and measures 200 cubic inches with a weight of 10 pounds. A single broadband aircraft antenna is included which is interchangeable with antenna installation provisions for the AN/ARC-175 radio.

The AN/ARC-182 installation will provide commonality and improved functional capability, thereby enhancing operational capability and system readiness. The Navy Decision Coordinating Paper W0661-CC approved the AN/ARC-182 for use in tactical air craft, including the EA-6 aircraft.

Development Status: The radio is being developed under RDT&E,N Program Element Number 24163N, Project W0661CC. Approval for Service Use is scheduled for September 1983.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	18	$8,088	70	$33,051	88	$41,139
O&MN Install			(88)	$854	(88)	854
O&MN Training				$200		200
APN-6 Spares		$1,719		$197		1,916
GRAND TOTAL						$44,109

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) field teams and during Standard Depot Level Maintenance (SDLM). Kit lead time is 21 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Installation of Supplemental Cooling Turbine (OSIP 33-[illegible])

Models of Aircraft Affected: EA-6B

Description/Justification:

The purpose of this modification is to provide for improved reliability and maintainability of the cooling capability needed to meet airflow demands in the avionics equipment bay. Existing cooling air is insufficient to cool present electronic equipment while the aircraft is operating on the deck. Future additional electronic equipment will create a further deficiency in cooling air. The additional cooling turbine will increase the cooling flow at altitude from 25 pound/minute to 50 pound/minute. The ground idle cooling capability will be increased from 18 pound/minute to 36 pound/minute, providing sufficient airflow for present and future needs.

Development Status: This change will be incorporated in the FY 1984 production aircraft. Approval for service use is not required; the change will be verified by contractor ground and flight test. No additional technical evaluation or operational testing is required.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	12	$3,450	73	$23,965	85	$27,415
O&MN Install.			(85)	$12,750	(85)	12,750
APN-6 Spares		$517		$911		1,428
GRAND TOTAL						$41,593

Installation Data: Installation will be accomplished by contractor field team. Leadtime is 21 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Replacement of AYA-6 Computer with AYK-14 (OSIP 15-83)

Models of Aircraft Affected: EA-6B ICAP

Description/Justification:

This change will replace the CFE AN/AYA-6 computer in the ICAP version of the EA-6B with the Navy standard AN/AYK-14 computer presently being qualified in the ICAP II version of the EA-6B. The AYA-6 group has been high on the EA-6B readiness degradation list since 1977. Its meantime between failure (MTBF) over that period has averaged 40 hours. It has 32K memory (completely utilized) and an inadequate built in test (bit). The AYK-14 has demonstrated six to seven times the AYA-6 MTBF during ICAP II development. The AYK-14 posesses 192K memory which will accommodate future growth, and full background and on demand bit. Aircraft modifications are minor. This change allows use of ICAP II software written in higher order language. This will standardize computer language in all versions of the EA-6B. The AYK-14 also utilizes MILSTD 1553 interfaces which greatly simplifies the task of integrating future equipment such as the ALQ-165, JTIDS, and ALQ-149 into the EA-6B.

Development Status: Development is complete.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	11	$11,543	12	$4,149	12	$4,734	24	$10,412	59	$30,838
O&MN Install.					(11)	$122	(48)	$536	(59)	$658
APN-6 Spares		$121		$123						$244
GRAND TOTAL										$31,740

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM). Lead time is 21 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: EA-6A Radar and Navigation Update (OSIP 53-82)

Models of Aircraft Affected: EA-6A

Description/Justification:

Currently, the APQ-103 radar group constitutes one of the highest readiness degradations in the EA-6A. This characteristic results from the obsolete tube type design; which is a direct derivation from the A-6A APQ-92 fire control weapon system. In addition, the wiring of the radar system is old and has deteriorated through age and use. Further, with the removal of the A-6A, and its replacement by the A-6E, and with the retrofit of the APS-130 into the EA-6B, the logistic support posture of the APQ-103 becomes untenable. Retrofit of the APS-130 into the EA-6A will increase the mean time between failure (MTBF) by a factor of five. This improvement is essential due to the importance of the search radar in determining aircraft positioning (as retrofit of an inertial navigation system (INS) is not contemplated). Additionally, maincainability will be massively increased due to reinstitution of commonality with the A-6E/EA-6B radar systems.

Upon installation of the APS-130 radar in the EA-6A, a total rewire of the forward pallet will be accomplished. Additionally, the entire navigation and attitude reference system will be updated with systems including the APN-200, ASN-50, ARA-63, APN-154, and AJB-3.

Development Status: All new items are approved for service use.

OSIP 53-82

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	7	$3,929	6	$3,749	2	$2,589	4	$6,000			19	$16,267
O&MN Install.					(2)	$148	(5)	$442	(11)	$800	(19)	1,390
O&MN Training		$190										190
APN-5 Spares		$1,460		$157								1,617
GRAND TOTAL												$19,473

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by field mod team (FMT).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Structural Improvements (SLEP) (OSIP 32-85)

Models of Aircraft Affected: EA-6B

Description/Justification:

This is an omnibus structural modification containing fixes for areas found to be deficient during aircraft fatigue tests which have been funded and which are scheduled for completion during September 1983. The minimum fixes anticipated are a keel breather change and fuselage structure longeron reinforcement/replacement. The EA-6B aircraft are presently certified for a total of 1,200 aircraft carrier catapults and arrested landings. Present projections show 15 aircraft will exceed their carrier catapult and arrestment service life by 1985. Fleet readiness will be severely degraded unless anticipated fixes are funded and incorporated in a timely manner. This program includes 57 ICAP aircraft, 13 EXCAP to ICAP II aircraft and 10 production ICAP II aircraft for a total of 80 aircraft.

Development Status: A contract has been let for the test article. The final test report is due in September 1983. No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	12	$685	68	$4,324	80	$5,009
O&MN Install.			(80)	$11,200	(12)	$11,200
APN-6 Spares		$103		$226		$329
GRAND TOTAL						$16,538

Installation Data: Installation will be accomplished by the contractor. Lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Computer Interface Unit (CIU) and Comparator Converter Update (CCU) (OSIP 18-85)

Models of Aircraft Affected: EA-6B

Description/Justification:

The AN/AYA-6 Central Computer Group has consistently been a major cause of EA-6B readiness degradation since aircraft production deliveries commenced in 1971. EA-6B Fleet Reliability Reports fc the ICAP aircraft show that the Computer Interface Unit (CIU) and comparator converter are consistently among the top three high failure Weapon Replaceable Assemblies (WRAs) which degrade the ALQ-99 On Board System (OBS). The CIU is among the top ten items in the EA-6B cannibalization summary and accounts for 30 percent of all OBS failures. This update will greatly increase weapons systems availability. Additionally, the update will improve Direction of Arrival (DOA) measurement and eliminate the comparator converter as a system processing choke point.

Development Status: Reliability and Maintainability (R&M) changes will be incorporated in FY 1984 production aircraft. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	18	$3,147	70	$24,695	88	$27,842
O&MN Install.			(88)	$3,571		$3,571
APN-6 Spares		$993		$1,526		$2,519
GRAND TOTAL						$33,932

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) and during contractor modification.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Improvement of Fuel Quantity Gaging System (OSIP 9-82)

Models of Aircraft Affected: A-7E

Description/Justification:

The 3M service data indicates that the fuel quantity indicator system wiring and connectors are the primary contributors to the reliability degradation of the A-7 fuel quantity gaging system. The proposed program will: (a) improve indicator by eliminating glass breakage, eliminate failures in adjustment section, and reduce requirement for system recalibration; (b) improve wiring by increasing abrasion resistance, providing greater flexibility, providing centralized test and fault isolation, and elimination of shield jumper terminations; and (c) improve electrical connectors by reducing corrosion, providing better moisture seals, shielded contacts, and improved coupling. This improvement will greatly enhance aircraft reliability through at least 1990 when they will be used by reserve squadrons. Contractor test will consist of ground testing and integration of all related systems. Navy test will consist of ground and flight test for verification.

Development Status: No development required. This modification utilizes existing state-of-the-art techniques.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$1,676		$737	120	$6,830	156	$9,432			280	$18,675
O&MN Install.					(4)	$121	(120)	$2,626	(156)	$5,984		8,731
APN-6 Spares		$8		$108		$1,024						1,140
GRAND TOTAL												$28,546

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and contractor field teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ASN-90 Inertial Measurement Set Update (OSIP 52-84)

Models of Aircraft Affected: A-7E/C, TA-7C

Description/Justification:

The ASN-90 inertial measurement set is number 1 on the readiness improvement summary evaluation (RISE) report. The PP6141 adapter/power supply unit is the major degrader to reliability. Within the power supply segment, cards #1, 3, 4, and 5 will be replaced by redesigned cards 1 and 4. Redesign will improve short circuit of components, and will utilize state-of-the-art technology to improve reliability.

Development Status: The PP6141 adapter/power supply is being redesigned and tested via the AERMIP program RDT&E P.E. No. 25633A. An engineering change proposal (ECP) is expected in NAVAIR by October 1983.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	50*	$1,298	238*	$2,940	92*	$1,023	380*	$5,261
O&MN Install. ("I" Level)		-0-						-0-
APN-6 Spares		$149		$714		$256		1,119
GRAND TOTAL								$6,380

*Component kits.

Installation Data: Installation will be accomplished at the intermediate level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: I^2R MAVERICK Airframe Provisions (OSIP 38-85)

Models of Aircraft Affected: A-7E (FLIR Configured)

Description/Justification:

The MAVERICK missile is an air-to-ground missile whose primary mission is to provide a high probability of kills against surface targets during war-at-sea strikes and small hard targets during close air support and interdiction strikes. The MAVERICK missile will provide greater stand-off range for enemy engagement than with present conventional weapon capability.

The HARPOON Missile is a stand-off, terminally guided weapon whose primary mission is to provide a long range high probability of kill against surface targets in the war-at-sea scenario. The HARPOON Missile will compliment the MAVERICK Missile by providing much greater stand-off range for enemy engagements.

These modifications also have application for other stand-off weapons.

Retrofit of MAVERICK and HARPOON capability into FLIR configured A7E aircraft will require interface with the TC-2A computer, multiple munitions wiring (MMW), head-up display (HUD), APQ-126 radar, and WALLEYE wiring and with stiff stick cockpit controller. In addition, a modification to the Armament Station Control Unit (ASCU) is required for control of the MAVERICK and HARPOON Missiles. Peculiar HARPOON command and launch subsystems are not required. Single rail launcher (LAU-117) will also be procured in support of the MAVERICK Missile. Existing racks will be utilized for the HARPOON Missile.

Development Status: Three DTE launches from the A7E are planned for April/May 1983. A7E/MAVERIC OTIIA will begin in September 1983 with Approval for Limited Production (ALP) planned for April 1984. OTIIB would start in late FY 1985 and be completed in FY 1986. The Approval for Full Production (AFP) would be scheduled for January 1986. The HARPOON missile received ASU 19 February 1981. The HARPOON was integrated into an A-7E aircraft, flight tested and launches successfully in December 1975. NTE for the A7E/HARPOON interface will begin in 1985. FOT&E will begin in the 2nd quarter FY 1986.

OSIP 38-85

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	24	$15,199	113	$28,096	137	$43,295
O&MN Install.				$763	(137)	763
APN-6 Spares		$1,289		$1,529		2,818
GRAND TOTAL						$46,876

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: TF-41 Engine Hot Section Extended Life Program (HELP) (OSIP 16-81)

Models of Aircraft Affected: A-7E

Description/Justification:

Component improvements, previously designed and tested to assure achievement of a 500-hour non-derated hot section repair capability (Lead the Fleet Componen. - HPT-1 Vane), began service incorporation April 1979. Incorporation of further hot section and control component redesigns are required to improve operational readiness, to reduce the risk of critical turbine part failure, minimize the cost of ownership, and provide the capability to maintain engine performance throughout a 1000-hour service interval. These hardware changes will collectively restore the TF-41 engine to cost effective levels of reliability and performance by increasing turbine durability and reducing peak hot section temperatures. State-of-the-art technology and greater contractor expertise are reflected in these redesigns.

Improved operational readiness will be attained by increasing the availability of the TF-41 engine. The engine configuration resulting from the Lead the Fleet ("LTF") program (OSIP 4-78) will require hot section refurbishment (engine disassembly) at 500-hour intervals due to HPT-1 vane distress and relatively low life limited components within the high pressure turbine section. The causes of the distress and relatively low life limits are high peak temperatures produced by the existing combustors, basic design of the existing HPT-1/-2 blade attachments, insufficient HPT-1/-2 blade airfoil capability to withstand even limited elevated temperature exposure, metal cooling capability of even the "LTF" bullnose HPT-1 vane configuration, and an inefficient electronic control (LTA) which does not effectively limit transient temperature overshoots and is adversely affected by common mode noise input to the T5.1 circuits. Because of these problems, the currently approved configuration hardware is life limited as follows; HPT-1/-2 blades - 1000 hours (not addressed by "LTF"); and HPT-1/-2 wheels - 2500 hours (not addressed by "LTF"). The cost and resultant operational readiness impact as a result of these relatively low life limits of the current configuration are inherently high.

This modification program addresses the above deficiencies with kits A through D. Kit A provides a three-lobe serration HPT-1 cast blade with a 1000-hour minimum airfoil life and an HPT-1 wheel with a 6000-hour life limit. Kit B provides a three-lobe serration air-cooled HPT-2 blade with a 3000-hour life and an HPT-2 wheel with a 6000-hour life limit. Kit D provides for an Engine Monitoring System (EMS) which continuously defines engine health status, hot section component usage, and performance characteristics to ensure early detection of engine discrepancies and to improve maintenance effectiveness. Kit D also provides increased flight safety by pilot warning of engine vibration and "quiet" stall. (NOTE: Several Fleet aircraft have recently been lost due to low engine performance and "quiet" stall).

OSIP 16-81

Description/Justification (Cont'd):

The improvements provided by this program combined with development efforts which began incorporation in April 1979 ("LTF") will result in a TF-41 engine with the capability for a 1000-hour refurbishment interval, a projected inherent premature removal rate of less than 2.0 per thousand hours, and a projected combined inherent premature removal rate of 4.0 per thousand hours. The new HELP kit improvement will increase the HP Turbine's tolerance to overtemperature effects due to stall. This modification program will extend the useful life of the high pressure hot section components thereby reducing inspection requirements and replacement parts costs. These improvements will provide additional turbine temperature capability. This capability can be used to maintain engine performance following prolonged operation by permitting depreciation recovery as required. The EMS will provide the engine component life usage tracking and performance degradation trend capabilities required by the CNO directed Navy-wide Engine Analytical Maintenance Program (EAMP). These capabilities coupled with the EMS ability to increase troubleshooting will improve aircraft availability, reduce unnecessary engine and component removals, decrease secondary material damage, increase logistics support effectiveness, and extend useful engine operational life. The incorporation of these improved hot section components with the cockpit warning feature of the EMS will significantly improve the A-7E flight safety record. The result of this total modification program will be a cost effective end item with improved reliability and combat readiness with significantly reduced logistics costs and increased safety.

Development Status: Kit A and B development is complete. Kits A, B, and D are being developed such that each kit can be incorporated as an individual entity. Development of the basic EMS provided for by Kit D is complete; all test and evaluation has been accomplished.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$20,675		$17,787		$17,685		$21,284				$77,431
O&MN Install.		$454		$236		$406		$2,353		$5,478		8,927
APN-6 Spares		$4,500		$4,505		$1,728		$1,642				12,375
GRAND TOTAL												$98,733

Installation Data: Kits A and B will be incorporated during scheduled engine/HPT rotor repair at depots. Modified HPT rotors will be installed at depots and IMA's. Kit D will be incorporated during scheduled engine repair at the depots, during scheduled aircraft Standard Depot Level Maintenance (SDLM), and by the Naval Air Rework Facility (NARF) field mod team as appropriate.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: HARM (OSIP 13-80)

Models of Aircraft Affected: A-7E (with FLIR Provisions)

Description/Justification:

Retrofit of HARM capability into FLIR configured A-7E aircraft will require interface with the TC2A computer, multiple munitions wing wiring (MMW), head-up display (HUD), APQ-126 and existing armament station control unit (ASCU). In addition, retrofit modification to LAU-118 launchers to provide HARM capability will be required in sufficient quantities to support A-7E/HARM aircraft deployments. This modification will provide the necessary nonrecurring effort for retrofit of HARM capability into the A-7E, procure modification kits and HARM peculiar avionics for retrofit, and provide the nonrecurring and procurement of modified kits for the AERO 5 launcher for retrofit. The HARM peculiar avionics designated AWG-25 consists of the Command Launch Computer (CLC) and the Control Indicator (CI). The CLC is about 936 cubic inches and will be installed in the A7E avionics bay. The CI will replace the existing Radar Warning Receiver (RWR) control panel in the cockpit and will perform both HARM and radar warning receiver (RWR) functions. In addition, the HARM avionics will interface with the APR-43 and ALR-45F replacement processor which are being provided for A7E installation under a separate program.

Development Status: A DSARC II was held in February 1978 which directed the HARM program to proceed to full-scale engineering development and allowed use of procurement funds prior to provisional approval for service use (PASU) or approval for service use (ASU) for limited production. A DNSARC IIB was held in October 1980 to determine readiness to proceed to limited production with initial procurement funds. HARM NTE is complete and OPEVAL was completed in 1982. DSARC III approval to proceed to full production is planned in 1983. ASU is planned in FY 1983. SECDEF Memo of 23 Mar 1978 authorized deviation from normal DOD Directives 5000.1 and 5000.2 policy.

OSIP 13-80

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	68	$38,501	24	$14,482	32	$14,003		$3,451			124	$70,437
O&MN Install.			(24)	$956	(44)	$1,309	(24)	791	(32)	$829	(124)	3,884
O&MN Training		$50		$50		$50		$50				200
APN-6 Spares		$2,547		$7,970								10,517
GRAND TOTAL												$85,038

Installation Data: Installation will be accomplished by contractor mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Digital Scan Converter for AN/APQ-126 Radar (OSIP 15-80)

Models of Aircraft Affected: A-7E/TA-7C

Description/Justification:

The sweep generator and direct view storage tube of the APQ-126 radar will be replaced by a digital scan converter (DSC) and a cathode ray tube (CRT) indicator. Together, this system is called the digital scan converter group (DSCG). These new units are installed in the TA-7C aircraft and are form-fit-function compatible with the old units. Specified MTBF of the DSCG is 500 hours and will improve the reliability of the APQ-126 system by 45 percent, from 45 to 70 hours. Maintainability will be improved as there are no "O" level adjustments. The installation of the DSCG in the A7E aircraft incorporates advanced features which include operational improvements in weapons delivery, beacon bombing, FLIR/WALLEYE display options and allowing the radar to be silenced while keeping a dead-reckoning track of target position.

Development Status: These items are similar but advanced to those installed in the TA-7C. TECHEVAL was completed in March 1978 and OPEVAL was completed in September 1978. Operational assessment by VX-5 of the digital scan converter installed in an A-7E was completed in March 1979.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	76	$13,150	90	$11,358	61	$8,546			227	$33,054
O&MN Install.			(4)	$165	(112)	$392	(111)	$389	(227)	946
APN-6 Spares		$195								195
GRAND TOTAL										$34,195

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: A-7E FLIR (OSIP 23-79)

Models of Aircraft Affected: A-7E and TA-7C

Description/Justification:

The A-7E FLIR subsystem was developed in accordance with SOR W11-96 to provide pilots a passive night vision capability and to enhance the weapon delivery accuracy of the A-7E during night operations. A Forward Looking Infrared (FLIR) set, mounted in a wing pod, is used in the FLIR subsystem to generate thermal imagery for classification, identification and visually aided attack of sea and land targets. The FLIR wing pod contains a video signal mixer (a new unit of the HUD (Head-Up Display)), provisions for a video tape recorder and an air-conditioner for cooling the pod avionics. The FLIR imagery and attack situation symbology are combined, in the video signal mixer, for viewing by the pilot on the modified cockpit HUD. Thus, FLIR provides the A-7E a first-pass visual attack capability at night with a bombing accuracy two times better than that which can be achieved by pure (blind) radar weapon delivery.

This modification extends the current FLIR program for production of new A-7E FLIR-equipped aircraft by (1) retrofitting FLIR provisions (wiring, controls, new computer, and modified HUD) into 160 existing Navy A-7E Fleet aircraft, and 12 TA-7C trainer aircraft, (2) providing 109 FLIR wing pods, and (3) providing video recorders for the FLIR subsystems. The FLIR subsystem has a total weight of 720 pounds and is 16-cubic feet in volume. Fifty-seven production aircraft (FLIR configured) are operating in the Fleet.

Development Status: All developmental testing was completed in February 1979. Approval for service use was granted in August 1979.

OSIP 23-79

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 Proc.	126	$95,637	24	$21,200	2	$24,208		$7,345	152	$148,780
APN-5 Install.	(41)	$1,863							(41)	1,863
O&MN Install.	(48)	$3,809	(23)	$2,078	(22)	$1,988	(28)	$2,530	(121)	10,405
APN-6 Spares		$2,152		$658						2,810
GRAND TOTAL										$163,857

Installation Data: Installation will be accomplished by contractor field mod teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: A-7 Nose Landing Gear "Fail Safe" Steering System (OSIP 16-83)

Models of Aircraft Affected: A-7B/C/E, TA-7C

Description/Justification:

Nose gear steering failures have been reported in large numbers over the past few years. Failures in various components of the system resulted in hard-over steering commands to the nose gear that resulted in aircraft departing the runway or caused immediate braking of the aircraft to prevent an out-of-control situation. This modification will provide for a nose gear steering monitoring system which will allow the nose gear steering to fail safely (i.e. go to a castering mode) in case of a wiring or amplifier failure.

Development Status: AERMIP project #44 at the Naval Avionics Center (NAC) has produced a monitoring system to detect a failure and allo the nose gear steering to fail safely (return to damping mode). Five units have been lab tested and one unit has been tested at Naval Air Test Center, Patuxent River (NATC) successfully. Development of this unit was funded in FY 1976 and FY 1978 APN-7. No approval for service use of this unit is required.

Project Financial Plan:

	FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	138	$965	300	$543	438	$1,508
O&MN Install. "O" Level		-0-				-0-
O&MN Training		$50				50
APN-6 Spares		$124		$101		225
GRAND TOTAL						$1,783

Installation Date: Installation will be accomplished at the Organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Air Data System Improvements (OSIP 38-84)

Models of Aircraft Affected: A-7C/E, TA-7C

Description/Justification:

The present A-7E air data computer (ADC) (CP-953) reliability mean flight hours between failure (MFHBF) is 128 hours with unscheduled maintenance manhours listed at 4.417. The primary purpose of the ADC is to provide air data information to the weapons release system flight crew displays and flight control system. Incorporation of the digital air data computer (DADC), being developed under the Avionics Components and Subsystems (AVCS) Program 64203N Project W0572 for multi-aircraft application, would provide a reliable (MFHBF of 450 hours), maintainable and common air data computer that is directly replaceable with the CP-953. The new DADC also provides for the 1553 MUX; internal fault isolation to the applicable shop replaceable assembly (SRA), and requires new peculiar ground support equipment (PGSE). The AVCS program will provide for commonality with other aircraft (F-14, F/A-18) that will greatly reduce operational support costs.

Development Status: A contract was awarded for the development, test, and evaluation of the DADC in September 1981. RDT&E,N Program Element Number 64203N Project W0572 refers. A-7 integration tests were conducted in October 1982. Verification flight tests (TECHEVAL) providing justification required for provisional approval for service use (PASU) are scheduled to complete in April 1983. OPEVAL is scheduled to start in May 1983 and complete July 1983. Approval for service use (ASU) is scheduled for the fourth quarter of FY 1983.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	$2,016	198	$9,315	95	$4,143	296	$15,474
O&MN Install.			(1)	$2	(156)	$572	(296)	574
O&MN Factory Trng.				$50				50
APN-6 Spares		$90		$1,870		$930		2,709
GRAND TOTAL								$18,897

Installation Data: Installation will be accomplished by contractor field mod team (FMT) and during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-162 Countermeasures Set (OSIP 21-83)

Models of Aircraft Affected: A-7E

Description/Justification:

The AN/ALQ-162 provides complementary DECM jamming capability to the operational AN/ALQ-126 DECM Jammer installed on tactical aircraft. The AN/ALQ-162 will accept threat handoff data from the AN/APR-43 Radar Warning Receiver and utilize a common transmit/receive antenna which is integral to the AN/APR-43 antenna assembly. The AN/ALQ-162 also provides a stand alone capability allowing for defensive electronic countermeasures in event of AN/APR-43 failure. The AN/ALQ-162 design exhibits flexibility in reprogrammability to handle future threat parameter changes. The addition of the AN/ALQ-162 results in a significant increase in the survivability for Navy tactical aircraft against radar directed air defense system.

Development Status: Northrop Corporation is under contract and provided preproduction engineering development models in the second quarter of FY 1981. The TEMP (No. 593) is presently in review to support Navy test and evaluation. TECHEVAL was completed in the fourth quarter of FY 1982. OPEVAL is scheduled to begin in the second quarter FY 1983 with Approval for Full Production (AFP) expected in the third quarter of FY 1983. RDT&E,N Program Element Number 64224N applies.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$5,076		$4,101	76	$30,205	147	$29,533	225	$68,915
O&MN Install.			(1)	$13	(1)	$13	(223)	$2,906	(225)	2,932
APN-6 Spares		$62		-0-		$4,764		$2,059		6,885
GRAND TOTAL										$78,732

Installation Data: Installation of the airframe change kit will be accomplished by Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Replacement of Bleed Air Manifolds (OSIP 8-84)

Models of Aircraft Affected: A-7E

Description/Justification:

Frequent failures of high and low pressure bleed ducts have been reported during the life of the A-7 aircraft. Failure of the ducts creates a safety condition allowing hot air (300° to 900°F) to impinge on the aircraft wiring, fuel/hydraulic system, etc. Minimum results of a duct failure would cause heat damage requiring costly repairs. Two aircraft mishaps involving bleed duct failures have been reported recently. This program will replace selected bleed ducts with ducts of improved design and material. Bleed ducts manufactured from Inconel 625 will replace the present ducts manufactured from 21-6-9 stainless steel. Inconel, which is a nickel based alloy, is not susceptible to stress corrosion cracking and will eliminate failures from that cause, which is the predominate failure cause.

Development Status: This change has been incorporated in A-7A/B/C and TA-7C aircraft.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$294	82	$1,200	250	$2,738	332	$4,232
O&MN Install. "O" Level		-0-						-0-
APN-6 Spares		-0-						-0-
GRAND TOTAL								$4,232

Installation Data: Installation will be accomplished at the Organizational (Fleet) level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Replacement of Hydraulic Extension Units (OSIP 10-84)

Models of Aircraft Affected: A-7B/A-7C/TA-7C/A-7E

Description/Justification:

During the period from January 1978 through April 1981, approximately 2,500 verified failures of extension units were reported. This is a average of 73 verified failures per month. During the period from July 1979 through March 1981, 36 in-flight aborts and 292 before flight aborts were reported due to failed extension units. Maintenance data for a 34-month period averaged 674 maintenance manhours per month. The majority of failures were attributed to leakage which can result in the loss of the respective hydraulic power system due to loss of hydraulic fluid. This program will replace the present hydraulic extension units with hoses and coiled tubing in the aileron, spoiler and roll feel, isolation systems which will increase aircraft reliability and availability, eliminate extension unit repair/overhaul and decrease maintenance manhours.

Development Status: The Air Force has accomplished a similar replacement of hydraulic extension units on A-7D aircraft aileron system through a Vought engineering change proposal. No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$609	50	$177	390	$1,548	440	$2,334
O&MN Install.					(44C)	$2,140	(440)	2,140
O&MN Training				$100				100
APN-6 Spares				$33		$295		328
GRAND TOTAL								$4,902

Installation Data: Installation will be accomplished by the Naval Air Rework Facility during Standard Depot Level Maintenance (SDLM) and contractor field teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APQ-126 Radar Set (OSIP 94-82)

Models of Aircraft Affected: A-7E/C, TA-7C

Description/Justification:

The APQ-126 radar is number 1 on the readiness improvement summary evaluation (RISE) report.

APQ-126 Update: The aluminum spur gear in the roll attitude gear assembly will be replaced with a steel gear of the same size. The currently used aluminum gear is susceptible to breakage due to material type, misalignment and mishandling. The azimuth dual rotary coupler, part of the antenna receiver AS-2272/APQ-126, will be replaced by a repairable sealed unit with increased reliability and better maintainability (expected mean time between failure (MTBF) four times greater than the old unit). A resistor and capacitor in the +200 VDC Power Supply, part of the Power Supply Programmer PP-6130/APQ-126(V), will be replaced to improve the reliability by reducing the vulnerability to excessive loads and improving its current limiting characteristics. Another improvement in the Power Supply Programmer is in the Scan Pulse Generator where two transistors which switch aircraft 26 VAC power will be replaced to reduce the vulnerability to spurious noise spikes from aircraft noise sources. The operational readiness (MTBF) of the radar will also increase with the use of a shroud for the protection of the potentiometers on the indicator Line Replaceable Unit (LRU) from damage during maintenance actions. The 3410 subassembly of the antenna receiver will be changed to improve performance in several areas including improved map display, target resolution through beam sharpening enhancing navigation and bombing accuracies, side-lobe suppression allowing improved terrain following, and improved boresight certainty over frequency and power ranges of radar.

Development Status: APQ-126 system changes will utilize updated and present state-of-the-art techniques. No Approval for Service Use (ASU) is required.

OSIP 94-82

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$571		$2,452		$1,761		$2,405			*420	$7,189
O&MN Install.					(100)	$80	(140)	$112	(180)	$144		336
APN-6 Spares		$173		$347		$1,015		$863				2,398
GRAND TOTAL												$9,923

*420 Radars.

Installation Data: Rework will be done at time of component repair at intermediate level. Two changes will be incorporated at depot level during repair. One change will be implemented only during maintenance actions on the indicator.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: TA-7C Re-engine with TF41 (OSIP 139-84)

Models of Aircraft Affected: TA-7C

Description/Justification:

Re-engine of 52 TA-7C aircraft with the TF-41 engine (replacing the TF-30 P408 engine) is necessitated by a foreign military requirement for TF-30 P408 engines. An operational and support improvement will be realized in out years with all active A-7 type/model/series powered by the TF-41. Operational Training will be greatly enhanced by having the same engine in the trainer as in the A-7E aircraft.

Development Status: Several series of two-seat A-7 aircraft are TF-41 powered including the A-7K, TA-7H, and YA-7E. Vought ECP 620 for drive-in modification line will perform modification. No structural flight testing will be required. Carrier suitability flight testing may be required.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	52	$56,603		$6,537			52	$63,140
O&MN Contr. Install.			(40)	$14,500	(12)	$3,500		18,000
APN-6		$1,961		$1,073				2,934
GRAND TOTAL								$84,074

Installation Data: Installation will be accomplished by a Drive-in Modification program at Vought.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Sealed Lead Acid Battery (OSIP 22-83)

Models of Aircraft Affected: AV-8A/C

Description/Justification:

The battery system presently used by the AV-8A has historically been a high maintenance manhour consumer, logistic burden, and readiness improvement summary evaluation (RISE) contributor. The sealed lead acid battery will provide a no maintenance use and expend battery with a projected minimum useful service life of six months. The sealed lead acid battery system will remove the current requirement for battery servicing at least every seven days and attendant servicing support equipment.

Development Status: This battery system has been developed for the AV-8B. Installation of this battery system in the AV-8C will provide commonality in support requirements.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$2,540	42	$2,384					44	$4,924
O&MN Install.			(2)	$34	(37)	$618	(5)	$73		725
O&MN Factory Trng.		$23		$23						46
APN-6 Spares		$24		$238						262
GRAND TOTAL										$5,957

Installation Data: Installation to be accomplished by the contractor and the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM). Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: DECM Pod (CSIP 19-80)

Models of Aircraft Affected: AV-8A/C

Description/Justification:

The HARRIER DECM pod is a defensive ECM system with both pulse and CW jamming capability. The system employs modular construction and will be firmware reprogrammable to accommodate threat parameter changes. The weight and size of the DECM pod will be no greater than 410 pounds and 85 inches long, 16 inches diameter. Pod carriage will be provided on the centerline station. The AV-8A/C aircraft is one of the few tactical aircraft in the U.S. inventory with no defensive ECM capability. DECM capability is essential to aircraft survivability in a hostile environment.

Development Status: The DECM pod is currently under development at Sanders Associates in conjunction with the AN/ALQ-126 Improvement Program. The DECM pod will reflect a design featuring a mid and high band pulse capability derived from the AN/ALQ-126 improvement program and full provisions (including antennas and transmission lines) to accept the AN/ALQ-162 clockwise jammer in the pod. The AN/ALQ-164 pulse jamming capability operates independently from the AN/ALQ-162 CW capability and can be used in that role until the AN/ALQ-162 is installed. Upon installation of the AN/ALQ-162, the total planned operational capability is achieved. Completion of OT&E and approval for service use is expected in the fourth quarter of FY 1983. Provisional approval for service use (PASU) for the wiring provisions for the AV-8C has been granted. A waiver request is in process.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	22	$1,773	22	$4,947		$1,346			44	$8,066
O&MN Install.	(5)	$49	(17)	$143	(11)	$103	(11)	$103	(44)	398
APN-6 Spares				$676		$374				1,050
GRAND TOTAL										$9,514

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by the contractor. Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: S,R&M (OSIP 14-84)

Models of Aircraft Affected: T/AV-8A/C

Description/Justification:

The T/AV-8A aircraft program is unique in that the engine and airframe, plus most of their components, were built in the United Kingdom (UK). Also, much of the component repair work is accomplished at UK vendor's facilities. This presents problems in configuration management. When the Royal Air Force or Royal Navy approves a configuration change to their aircraft which is applicable to the USMC aircraft, one of the following may occur:

a. The original tooling is changed and the old part can no longer be procured. This necessitates US approval of the Engineering Change Proposal (ECP) in order for ASO to procure spares.

b. The original tooling can be maintained for the USMC but a cost will be incurred.

c. If the change was required because the original vendor no longer makes the part or component, then either US approval of the ECP or a US generated ECP is required.

Examples of such changes are:

a. RCS Control Rods.
b. NLG Reinforcing Ring.
c. Canopy Release Lever.
d. TAV-8 Aft Fuselage Mod.

Development Status: Development is complete.

OSIP 14-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$544		$1,114		$1,389		$3,047
O&MN Install.				$484		$660		1,144
APN-6 Spares		$82		$167		$208		457
GRAND TOTAL								$4,648

*Total quantity of aircraft is 55.

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) and by field teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARN-118 TACAN (OSIP 15-84)

Models of Aircraft Affected: T/AV-8A/C

Description/Justification:

The AV-8A aircraft uses the Hoffman Mark 5 (AN/ARN-91) TACAN manufactured by Hoffman Electronics Corporation (now known as NAVCOM Systems Div, Gould Inc.). The equipment is unique to AV-8A aircraft. The equipment is out of production; some component parts are out of production. Gould Inc. will accept orders to repair existing sets but they will not accept orders to manufacture new items The ARN-91 operates on 126"X" channels only; new airbornes sets and new ground (ship) beacons have 126"Y" channels and 126"Y" channels. Thus, the AN/ARN-91 is operationally limited. The AN/ARN-118(V) TACAN is a standard Air Force/Navy Airborne TACAN Set, operates on all 126"X" and 126"Y" channels, and has full logistics support in place.

Development Status: The AN/ARN-118 is approved for service use and is currently installed in Fleet aircraft.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	55	$1,976			55	$1,976
O&MN Install			(55)	$30		30
O&MN Training		$29				29
APN-6 Spares		$46				46
GRAND TOTAL						$2,081

Installation Data: Installation will be accomplished by the Naval Air Rework Facility, Cherry Point Field Teams and Organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Structural Integrity (OSIP 16-84)

Models of Aircraft Affected: AV-8A/AV-8C

Description/Justification:

This aircraft structural enhancement program involves modifications to the aircraft at fatigue critical locations. Laboratory full-scale as well as element spectrum fatigue testing, together with fatigue analyses indicate that the onset of structural damage due to service usag will occur at approximately 1,500 to 2,000 flight hours. Based on the Aircraft Structural Appraisal of Fatigue Effects (SAFE) Program, dated 15 July 1981 (which includes AV-8A/C Fleet information up to the end of April 1981) the Fleet average was 1,390 hours with the high time aircraft at 2,040 hours.

Thus, it is apparent that action is required to develop repairs as these aircraft accumulate flight time. In fact, frame 43 web fatigue damage has already been discovered and repaired at Naval Air Rework Facility (NARF), Cherry Point on five aircraft inducted through their second Standard Depot Level Maintenance (SDLM) (at approximately 1,800 flight hours). The repair scheme used was a more comprehensive version of a British "band-aid" type of repair. The possibility exists that fatigue damage left unrepaired in any of the critical areas could eventually lead to a safety of flight situation. After incorporation on the aircraft, the modifications will have a safe life of 2,500 flight hours total.

Development Status: The design and modification work has been accomplished by the contractor; however, a review and update will be made of the existing modification designs to include currently available information. The design update shall include fatigue, strength and structural dynamics analysis of the modifications. Tooling will be designed and fabricated.

OSIP 16-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$813	38	$2,182			40	$2,995
O&MN Install.		-0-	(2)	$188	(38)	$3,608	(40)	3,796
APN-6 Spares		-0-		$181				181
GRAND TOTAL								$6,972

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) and a drive-in mod Program. Kit lead time is 15 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 19 4

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARC-159 Radio (OSIP 60-82)

Models of Aircraft Affected: F-4S

Description/Justification:

The F-4S currently has only one UHF communications transceiver (RT-793) with one auxiliary receiver (AN/ARR-69). Both pieces contain early 1960's technology and are currently exhibiting an unsatisfactory mean flight hour between failure (MFHBF). This program proposes to install the AN/ARC-159 system as a dual system (backup and prime) in the F-4S. A backup ARC-159 is currently being installed in the F-4N and a dual system is being installed in the RF-4B.

Development Status: The AN/ARC-159 radio is approved for service use.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	12	$2,166	55	$4,843	63	$5,175					130	$12,184
O&MN Install.			(1)	$6	(66)	$506	(40)	$324	(23)	$162		998
APN-6 Spares				$124		$144						268
GRAND TOTAL												$13,450

Installation Data: Installation will be accomplished at the Naval Air Rework Facility (NARF) during SLEP, Standard Depot Level Maintenance (SDLM), and by field mod teams (FMT). Kit lead time is 15 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/AWG-10A; Obsolesence/R&M Program (OSIP 19-81)

Models of Aircraft Affected: F-4S

Description/Justification:

F-4S aircraft are projected to remain operational through the early 1990's. As an essential part of the F-4 weapons system, the AN/AWG-10A missile control system (MCS) must remain operational for the same period. Recently, several components/critical subassemblies have become unobtainable because vendors have either discontinued production or have gone out of business. In order to maintain the AWG-10A in an operational status, replacement of these obsolescent items with qualified substitutes must be accomplished in an expeditious manner. Approximately twenty shop replaceable assemblies (SRA's)/line replaceable units (LRU's) absolutely essential to the operation of the MCS are effected. The purpose of this program is to effect replacement of the obsolescent components/subassemblies, to preclude imminent not mission capable (NMC) AWG-10A systems. Maximum coordination with the type commanders will be maintained to minimize the accelerated modification schedule impact on aircraft/carrier operational schedules and provide for the most expeditious elimination of the obsolescent items.

Development Status: The AWG-10A is in service use. The proposed modifications will require a contractor development program which will be monitored by the Navy to insure future supportability of AWG-10A radars.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	50	$29,425	50	$12,544	43	$11,141			143	$46,110
O&MN Install.			(44)	$579	(62)	$560	(37)	$260	(143)	$1,399
APN-6 Spares		$516		$5,759		$3,180				9,465
GRAND TOTAL										$56,974

Installation Data: Installation will be accomplished by a contractor modification turnaround program. Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/AWG-10A Improved Simulated Doppler Signal (OSIP 21-84)

Models of Aircraft Affected: F-4S

Description/Justification:

The simulated doppler signal is generated by the AN/AWG-10A radar when tracking a target. This signal is used to preposition the AIM-7 missile speedgate prior to launch. Positioning of the missile speedgate is critical. Accuracy is required for the AIM-7 missile to lock onto the same target the radar is tracking before and after launch.

One year of telemetry data gathered from fleet missile exercises reveals an excessive number (87 percent) of mispositioned speedgates. Most of these missiles launched with mispositioned speedgates have gone ballistic vice guiding to the target/drone. This change to the AWG-10A radar will provide a highly reliable/accurate simulated doppler signal which will significantly reduce the probability of mispositioned speedgates.

Preliminary laboratory and instrumented flight tests revealed that the simulated doppler signal circuits consistently generate a signal which is high in frequency. In addition to the high output from the radar, engineering data gathered aboard the USS MIDWAY has revealed a poor signal distribution system in the F-4S aircraft. The distribution system degrades and becomes susceptible to electromagnetic interference (EMI). The EMI adds to the doppler signal and mispositions the missile speedgate.

This program will replace the radar signal generating circuits with state-of-the-art circuitry and modify the distribution system to be less susceptible to EMI.

Development Status: Contractor laboratory tests were performed in FY 1980. Contractor/Navy instrumented flight tests were performed in FY 1981. Approval for Service Use (ASU) is not required.

OSIP 21-84

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,440	121	$1,810	120	$1,531	242	$4,781
O&MN Install. "O" Level		-0-						-0-
O&MN Training				$32				32
APN-6 Spares		-0-		$198		$153		351
GRAND TOTAL								$5,164

Installation Data: Installation will be accomplished at the Organizational (Fleet) level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: F-4 Extended Range Visual Identification (OSIP 32-84)

Models of Aircraft Affected: F-4S

Description/Justification:

Past and present combat scenario rules of engagement have necessitated Visual Identification (VID) as a standard U.S. fighter technique. Optical aids for VID have been developed for use in Navy F-14 and Air Force F-4 fighter aircraft. The purpose of VID systems is to extend the range at which aircrews can visually identify targets. This proposal will install a target magnification telescope (Phantom Eye) in the Navy F-4 aircraft cockpit. The Phantom Eye will significantly increase the range of both initial visual sighting and VID.

Development Status: Prototype telescopes mounted in Navy F-4 and Air Force F-15 aircraft have been used during air combat manuvering training and AIMVAL-ACEVAL at Nellis Air Force Base with good success. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$620	241	$423	242	$1,043
O&MN Install. "O" Level		-0-				-0-
O&MN Training		$60				60
APN-6 Spares		-0-		$77		77
GRAND TOTAL						$1,180

Installation Data: Installation will be accomplished at the Organizational (Fleet) level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: J-79 Low Smoke Engine Provisions (OSIP 76-81)

Models of Aircraft Affected: RF-4B

Description/Justification:

This program replaces existing J79-GE-8 engines with smokeless J79-GE-10B engines being converted under OSIP 9-75. Standard configuration -10B engines will be utilized, but aircraft modification is required mainly in the keel/aft engine bay area to accommodate the -10B afterburner. Weight increases by 442 pounds; space required increases by 2.48 cubic feet. This improvement will reduce visual acquisition range of the RF-4B as it has with the F-4J/S, and prevent distant recognition of an RF-4B versus an F-4J/S in an operational environment. Commonality of RF-4B engines with F-4J/S engines on deployments is a distinct logistic advantage.

Development Status: Development is complete. This is for provisions only for the RF-4B. Engine modification being done under OSIP 9-75.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	9	$3,166	10	$4,570	9	$1,844			28	$ 9,580
O&MN Install.			(1)	$333	(9)	$2,908	(18)	$5,049		8,290
APN-6 Spares		$4				-0-				4
GRAND TOTAL										$17,874

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and drive-in mod. Installation costs also include engine rework incident to modification. Kit lead time is 6 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-162 Countermeasures Set (OSIP 128-84)

Models of Aircraft Affected: RF-4B

Description/Justification:

The AN/ALQ-162 provides complementary DECM jamming capability to the operational AN/ALQ-126 DECM Jammer installed on tactical aircraft. The AN/ALQ-162 will accept threat handoff data from the AN/APR-43 Radar Warning Receiver and utilize a common transmit/receive antenna which is integral to the AN/APR-43 antenna assembly. The AN/ALQ-162 also provides a stand alone capability allowing for defensive electronic countermeasures in event of AN/APR-43 failure. The AN/ALQ-162 design exhibits flexibility in reprogrammability to handle future threat parameter changes. The addition of the AN/ALQ-162 results in a significant increase in the survivability for Navy tactical aircraft against radar directed air defense system.

Development Status: Northrop Corporation is under contract and provided preproduction engineering development models in the second quarter of FY 1981 for test and evaluation. The TEMP (No. 593) is presently in review to support Navy test and evaluation. TECHEVAL was completed in the fourth quarter of FY 1982. OPEVAL is scheduled to begin in the second quarter FY 1983 with Approval for Full Production (AFP) expected third quarter of FY 1983. RDT&E,N Program Element Number 64224N applies.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	$1,264	11	$1,988	11	$1,641	25	$4,893
O&MN Install.			(3)	$26	(22)	$188	(25)	$214
APN-6 Spares		$177		$307		$69		553
GRAND TOTAL								$5,660

Installation Data: Installation of the Airframe Change Kit will be accomplished during Standard Depot Level Maintenance (SDLM) and field mod team (FMT).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Combined Altitude Radar Altimeter (CARA) (OSIP 37-84)

Models of Aircraft Affected: RF-4B

Description/Justification:

The AN/APN-159 High Altitude Radar Altimeter (HARA) currently installed in the RF-4B aircraft, provides absolute altitude information to the radar altimeter indicator, the AN/APD-10 side looking radar, the AN/APQ-99 forward looking radar in the terrain clearance/terrain avoidance mode, the AN/ASN-92 inertial navigation system, the AN/ASQ-151 data annotation set and the camera parameter control set. Altitude information is required for accurate "looking" angles, reference information, and camera focusing.

The HARA is a CIRCA 1960 technology system which has exhibited grossly unsatisfactory reliability and maintainability characteristics. Reconnaissance data provided by camera and sensor imagery has proved to be ineffective and a number of hard landings have been attributed to unreliable HARA inputs. The proposed CARA will also be used in the Air Force RF-4C aircraft. It will provide inter-service commonality and improved reliability/maintainability.

The new Combined Altitude Radar Altimeter (CARA) can be installed in the RF-4B without aircraft wiring or structural changes. Complete replacement can be effected at organizational level in less than 4 hours.

Development Status: The CARA altimeter is currently being developed and tested by the U.S. Air Force. The Air Force will take the lead for development and obtain Approval for Service Use (ASJ). The Navy will evaluate the carrier suitability requirement.

OSIP 37-84

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	26	$2,820	26	$2,820
O&MN Install. "O" Level		-0-		-0-
O&MN Training		$80		80
APN-6 Spares		$624		624
GRAND TOTAL				$3,524

Installation Data: Installation will be accomplished at the Organizational (Fleet) level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Follow-On Structural Fatigue (OSIP 39-85)

Models of Aircraft Affected: RF-4B

Description/Justification:

The RF-4B conversion program incorporated structural improvements into the airframe to permit extension of the service life an additional 8 years. Due to projected shortfalls in reconnaissance aircraft in the 1980's the RF-4B will be the prime reconnaissance aircraft for the Navy and Marine Corps for longer than originally projected. Initial structural improvements will consist of fixing known problem areas which have been identified with follow-on engineering change proposals (ECP's) generated in a timely manner based on the F-4 full-scale fatigue test.

Development Status: Current full-scale fatigue testing has resulted in the decision to incorporate an improved center line splice and fatigue improvements to the outer wing panels. Additional requirements will be identified by the full-scale fatigue test teardown analysis. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	24	$1,320			24	$1,320
O&MN Install.			(24)	$1,196	(24)	1,186
APN-6 Spares		$58				58
GRAND TOTAL						$2,564

Installation Data: Installation is to be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and by drive-in mod program.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APQ-99 Technical Obsolescence Update Program (OSIP 41-84)

Models of Aircraft Affected: RF-4B

Description/Justification:

The AN/APQ-99 Forward Looking Radar (FLR) set was based on electronic technology circa 1961 and developed for installation in the RF-4B aircraft. Since the introduction of the RF-4B aircraft into the Navy inventory in 1965, the FLR has undergone increased capability improvements and updates to keep it operationally current; however, most of the electronic components remain in 1960's technology. Over the years, component degradation and obsolescence have impacted FLR maintainability resulting in the system constantly being ranked the number one contributing factor to overall RF-4B downtime as indicated by Navy Maintenance data. Several key components in the FLR set have become unobtainable due to companies no longer in business or discontinued production of obsolescent components. In order to prevent the RF-4B aircraft from becoming more adversely impacted due to FLR component degradation/obsolescence and since the RF-4B will remain in the operational inventory well into the 1990's, a formal update program must be established to reverse the increasing aircraft downtime. Primary redesign efforts will concentrate on replacing obsolescent or discontinued components of the AN/APQ-99 FLR system.

Development Status: The AN/APQ-99 is currently in service use. The contractor has submitted several engineering change proposals (ECP's) in an attempt to preclude obsolescence. The basic design approach is considered satisfactory. Navy Approval for Service Use (ASU) is not required.

OSIP 41-84

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	2	$3,030	24	$3,000			26	$6,030
O&MN Install.			(2)	$41	(24)	$264		305
O&MN Training		$50		$250				300
APN-6 Spares		$102		$822				924
GRAND TOTAL								$7,559

Installation Data: Installation is to be accomplished by contractor field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Television Camera Sight (TCS) (OSIP 62-82)

Models of Aircraft Affected: F-14A

Description/Justification:

The television camera sight (TCS) will provide the pilot and radar intercept officer (RIO) of an F-14A the ability to visually identify airborne targets at long stand-off ranges during day clear weather conditions. The TCS significantly enhances the F-14A weapon systems effectiveness and survivability whenever operational conditions dictate positive target ID prior to attack.

Development Status: Approval for service use was granted in January 1981. Production effectivity is aircraft #456.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	66	$6,200	84	$15,988	98	$17,386	105	$18,830	44	$10,587	397	$68,991
O&MN Install.			(1)	$28	(66)	$1,876	(84)	$2,385	(246)	$6,987	(397)	11,276
APN-6 Spares		$545		$2,796		$110		$110				3,561
GRAND TOTAL												$83,828

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Hydraulic System Cavitation Damper (OSIP 28-81)

Models of Aircraft Affected: F-14A

Description/Justification:

Numerous problems have been experienced in fleet aircraft where hydraulic pump cavitation has resulted in severe line/bracketry/component failures downstream of the hydraulic pump.

The problem can be corrected through the addition of hydraulic damper assemblies in the pressure discharge line of both the flight and combined systems and through strengthening the brackets that have been failing. Computer simulation, conducted by the contractor, indicated that the use of damper assemblies showed good flow attenuation during both normal and cavitation pump operation. This will thereby greatly reduce the resultant effects of pump cavitation on the rest of the hydraulic system downstream of the pump. The strengthening of the problem brackets along with the hydraulic dampers should solve the present problem with hydraulic line/bracketry/component failures. Initial design of the damper assembly as approved by NAVAIR would have required two separate Quick Engine Change (QEC) kits which would have created left and right hand engines/QEC's. This was unsatisfactory from logistics viewpoint and a revised engineering change providing for common QEC's for right and left engines was requested from Grumman and was approved by NAVAIR in November 1982. Grumman has been directed to continue procurement of the long-lead items which are not affected by the redesign and will be able to meet production incorporation in aircraft 471 and maintain kit installation schedules as presented below. Prices presented for FY 1982 and subsequent include the added cost of the redesign.

Development Status: No approval for service use is required. Production incorporation was authorized in May 1981.

OSIP 28-81

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	131	$2,187	73	$1,445	85	$1,804	56	$1,276	33	$798	378	$7,510
O&MN Install.			(62)	$216	(70)	$257	(63)	$329	(183)	$934	(378)	1,929
AFN-6 Spares		$449										449
GRAND TOTAL												$9,888

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: PHOENIX AN/AWG-9, Computer Expanded Memory (OSIP 25-81)

Models of Aircraft Affected: F-14A

Description/Justification:

The memory of the AWG-9 CDC computer will be expanded from 32K to 64K computer memory locations. The expanded memory will consist of four AN/AYK-14(V) memory modules. These modules are also used in the Navy standard computer and are core type destructive read-out (DRO) memories. The present nondestructive read-out (NDRO) memory (452 unit) and DRO memory will be eliminated. This will reduce the weight, volume and required cooling for the AWG-9 computer. The present tactical software program can be used with either the present or expanded computer memories and the units will be interchangeable in the F-14 aircraft.

Development Status: The AN/AYK-14(V) memory modules are completely developed. This change was incorporated in production aircraft #406.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	106	$17,855	51	$10,253	73	$15,549	55	$12,565	31	$7,542	316	$63,764
O&MN Install.		$50	(53)	$1,264	(53)	$1,326	(51)	$1,276	(159)	$3,977	(316)	7,893
APN-6 Spares		$5,206		$3,021		$1,865						10,092
GRAND TOTAL												$81,749

Installation Data: Installation will be accomplished by contractor field mod teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARC-182 Radio (OSIP 30-84)

Models of Aircraft Affected: F-14A

Description/Justification:

The AN/ARC-182 combination radio is a new radio for all tactical aircraft. It provides UHF-FM(30-88MHz), VHF-AM(108-156MHz), VHF-FM(156-174MHz) and UHF-AM(225-400MHz) securable voice communications. Size/weight is 200 cubic inches/10 pounds. Two broadband aircraft antennas are also provided. This replaces the ARC-159V5 or ARC-51 rear cockpit radio.

Development Status: The ARC-182 radio is being developed under RDT&E,N Program Element Number 24163N, Project WO661-CC. Provisional Approval for Service Use (PASU) is scheduled for July 1983. Approval for Service Use (ASU) is scheduled for September 1983.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	17	$1,872	16	$1,942	362	$54,515	395	$58,329
O&MN Install.			(17)	$320	(378)	$7,112	(395)	7,432
APN-6 Spares		$405		$306				711
GRAND TOTAL								$66,472

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Replacement of Fire-Warning Set (OSIP 30-80)

Models of Aircraft Affected: F-14A

Description/Justification:

The present fire warning system is electrical and initiates the warning light based on resistance change in the conductors due to heat. This system is susceptible to false fire warnings due to shorts caused by vibration and handling damage. Testing has shown that the present system can be upgraded by modifying the sensing elements and rerouting them to eliminate chafing and sharp bends. Clamp spacing will also be modified so that the sensing element critical frequency will not be in tune with the aircraft natural frequencies. The alarm control unit will also be modified to include a more effective short discriminator circuit.

Development Status: No approval for service use is required. Naval Air Test Center testing has been completed and shows the existing fire-warning system with the above modifications has performance equivalent to present state-of-the-art replacement systems. Production approval was authorized in April 1981 and commenced with aircraft #471.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	173	$1,412			98	$897	100	$1,000	42	$436	413	$3,745
O&MN Install.	(16)	$55	(80)	$308	(98)	$308	(84)	$291	(135)	$467	(413)	1,429
APN-6 Spares						-0-						-0-
GRAND TOTAL												$5,174

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Spoiler Actuator Water Integrity (OSIP 62-82)

Models of Aircraft Affected: F-14A

Description/Justification:

Due to water intrusion, an excessive field failure rate has been experienced by the spoiler actuator resulting in inadvertent operation or failure to operate. This change will correct this problem by increasing the water protection of the spoiler actuator assemblies and their component parts. This increased water protection is to be achieved by the incorporation of better sealant and potting techniques combined with increased "O" ring squeeze in all areas of the actuator assembly where water intrusion has been found. This change also includes a water immersion test program to assure the desired actuator integrity once the aforementioned modifications have been incorporated. Projected reliability improvement is 360 percent.

Development Status: The design is being completed at the Naval Air Rework Facility (NARF) Norfolk.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$25		$612	84	$1,903	98	$2,368	244	$6,531	426	$11,499
O&MN Install							(84)	$[illegible]	(342)	$1,[illegible]	(426)	[illegible]
APN-6 Spares						$227		$242				469
GRAND TOTAL												$[illegible]

Installation Date: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Environmental Control System (ECS) Water/Particle Separator (OSIP 60-79)

Models of Aircraft Affected: F-14A

Description/Justification:

This change will add a cyclamic flow type (no moving parts) moisture and particle separator to the 400°F servo air outlet of the service air heat exchanger. This installation will remove moisture from the ECS servo air system thereby reducing the associated corrosion problems on servo air operated components such as the suit pressure regulator, two-atmosphere pressure regulator, turbine discharge hot air valve and the cabin air servo valve. Projected reliability improvement for this change is 24 percent.

Development Status: Production and retrofit were approved in August 1979. Production incorporation commenced with aircraft #395.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	283	$1,084	36	$222	27	$176					346	$1,482
O&MN Install.	(82)	$147	(86)	$195	(80)	$195	(84)	$179	(2)	$1	(346)	695
APN-6 Spares				-0-								-0-
GRAND TOTAL												$2,177

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: TCR's and Correction of Defect Changes for Out-of-Warranty Aircraft (OSIP 55-77)

Models of Aircraft Affected: F-14A

Description/Justification:

A number of contractor responsible time compliance requirements (TCR's) and correction of defect changes have been identified which require kits for out-of-warranty aircraft. This program funds the follow-on incremental kit buys for out-of-warranty aircraft. Kits for in-warranty aircraft will be ordered and installed prior to placing incremental orders for out-of-warranty kits.

The following TCR's and correction of defect changes for FY 1984 for out-of-warranty aircraft are included:

1. Station 569 fasteners (Production effectivity A/C #411) ECP 1040.
2. Titanium fireshields (Production effectivity A/C #468) ECP-1011.

Development Status: These changes have been approved for production.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	5,699*	$3,444*	243	484*	147*	375	550*	$255			6,639	$ 4,558
O&MN Install.		$11,229		$1,568		$2,204		$1,038		$443		16,482
APN-6 Spares				$58		$45		$38				141
GRAND TOTAL												$21,241

* Quantities listed by APN represent kits, vice aircraft.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: F-14A Weapons Rail Operational Improvement (OSIP '3-85)

Models of Aircraft Affected: F-14A

Description/Justification:

Weapons rails are in a state of increasing deterioration due to water and cleaning solution intrusion; wiring insulation and connector breakdown; binding, bending, interference and non-confidence in mechanical linkage; unsatisfactory fasteners; and the inability to test the PHOENIX weapon system prior to take off on the carrier deck due to electromagnetic interference (EMI). PHOENIX capability is dependent on implementation of this program.

Development Status: No approval for service use is required. This will be a modification of the harnesses and connectors to correct EMI and maintenance problems. An EMI study by Grumman has been initiated to verify that the redesigned weapon rails meet the latest specification requirements. This study was completed in June 1982.

Project Financial Plan:

	FY 1985		Cost to Complete		AL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	412	$7,957	1,088	$40,655	1,500*	$48,612
O&MN Install.			(1,500)	$13,676	(1,500)	13,676
APN-6 Spares		$10		$10		20
GRAND TOTAL						$62,308

*Quantity listed is rails.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) and the contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Upgrade Wiring and Wiring Components (OSIP 17-82)

Models of Aircraft Affected: F-14A

Description/Justification:

Wire used in the F-14 aircraft is approximately 95 percent Poly-insulated with the remaining amount of wire split between Teflon and Kapton. In the Fleet both the Poly-X and Teflon outer insulations have been found to deteriorate. The deterioration rate of the insulation is accelerated by water and washing solverts which cause embrittlement and cracking, allowing water to induce cross-talk between wires (shorts). In production, Poly-X wire was replaced by Kapton wire, and, in retrofit, Spec-55 type wire will be used to replace selected wires/harnesses. Under OSIP 38-80, the most susceptible wire harnesses in the wheel well and wings are now being replaced. Further investigation by a Grumman/Navy team has found that due to deterioration, other interior wire harnesses and individual wires also require replacement. The investigation further recommended installing additional grounding brackets, replacing certain connectors in specific areas which are most susceptible to corrosion, and installing additional harness supports to prevent chafing. These necessary changes are common to all F-14 aircraft. This "retrofit only" engineering change proposal (ECP) has been requested from the Naval Air Rework Facility, (NARF) Norfolk to correct these specific problem areas and is being processed in NAVAIR. This ECP will also provide for a complete wiring continuity and integrity test by the DITMCO (Drive-In Theater Manufacturing Company) tester.

Development Status: The wire (Spec-55 type wire), connectors, harness supports and other items required for these retrofit kits are all available from qualified sources. No further development or testing is required other than routine kit design/fabrication.

OSIP 17-82

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$10	33	$1,727	45	$1,351	100	$4,800	149	$7,734	327	$15,622
O&MN Install.					(1)	$32	(32)	$768	(294)	$8,159	(327)	8,959
APN-6 Spares				$197		$140		$480				817
GRAND TOTAL												$24,398

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Time Compliance Requirements (OSIP 27-81)

Models of Aircraft Affected: F-14

Description/Justification:

The following Time Compliance Req irement (TCR) requires kit procurement in FY 1984:

(1) Lightning Suppression of ART Probe. There have been several instances of lightning strikes on the ART probe incapacitating the AWG-9. This change adds a lightning suppressor.

Development Status: No development required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$1,476		$1,734		$151						$3,361
O&MN Install.		$976		$1,389		$1,783		$1,183		$29		5,360
APN-6 Spares		$353		$86		-0-						439
GRAND TOTAL												$9,160

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) and/or at organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: TF30-P-414A Package (OSIP 15-82)

Models of Aircraft Affected: F-14A

Description/Justification:

This program consists of 25 separate engine improvements and associated aircraft changes required to ensure long term reliability, supportability and safety of the TF30 in the F-14 aircraft. The improvements provide significant increases in component low cycle fatigue life, engine stall margin and overall durability. The retrofit kit procurement provides the only source of hardware to replace components that reach currently imposed low cycle fatigue life limits. Thus, a specific procurement schedule is required to ensure hardware availability for those replacements and to avoid the negative effect of aircraft with bare firewalls if the hardware were not available. The incorporation of the 25 changes will result in a new model of the TF30 engine - TF30-P-414A.

Development Status: Component testing commenced in June 1979. One engine completed 2,500 hours of Accelerated Simulated Mission Endurance Testing (ASMET) in January 1981. Production effectivity will commence in aircraft #456.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	126	$57,767	211	$99,174	196	$98,806	238	$127,832	236	$135,212	1,007	$518,791
O&MN Install.			(126)	$14,898	(211)	$24,797	(196)	$23,047	(474)	$55,633	(1,007)	118,365
APN-6 Spares		$3,850		$7,180		$4,751		$6,134		$5,447		28,362
GRAND TOTAL												$665,518

Note: Quantity represents engines to be modified.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF). Engine installation O&MN funding includes rework costs.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AIM-9 Seeker Head Position Display (OSIP 134-84)

Models of Aircraft Affected: F-14A

Description/Justification:

In SIDEWINDER expanded acquisition mode (SEAM), the AIM-9 seeker head goes into a circular scan and is slaved to the radar line of sight (LOS). The AIM-9L (due to its increased seeker head sensitivity) has demonstrated the capability of locking on the wrong target in SEAM and of transferring a SEAM acquired lock to another target passing through its field of view. The pilot is unaware of these situations when they occur. This can result in a missile being committed to a bogus target (i.e., flares or ground) or the wrong target (i.e., friendly). Tests at the Pacific Missile Test Center (PMTC) have shown that deletion of AIM-9L seeker head scan decreases the probability of initially locking on the wrong target and that missile slaving accuracies are adequate to acquire the targets in SEAM without seeker head scan.

The Operational Advisory Group (OAG), in September of 1979, favorably endorsed a recommendation by VX-4 that AIM-9 seeker head position be displayed to the pilot via the gunsight reticle on the head-up display (HUD) to enable him to determine radar LOS and AIM-9 seeker head coincidence, and that AIM-9 seeker head scan be inhibited. This change will provide a weapon system operational improvement by: (1) displaying AIM-9 missile seeker head position information to the pilot via a gunsight reticle symbol on the HUD; (2) inhibiting the AIM-9 seeker head scan; (3) deleting the AIM-9G interface requirement; (4) providing for AIM-9H and AIM-9L interface compatibility; (5) deleting the visual target acquisition system (VTAS) back up power supply to make room for a new shop replaceable assembly (SRA); (6) modifying all applicable test equipment; (7) modifying all applicable maintenance trainers and spares; and (8) updating all relevant publications.

Development Status: The acquisition Lambda processor (except for BIT and SRA self test, which were not in prototype) has been tested at the Responsible Engineering Activity (REA) laboratory, and as a complete system in the roofhouse. Flight tests conducted by Hughes Aircraft (HAC) and the Navy confirmed the validity of this change. As these have been additional functions added (BIT, SRA self test, OFP) roofhouse testing will be required. In addition, the REA will modify an existing SRA to prove these features. The AN/AWG-9 software containing these changes will be delivered in Tapes 113 and 200 in accordance with the delivery schedule as follows:

(a) Tape 113 delivered to the Fleet in June 1983.
(b) Tape 200 delivered to Fleet in November 1983.

No Approval for Service Use (ASU) is required.

OSIP 134-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	213	$1,159	267	$1,545			480	$2,704
O&MN Install.								
APN-6 Spares		$228		$303	(480)	$1,927	(480)	1,927
								531
GRAND TOTAL								$5,162

Installation Data: Component modification will be accomplished via an avionics change (AVC) submitted from Hughes Aircraft Corporation and will be installed by contractor personnel. Airframe modification shall be accomplished via an airframe change (AFC) submitted by Grumman Aerospace Corporation and will be installed by contractor personnel.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: F-14A Nose Wheel Steering Damper (OSIP 84-82)

Models of Aircraft Affected: F-14A

Description/Justification:

The nose wheel steering damper has been experiencing failures caused by twisting of the output shaft when towed beyond the 120° steering limit. Twisting of the shaft prevents the steering damper from centering the launch bar. If the launch bar is not centered it will hit the landing gear doors and ECS ducts when the nose gear is retracted.

This modification of the nose wheel steering damper will incorporate a steel output shaft and "O" level replaceable shear pin to preclude damage to the shaft and to the aircraft. It will not reduce the number of steering damper failures; but when the unit is overtowed, the shear pin will fail with no other damage to the steering damper. The unit can be repaired at "O" level maintenance, whereas, before, the unit had to be repaired at depot level.

Development Status: A prototype unit has been manufactured by Grumman and was tested at the Naval Air Test Center, Patuxent River. The unit operated satisfactorily on F-14 aircraft. No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	100	$1,368	228	$3,169	94	$1,399					422	$5,936
O&MN Install.*					(94)	$150	(210)	$345	(267)	$438	(568)	933
APN-6 Spares		$798		$750		$480						2,028
GRAND TOTAL												$8,897

* Includes 146 Spares kits

Installation Data: Units will be modified by the Naval Air Rework Facility during SDLM and through a rotable pool.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Activate Spoilers to 62° (OSIP 135-84)

Models of Aircraft Affected: F-14A

Description/Justification:

The F-14A aircraft, as presently configured, permits spoiler activation to 57° of wing sweep angle. Structural analysis has indicated a reduction of aft fuselage torsional loads with activation of spoilers to 62° of wing sweep vice the present 57°. The benefits of reducing the aft fuselage loads to the F-14 aft fuselage fatigue life and allowing future expansion of the aircraft maneuvering envelope by legislated to the inclusion of the 62° wing sweep spoiler activation in the ongoing Aircraft 98 fatigue program. This change will modify the inboard/outboard spoilers to permit activation to a 62° wing sweep angle.

Development Status: Required analysis and testing have been completed and the Engineering Change Proposal has been received. No approval for service use is required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	95	$209	93	$46	238	$136	426	$ 391
O&MN Install			(34)	$70	(392)	$913	(426)	983
APN-6 Spares		$14		$15		$14		43
GRAND TOTAL								$1,317

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Wing Pivot Bearing Redesign (OSIP 136-84)

Models of Aircraft Affected: F-14A

Description/Justification:

The silver plating and fabric liner of the wing pivot bearing outer race on early production F-14's were found to be disintegrating on both the upper and lower bearings. This resulted in galling of the wing lug which if continued could result in a substantial reduction in fatigue life of the wing itself. An interim configuration was developed by Grumman that was better than the original design but would not last the service life of the F-14 aircraft. This change was installed on aircraft 271 and subsequent. A new design has been developed that will meet the required service life of 6,000 flight hours and eliminate the need to refurbish the bearings during each Standard Depot Level Maintenance (SDLM) cycle.

Development Status: Testing and analysis of the new design has been completed by Rockwell and shows definite life improvement/producibility capability. The engineering change proposal has been received by NAVAIR. No Approval for Service Use is required (ASU).

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	95	$325	95	$345	262	$1,116	452	$ 1,786
O&MN Install.					452)	$13,533	(452)	13,533
APN-6 Spares		$54		[illegible]		$51		148
GRAND TOTAL								$15,467

Installation Data: The vendor will rework the bearings. Wing removal and reinstallation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Stinger Shank Trunnion Stops (OSIP 30-83)

Models of Aircraft Affected: F-14A

Description/Justification:

The fleet has experienced cracking of stinger shanks due to stinger shank lugs impacting trunnion stops during rollback following arrestment. This program replaces the current integral stops with detachable sacrificial stops which move the impact area away from the critical lug area, improve load carrying capability, and provide lower hardness material to further preclude impact damage. The Naval Air Rework Facility will modify the out-of-production (already delivered) aircraft. Grumman will be tasked separately to provide a similar modification for production aircraft.

Development Status: Grumman was tasked to conduct a test program to determine a suitable material for the new stops. This program is complete. Approval for service use is not required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	73	$156	97	$109	95	$114	164	$219	429	$ 598
O&MN Install.			(25)	$42	(84)	$142	(320)	$540	(429)	724
APN-6 Spares		$106		$107		$114		$224		551
GRAND TOTAL										$1,873

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ECS Compressor Duct Mod (OSIP 54-82)

Models of Aircraft Affected: F-14A

Description/Justification:

High failure rates of the compressor discharge duct assembly (A51E20018-1) have been reported by the Naval Air Rework Facility, Norfolk. The failures have been attributed to intergranular corrosion of 19-9DL flanges in combination with excessive structural loading. Redesign of the compressor discharge duct will eliminate excessive structural loading that has resulted from installation difficulties. Also, utilization of 321 Cres steel flanges vice 19-9DL will eliminate the potential for intergranular corrosion.

Development Status: Engineering is complete. Production incorporation was authorized in March 1981 and will commence in aircraft #441. No approval for service use is required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	144	$185	86	$281	52	$180	28	$106	77	$304	387	$1,056
O&MN Install.			(48)	$33	(89)	$62	(84)	$58	(166)	$115	(387)	268
APN-6 Spares				$20		-0-						20
GRAND TOTAL												$1,344

* Correction of defects (in warranty).

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Turbine Compressor Assembly Coolanol Protection Blanket for ECS (OSIP 31-83)

Models of Aircraft Affected: F-14A

Description/Justification:

The coolanol auto ignition temperature is 480°F. This temperature is below the turbine-compressor assembly (TCA) surface temperature of 600°F. If coolanol is sprayed onto a surface which has a surface temperature that is above 480°F, a fire may result. Because coolanol lines are within the vicinity of the TCA there is a possibility of a coolanol leak onto the TCA. A TCA coolanol protection blanket will reduce the potential for a fire in this area. The blanket can be installed at organizational level.

Development Status: No approval for service use (ASU) is required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	97	$291	101	$249	100	$264	153	$437	451	$1,241
O&MN Install.					(97)	$29	(354)	$121	(451)	150
APN-6 Spares		$53		$40						93
GRAND TOTAL										$1,484

Installation Data: Installation is scheduled for the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM), and Organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Structural Improvements (OSIP 40-84)

Models of Aircraft Affected: F-14A

Description/Justification:

This is an omnibus structural modification package containing fixes for the areas on the F-14A found to be deficient during the aircraft #98 test currently underway. It is anticipated the following areas will need modification:

1. Replacement of the wing box fittings
2. BL 70 beef up
3. BL 10 beef up
4. Center section beef up under box beam
5. Fin tang replacement at Fuselage Station 737

Development Status: Aircraft #98 fatigue tests are currently underway. 4,200 out of the total 18,000 test hours have been completed. The aircraft is presently being repaired due to failure of 533 Bulkhead. Test were resumed in September 1982 and will complete in late 1983. No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$3,658	30	$22,035	298	$249,750	334	$275,443
OAMN Install.			(1)	$751	(333)	$250,521	(334)	251,272
APN-6 Spares		$367		$1,370		$2,876		4,613
GRAND TOTAL								$531,328

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Structural Fatigue Modification (OSIP 115-82)

Models of Aircraft Affected: F-14A

Description/Justification:

This is an omnibus structural modification package containing fixes for the areas found to be deficient during the #98 fatigue tests and the Main Landing Gear (MLG) piston fatigue tests.

F.S. 569 Bulkhead - During the 4000 hour inspection on the aircraft #98 fatigue test article and subsequent inspection of aircraft #105 at Standard Depot Level Maintenance (SDLM), cracks were discovered in the bulkhead centerbody flange radius on both the left and the right hand sides. ECP 1116 (Correction of Deficiency) will modify the bulkhead nacelle to centerbody flange by the addition of angles and shims in production and retrofit aircraft to eliminate the possibility of further cracking in the F.S. 569 area. During the inspection made after failure of the 533 bulkhead cracks were found in the nacelle area at F.S. 569. ECP-1125 will add interference fit fasteners in this area to eliminate the possibility of cracking in fleet aircraft.

F.S. 533 Bulkhead - During fatigue tests on aircraft #98, the fuselage station 533 bulkhead failed at 4,534 spectrm hours. ECP 1118 (Correction of Deficiency) will provide structural modifications of various fuselage stations (F.S. 533 Breather Joint, F.S. 345 B. L. 26 Skin Strap, F.S. 569 Forward Fixed Cowl Shim, F.S. 533 and F.S. 545 Ring Frames) to improve fatigue life in production and retrofit aircraft. ECP 1123 (Operational Improvement) will provide for production and retrofit incorporation of interference fit fasteners to the right and left hand side of the F.S. 533 bulkhead and new door stop angles and plates to span F.S. 533.75.

MLG Torque Arm Pins - A failure of the lower torque arm pin occurred at 8,044 landings during contractor conducted main landing gear piston fatigue tests. Further investigation revealed that both upper and lower pins were cracked. The problem was traced to an undercut radius at the head of the pin. ECP 1100 (Correction of Deficiency) will replace the present upper and lower torque arm pins on the MLG with modified pins.

Development Status: Grumman Aerospace Corporation aircraft #98 fatigue tests and MLG piston fatigue tests provided failure data. No Approval for Service Use (ASU) is required.

OSIP 115-82

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$3,134	87	$4,800	88	$4,698	92	$5,373	143	$7,436	410	$25,441
O&MN Install.				$4,075		$6,288		$5,261		$13,213		28,837
APN-6 Spares				$264		$204						468
GRAND TOTAL												$54,746

Installation Data: Installation will be accomplished at Organizational and Depot levels.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Increased Wall Thickness of Main Landing Gear (OSIP 9-84)

Models of Aircraft Affected: F-14A

Description/Justification:

Engineering Change Proposal (ECP) 1096 increases the main landing gear shock strut inner piston wall thickness to 0.744 inch eliminate the premature cracking and failures of the current piston. For retrofit, this requires the installation of a new inner piston.

ECP 1079R1 which increases the wall thickness to 0.494 inch and includes an internal plug has been approved for production, and ECP 991 (OSIP 27-81) which puts an internal plug into the current piston (wall thickness 0.354 inch) has been approved for retrofit. Neither of these interim measures has demonstrated full design service life but offer a short term solution to this safety problem at the expense of frequent fleet inspection.

To date the Navy has experienced ten fleet gear with cracks. Recently, there was a failure immediately after catapult launch and another during carrier arrestment. The fleet cracks have occurred on aircraft with total number of landings substantially lower than the test number of simulated landings at which similarly sized cracks were observed. To preclude the possibility of a catastrophic gear failure the fleet has been inspecting, ultrasonically, all F-14A main landing gears every 150 flight hours. After the last incident a one-time magnetic particle inspection was conducted on all fleet aircraft. Future inspection requirements will be determined after the results of the one-time inspection are analyzed.

Development Status: Testing of the 0.744 inch thick piston wall gear has begun and will be completed prior to October 1983. Production effectivity is aircraft #456. No Approval for Service Use (ASU) is required.

OSIP 9-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	99	$14,196	97	$18,334	203	$42,300	399	$74,820
O&MN Install.					(399)	$2,072	(399)	2,072
APN-6 Spares		$1,899		$757		$803		3,459
GRAND TOTAL								$80,351

Installation Data: Modification is scheduled for Standard Depot Level Maintenance (SDLM) via an Accessory Change (AYC). Kit delivery lead time is 30 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Correction of Inadvertant Wing Unsweep (OSIP 80-82)

Models of Aircraft Affected: F-14A

Description/Justification:

This Correction of Defect engineering change proposal (ECP) proposes to interchange the CADC primary wing sweep channel inputs from the left hand pitot/static probe to the right hand pitot/static probe and to switch the Mach number input source for the backup wing sweep channel from the right AICS computer to the left AICS computer. These changes are necessary to preclude the possibility of an inadvertant wing unsweep due to lower Mach number calculations of the CADC in response to variations in pressure ratio inputs from the left hand pitot/static probe. The variations are a result of certain nose-left yawing maneuvers and disturbances during gun firing. The conversion of the pitot static system inputs to the CADC results in an increase in the true Mach number error therefore requiring compensation for the additional Mach number error.

Development Status: Engineering is complete. Grumman ECP 1018 was approved in August 1981. Production incorporation is scheduled for aircraft #456. No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	134*	$8	72	$14	67	$14	45	$10	84	$20	402	$ 66
O&MN Install.			(41)	$142	(89)	$308	(84)	$291	(188)	$370	(402)	1,111
APN-6 Spares				$2		$2		$2				6
GRAND TOTAL												$1,193

* In-warranty kits.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: LH/RH Glove Vane Switching Assembly (OSIP 112-81)

Models of Aircraft Affected: F-14A

Description/Justification:

Many engineering change proposals (ECP's) have been authorized for production and/or retrofit which have incorporated changes in the L/H and R/H Glove Vane Switching Assemblies. Each of these changes has resulted in reidentification, resulting in many different part numbers being in active fleet usage. The situation has been compounded by many retrofit changes having been incorporated out of proper sequence. Installation of improperly configured left glove switching assemblies on pre-Block 85 aircraft has rendered the bleed door and mid compression by-pass inoperative, therefore increasing stall susceptibility. Concern exists that additional safety of flight problems may occur in other areas due to installation of improperly configured relay boxes. ECP 1097 will provide new part numbers for production and retrofit versions of the L/H and R/H Glove Vane Switching Assemblies which will identify the functional interchangeability of these units between individual aircraft as well as blocks of aircraft.

Development Status: Engineering is complete. Grumman ECP 1097 was approved in September 1981. Production incorporation is scheduled for aircraft #455. No Approval for Service (ASU) is required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	142	$149	81	$14	70	$13	61	$12	47	$10	401	$198
O&MN Install.	(67)	$23	(75)	$26	(81)	$28	(70)	$24	(108)	$37	(401)	138
APN-6 Spares		$12				-0-						12
GRAND TOTAL												$348

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Increased Capability of F-14A Rain Removal Valve (OSIP 4-84)

Models of Aircraft Affected: F-14A

Description/Justification:

Fleet reports indicated that rain removal during heavy rains is inadequate and poses a safety problem due to poor visability. Modification of the Environmental Control System (ECS) rain removal valve with a new spring will increase the air supply pressure from 22 psi to 34 psi thus improving rain removal flow capability.

Development Status: Naval Air Test Center (NATC) has evaluated the adequacy of the rain removal valve with a spring change. The tests determined that the increased rain removal capability will be sufficient during heavy rains with the use of wire-on rain repellant on the windscreen. No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	98	$116	101	$29	202	$61	401	$ 206
O&MN Install.			(18)	$32	(383)	$680	(401)	712
APN-6 Spares		$116		$10				126
GRAND TOTAL								$1,044

Installation Data: The modification of the valve will be accomplished by the vendor (Janitrol). Removal and installation will be scheduled for Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Forward Engine Mount Bolts (OSIP 44-84)

Models of Aircraft Affected: F-14A

Description/Justification:

The forward engine mount bolts and their associated bushings have exhibited severe corrosion fretting, galling or pitting. The cause of this condition is attributed to the 15-5 PH steel bolt being used in conjunction with a 15-5 PH steel center bushing and an Inconel 718 outer bushing. These material combinations, being of similar hardness, display a certain degree of mutual solubility and tend to fret and gall under vibration and load conditions. A change in this material combination is necessary to prevent further corrosion. ECP 1075 proposes to use saturation shot peening and chromium plating of the part number A51P60725-11 bolt to eliminate this condition.

Development Status: ECP 1075 is available. No Approval for Service Use (ASU) required. Production effectivity is aircraft #456.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	98	$178	100	$94	203	$209	401	$481
O&MN Install.			(26)	$9	(375)	$130	(401)	139
APN-6 Spares		$12						12
GRAND TOTAL								$632

Installation Data: This modification will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Maintenance Level (SDLM). Kit delivery lead time is 20 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Vertical Fin-Substructure (OSIP 45-84)

Models of Aircraft Affected: F-14A

Description/Justification:

The Fleet has experienced extensive cracking of the vertical fin to nacelle attachment drag angles and to the nacelle support frames. ECP 1070 provides rework instructions for cracked components to assure structural integrity and adequate service life. The change will replace the existing aft nacelle frames and vertical fin drag angle attaching brackets and install new intercostals on each side of the fin centerline to provide the nacelle frames with enhanced flexibility.

Development Status: The contractor submitted ECP 1070 as a Correction of Defects change. Approval for Service Use (ASU) is not required. Production effectivity is aircraft #460.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	101	$2,659	103	$2,808	201	$6,043	405	$11,510
O&MN Install.					(405)	$9,812	(405)	9,812
APN-6 Spares		$57		$30				87
GRAND TOTAL								$21,409

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Maintenance Level (SDLM). Kit lead time is 32 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Gun Forward Mount Redesign (OSIP 46-84)

Models of Aircraft Affected: F-14A

Description/Justification:

Engineering Change Proposal (ECP) 1035 improves the service life (static and fatigue) of the gun support fitting by increasing its strength via redimensioning (increase thickness) and material changes (aluminum to steel) to the fitting, bushing, and clips. Failure of the gun forward mount is a serious safety hazard, as evidenced by at least one instance where the aircraft was hit by its own gunfire. ECP 1035 is correction of a design deficiency.

Development Status: ECP 1035 will be submitted in August 1983. Approval for Service Use (ASU) is not required. Production effectivity is aircraft #456.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	97	$111	102	$126	202	$273	401	$ 510
O&MN Install.			(9)	$31	(392)	$1,356	(401)	1,387
APN-6 Spares		$17		$11				28
GRAND TOTAL								$1,925

Installation Data: This modification will be accomplished by Naval Air Rework Facility (NARF) during Standard Depot Maintenance Level (SDLM). Kit delivery lead time is 21 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Gun Gas Purge Door Modification (OSIP 48-84)

Models of Aircraft Affected: F-14A

Description/Justification:

Foreign Object Damage (FOD) from the M61 gun compartment can exist via the gun gas door and FOD the port engine. This problem is caused by the lack of a protective device prohibiting exit of loose material from the gun compartment. The F-14A is also presently limited to a 50-round burst due to inadequate distribution and quantity of purge air in the F-14A gun compartment bay. The lack of adequate purge air results in a live flame of burning gun gas in the compartment. The proposed modification would install a new louvered gun access door with integral screen replacing the present access door with purge door. A screen covering the present purge door exit will be procured from NARF Norfolk during FY 1983 as an interim measure to decrease the number of engine FOD's from debris from the gun compartment. The design will prevent FOD from exiting the compartment and provide increased and re-routed purge air to eliminate gun gas burning.

Development Status: Naval Air Test Center will flight test the new design in FY 1983. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	98	$884	100	$799	203	$1,782	401	$3,465
O&MN Install.			(26)	$27	(375)	$390	(401)	417
APN-6 Spares		$110		$57				167
GRAND TOTAL								$4,049

Installation Data: This modification will be accomplished during Standard Depot Level Maintenance (SDLM). This modification is considered to be within fleet level capability and may be installed during pre-deployment. Kit delivery lead time is 20 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: RF-8G Configuration Update (OSIP 131-84)

Models of Aircraft Affected: RF-8G

Description/Justification:

Navy planning calls for the continued use of the RF-8G through the 1990's. Review of the operational service months remaining on the ten (10) operational RF-8G aircraft currently in Naval Reserve custody indicates that two (2) aircraft will reach maximum service life in FY 1984, and a total of seven (7) aircraft will reach maximum service life by FY 1987. Aircraft stored at Davis Montham AFB must be withdrawn to replace aircraft with expended service life. These aircraft will require some modifications to update them to current RF-8G configuration.

Development Status: No development is required. Modifications required are currently installed in operational aircraft.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	$200	2	$175	5	$700	10	$1,075
O&MNR Contr. Install.	(3)	$130	(2)	$87	(5)	$417	(10)	634
APN-6 Spares		-0-						-0-
GRAND TOTAL								$1,709

Installation Data: Installation will be accomplished by the contractor concurrent with Standard Depot Level Maintenance (SDLM) and/or Field Mod Team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Structural Fatigue Improvement Program (OSIP 20-81)

Models of Aircraft Affected: F-5E/F

Description/Justification:

Navy F-5 operations in the air combat maneuvering envelopes require structural improvements in critical components to extend the fatigue life. Recent 1200 hour structural inspection, fleet experience, full scale fatigue testing at Northrop Aircraft Corporation and counting accelerometer data from worldwide USAF F-5 Dissimilar Air Combat Training (DACT) aircraft identify potential structural fatigue items which require attention. Initial structural improvements consist of correcting known problem areas which have been identified subsequent to the 1200 hour structural inspection. These include wing change and wing point rework/improvement in FY 1984 and FY 1985. The program also involves installation of a redesigned Dorsel Longeron and replacement/modification of highly corrosion-prone structural components. These changes will be made on the Navy's seven F-5E and three F-5F aircraft.

Development Status: No development required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$200		$1,530		$2,950			10*	$4,680
O&MN Install.				$40		$160		$200		400
APN-6 Spares				$191		$326				517
GRAND TOTAL										$5,597

*Total aircraft quantity is 10.

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Navy/Air Force F-5 Standard Configuration Update (OSIP 42-84)

Models of Aircraft Affected: F-5E/F

Description/Justification:

This program will incorporate selected Air Force approved time-compliance technical orders involving kits to assure the Navy a safe, reliable adversary aircraft supportable through the Air Force Logistics System. Although design and configuration management of the basic F-5 aircraft reside within the USAF, procurement and installation of kits as well as the assurance that these aircraft are kept updated are the sole responsibility of the Navy. These changes will be made on the Navy's seven F-5E and three F-5F aircraft.

Development Status: The improvements are developed by the Air Force and the contractor and approved by the Air Force in response to discrepancies reported by all users of F-5E/F's. Navy Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$218		$229		$242		$ 689
O&MN Install.				$500		$1,000		1,500
APN-6 Spares		$33		$34		$36		103
GRAND TOTAL								$2,292

Installation Data: Installation is to be accomplished by Naval Air Rework Facility (NARF) field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: OMEGA Navigation System (OSIP 40-83)

Models of Aircraft Affected: OV-10D

Description/Justification:

The LTN-211 OMEGA system has been tested by the Navy and approved for service use to satisfy requirements for improved, modern, high-accuracy navigation. The FLIR and laser designator equipped OV-10D has proven extremely valuable in operational employment; however, one continuously reported deficiency has been the inability of OV-10D aircrews to establish location of targets acquired with the FLIR with the precision required for safe and effective coordination of close air support and artillery. Realization of the operational effectiveness inherent in the FLIR installation therefore mandates the use of an improved navigation system. The proven effectiveness and econom, of the LTN-211 presents an ideal solution to the OV-10D NAV requirement.

Development Status: The LTN-211 is approved for service use.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,700	17	$1,435			18	$3,135
O&MN Install.	(1)	$57	(1)	$57	(16)	$906		1,020
O&MN Factory Trng.				$300				300
APN-6 Spares		$11		$56				67
GRAND TOTAL								$4,522

Installation Data: Installation will be accomplished by a contractor field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: OV-10D Service Life Extension (OSIP 42-85)

Models of Aircraft Affected: OV-10D

Description/Justification:

The FLIR and laser designator equipped OV-10D has proven extremely valuable to the Fleet Marine Force. Airframe structural service life of the OV-10D is presently projected to expire in the 1980's without a replacement procurement program to satisfy the operational mission requirement. Additionally, the economic service life is also approaching due to advances in systems state-of-the-art and the consequent changes in the industrial base leading to increased operating costs. This program will extend the aircraft as an effective mission asset into the late 1990's.

Development Status: Several elements of the airframe are known to be a problem and are currently expending many manhours for inspection and repair or are reducing the operational flexibility of the aircraft. A study at the Naval Air Development Center under the auspices of NAVAIR (AIR-530) defined problem areas and the final scope of the required modifications. The SLEP specification is expected to be available by September 1983.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$7,508	16	$32,683	18	$40,191
O&MN Install.			(18)	$5,454	(18)	5,454
O&MN Factory Trng.				$320		320
APN-6 Spares		$1,045		$3,311		4,356
GRAND TOTAL						$50,321

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-144 IR Jammer (OSIP 13-84)

Models of Aircraft Affected: OV-10A/D

Description/Justification:

The ALQ-144 is an infrared jammer developed by the army for use on its AH 1 and UH-1 helicopters. The equipment consists of a transmitter unit and a small operator's control unit. Characteristics include: weight - 30 pounds; input power - 1,500 watts; and mean time between failure 250 hours. Current defenses against IR homing missiles (flare decoys and evasive maneuvers) depend on visual detection of the attack. The IR Jammer will provide continuous protection.

Development Status: Approval for service use (ASU) was granted on 29 April 1980 for Marine Corps AH-1 and UH-1 helicopters.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$1,682	38	$2,265	20	$1,108	60	$5,055
O&MN Install.	(1)	$15	(1)	$15	(58)	$852	(60)	$882
O&MN Factory Trainin				$12				12
APN-6 Spares		-0-		$82		$35		117
GRAND TOTAL								$6,066

Installation Data: Installation will be accomplished by contractor field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: APR-39 Radar Warning Receiver (OSIP 103-81)

Models of Aircraft Affected: OV-10A/D

Description/Justification:

The AN/APR-39 is a lightweight radar warning receiver (RWR) developed by the Army for helicopter and low performance fixed wing aircraft. It is capable of detecting and identifying threat emitters utilized for target acquisition and weapons system control, and displaying direction or arrival information to aircrews, to aid in execution of evasive maneuvers or ECM employment. A digital processor that is interchangeable with the basic systems analog processor is available for missions in higher density threat environments.

Development Status: The AN/APR-39 was developed by the US Army. Approval for Service Use (ASU) was granted for the AN/APR-39(V)1 on 29 April 1980.

Project Financial Plan:

	FY 1982 & Prior		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$50	1	$2,042	39	$1,215	20	$632	60	$3,939
O&MN Install.			(1)	$17	(1)	$17	(58)	$907	(60)	941
O&MN Factory Trng.				$18		$134				152
APN-6 Spares				-0-		$111		$42		153
GRAND TOTAL										$5,185

Installation Data: Installation will be accomplished by contractor field teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: OV-10A to D Conversion (OSIP 61-84)

Models of Aircraft Affected: OV-10A

Description/Justification:

The OV-10D (NOS) aircraft provides the USMC with a capability to locate enemy troops, artillery positions and armor under conditions of low visibility, night and masking. The Laser Ranging Detecting System permits target designation for laser guided weapons organic to the fleet. Conversion in lieu of production of 20 additional aircraft will provide the Fleet with additional mission effectiveness, and provide service life extension of these aircraft.

Development Status: The OV-10A to OV-10D (NOS) modification program for 18 aircraft was completed in late November 1980. Approval for Service Use (ASU) is in process and will be completed by October 1983.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$2,417	6	$31,969	11	$53,484	17	$87,870
O&MN Install.		-0-			(17)	$6,239	(17)	6,239
O&MN Training		-0-				$320		320
APN-6 Spares		-0-		$2,919		$4,040		6,959
GRAND TOTAL								$101,388

Installation Data: Installation will be accomplished by a contractor drive-in mod line.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: SIDEWINDER Wiring (AIM-9) (OSIP 62-84)

Models of Aircraft Affected: OV-10D

Description/Justification:

The current Fleet of OV-10D aircraft are unable to use the SIDEWINDER missile capability due to a change of the wing pylon during the OV-10A to OV-10D mod program. This program reinstalls the wiring and control box necessary to implement the SIDEWINDER capability. Stores Separation Only flight testing will be necessary.

Development Status: No development required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	18	$801			18	$ 801
O&MN Install.	(4)	$67	(14)	$235		302
APN-6 Spares		$33				33
GRAND TOTAL						$1,136

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Strobe Lights (OSIP 29-84)

Models of Aircraft Affected: OV-10A and OV-10D

Description/Justification:

An Operational Requirement has been established to install common high intensity anti-collision strobe lights on all Naval aircraft. Similar strobe lights have been successfully installed on the E-2C and P-3C aircraft.

Development Status: The strobe lights are developed and are installed on operational Navy aircraft (E-2C, etc.).

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$300	59	$622	60	$ 922
O&MN Install.	(1)	$16	(59)	$929		945
APN-6 Spares		-0-		$60		60
GRAND TOTAL						$1,927

Installation Data: Installation will be by contractor at his plant or by contractor field mod team at three sites.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Rotor Life and Bearing Improvement (OSIP 52-82)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

This modification entails two major components of the F/A-18 engine which by their direct interrelationship should be accomplished concurrently rather than sequentially to minimize costs. The modification is basically a redesigned No. 4 bearing and its interfacing components, and material substitutions in the Low Pressure Turbine (LPT) and High Pressure Turbine (HPT) rotors.

A larger, increased capacity No. 4 bearing has been developed which significantly increases bearing life at idle preload conditions and also at the higher power - high dynamic load conditions. This larger bearing results in corresponding dimensional adjustments to the LPT drive shaft, torque cone, oil separator, locking bolt and retaining ring. This change was incorporated and proven in Lot IV engines. Retrofit of the 25 Lot III engines and 52 Lot IV engines will significantly reduce support costs of the lower life bearing design.

The failure of the LPT disk, manufactured from Rene 95 powder metal, is believed to have been the main cause of the loss of aircraft TF-18 No. 2 in England in September 1980. The accident investigation revealed that abnormally large, undetected flaws existed in the disk material. This modification will provide for the substitution of DA INCO 713 material for the Rene 95 in the LPT disk, LPT forward seal, HPT disk, outer balance piston seal, and high pressure compressor aft spool. This material has better low cycle fatigue properties. In addition, the HPT cooling plates, the HPT aft shaft, LPT torque cone, and the inner balance piston seal have been dimensionally redesigned to reduce operating stresses. Difficulties encountered with the Rene 95 manufacturing/inspection process have resulted in large increases in cost and time, with corresponding reduced engine availability, to assure product acceptability. Rene 95 parts require inspection every 200 hours at a cost of $43,000 and 12 weeks downtime per engine.

Development Status: The new design parts were qualified on engine 215020 (150-hour qualification test) and over 500 accelerated mission test hours. In addition, the equivalent of 4000 accelerated service test hours were demonstrated on each component in the rotor spin facility. Since official qualification, two engines have accumulated over 325 flight hours each and life verification factory engine testing will continue throughout and FY 1983.

OSIP 52-82

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	9	$2,942	39	$11,348	29	$7,920	77	$22,210
O&MN Install.	(2)	$42	(56)	$1,322	(19)	$449		1,813
APN-6 Spares		$225		$482		-0-		707
GRAND TOTAL								$24,730

Installation Data: Production incorporation leaves 77 engines for retrofit, 25 Lot III, 52 Lot IV. Retrofit will be accomplished at the Naval Air Rework Facility (NARF), North Island.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Dual Chamber Main Landing Gear Shock Absorber (OSIP 33-83)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The F/A-18 single chamber shock absorber main landing gear has failed due to high sustained stresses in the retracted position. In order to reduce these sustained stresses to acceptable levels it was necessary to reduce the shock absorber pressure from 443 PSI to 150 PSI, but this decreased pressure reduced the sink rate and taxi capabilities to unacceptable levels. Subsequently it was determined that a dual chamber shock absorber would be necessary. The dual chamber configuration has a lower chamber pressure of 150 PSI for low stresses in the retracted position and a high pressure upper chamber to provide higher sink rate capability.

Development Status: The dual chamber main landing gear shock absorber underwent a qualification test program beginning late July 1981 and was completed in October 1982. No approval for service use (ASU) is required. Full production incorporation began with aircraft numbers F/A-41 and TF/A-10.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$505	15	$1,623	14	$1,695			33	$3,823
O&MN Install.			(4)	$92	(15)	$340	(14)	$318		750
APN-6 Spares		$61		$243		$253				557
GRAND TOTAL										$5,130

Installation Data: Aircraft F/A 28-31 are assigned for BIS trials and will be fitted with the dual chamber shock absorber in production. Retrofit will be accomplished by contractor field mod teams with effectivity F/A 10-27 and 32-40 and TF/A 3-9.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 6

Modification Title and No.: AN/ALR-67 Receiving Set, Countermeasures (OSIP 66-84)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The AN/ALR-67 Radar Receiving Set, Countermeasures Warning and Control System is a replacement for current AN/ALR-45 and AN/ALR-50 Radar and Missile Warning Equipment in certain tactical aircraft. The AN/ALR-67 provides detection and direction finding (DF) coverage over the entire known radar/missile frequency bands for all types of emissions used for target tracking and missile control. The ALR-67 includes a firmware reprogrammable signal processor and a high intensity alpha numeric CRT azimuth display. Handoff of threat data to other on board EW equipment via a MIL-STD-1553 digital data bus is also provided. The AN/ALR-67 is a significant DF coverage as well as an improvement in capability and maintainability/ reliability over equipments in current use.

Development Status: Seven engineering development model ALR-67's have been fabricated and are in various stages of test and evaluation. The reliability development test program, along with the environment qualification test program is continuing at the contractor's facility. The ALR-67 has successfully completed all required lab and ground testing and TECHEVAL. OPEVAL should start in the second quarter of FY 1983. Approval for Full Production (AFP) is anticipated in the third quarter of FY 1983. A limited production contract was awarded in the first quarter of FY 1983. RDT&EN Program Element is 64225N/WO613-TW.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$11,000	13	$23,268			17	$34,268
O&MN Install.					(17)	$528	(17)	528
APN-6 Spares		$2,053		$4,446				6,499
GRAND TOTAL								$41,295

Installation Data: Production incorporation of the provisions commenced with the FY 1981 procurement aircraft numbers F/A-37 and TF/A-20. Retrofit will be accomplished at Naval Air Rework Facility (NARF) North Island during Standard Depot Level Maintenance (SDLM), which will commence in FY 1985.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Non-Cooperative Target Recognition (NCTR) (OSIP 6-84)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

Non-Cooperative Target Recognition (NCTR) is a generic term which implies that an unknown target may be identified in spite of the target's refusal to cooperate in any way. NCTR is only one aspect of the broader identification friend or foe (IFF) problem and significantly adds to the pilot's ability to discern whether an unknown target beyond visual range is a friend or foe without an elaborate question and answer scheme such as the MK XII IFF system. The AN/APG-65 radar was designed for operation in multiple modes to satisfy multiple missions. It is the primary sensor that enhances the day or night all-weather capability of the F/A-18. The F/A-18 is the scheduled replacement for two aircraft mission areas that impose unique design requirements on the radar system. An extremely fast data processing rate is required for the air-to-air mode. The air-to-surface mode calls upon a very large data storage capacity. NCTR changes to the baseline AN/APG-65 provide for (1) increase in storage capacity from 4K to 16K Random Access Memory (RAM), (2) the addition of a micro-processor, and (3) improvements to software.

Development Status: Design is complete, hardware modification and laboratory testing are in progress, software development is in progress with an estimated completion date during the fourth quarter FY-1983. Flight test will be conducted in March 1983 and will complete September 1983. Approval for service use is not required. Production incorporation will commence with the FY 1982 procurement, aircraft F/A-87 and TF/A-21.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$2,660	48	$9,840	23	$5,075	75	$17,575
O&MN Install.			(4)	$19	(71)	$137	(75)	156
APN-6 Spares		$242						242
GRAND TOTAL								$17,973

OSIP 6-8[illegible]

Installation Data: Retrofit will be accomplished by contractor field mod team and at organizational level (due to multiple kits and effectivity) with aircraft effectivity F/A 10-86 and TF/A 3-20.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: One-Box INS Configuration (OSIP 105-84)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The inertial navigation set (INS) is the dominant equipment for providing position, velocity and acceleration information. It provides sensor data to the mission computer and velocity data to the radar for improved weapons delivery accuracy. The core memory is replaced with an ultra violet programmable read only memory (U/V PROM), leading to a reduction in failure rate and power requirement. The name one-box is suggested from the physical combination of component boxes. This is a CFE box change only and does not involve any change to the aircraft. The redesign will provide 25 percent improved maintainability and a 25 percent increase in mean time between failure (MTBF).

Development Status: System design is complete and fabrication is in progress. Qualification testing was completed in the second quarter FY 1982. The system will be evaluated in the F/A-18 prior to F/A-18 Approval for Service Use (ASU). Production incorporation commenced with the FY 1981 procurement, aircraft F/A-37 and TF/A-10.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	25	$1,382	25	$1,382
O&MN Install. "O" Level		-0-		-0-
APN Spares		$259		259
GRAND TOTAL				$1,641

Installation Data: Retrofit of the CFE will be accomplished at the organizational level with effectivity F/A 10-36 and TF/A 3-9.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Correction of Discrepancies identified during preliminary evaluation and subsequent flight test programs (OSIP 11-84)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

Discrepancies found during testing and evaluation can sometimes be incorporated in production aircraft, effective with the physical configuration audit which establishes the product baseline of the aircraft. However, when this cannot be done due to time constraints, retrofit of the changes in already delivered aircraft will require funding through the Aircraft Modification Program. The unacceptable alternative to retrofitting would be multiple configurations in the fleet, which create maintenance and supply problems, and in many cases the mission capability of the aircraft would be adversely affected.

(1) Incorporation of Differential Leading Edge Flaps and improved flying qualities.
(2) Airframe Mounted Accessory Drive (AMAD) Heat Exchanger.
(3) Main Landing Gear Trunnion Beef-up.
(4) Strobe Light Vibration Fix
(5) Sealed Lead Acid Battery.
(6) Throttle Sensitivity. (AFC)
(7) Throttle Sensitivity. (PPC)
(8) Secondary Power Isolation Valve "P".
(9) Main Landing Gear (MLG) Side Brace Improvement.
(10) Negative "G" Fuel System Limitations/Raised Inverted Baffles Tanks 213.
(11) Nose Landing Gear Cylinder Lug.
(12) Electromagnetic Interference Protection of Leading Edge Extension Leading Edge Skin.
(13) Center Fuselage Fatigue Improvement.
(14) Engine Control Unit.
(15) Turbine Boost Pumps.
(16) Engine Anti-Ice Adversary Logic.
(17) Fuel System Simplification

Development Status: Each change is either undergoing testing or will be tested and validated prior to installation in the F/A-18.

OSIP 11-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$5,298		$8,062		$6,282		$19,642
O&MN Install.		$1,017		$5,504		$23,767		30,288
APN-6 Spares		$787		$1,208		$524		2,519
GRAND TOTAL								$52,449

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) or contractor field modification teams, organizational and intermediate levels. Installation will occur by order of priority as established from the results of further flight testing and as operational flights are accumulated.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: ?N - Activity 5

Modification Title and No.: Pilot Selectable Wingfuel Circulation (OSIP 34-85)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

Since an air/fuel heat exchanger is being installed in production aircraft, the wing fuel recirculation system, originally designed to return part of the engine motive flow fuel to the lower wing surface for cooling, may not be needed for many flights where ambient temperatures are not extreme. Modification to the wing recirculation will provide the pilot with a switch to divert motive flow fuel directly to the feed tanks rather than back to the wings. This change will eliminate a potential wing trapped fuel condition when recirculation is not used. To accomplish this change, wiring changes and a cockpit switch are necessary.

Development Status: Modification of an aircraft for testing was completed in August 1982 is undergoing actual fuel soak and flight testing to obtain necessary data. Testing was completed in mid September 1982. A study of the data will result in determining at what fuel level for certain conditions the system can be operated. Production incorporation is planned to start with the FY 1985 procurement Lot IX.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	45	$2,798	180	$12,595	225	$15,393
O&MN Install.			(225)	$1,484	(225)	1,484
APN-6 Spares		$420		$596		1,016
GRAND TOTAL						$17,893

Installation Data: Retrofit will be accomplished at Naval Air Rework Facility (NARF) North Island at Standard Depot Level Maintenance (SDLM) and by Field Teams with effectivity aircraft numbers F10-234, TF3-29.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Special Weapons (OSIP 35-85)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The baseline AMAC system which had proceeded through the fabrication of four Engineering Development Models (EDM) had design deficiencies. In addition to correction of the original design deficiencies, changes are being considered which are in response to need for additional operational capabilities.

Development Status: Design requirements and mechanizations are being finalized so that fabrication of a system breadboard and preproduction units can be accomplished. Preproduction units are scheduled for deliveries in August 1983. Preliminary unit planning has begun and first delivery of production units for aircraft installation is scheduled for January 1984. Production incorporation will commence with the FY 1982 procurement. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	28	$1,044	38	$1,535	66	$2,579
O&MN Install.			(66)	$1,018		1,018
APN-6 Spares		$156		$203		359
GRAND TOTAL						$3,956

Installation Data: Retrofit will be accomplished by contractor field mod team with effectivity aircraft numbers F10-86 and TF3-20.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Video Recording System (VRS) (OSIP 56-84)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The Video Recording System (VRS) consists of a Head Up Display (HUD) camera and a Video Tape Recorder (VTR) and replaces the KB-34A Motion Picture Camera. The VRS is designed to enhance training, safety, single pilot operability and operational capability. The VRS has the capability to record the display presented on the HUD as well as the view seen by the pilot through the HUD and the pilot's headset audio. The compactly packaged lightweight recorder will extend the recording time available over the KB-34A which has been removed from the aircraft. The VRS will provide the greatest training benefits from the limited flight time available.

Development Status: A recharged TEAC commercial recorder procured as GFE is now available. An existing Fairchild CCD camera has been repackaged for F/A-18 while preserving commonality with the F-14 camera at the SRA level. Approval for Service Use (ASU) is not required. Production incorporation commenced with the FY 1981 (LOT V) aircraft numbers F/A-37 and TF/A-10 and subsequent.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	12	$873	21	$978			33	$1,851
O&MN Install.			(12)	$340	(21)	$489		829
APN-6 Spares		$65		$76				141
GRAND TOTAL								$2,821

Installation Data: Retrofit will be accomplished at Naval Air Rework Facility (NARF) North Island during Standard Depot Level Maintenance (SDLM) and by contractor field mod team with effectivity aircraft numbers F10-36, TF3-9 and subsequent.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Beacon Bombing (OSIP 11-85)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The radar beacon bombing mode of the AN/APG-65 Radar will provide the capability to provide close air support to ground troops and provide accurate bombing by operating in conjunction with a ground station. The system permits contact between a forward air controller and the pilot via the radar. This is accomplished by AN/APG-65 radar interrogation of ground beacons for target information to enable detection, tracking and weapon delivery computations.

Development Status: A study was completed in March 1981, with the results indicating that the beacon mode is feasible and can be implemented with very low risk and with minor incorporation difficulty. Hardware modifications to the radar receiver-exciter and software changes are required. The ground stations will be procured from the Army and agreement has been obtained for a crystal to be added which will be compatible with F/A-18 aircraft. Approval for Service Use (ASU) is not required. Production incorporation is planned to start with FY 1984 procurement (LOT VIII).

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	24	$1,553	99	$5,677	123	$7,230
O&MN Install.			(123)	$543	(123)	543
APN-6 Spares		$350		$249		599
GRAND TOTAL						$8,372

Installation Data: Retrofit will be accomplished by induction of the Weapons Replaceable Assembly (WRA) into Intermediate "I" level for exchange of modified Shop Replaceable Assembly (SRA). Retrofit of the SRA will be accomplished at contractors facility with effectivity aircraft numbers F37-145 and TF10-24.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Laser Target Designator (OSIP 12-85)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The Laser Target Designator (LTD) will be designed as an addition to the AN/AAS-38 Detecting Set. The AN/AAS-38 is a pod-mounted infrared imaging sensor. The LTD will provide laser illumination of targets being tracked by the AN/AAS-38, for designation to laser guided weapons or other laser spot tracker equipped aircraft, contributing to a first pass attack capability.

Development Status: Update of the feasibility study change proposal of 23 October 1980 has been requested. Production incorporation is planned to start with FY 1984 procurement. Combined integration evaluation will commence in second quarter FY 1984. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	25	$3,788	36	$5,639	61	$ 9,427
O&MN Install.			(61)	$2,349	(61)	2,349
APN-6 Spares		$1,093		$1,128		2,221
GRAND TOTAL						$13,997

Installation Data: Installation will be accomplished by the contractor at the contractor's facility. Currently planned retrofit will be FY 1985 - 25 units and FY 1986 - 36 units. Kit leadtime will be 15 months after receipt of order.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-126B Provisions (OSIP 36-85)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The AN/ALQ-126B is an improved version of the AN/ALQ-126A Electronic Countermeasures Set. Retrofit modifications will include changes to make the AN/ALQ-126B compatible with the on-board avionics. Significant enhancement over the AN/ALQ-126A will be realized by incorporated/expanded techniques and software processing enabling the ALQ-126B to communicate with the ALR-67. Operational flexibility will be achieved by this change because the aircraft will be able to accommodate either the ALQ-126A which is presently in inventory but not in sufficient quantities to fulfill F/A-18 fleet requirements, or use of the ALQ-126B. Aircraft modifications required to retrofit the ALQ-126B are limited to tunable filter and software. Waveguide alteration is not required.

Development Status: The AN/ALQ-126B has completed OPEVAL, and Provisional Approval for Service Use (PASU) was granted in August 1982. Approval for full production is planned for third quarter FY 1983.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	60	$1,491	60	$1,590	120	$3,081
O&MN Install.			(120)	$226		226
APN-6 Spares		197				197
GRAND TOTAL						$3,504

Installation Data: Retrofit will be accomplished at Naval Air Rework Facility (NARF) North Island, during Standard Depot Level Maintenance (SDLM) or by field mod team (FMT) with effectivity aircraft numbers F/A 17-145 and TF/A 5-24. Kit leadtime is estimated at 15-18 months after receipt of order.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Flight Incident Recorder/Crash Position Locator (FIR/CPL) (OSIP 13-85)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The Flight Incident Recorder/Crash Position Locator (FIR/CPL) will record flight data needed for analysis in the event of a flight incident, mishap or crash. The FIR will be integrated into a deployable module that also contains a radio beacon CPL and a visual marker. The entire module will be ejected from the host aircraft before or upon crash impact or water ditching.

Development Status: Development of the FIR/CPL for F/A-18 is based on existing FIR/CPL technology. All basic system components are state-of-the-art and already flying in other aircraft concepts, or have been thoroughly evaluated under RDT&E programs, and are currently being implemented via technology transfer programs. The F/A-18 configuration will include redesign of existing maintenance recording electronics to provide central processing and power supplies for increased reliability and cost reduction. Production incorporation will commence with the FY 1984 procurement.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	60	$1,633	181	$4,803	241	$ 6,436
O&MN Install.			(241)	$4,651	(241)	4,651
APN-6 Spares		$224		$199		423
GRAND TOTAL						$11,510

Installation Data: Retrofit will be accomplished by the Contractor with effectivity aircraft numbers F10-224 and TF3-29. Kit leadtime is estimated at 9 months after receipt of order.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Underwater Crash Position Indicator (OSIP 60-84)

Models of Aircraft Affected: F/A-18A

Description/Justification:

Provide mounting capability, consisting of four holes, for an Underwater Crash Position Indicator (CPI). The Underwater CPI (also called Pinger) is provided by the TYCOM as loose equipment, which is secured to the airframe. The Pinger activates at water entry propagating an acoustic pulse once a second in all directions, with detection ranges up to approximately 3,000 yards for a period of 30 days. Pingers are removed from sensitive aircraft prior to deployment. Maintenance consists of periodic contact cleaning and functional checks in aircraft and annual battery replacement.

Development Status: The Dukane Beacon was selected after comparative testing at Naval Air Test Center (NATC) Patuxent River for all aircraft in the RDT&E Program in the early 1970's. Subsequently, they were selected for the F-14, A-7E's, etc. and for the Marine Corps loose equipment program controlled by the TYCOM, for use only in the CONUS (not deployed). Dukane leadtime is 30 days in quantities for FY 1984, FY 1985 and FY 1986, and 120 days for FY 1987 and FY 1988 quantities. Normal procurement is one Pinger and Mount per aircraft; and one tester, wrench and clamp per squadron. Production incorporation will commence with FY 1984 procurement. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	157	$179	157	$179
O&MN Install. "O" Level		-0-		-0-
APN-6 Spares		$4		4
GRAND TOTAL				$183

Installation Data. Retrofit will be accomplished at organizational level with effectivity aircraft numbers F10-145 and TF3-24. Kit leadtime is estimated at between 15-18 months after receipt of order.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-165 Installation (ASPJ) (OSIP 25-85)

Models of Aircraft Affected: F/A-18

Description/Justification:

The AN/ALQ-165 is a versatile defensive electronic countermeasures system. It consists of receiver, processor, and transmitter units configured to fit into the current AN/ALQ-126 space (about 2.3 cubic feet) and weighing about 230 pounds. The AN/ALQ-165 is required to provide combat survivability against modern diversified radar controlled weapons. Survivability is afforded through application of a variety of countermeasures techniques to a versatile array of system resources. A reprogramming capability facilitates adaption to threat changes to maintain effectiveness.

Development Status: The AN/ALQ-165 is currently in Engineering Development under Program Element Numbers 64226N and 64737F. TECHEVAL and OPEVAL are scheduled for early to mid FY 1984 and late FY 1984 to early FY 1985, respectively.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	22	$32,383	226	$192,871	248	$225,254
O&MN Install.			(248)	$21,396	(248)	21,396
APN-6 Spares		$4,836		$17,598		22,434
GRAND TOTAL						$269,084

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Double Density AN/AYK-14 Mission Computer (OSIP 40-85)

Models of Aircraft Affected: F/A-18, TF/A-18

Description/Justification:

The Mission Computer (MC), AN/AYK-14, presently utilized in the F/A-18 and TF/A-18 aircraft does not provide sufficient memory for the present requirements (e.g. HARPOON) and future memory requirements. This change will provide "double density" memory cards, which are directly replaceable for the current memory cards, in effect giving the MC (two per aircraft) twice as much memory.

Development Status: Thirty-four (34) Engineering Development modules have been prepared and twenty-four (24) have been developed by NATC Patuxent River, MD. To date, interface testing, interchange testing, and reliability development testing have been completed. Environmental qualification was completed in February 1982. Production deliveries of 64K memory modules are planned to begin in April 1983. Production incorporation commenced with the FY 1981 procurement (LOT V) aircraft numbers F37 and TF10 to add restrictors for cooling requirements. Production installation of the Double Density AYK-14's will commence with the FY 1982 procurement (LOT VI) aircraft numbers F87 and TF21.

Project Financial Plan:

	FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	19	$2,682	33	$4,957	52	$7,639
O&MN Install. "O" Level		-0-				-0-
APN-6 Spares						-0-
GRAND TOTAL						$7,639

Installation Data: Retrofit will be accomplished at the "O" level via an AFC to add restrictors in aircraft F10-36 and TF3-9. GFE AYK-14 Double Density retrofit will be accomplished via an AVC at the "I" level commencing FY 1984 in aircraft F10-86 and TF3-20.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARN-118 TACAN (OSIP 21-82)

Models of Aircraft Affected: HH-46A, CH-46D, CH-46E, UH-46D

Description/Justification:

The H-46 tactical navigation (TACAN) systems have demonstrated low reliability and poor maintainability, resulting in both high cost of ownership and degraded Fleet readiness. Reliability data for the ARN-52 in the H-46 series helicopter has established mean flight hours between failure (MFHBF) of approximately 78 hours. In view of the low MFHBF for the ARN-52, all H-46's will be retrofitted with the ARN-118 TACAN. In addition to the significant improvement in MFHBF (typically 1700+ hours in other Navy/Air Force aircraft) an operational improvement of approximately 200-mile (200 to 390 NM) increase in reliable TACAN information plus air-to-air range information will be realized. The AN/ARN-118 is smaller and lighter than the currently installed equipment. Direct replacement is made possible by mounting adapters for installation.

Development Status: The ARN-118 is approved for service use.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	$350	90	$2,016	150	$3,375	106	$2,507			356	$8,248
O&MN Install.			(10)	$22	(45)	$101	(120)	$270	(181)	$407	(356)	800
APN-6 Spares						-0-						-0-
GRAND TOTAL												$9,048

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) Cherry Point and Naval Air Rework Facility (NARF) North Island during Standard Depot Level Maintenance (SDLM). Kit lead time is 15 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: H-46 Safety, Reliability and Maintainability (S,R&M) Update (OSIP 31-81)

Models of Aircraft Affected: CH/UH/HH-46

Description/Justification:

H-46 service life extension to at least the mid-1990's is realistic in view of the status of current planning for a replacement aircraft and present budgetary outlook. This extension of operating life makes corrective action on existing major material deficiencies inherent to the aging H-46 fleet imperative if unacceptable impact on safety, fleet readiness and cost of continued ownership is to be avoided.

Planned items involve changes to ensure adequacy of the basic airframe structure and its integral components and to improve reliability and maintainability of various system components. A detailed analysis of the changes indicates their incorporation will significantly improve safety, aircraft availability (+9.6 percent) and maintenance hours per flight hour (MH/FH - 1.91).

Development Status: No development is necessary but qualification testing of affected parts/components will be required. Contractor installation and flight test will be conducted followed by Navy evaluation at the Naval Air Test Center (NATC), Patuxent River, Maryland.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$43,933		$15,987	78	$91,435	120	$123,414	146	$165,873	348	$440,642
O&MN Install.			(4)	$3,724		$3,921	(10)	$5,503	(334)	$109,719	(348)	122,867
APN-6 Spares		$3,641		$1,482		$18 402		$15,865		$18,250		57,640
GRAND TOTAL												$621,149

Installation Data: To be incorporated during Standard Depot Level Maintenance (SDLM) at Naval Air Rework Facility (NARF) Cherry Point and Naval Air Rework Facility (NARF) North Island.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: H-46 Fiberglass Blades (OSIP 9-78)

Models of Aircraft Affected: CH-46D/E/F, UH/CH/HH-46A

Description/Justification:

The H-46 fiberglass rotor blades will have a fiberglass "D" spar with a titanium erosion strip, fiberglass skin and nomex honeycomb core trailing edge. This construction concept is expected to provide the following characteristics: will not corrode, environmental degradation insignificant, insensitive to small defects, soft failure propagation with a change in stiffness warning, preflight visual inspection only, mean time between removal (MTBR) will increase from 288 hours to 2,500 hours, manufacturing process repeatability will reduce blade tracking and balance time, and procurement cost per blade compared to current blade will remain equivalent.

Development Status: Approval for Service Use (ASU) has been granted.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	274	$75,395	48	$15,449	32	$15,000	354	$105,844
APN-6 Spares		$5,908		$3,747				9,655
GRAND TOTAL								$115,499

Installation Data: Installation will be accomplished at the organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-157(V) IR Jammer (OSIP 22-77)

Models of Aircraft Affected: CH-46E

Description/Justification:

The ALQ-157(V) is an infrared jammer that degrades the capabilities of IR homing missiles posing serious threats to tactical helicopters. Current defenses against IR homing missiles (flare decoys and evasive maneuvers) depend on visual detection of the attack. No warning receiver is available. The ALQ-157(V) provides continuous protection. The equipment consists of two externally mounted transmitter units, an internally mounted electronic control unit, and a pilot's control-indicator. This is a joint Army-Navy program for heavy helicopters with the Navy acting as lead service. The basic jammer or a variant will be applicable to the USMC CH-46E, CH-53A/D and to the Army CH-47C helicopters. The ALQ-157(V) is being manufactured by Xerox Electro-Optical Systems, Pasadena, California.

Development Status: Competitive testing of three engineering development models (EDM's) was completed in late FY 1977 with two of the systems considered capable of meeting the CH-46/47/53 requirements with improvements to be incorporated in production. Further tests/analysis leading to specifications for production test articles accommodating requirements of all candidate helicopters were completed in FY 1978. Approval for Service Use (ASU) is scheduled for June 1983.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1*	$3,175	111	$7,978	116	$8,506	34	$580			262	$20,269
O&MN Install.	(1)	$8			(52)	$40	(113)	$873	(96)	$742	(262)	2,024
APN-6 Spares				$1,813		$1,499						3,312
GRAND TOTAL												$25,605

*Prototype.

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) Cherry Point during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Engine Air Particle Separators (OSIP 42-83)

Models of Aircraft Affected: CH-46E

Description/Justification:

The CH-46E (reworked from CH-46D/F's) are equipped with either: (a) nonseparating inlet and barrier screen or (b) the engine air particle separators (EAPS) now installed on the remaining H-46D/F's. The EAPS is a flight proven erosion protection system with low power loss. It has experienced some reliability and maintainability (R&M) problems and cannot be used in any environment where icing exists or is predicted. However, the barrier screens impose high power loss, low R&M, and have no anti/de-ice capability. Therefore EAPS are needed as a near term solution to the foreign object damage (FOD) problem and either a redesigned inlet system utilizing the present EAPS or a Heated EAPS (HEAPS) is required for a long term, all weather capability.

Development Status: This system is qualified and flying on H-46 aircraft.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$3,538	48	$4,922	43	$4,701	36	$4,192	127	$17,353
O&MN Install.					(12)	$326	(115)	$3,129	(127)	$3,455
APN-6 Spares				$79						79
GRAND TOTAL										$20,887

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM). Kit lead time is 18 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Night Vision Goggles (OSIP 66-82)

Models of Aircraft Affected: CH-46E

Description/Justification:

The present and projected threat require low altitude helicopter operations which cannot now be conducted at night due to a lack of adequate night vision equipment. AVS-6, third generation aviation night vision goggles, with appropriate cockpit lighting modifications for compatibility, will provide a limited capability for the flight crew to regain 25-75 percent of the night time.

Development Status: The Helicopter Night Vision System is being developed under RDT&E,N Program Element Number 64213N. The goggles are under development by the U.S. Army and are referred to as Aviator's Night Vision Imaging System (ANVIS) or AVS-6. USN Approval for Service Use (ASU) is expected by the third quarter of FY 1983. Army DT/OT-II testing is completed and production was authorized in September 1982. Temporary lighting modification for AVS-6 compatability has been developed by the Naval Air Test Center (NATC) for the CH-46E. The lighting modification will be installed in 48 CH-46E aircraft. A permanent lighting modification will follow for 265 CH-46E aircraft.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$1,805		$5,846		$8,263		$3,132		$19,046
O&MN Install. "O" Level						-0-				-0-
O&MN Training		$80								80
APN-6 Spares		$58		$586		$817				1,461
GRAND TOTAL										$20,587

Installation Data: Lighting Mod kits will be installed at the organizational level by squadron maintenance personnel.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: H-46 Emergency Flotation System (OSTP 21-85)

Models of Aircraft Affected: CH-46E/UH-46D/CH-46D/HH-46A/HCH-46A

Description/Justification:

H-46 emergency water landings at sea frequently result in water entry, rollover, and sinking in less than two minutes with loss of the helicopter and occupants. If the aircraft had remained afloat and upright longer, accident statistics indicate 64 lives and 46 aircraft could have been saved. The planned flotation system would permit the H-46 to remain afloat in an upright position for 3 hours and under sea state conditions up to 5 hours. This system consists of four dual compartment polyurethane flotation bags stowed external to the fuselage and inflated in an emergency either manually by the pilot or automatically upon water entry. The inflation medium (nitrogen) will be stored in four 3,000 PSI Kevlar filament-wound pressure vessels.

Development Status: This system is under development by the Naval Air Development Center (NADC), Warminster (RDT&E,N Program Element Number 64213N). RDT&E,N category 6.4 funds to demonstrate the system in the H-46 and to provide necessary documentation to expedite the production/deployment phase. Flight test is scheduled to be conducted in July 1983.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	56	$5,003	296	$27,862	352	$32,865
O&MN Install.			(352)	$2,798		2,798
O&MN Training				$95		95
APN-6 Spares		$388		$1,052		1,440
GRAND TOTAL						$37,198

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM). Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Ground Proximity Warning System (OSIP 63-84)

Models of Aircraft Affected: CH-46E, CH-46D, HH-46A, UH-46A/D, CH-46A

Description/Justification:

The Ground Proximity Warning System (GPWS) is intended to provide flight crews with audible and visual warnings of imminent inadvertent contact with the ground due to excessive rates of descent, excessive closure rates to terrain, altitude loss, or flight into terrain when not in a landing configuration. The GPWS is very effective in alerting pilots and air crews of impending Controlled Flight Into Terrain (CFIT) danger.

Development Status: The GPWS is a commercially available, off-the-shelf product that meets ARINC standard 594. Flight tests and verification of the GPWS computer software flight profiles for the H-53 aircraft installation have been complete for the RH/CH-53A/D. Completion for the CH-53E is expected in the fourth quarter of FY 1983.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$1,071	132	$3,260	216	$5,422	352	$ 9,753
O&MN Install.			(4)	$53	(348)	$4,629		4,682
O&MN Training				$10				10
APN-6 Spares		$31		$789		$562		1,382
GRAND TOTAL								$15,827

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Disc APP Clutch (OSIP 47-80)

Models of Aircraft Affected: CH-53A/D, RH-53D

Description/Justification:

This change will introduce a disc clutch that is identical to the disc clutch installed on production CH-53E helicopters. Tests conducted on the CH-53E disc clutch revealed improved operational performance and reduction in vibration when compared to the existing drum clutch installation. A reduction in seal leakage, shoe and drum wear is also expected. No additional qualification testing will be required, since testing was accomplished under the CH-53E program. These test results are applicable to the CH-53A/D and RH-53D helicopters.

Development Status: Drawings are available. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	55	$2,431	56	$1,844	62	$1,854	24	$766			197	$6,895
O&MN Install.			(27)	$15	(62)	$35	(50)	$33	(49)	$28	(197)	111
O&MN Training		$6										6
APN-6 Spares		$122		$205		-0-						327
GRAND TOTAL												$7,339

Installation Data. Installation will be accomplished by the Naval Air Rework Facility (NARF) Pensacola during Standard Depot Level Maintenance (SDLM). Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-157(V) IR Jammer (OSIP 69-79)

Models of Aircraft Affected: CH-53A/D

Description/Justification:

The ALQ-157(V) is an infrared jammer that degrades the capabilities of IR homing missiles posing serious threats to tactical helicopters. Current defenses against IR homing missiles (flare decoys and evasive maneuvers) depend on visual detection of the attack. No warning receiver is available. The ALQ-157(V) provides continuous protection. The equipment consists of two externally mounted transmitter units, an internally mounted electronic control unit, and a pilot's control-indicator. This is a joint Army-Navy program for heavy helicopters with the Navy acting as lead service. The basic jammer or a variant will be applicable to USMC CH-46E, CH-53A/D and to Army CH-47C helicopters. The ALQ-157(V) is being manufactured by Xerox Electro-Optical Systems, Pasadena, California.

Development Status: Competitive testing of three EDM's was completed in late FY 1977 with two of the equipments considered capable of meeting the requirements, with improvements to be incorporated in production. Further tests/analysis leading to specifications for production test articles accommodating requirements of all candidate helicopters were completed in FY 1978. In August 1979, a contract was awarded to Xerox Electro-Optical Systems for production of twelve system test models for the ALQ-157. Testing leading to approval for service use (ASU) will be completed during the second quarter of FY 1983 with ASU in May 1983. The current contract with Xerox contains fixed price options for the first year (FY 1983) production.

OSIP 69-79

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1*	$1,736	87	$4,384	86	$6,192					174	$12,312
O&MN Install.			(1)	$8	(16)	$130	(60)	$488	(97)	$789	(174)	1,415
APN-6 Spares				$789		$1,097						1,886
GRAND TOTAL												$15,613

* Prototype.

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) Pensacola during Standard Depot Level Maintenance (SDLM). Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Crashworthy Armored Pilot Seats (OSIP 43-83)

Models of Aircraft Affected: CH-53A, CH-53D, RH-53D

Description/Justification:

Personnel currently survive helicopter crashes only when the crash impact is light and the structural integrity of the seat/restraint system is not compromised. The proposed armored seats will provide improved helicopter crash survivability consistent with direction of the Chief of Naval Operations. Early incorporation of impact protection to meet the dynamic requirements based on USAAVLABS Technical Report 70-22 will save a substantial number of lives currently being lost in helicopter operations.

Development Status: Crashworthy crew seats have been tested and approved for service use under the CH-46E CILOP. In addition, crashworthy crew seats are being installed in the U.S. Army Black Hawk and U.S. Navy derivative Sea Hawk.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$5,368	38	$3,478	62	$4,376	91	$7,098	197	$20,320
O&MN Install.			(6)	$189	(38)	$884	(153)	$3,559	(197)	4,632
O&MN Factory Training		$100		$100						200
APN-6 Spares		$90		$387		$306				783
GRAND TOTAL										$25,935

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM). Kit lead time is 9 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Night Vision Goggles (DSIP 67-82)

Models of Aircraft Affected: CH-53A/D, RH-53D, CH-53E

Description/Justification:

The present and projected threat requires low altitude helicopter operations which cannot now be conducted at night due to a lack of adequate night vision equipment. The third generation Aviation Night Vision Goggles, with appropriate cockpit lighting modifications for compatibility, will provide a limited capability for the flight crew to regain 25-75 percent of the night time.

Development Status: The Helicopter Night Vision System is being developed under RDT&E,N Program Element Number 64213N. The goggles are under development by the U.S. Army and are referred to as Aviator's Night Vision Imaging Systems (ANVIS) or AVS-6. U.S. Navy Approval for Service Use (ASU) is expected by the third quarter of FY 1983. Army DT/OT-II testing is completed and production was authorized in September 1982. A temporary lighting modification for AVS-6 has been developed by the Naval Air Test Center (NATC) for the CH-53. The temporary lighting modification will be installed 16 CH-53A/D aircraft, 12 RH-53D aircraft and 16 CH-53E aircraft. A permanent lighting modification for 181 16 CH-53A/D aircraft, 23 RH-53D aircraft and 160 C/MH-53E aircraft will follow.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	32	$719	107	$2,760	174	$4,137	380	$9,179	472	$11,815	1,165	$28,610
O&MN Training		$40										40
APN-6 Spares				$559		$599						1,158
GRAND TOTAL												$29,808

NOTE: Quantity represents sets of goggles.

Installation Data: Ltng Mod kits will be installed at the organizational level by squadron maintenance personnel.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: LTN-211 OMEGA/VLF Navigation Set (OSIP 64-84)

Models of Aircraft Affected: CH-53E, CH-53D, CH-53A, RH-53D

Description/Justification:

The OMEGA navigation set is a long-range over-water navigation system in use on Navy aircraft. The OMEGA system involves the use of eight ground stations located in various parts of the world. The stations emit low frequency radio signals. A receiver/computer aboard the aircraft interprets these signals and computes latitude and longitude of the aircraft. The OMEGA system is also used by commercial airlines. The current standard Navy OMEGA system is the commercial LTN-211. Due to its commercial airline usage, software modification/updates are accomplished at no cost to the government. Commercial repair facilities are worldwide and Mean Time Between Failure (MTBF) in excess of 1500 hours is currently being achieved. This modification installation also provides for a true airspeed system (TAS) to provide velocity information for the OMEGA navigation set.

Development Status: The LTN-211 OMEGA/VLF is approved for service use.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$2,419	96	$5,568	137	$7,906	239	$15,893
O&MN Install.			(6)	$81	(233)	$2,681	(239)	2,762
O&MN Training		$255		$50				305
APN-6 Spares		$7		$117				124
GRAND TOTAL								$19,084

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) field team and during Standard Depot Level Maintenance (SDLM). Kit lead time is 9 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Crashworthy Fuel System (OSIP 65-84)

Models of Aircraft Affected: CH-53A, CH-53D, RH-53D

Description/Justification:

The crashworthy fuel system is designed to contain fuel spillage during and following a crash or impact with the ground. The system consists of impact resistant fuel tanks and flangeable fittings which resist fracture during crash impacts. The system will also incorporate an increase in ballistic protection for the fuel tanks.

Development Status: A crashworthy fuel system has been developed for the CH-53E currently in production. Major segments of the CH-53E system will be interchangeable with the CH-53A/D and RH-53D aircraft and will only require verification.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$2,865	55	$4,565	121	$10,062	178	$17,492
O&MN Install.			(6)	$70	(172)	$1,909	(178)	2,069
APN-6 Spares		-0-		$599		$829		1,428
GRAND TOTAL								$20,989

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM). Kit lead time is 4 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Ground Proximity Warning System (GPWS) (OSIP 67-84)

Models of Aircraft Affected: CH-53A, CH-53D, RH-53D

Description/Justification:

The Ground Proximity Warning System (GPWS) is intended to provide flight crews with audible and visual warnings of imminent inadvertent contact with the ground due to excessive rates of descent, excessive closure rates to terrain, altitude loss, or flight into terrain when not in a landing configuration. The GPWS is very effective in alerting pilots and air crews of impending Controlled Flight Into Terrain (CFIT) danger.

Development Status: The GPWS is a commercially available, off-the-shelf product that meets ARINC standard 594. Flight tests and verification of the GPWS computer software flight profiles for the H-53 aircraft installation have been completed for the CH-53A/D series aircraft. Completion for the CH-53D is expected by the first quarter of FY 1984.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$1.291	52	$1,439	99	$2,607	153	$5,337
O&MN Install.			(2)	$46	(151)	$2,109	(153)	2,155
O&MN Training				$140		$75		215
APN-6 Spares		$129		$290		$232		651
GRAND TOTAL								$8,358

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Aircraft Survivability Improvement (Engine and Vital Area Armor) (OSIP 68-84)

Models of Aircraft Affected: CH-53A, CH-53D, RH-53D, CH-53E

Description/Justification:

Under Airframe Change 20, an airframe armor suite was installed on CH-53A/D helicopters. This armor package serves to protect the engine components and hydraulic reservoir from small arms fire. The total weight of the airframe kit is 325 pounds. A second armor plate package was incorporated on a limited number of CH-53D helos. This suite uses Air Force HH-53-configured armor to protect the cockpit area, flight control systems, main rotor pylon, tail and main rotor servos, gearboxes, and parts of the fuel system. This kit consists of Titanium armor plate material in accordance with MIL-T-46077. The entire USAF package weighs 619 pounds. Technology and material advances drastically reduce the ballistic vulnerability of helicopters.

Development Status: Armor systems are already developed or in final development testing at the Naval Weapons System (NWC) and Sikorsky for the H-53 aircraft.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,433	27	$3,365	229	$33,061	257	$37,859
O&MN Install.			(1)	$47	(256)	$11,910	(257)	11,957
APN-6 Spares				$488		$880		1,368
GRAND TOTAL								$51.184

Installation Data: Fuel system protection will be installed during normal Standard Depot Level Maintenance (SDLM) cycle at the Naval Rework Facility (NARF). Kevlar mats will be installed at the organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: H-1 Battery Fault Warning (OSIP 62-80)

Models of Aircraft Affected: AH-1J/T, UH-1N

Description/Justification:

Since incorporation of NICAD batteries into the H-1 aircraft, there have been numerous instances of the battery overheating, going into thermal runaway. Results of thermal runaway are fire, fumes and possible explosion in the electrical compartment of the H-1 aircraft which may result in catastrophic loss of aircraft and crew. The Naval Safety Center has identified a battery thermal runaway as contributing to an accident.

This modification will prevent NICAD battery thermal runaway and warn the pilot of an impending battery overheat problem, preventing loss or damage to the aircraft and crew. Furthermore, by providing a proper constant controlled charge to the aircraft battery, the system is expected to reduce battery malfunctions, maintenance, and increase the service cycle of the battery.

Development Status: Basic system components are available as off-the-shelf items. This is a minor change to the aircraft. No approval for service use required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$265	59	$780	69	$988			128	$2,042
O&MN Install.					(59)	$328	(69)	$384	(128)	712
APN-6 Spares				$55		$69				124
GRAND TOTAL										$2,878

Installation Data: Installation will be accomplished by contractor field team on site at East and West Coast Marine Corps facilities.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: APR-44 (OSIP 24-82)

Models of Aircraft Affected: UH-1N

Description/Justification:

The APR-44 is an Army developed continuous wave (CW) warning receiver intended for use on helicopters. Total installed weight is approximately 4 pounds, size is 33 cubic inches. The system is required by Marine Corps assault helicopters that currently have no CW warning system. Provisions and APR-44's will be installed in 139 UH-1N's.

Development Status: Development by the U.S. Army was completed in FY 1979. Army production began in FY 1980 and is continuing. Navy DT-II (TECHEVAL) was completed in the third quarter of FY 1982. OT-II (OPEVAL) will be complete in May 1983 followed by Approval for Service Use (ASU) in the fourth quarter of FY 1983.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$140	41	$2,260	98	$2,443			139	$4,843
O&MN Install.					(41)	$502	(98)	$1,105		1,607
APN-6 Spares				$263		$378				641
GRAND TOTAL										$7,091

Installation Data: Installation will be accomplished by contractor field team on site at Marine Corps facilities on East and West Coasts.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: H-1 AN/ALQ-136 (OSIP 117-83)

Models of Aircraft Affected: AH-1J/T

Description/Justification:

The AN/ALQ-136 is an Army developed high band defensive electronic countermeasures (DECM) system intended for use on helicopters. Tota' installed weight is 55 pounds and size is 600 cubic inches. The system is required by Marine Corps attack helicopters that currently have no DECM systems. Provisions and ALQ-136's will be installed in 53 AH-1J's and 48 AH-1T's.

Development Status: Navy DT-II (TECHEVAL) was completed in May 1982. Navy OT-II OPEVAL began in August 1982 and will be complete in February 1983. Approval for production is scheduled for June 1983.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	15	$2,521	34	$9,989	32	$9,822	20	$4,085	101	$26,417
O&MN Install.			(15)	$181	(34)	$450	(52)	$627	(101)	1,258
APN-6 Spares		$466		$1,657		$1,677				3,800
GRAND TOTAL										$31,475

Installation Data: Installation will be accomplished by contractor field team on site at Marine Corps facilities at East and West Coast sites.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: APR-44 (OSIP 116-83)

Models of Aircraft Affected: AH-1J/T

Description/Justification:

The APR-44 is an Army developed continuous wave (CW) warning receiver intended for use on helicopters. Total installed weight is approximately 4 pounds, size is 33 cubic inches. The system is required by Marine Corps assault helicopters that currently have no CW warning system. Provisions and APR-44's will be installed in 53 AH-1J's and 48 AH-1T's.

Development Status: Development by the U.S. Army was completed in FY 1979. Army production began in FY 1980 and is continuing. Navy DT-II (TECHEVAL) was completed in the third quarter of FY 1982. OT-II (OPEVAL) will be complete in May 1983 followed by Approval for Service Use (ASU) in the fourth quarter of FY 1983.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	75	$3,507	26	$746			101	$4,253
O&MN Install.			(46)	$548	(55)	$618		1,166
APN-6 Spares		$449		$120				569
GRAND TOTAL								$5,988

Installation Data: Installation will be accomplished by contractor field team on site at Marine Corps facilities on East and West Coasts.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Portable Fire Extinguisher (OSIP 17-84)

Models of Aircraft Affected: UH-1N, AH-1T, AH-1J

Description/Justification:

The existing fire extinguisher is unreliable and when exposed to high temperature conditions has a record of opening and allowing pressure to bleed off. This causes a possible safety hazard. This program would procure new standard Navy fire extinguishers for installation at the organizational level.

Development Status: Development is complete. Approval for service use (ASU) is not required.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	266	$203	266	$203
O&MN Install. "O" Level		-0-		-0-
APN-6 Spares		-0-		-0-
GRAND TOTAL				$203

Installation Data: Installation will be accomplished by organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Radar Altimeter Readout (OSIP 18-84)

Models of Aircraft Affected: AH-1J, AH-1T

Description/Justification:

Safety requirements dictate the need for an altimeter readout in the front seat (cockpit) to enable gunner/copilot to assist the pilot in maintaining proper altitude monitoring during low level flight. This requirement resulted from safety investigations concerning accidents which could have been averted if the copilot had been able to monitor altitude.

Development Status: Development is complete. This effort will provide a parallel altimeter readout in the front cockpit off of the current AN/APN-171 system.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$571	102	$1,521			103	$2,092
O&MN Install.			(1)	$4	(102)	$344	(103)	348
O&MN Training		$100						100
APN-6 Spares		-0-		$88				88
GRAND TOTAL								$2,628

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Crashworthy Fuel System (OSTP 19-94)

Models of Aircraft Affected: AH-1T, AH-1J

Description/Justification:

Current attack helicopters do not have crashworthy fuel systems. Addition of the Army developed crashworthy fuel system will increase survivability and protect crews from possible fatal injury. The system consists of new fuel cells which contain a foam substance which is shock and fire resistant.

Development Status: This system has been developed by the Army and is in use on the AH-1S helicopter.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,951	30	$1,791	70	$4,617	101	$ 8,359
O&MN Install.			(1)	$56	(100)	$5,600	(101)	5,656
O&MN Training		$50						50
APN-6 Spares		-0-		$200				200
GRAND TOTAL								$14,364

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: HELLFIRE Weapon System (OSIP 20-84)

Models of Aircraft Affected: AH-1J/T

Description/Justification:

The HELLFIRE anti-tank weapon system is being developed by the Army for use on the AAH-64. The Navy/Marine Corps are following the Army's development program under a Joint Development Program. R&D funding will be available in FY 1982/1983/1984 for this development. This program will provide for retrofit of the HELLFIRE Missile System into the AH-1J and AH-1T Marine attack helicopters starting in FY 1984. The AH-1J interface/integration will add a new capability. The AH-1T interface/integration will provide HELLFIRE missile system and TOW Missile System capability for greater operational flexibility.

Development Status: The HELLFIRE weapon system development by the Army is complete. Navy R&D program for unique shipboard interface will by complete by August 1983. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$8,952	54	$45,982	43	$29,853	98	$ 84,787
O&MN Install.			(1)	$142	(97)	$10,894	(98)	11,036
O&MN Training		$535		$571				1,106
APN-6 Spares		-0-		$5,897		$3,654		9,551
GRAND TOTAL								$106,480

Installation Data: Installation will be accomplished by contractor field team on site at East and West coast Marine Corps facilities.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Night Vision Goggles (OSIP 68-82)

Models of Aircraft Affected: UH-1N

Description/Justification:

In order to improve tactical weapon effectiveness of the UH-1N aircraft, it must have the capability to operate at night and at low levels. Improved cockpit system must be integrated with night vision goggles to meet fly and fight at night operational requirements for UH-1N aircraft.

Development Status: R&D effort is being conducted by the U.S. Army for night vision capability on a UH-1 aircraft. Approval for service use (ASU) is scheduled for the fourth quarter of FY 1983. This modification will be installed on 139 UH-1N aircraft.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5												
Quick Fix	6	$360	119	$1,533							125	$ 1,893
Full AVS-6					1	$2,967	29	$11,447	109	$42,586	139	57,000
O&MN Install.					(1)	$214		$214	(138)	$29,560	(139)	29,988
O&MN Factory Training		$40				$214						254
APN-6 Spares		-0-		$277		$49		$2,600		$7,546		10,472
GRAND TOTAL												$99,607

Installation Data: Quick fix kits will be installed at the organizational level by squadron maintenance personnel. Full cockpit mod kits will be installed at the contractor's plant. Budget year for the AVS-6 contract will be FY 1982.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ANVIS Night Vision System (OSIP 69-82)

Models of Aircraft Affected: AH-1T/J

Description/Justification:

In order to improve tactical weapon effectiveness of the AH-1T/J aircraft, it must have the capability to operate at night and at low levels. An improved cockpit system must be integrated with night vision goggles to meet fly and fight at night operational requirements for AH-1T/J aircraft.

Development Status: RDT&E,N effort is being conducted by the U.S. Navy for night vision capability on attack helicopters. Approval for service use is scheduled for the fourth quarter of FY 1983.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 - AVS-6												
Quick Fix	10	$347	93	$1,053							103	$ 2,300
Full					2	$6,737	47	$32,339	52	$40,811	(101)	79,887
O&MN Install.								$337 (101)		$22,692 (101)		23,029
O&MN Training		$40				$321						361
APN-6 Spares				$240		$477		$2,209		$8,162		15,187
GRAND TOTAL												$123,764

Installation Data: AVS-6 quick fix kits will be installed at the organizational level by squadron maintenance personnel. Full cockpit mod kit procurement will begin in FY 1984 and will be installed at the contractor's plant.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FACTS (FLIR Augmented Cobra TOW Sight) (OSIP 23-85)

Models of Aircraft Affected: AH-1T/J

Description/Justification:

IR and EO sensor developments are providing potential enemies with weapons and vehicles with an effective night and adverse weather combat capability. Marine Corps attack helicopters require similar sensor capabilities in order to conduct effective combat operations in comparable environments. An ongoing Army development FACTS (FLIR Augmented Cobra TOW Sight) will provide a night/adverse weather capability to their AH-1S attack helicopters. This project will adapt the Army systems to the Marine Corps AH-1T.

Development Status: The Army has installed a feasibility model on an AH-1S. Following flight and TOW missile firing tests, two engineering development models will be procured and qualification testing will begin. Approval for service use is scheduled for the fourth quarter of FY 1983.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,850	46	$22,086	47	$23,936
O&MN Install.			(47)	$10,628	(47)	10,628
APN-6 Spares		-0-		$6,597		6,597
GRAND TOTAL						$41,161

Installation Data: The FACTS systems will be installed at the contractor's plant.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Load Measuring and Warning System (Accelerometer) (OSIP 70-84)

Models of Aircraft Affected: AH-1T, AH-1J

Description/Justification:

Nap of the earth flying requires rapid maneuvering of the aircraft and without a warning or indication of an approaching dangerous flight load situation the aircraft may be overstressed and/or cause an incident. A cockpit readable accelerometer parameter will relieve the pilot's current workload by providing a direct indication of aircraft loads.

Development Status: Development is complete on fixed wing aircraft which have similar systems. This program will adapt current in-use accelerometers for use on helicopters. Minor software changes will be required. No Approval for Service Use (ASU) is required. Navy flight testing will be required to develop the envelope/scale required to provide accurate information to the point. R&D funding under the Composite Blade integration program (RDT&E,N Program Element Number 63266 Project W1107-SL applies) will be used to define the maneuvering envelope. Contractor testing was completed in August 1982. Navy verification of the software changes will be complete in April 1983.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,713	52	$828	47	$536	100	$3,077
O&MN Install.		$51	(1)	$42	(99)	$1,191	(100)	1,284
O&MN Training		$100						100
APN-6 Spares		$75		$67		$54		197
GRAND TOTAL								$4,658

Installation Data: Installation will be accomplished by drive-in Mod at the contractor's facility.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Wire Strike Protection (OSIP 57-84)

Models of Aircraft Affected: UH-1N, AH-1T, AH-1J

Description/Justification:

At present there are no provisions on H-1 aircraft to cut wire obstructions that may be in the flight path of aircraft during low level operations. This modification to the aircraft will provide a wire cutting device above and below the main body of the fuselage that will insure safe flight in the low level environment.

Development Status: The U.S. Army has installed wire cutters on H-1 aircraft. An R&D effort on U.S. Army AH-1S aircraft has been completed. This is a minor modification and Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	$580	105	$1,134	170	$1,978	278	$3,692
O&MN Install.			(3)	$24	(275)	$332	(278)	356
APN-6 Spares		-0-		$57		$60		117
GRAND TOTAL								$4,165

Installation Data: Installation will be accomplished by Contractor Field Team at East and West Coast locations.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Crashworthy Pilot Seats (OSTP 71-84)

Models of Aircraft Affected: UH-1N

Description/Justification:

Personnel currently survive helicopter crashes only when the crash impact is light and the structural integrity of the seat/resistant system is not compromised. The proposed seats will provide improved helicopter crash survivability consistent with direction of the Chief of Naval Operations. Early incorporation of impact protection to meet the dynamic requirements based on USAAVLABS Technical Report 70-22 will save a substantial number of lives currently being lost in helicopter operations.

Based upon a study reported in USAAVLABS Technical Report 67-17 seats using energy attentuation should weigh approximately 62 percent of rigidly mounted seats when providing equal impact protection under given dynamic crash conditions. Because of dynamic overshoot current crew seats which are statically tested for 20g-20g-10g represent approximately one-half the strength provided by crew seats dynamically tested for identical crash conditions.

Development Status: Crashworthy crew seats have been tested and approved for service use under the CH-46E CILOP program. In addition crashworthy crew seats are being installed in the U.S. Army Black Hawk and U.S. Navy derivative Sea Hawk.

OSIP 71-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1*	$850	60	$1,749	100	$2,330	161	$4,929
O&MN Install.			(1)*	$35	(160)	$592	(161)	627
O&MN Training				$100				100
APN-6 Spares		-0-		$193		$204		397
GRAND TOTAL								$6,153

* Prototype

Installation Data: Installation will be accomplished by contractor field team. Lead time for airframe change kit is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: VH-1N Automatic Flight Controls Door Mod (OSIP 117-82)

Models of Aircraft Affected: VH-1N

Description/Justification:

Six VH-1N aircraft were recently re-activated after four years in storage at Davis-Monthan AFB. These aircraft have no automatic stabilization system. The aircraft will be utilized to transport the President of the United States, the Vice President, Foreign Heads of State and other foreign dignitaries, and other persons as directed by the military office of the White House. To maximize safety of flight, these aircraft must be equipped with a "state-of-the-art" automatic flight control system.

Development Status: The current automatic flight control system in UH-1N aircraft is not compatible with this mission. Due to interior configuration, weight control is critical. Additionally, a fully coupled system is required for Category II certification. The Sperry 412 system is fully automatic, solid state, lightweight, and provides "state-of-the-art" technology. The system is being installed in commercial Bell 212 helicopters and FAA certification was received in May 1982. Aircraft modifications will be accomplished during scheduled Special Periodic Aircraft Rework (SPAR).

Project Financial Plan:

	FY 1982		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,249	5	$1,338	6	$2,587
O&MN Install.		$254		$283		537
APN-6 Spares		-0-		$611		611
GRAND TOTAL						$3,735

Installation Data: To be accomplished during normal Special Periodic Aircraft Rework (SPAR).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Tail Pylon/Aft Drive Train Improvements (OSIP 22-84)

Models of Aircraft Affected: SH-2F

Description/Justification:

The present aluminum pylon, aluminum/fiberglass horizontal stabilizer and aft power train evolved from the original UH-2 A/B single-engine helicopter via add-on/beef-up modification. With growth of the H-2, changing loads and vibratory conditions have led to fatigue failures in the tail rotor gear box, corrosion in the attachment shaft of the horizontal stablizer and wear and corrosion in the flapping and pitch bearings. This program will eliminate the 25-hour inspection requirement for fatigue cracks in the tail rotor gear box housing. The redesign of the housing and the use of stronger aluminum to replace the present magnesium will provide greater fatigue and corrosion resistance. A new forged aluminum tail rotor gearbox mounting rib will also be installed to provide a clean fatigue resistant structure. The changes to the flapping and pitch bearings will extend the scheduled maintenance time from 5 hours to an expected 15 to 20 hours. The redesign of the horizontal stabilizer from aluminum to titanium is expected to alleviate the sticking and binding of the stabilizer altogether.

OSIP 22-84 is divided into three kits:

Kit A - Horizontal Stabilizer attachment shaft redesign.

Kit B - Redesign of the flapping and pitch bearings.

Kit C - Redesigned aluminum tail rotor gearbox and forged aluminum tail rotor gearbox mounting rib.

The plan was subdivided into separate elements because although the overall objective of the efforts are interrelated, each element can be developed separately.

Development Status: Prototype for Kit A and B will be completed in June of 1983 with contractor testing complete in June 1984. Testing for Kit C will be completed in early 1985. Prototyping and testing will be accomplished commencing FY 1982 through FY 1983 for Kits A and B and through 1985 for Kit C. The prototypes and testing will be funded with RDT&E Program Element Number 64219N. Approval for Service Use (ASU) is not required.

OSIP 22-84

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	520	$2,741	499	$4,183	108	$4,906	1,127*	$11,830
O&MN Install.		$76		$490		$811		1,377
APN-6 Spares		$299		$1,557				1,856
GRAND TOTAL								$15,063

* Quantity represents kits vice aircraft.

Installation Data: Installation will be accomplished at the organization level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 6

Modification Title and No.: Composite Main Rotor Blade (OSIP 26-85)

Models of Aircraft Affected: SH-2F

Description/Justification:

The composite main rotor blade for the SH-2F is an outgrowth of composite material applications, particularly that for rotor blades such as the circulation control rotor for the Navy and the AH-1 improved main rotor blade which is now in production for the Army. Although the new blade is composite construction, it will be completely compatible with the existing SH-2F rotor system and will retain the outstanding flight characteristics that the -101 rotor presently exhibits. Substantial life cycle cost savings will accrue to the Navy due to the elimination of corrosive materials, the extended fatigue life (approximately the 10,000 hours presently approved for AH-1 blade), and the improved reliability and field repairability that is inherent in composite rotor blades. These features have already been demonstrated through an extensive test program and initial field use of AH-1 blades.

Development Status: Engineering and development started in FY 1980 as part of the SH-2F Readiness Improvement Program (RIP). RDT&E,N Program Element Number 64219N refers. Testing will be completed in FY 1984.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	43	$17,414	76	$33,772	119	$51,186
O&MN Install. "O" Level		-0-				-0-
APN-6 Spares		$7,993		$12,437		20,430
GRAND TOTAL						$71,616

Installation Data: Installation will be accomplished at the organizational level. Retrofit includes 27 new aircraft.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Main Gear Box Improvements (OSIP 27-85)

Models of Aircraft Affected: SH-2F

Description/Justification:

The improvements to the main gear box will increase the Time Between Overhaul (TBO), reduce overhaul cost, and increase reliability. The improvements will allow the main gear box to be operated on a "condition" basis, instead of an hourly interval before removal for overhaul. This will result in less frequent gear box removals and increase operational readiness for the SH-2F. There are five areas where improvements will be made to the gear box. They are planetary gear reduction system, upper housing, forward bearing on the tail rotor power take-off shaft, rotor shaft lower oil seal, and tab washers for safety locknuts.

Development Status: Engineering and development started in FY 1982 as part of the SH-2F Readiness Improvement Program (RIP). RDT&E,N Program and Element Number 64219N refers. Testing will be completed early in FY 1985.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	67	$6,102	52	$4,932	119	$11,034
O&MN Install.				$1,911		1,911
APN-6 Spares		$2,808		$2,560		5,369
GRAND TOTAL						$18,313

Installation Data: Installation of gear boxes will be during Standard Depot Level Maintenance (SDLM) and at organizational level. Modification and Component rework of gear boxes will be by Naval Air Rework Facility (NARF). Total installation includes gear boxes for 119 Aircraft (27 new) and (53 Spares).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: DC Fuel Quantity System and 100-Gallon Auxiliary Tanks (OSIP 72-84)

Models of Aircraft Affected: SH-2F

Description/Justification:

The fuel quantity system presently used is an AC system having shielded cables from the tank units to the bridge amplifier. These cables are subject to leakage due to wear and moisture entry which affects the calibration of the amplifier. The tank units are sensitive to water-saturated fuel, which also affects amplified adjustments. The quantity guage unit itself experiences binding and internal failures. Taken together these problems lead to erroneous indication of fuel quantity remaining in one or more fuel tanks.

Unauthorized practices by fleet personnel, such as pulling various fuel transfer circuit breakers and waiting for a fuel trouble caution light to appear, bypass the normal fuel quantity indicating system. This airborne "trouble shooting" and forced transfer technique is questionable at test. The present SH-2F equipped with a 60-gallon auxiliary tank and one MK 46 torpedo has 1.5 hours time on station at 35NM combat radius for the ASW mission; when two 60-gallon tanks are carried on station, time is approximately 2.0 hours. This relatively short time on station inhibits the operational capability of the total LAMPS MK I as an effective ASW system.

A replacement system utilizing state-of-the-art DC circuitry and 100-gallon auxiliary tanks is recommended. All components of the AC system will be replaced with DC units connected with conventional unshielded wiring. The indicator will use a DC motor thus eliminating the need for gearing which is a high failure component in the present system. Current Navy Maintenance Support Office (NAMSO) data indicates that approximately 190 maintenance actions per month are being documented consuming over 860 maintenance manhours per month to correct fuel quantity system discrepancies. Using the 100-gallon external tank(s) the maximum take-off weight will be increased to 13,300 pounds while maintaining the 11,600-pound auto rotation landing limit (dual engine failure), by readily jettisonable external stores. The use of the 100-gallon auxiliary tank will increase on station time at 35 NM to 1.8 hours with one tank and 2.8 hours with two tanks. The SH-2F was formally demonstrated by Kaman pilots at 13,000 pounds gross weight and after center of gravity (cg). In addition, the YSH-2F was flown extensively by Kaman and Naval Air Development Center (NADC) pilots at 13,300 pounds gross weight and 176.0 inches cg. No additional flight testing remains to be done to complete qualification of the SH-2F for operation at 13,300 pounds gross weight and 174.5 inches cg. It is necessary, however to demonstrate satisfactory in-flight jettisoning of the 100-gallon tanks, and proper functioning of the fuel transfer and fuel quantity gaging systems.

OSIP 72-84

Development Status: Flying qualities, structural demonstration, and hard landings have been completed at 13,300 pounds, 174.5 inches cg. Static strength of the auxiliary tank support backup structure are ongoing. Form, fit and function of the fuel transfer and fuel quantity gaging systems will be conducted in FY 1983. In-flight jettison tests of 100-gallon auxiliary fuel tanks will be performed by the Naval Air Test Center, Patuxent River, Maryland Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	34	$1,890	43	$1,973	46	$2,248	123	$6,111
O&MN Install.					(123)	$1,136	(123)	1,136
APN-6 Spares		$744		$790				1,534
GRAND TOTAL								$8,791

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM), field mod team, or drive-in-modification.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Throttle Quadrant Electrical Improvements (OSIP 73-84)

Models of Aircraft Affected: SH-2F

Description/Justification:

The throttle quadrant assemblies (two per aircraft) contain electric circuits which integrate signals from various sources. These signals position the fuel control actuators mounted on each engine that control the power setting of each engine.

The present quadrants require adjustment of 3 multi-turn potentiometers to obtain proper rigging of the quadrant to the fuel control. Frequent breakage of these potentiometers results in a high replacement of quadrant assemblies. This item along with the fuel control actuator, is number one on the Readiness Improvement Status Evaluation (RISE) report and has remained on RISE for 18 months. Maintenance actions are being performed every 42 flight hours with a mean time to repair of 4.64 hours.

At present, the electrical throttle is plagued by reliability and maintainability problems which contribute to reduced flight safety, excessive down time and excessively high maintenance and logistics expenditures. The system has been consistently high on the RISE report and has appeared in the top six AMP/RIP highest NMCS and NMCM items for the last four years. The changes proposed are designed to greatly increase the reliability of system subcomponents and to reduce the difficulties currently experienced when component replacements are required. Based on preliminary analysis, the proposed changes are expected to improve quadrant reliability/maintainability as follows:

	Present	Projected
Mean Time Between Failure (MTBF)	88	183
Mean Time Between Maintenance (MTBM)	47	82
Manhours/Flight Hours (MH/FH)	.09	.05

OSIP 73-84

This program proposes several producibility, reliability and maintainability improvements in the existing electrical throttle control system. These changes are summarized as follows:

(a) The existing trim potentiometers will be replaced by more rugged units and adjustment screw access will be improved to reduce breakage.
(b) The S-4 micro switch will be eliminated.
(c) The existing double micro switch configuration will be replaced with a single physical component incorporating both switches. This will eliminate the difficulties experienced adjusting the switches.
(d) Pulse suppression diodes will be installed across relays and the rotor brake solenoid to prevent arcing across micro-switch contacts. This will increase the reliability of the switches by reducing damage caused by arcing.
(e) Wiring will be replaced with Teflon wire to improve reliability.
(f) The existing component board will be replaced by a printed circuit board designed to provide access to the K2 and K3 relays.
(g) The existing method of retention of internal parts relies heavily on roll pins. Alternative methods of retention will be used to facilitate component replacement when required.
(h) The handle receiver will be made into a permanent assembly to preclude subcomponent loss during maintenance.
(i) Handle wiring will terminate in connectors in lieu of present soldered joints.
(j) Handle slot clearance will be improved to eliminate binding.
(k) The maintenance manual for the amplifier will be rewritten.

Development Status: Approval for Service Use (ASU) is not required. Design will be completed in FY 1983 and installed as part of the new production aircraft contract. This program will backfit this change into all existing Fleet aircraft, spare units in the supply system and units now on order (total of 194 units for 96 aircraft plus 98 units for rework of spares).

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	56	$896	57	$965			113	$1,861
O&MN Install.			(56)	$37	(57)	$37		74
APN-6 Spares		$176		$192				369
GRAND TOTAL								$2,304

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) Pensacola.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: New Fuel Control Actuator (OSIP 74-84)

Models of Aircraft Affected: SH-2F

Description/Justification:

The fuel control actuator (one per engine) receives electrical signals from the throttle quadrant and mechanically positions the engine fuel control, thereby selecting the desired engine power setting. Each fuel control actuator contains two electric motors and associated electronic circuitry.

The current design is not only difficult to trouble shoot, but very difficult to install. Internally, the high speed motor has been burning out at a high rate due to receiving a constant electrical signal when microswitches are improperly set or vibrate out of position. During installation, proper spline shaft alignment between the actuator and engine fuel control must be maintained. Incorrect installation of actuators has caused engines fires due to the engine fuel control being partially open during engine start.

The new design incorporates easily accessible external adjustments, rugged encasement of internal components and a keyed shaft which will eliminate errors common to the old units. The existing actuator appears as the number one RISE item along with the throttle quadrant. The present actuators have a replacement rate of 17 per month with an average replacement time of 5.5. manhours. With the above changes incorporated, the number of removals can be expected to drop significantly. Mean Time Between Failure (MTBF) is expected to be at least 25 percent greater than the present 93 hours the actuator is now experiencing.

Development Status: Approval for Service Use (ASU) is not required. The design will be complete in FY 1983 and be installed as part of the new production contract. This program will backfit this change into all existing Fleet aircraft.

OSIP 74-84

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-6	113	$2,526	113	$2,526
O&MN Install. "I" Level		-0-		-0-
APN-6 Spares		$538		538
GRAND TOTAL				$3,064

Installation Date: Installation will be accomplished at the Intermediate Maintenance Activity (IMA).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARN-118(V) TACAN (OSIP 75-84)

Models of Aircraft Affected: SH-2F

Description/Justification:

The AN/ARN-118(V) TACAN is a new digital/analog navigation system available in several different configurations to allow replacement of older installations, including the AN/ARN-52. The AN/ARN-118 is designed to be compatible with the new "X&Y" channel TACAN transmitting stations that provide an additional 127 receiving frequencies capability. Sensitivity is increased allowing reception of signals at lower altitudes where the LAMPS MK I performs the Anti-Submarine Warfare (ASW) mission.

From April through June 1981 there were a total of 248 maintenance actions documented against the AN/ARN-52 installed in the SH-2F; the average manhours per maintenance action was 8.5 hours.

Development Status: The AN/ARN-118 is approved for service use and is currently operating in P-3 and A-4M aircraft.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	20	$770	34	$776	28	$681	82	$2,227
O&MN Install.			(29)	$53	(62)	$110	(91)	163
APN-6 Spares		$10		$58				68
GRAND TOTAL								$2,459

Installation Data: Installation will be accomplished during Commercial Navy Yard Depot Level Maintenance.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ALR-66 (OSIP 75-84)

Models of Aircraft Affected: SH-2F

Description/Justification:

The ALR-66 is the SH-2F Electronic Support Measure (ESM) system used in the LAMPS MK I mission of Anti Ships Surveillance and Targeting (ASST) and is currently replacing the antiquated ALR-54 ESM system. There are currently 75 operational ALR-66 systems installed in Fleet SH-2F's. A March 1981 report from the Commander, Operational Test and Evaluation Force cited deficiencies in the production system that, if not corrected, cause serious degradation in performance. Enhanced operational effectiveness of the ALR-66 is required. The necessary modifications to the processor hardware and software to resolve cited deficiencies will require significant investment of funds and leadtime. The outdated threat emitter library problem will be resolved through the introduction of a programmable Electrically Alterable Read Only Memory (EAROM) that will eliminate the need for future hardware changes. This program also includes provisions to procure 20 complete ALR-66 systems with the modifications installed to complete the outfitting of the 22 SH-2F's after achieving Approval for Service Use (ASU).

Development Status: Provisional Approval for Service Use (PASU) has been granted. Follow-on operational evaluation completed in 1981 and operational deficiencies have been identified. Technical evaluation commenced in October 1982. FOT&E will commence in February 1983. Approval for Service Use (ASU) is planned for March 1983.

OSIP 75-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	40/10	$3,290	32/10	$2,552			72/20*	$5,842
O&MN Install.			(40)	$237	(32)	$189	(72)	426
O&MN Training		$175						175
APN-6 Spares		$1,000		$846				1,855
GRAND TOTAL								$8,298

* 72 Avionics kits; 20 new systems

Installation Data: Installation will be accomplished by a contractor turnaround program.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: SH-3 Service Life Extension (OSIP 46-83)

Models of Aircraft Affected: SH-3H/SH-3G/SH-3D

Description/Justification:

The SH-3H SLEP program will extend the service life of the SH-3H past the year 2000. This program will address only the items in the H-3 airframe that are unreliable or in a severely degraded mode. This modification will include extensive rework of the dynamic components, correction to areas of severe airframe corrosion, installation of a Bifilar Head to reduce dynamic vibrations in the airframe, modified webbing in the aircraft structure to alleviate cracking, rewiring of the aircraft electrical system, and installation of structure and kits for crashworthy seats. The kit B will be done all H-3 aircraft.

Development Status: Contractor testing of critical components will be preformed on pilot production aircraft. Government testing at NATC will be preformed to verify flight characteristics. No OT&E required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$18,685		$37,389		$80,299		$260,944		$397.317
O&MN Install.		$771		$783		$3,332		$173,744		178,620
APN-6 Spares		$3,081		$2,019		$8,033		$15,394		28,727
GRAND TOTAL										$604,664

* Kit A (129), Kit B (200), Kit C (26). Total quantity of kits is 355.

Installation Data: Installation of Kit A will be accomplished by the winner of a competitive bid. Installation of Kit B will be accomplished during component rework and Standard Depot Level Maintenance (SDLM). Installation of Kit C will be accomplished by the prime contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Ni-CD Battery Constant-Current Charge/Monitor System (OSIP 70-82)

Models of Aircraft Affected: HH-3A, UH-3A, VH-3A, SH-3D, VH-3D, SH-3G, SH-3H

Description/Justification:

The H-3 family of aircraft utilizes one MS90377-1, 19-cell, 20 ohm, 55-pound, nickel-cadmium battery. The battery, which provides engine starting capability and emergency electrical power for the aircraft, is presently charged directly from the aircraft's DC bus. Because of the method by which the battery is charged on the aircraft, the probability of uncontrolled charging exists, which can lead to fire/fumes and possible explosion in the battery compartment of the H-3 helicopter. This modification will consist of an airborne battery charger which will automatically prevent Ni-CD battery thermal runaway and will notify the pilot of any battery fault conditions, preventing loss of aircraft and crew. Furthermore, by providing a properly controlled constant-current charge to the aircraft battery, the system is expected to reduce battery malfunctions and maintenance, and increase the service life of the battery.

Development Status: Suitable hardware has been developed in accordance with requirements of the Navy's proposed battery charger specification. Approval for service use is not required.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	9	$85	112	$1,015	71	$771			191	$2,771
OPVN Install.			(2)	$7	(80)	$269	(109)	$376		652
APN-6 Spares				$155		$93				248
GRAND TOTAL										$3,671

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM) and contractor field mod team (FMT).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Crashworthy Pilot Seats (OSTP 23-84)

Models of Aircraft Affected: SH-3H, SH-3D, SH-3G, HH-3A

Description/Justification:

Personnel currently survive helicopter crashes only when the crash impact is light and the structural integrity of the seat/restraint system is not compromised. The proposed seats will provide improved helicopter crash survivability consistent with direction of the Chief of Naval Operations. Early incorporation of impact protection to meet the dynamic requirements based on USAAVLABS Technical Report 70-22 will save a substantial number of lives currently being lost in helicopter operations.

Based upon a study reported in USAAVLABS Technical Report 67-17, seats using energy attenuation should weigh approximately 62 percent of rigidly mounted seats when providing equal impact protection under given dynamic crash conditions. Because of dynamic overshoot current crew seats which are statically tested for 20g-20g-10g represent approximately one-half the strength provided by crew seats dynamically tested for identical crash conditions.

Development Status: Crashworthy crew seats have been tested and approved for service use under the CH-46F SLEP program. In addition, crashworthy crew seats are being installed in the U.S. Army Black Hawk and U.S. Navy derivative Sea Hawk.

OSIP 23-84

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	20	$1,511	80	$1,429			100	$2,940
O&MN Install.			(20)	$17	(80)	$67		84
O&MN Factory Training		$40						40
APN-6 Spares		$86		$91				177
GRAND TOTAL								$3,241

Installation Data: Installation will be accomplished at the Naval Air Rework Facility (NARF) concurrent with Standard Depot Level Maintenance (SDLM) and by contractor during SLEP.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Main Gear Box Improvements (OSIP 77-84)

Models of Aircraft Affected: SH-3H, SH-3D, VH-3A, HH-3A, SH-3G

Description/Justification:

The H-3 Main Gear Box (MGB), which has a Time Between Overhaul (TBO) of 1900 hours, has a Mean Time Between Failure (MTBF) of only 450 hours. The primary reason for the low MTBF is the premature failure of various subcomponents. During the period from June 1980 to June 1981, approximately 47 percent of premature MGB removals occurred due to chip lights (apparent metal contamination). Related to that percentage is a 34 percent removal rate (of premature removals) due to freewheel unit (FWU) damage and failures. A 3-year average shows one-third of early removals are for metal contamination and one-third for FWU failures. Catastrophic failures of MGB subcomponents have been suspected causes for the losses of five (5) Navy and two (2) Air Force H-3 Helicopters since 1973. Also since FY 1978, there have been 34 additional mishaps which have necessitated the premature removal of MGB's and were potential catastrophic failures. This program proposes improvements that will distinctly improve MGB reliability service life and eliminate the present safety of flight hazards responsible for the 41 incidents described. MTBF will improve by 200 percent and Maintenance Manhours will decrease by 25 to 50 percent. Improvements include:

1. Freewheel Unit Redesign - A new bearing cage design will eliminate roller bearing and cam shaft damage during accessory drive operation, the major cause of FWU damage and failures.
2. Lubrication System Improvements - Improved subcomponent materials, increased capacity lubrication pumps, increased efficiency oil cooling, and dramatically improved filtration will significantly reduce current problems of oil starvation, high-temperature and, most importantly, contamination of oil which can, and does, lead to catastrophic MGB failures
3. Subcomponent Improvements - A group of critical subcomponents, such as gimbel ring bushings and input pinion gears, which have been shown to cause MGB failures and dramatically effect MGB reliability and service life, are slated for improvement.

Development Status: The development is being funded by the AFRMIP Program, Program Element Number 25633N, W1081-SL. Approval for Service Use (ASU) is not required.

OSIP 77-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
AFN-6	90	$11,795	98	$12,714			188	$24,509
O&MN Install.					(188)	$2,467		2,467
AFN-6 Spares		$6,016		$11,716				17,732
GRAND TOTAL								$44,708

Installation Data: Installation will be accomplished by the contractor during a component turnaround program.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Vespel Spline Adapters (OSIP 78-84)

Models of Aircraft Affected: VH-3D

Description/Justification:

The VH-3D helicopter provides world wide executive transportation for the President of the United States, Vice President, Foreign Heads of State and others as directed by the military office of the White House. This program will incorporate Vespel spline adapters in the main gearbox and APU generator drives of the VH-3D helicopter. Incorporation of the adapter requires a corresponding change to the generator quill drive shaft. The proposed Vespel spline is an expandable and long wearing polyamide plastic insert that eliminates fretting, while accommodating small angular misalignments inherent to all accessory drive interfaces. In addition to offering extended interface component life, the insert requires no lubrication or servicing.

Development Status: The Vespel adapters have been incorporated on fleet SH-3's.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	11	$183	11	$183
O&MN Install.		$10		10
APN-5 Spares		$7		7
GRAND TOTAL				$200

Installation Data: Adapters will be installed on a "drop-in" basis by the contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Improved Tail Rotor Blade (OSIP 79-84)

Models of Aircraft Affected: VH-3D

Description/Justification:

The VH-3D helicopter provides world wide executive tansportation for the President of the United States, Vice President, Foreign Heads of State and others as directed by the military office of the White House. This program will replace the existing honeycomb blade with a ribbed pocket tail rotor. The ribbed blade will provide superior resistance to skin cracks, increased service life, elimination of blade clamps, and improved abrasion protection. The end result, due to longer life and reduced maintenance, will be an overall cost reduction for the life of the aircraft.

Development Status: Improved tail rotor blades are now FAA certified.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	11	$316	11	$316
O&MN Install. "O" Level		-0-		-0-
APN-6 Spares		$283		293
GRAND TOTAL				$599

Installation Data: Installation will be accomplished by organizational level personnel.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: VH-3D Cockpit/Avionics Update (OSIP 50-84)

Models of Aircraft Affected: VH-3D

Description/Justification:

The VH-3D helicopter provides world wide executive transportation for the President of the United States, Vice President, Foreign Heads of State and others as directed by the military office of the White House. The capability of the VH-3D to support the White House Emergency Plan (WHEP) in other than VMC conditions is marginal. The VH-3D capability to communicate consists of line-of-sight UHF and VHF radios only. The planned addition of a Presidential communication capability by the White House Communication Agency (WHCA), crypto communication capability, H.F. communication, and additional Secret Service radio communication equipment requires reduction in weight and volume of existing VH-3D aircraft equipment to prevent a degradation in passenger load or range. Additionally, execution of the WHEP requires the aircraft be equipped with all weather capabilities to include radar on-board navigation equipment, and an automatic (coupled) approach capability.

Development Status: The Naval Air Development Center (NADC) is currently involved in a study to update the VH-3D avionics systems with the intention of EMP hardening selected sub-systems. Hardware selection was completed in FY 1982. Laboratory facility completion and aircraft installation design will be completed in FY 1983. Laboratory integration and aircraft configuration will be completed in FY 1984; aircraft flight checks to commence in the fourth quarter, FY 1984.

OSIP 50-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$6,697	3	$14,980	7	$23,178	11	$44,855
O&MN Install.		$400		$1,200		$2,800		4,400
O&MN Training		$250		$500		$1,000		1,750
APN-6 Spares		$219		$2,688		$1,900		4,807
GRAND TOTAL								$55,812

Installation Data: Installation will be accomplished during normal Special Periodic Aircraft Rework (SPAR).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: EP-3E/B CILOP (OSIP 48-81)

Models of Aircraft Affected: EP-3E/B

Description/Justification:

The service life of the EP-3E inventory of ten aircraft is predicted to expire during the 1981 through 1984 timeframe based upon current operational flight hour utilization and fatigue life projections of the basic airframe structure. This expiration of aircraft service life is mandatory unless aircraft structural inspection is scheduled and individually determined "levels of rework" of the basic airframe and wing structure are undertaken to extend their useful service life.

Prior year EP-3E/B avionics modifications (OSIP 17-78) corrected Board of Inspection and Survey (BIS) deficiencies reported since 1972 by; funding installation of manually operated state-of-the-art digital Direction Finding (DF) antenna subsystems, replacing the unreliable/obsolescent APS-20 radar, modifying the high gain BIG LOOK antenna for digital control/output, and modifying other mission avionics subsystems (ALR-60, HF receiver, RF distribution and Displays) to improve reliability/performance. These modifications were designed for compatibility with planned weapon system operational improvements to semi-automate system operations. Included is the installation of equipments to interface Fleet Satellite Communications (FLTSATCOM) nets, secure communications nets, and data links.

The ten EP-3E inventory aircraft will commence a periodic Service Life Extension Program (SLEP) inspection program during the FY 1982/1985 timeframe to extend their respective service life to 1995-2001. This CILOP will procure, install and integrate: (1) an Airborne Electronic Warfare Support Measure (ESM) Data Analysis System (AEDAS), and one LTN 211 OMEGA NAV system; (2) dual LTN-72 (inertial NAV) subsystems and dual ARC-166 (UHF) ransceivers compatible with Satelite Communications (SATCOM) UHF data link; (3) Radar Emitter Classification and identification (REC/I) subsystem, two ARC-157 transceivers compatible with link 11 HF data link and two ARR-81(V) COMINT subsystems; (4) High Resolution Multipurpose Displays. FY 1984 will provide for the installation/integration of replacement High Resolution Multipurpose Displays to meet current operational requirements.

OSIP 48-81

Development Status: Development/test of REC/I (PE 63206) commenced in FY 1977 and completion of FOT&E is scheduled for March 1983. Development/test of High Resolution Multi-Purpose Displays (PE 64255) commenced in FY 1980 and will be completed September 1983. The remaining equipments to be installed either have Approval for Service Use/Provisional Approval for Service Use. In MID FY 84, a Test and Evaluation (Lab Development Test/Operation Test II) is scheduled to be completed by OPTEVFOR. After completion of the Test and Evaluation, it is expected that OPTEVFOR, based on a CNO granted ASU waiver will recommend a limited production of three (3) aircraft (one in FY 85 and two in FY 86). The first production aircraft will be tested with the production backfitted Integration Test Facility system (ITF). Completion of the OPEVAL of the First production aircraft is scheduled for the 1st quarter FY 85 and Approval for Service Use (ASU) is expected during 1st quarter of FY 1986.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	24*	$22,789	12*	$19,686	12*	$11,959			12*	$53,393
O&MN Install.	(12)	$180	(12)	$159	(12)	$1,603	(12)	$569		2,511
APN-6 Spares		$3,800		$895		$3,110				7,305
GRAND TOTAL										$63,709

*12 aircraft total.

Installation Data: Prototype installation(s) of subsystems will be accomplished by the Naval Air Rework Facility (NARF) during the Service Life Extension Program (SLEP)/Standard Depot Level Maintenance (SDLM); production aircraft kits/Government furnished equipment (GFE) will be installed during SLEP/SDLM cycle when possible, or by drive-in mod or field team mod.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: P-3C MAD System Integration (OSIP 21-82)

Models of Aircraft Affected: P-3C

Description/Justification:

This modification enhances the ASQ-81 magnetic anomaly detection (MAD) system on 201 P-3C aircraft by providing a compensation group adapter (CGA) for aircraft magnetic compensation. This modification also installs ASQ-81 MAD systems on 47 P-3C aircraft that are currently equipped with obsolescent ASQ-10 systems.

Development Status: Both the MAD CGA and the AN/ASQ-81 obtained approval for service use in July 1979.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 (CGA&IMP/ASQ-81)	45/0	$2,786	73/0	$4,535	51/15	$8,571	22/22	$8,066	10/10	$4,005	201/47	$27,962
O&MN Install.			(17/0)	$1,471	(70/0)	$5,200	(66/0)	$5,082	(49/47)	$12,100	(201/47)	24,052
APN-6 Spares		$349		$897								1,245
GRAND TOTAL												$53,259

Installation Data: The contractor will build and install CGA and MAD improvement kits via field team. ASQ-81 kits will be installed via drive-in modification at the contractor's facility.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: HARPOON (OSIP 104-79)

Models of Aircraft Affected: P-3/B/C

Description/Justification:

This installation will give the P-3 aircraft a capability to carry and launch four HARPOON missiles. Provisions for the HARPOON Airborne Command and Launch System (HACLS) (AWG-19) include standard wing pylons, wing wiring, interconnecting cables within the fuselage and the following equipment:

a. Data processor.
b. Logic unit.
c. Control panel.
d. Auxiliary armament interconnect unit.
e. Power distribution box.
f. Junction box.
g. HARPOON Missile Simulator.

The U. S. Navy has an urgent requirement for an offensive/defensive all-weather, medium range, air-to-surface missile capability. The HARPOON missile, in conjunction with the P-3 weapon system, will provide an effective worldwide sea control vehicle that can destroy a surfaced submarine, a high-speed surface missile launcher, or any ocean-going military target with minimum risk to U. S. Navy forces. The P-3 force with the addition of HARPOON missiles provides the only worldwide ocean presence that can respond to interdictive roles such as the PUEBLO or MAYAGUEZ incidents, as well as provide protection for sea lines of communication and trade route coverage to ensure the critical flow of raw materials and oil supplies necessary for maintenance of our nation's industrial requirements. The need for this long-range protective vehicle is particularly critical in remote areas like the Indian Ocean where tactical aircraft are not normally available. The P-3 aircraft, when HARPOON equipped, will make a major contribution to the Navy's anti-surface ship warfare and surveillance capability at a relatively small cost. This modification addresses 199 P-3 aircraft (145 P-3C and 54 P-3B).

Development Status: Approval for service use of the HARPOON weapon system was obtained in February 1981.

OSIP 104-79

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	109	$39,371	48	$20,438	42	$22,448		$3,605			199	$ 85,862
APN-5 Install.	20	$1,493									(20)	1,493
O&MN Install.	(37)	$4,441	(27)	$3,785	(48)	$7,367	(46)	$7,702	(18)	$4,341	(176)	27,637
APN-6 Spares		$515										515
GRAND TOTAL												$115,507

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/AQA-7 Improvements (OSIP 84-79)

Models of Aircraft Affected: P-3B/C

Description/Justification:

This program will update the AQA-7 Acoustic Processing System by incorporating a Triple Vernier, DICASS and upgraded bearing computer. It has been demonstrated that a frequency Vernier greatly increases an acoustic sensor operator's recognition and classification capabilities. The DICASS capability provides long range, single sonobuoy targeting information which is essential for the fast moving submarine threat. This modification includes an update to the AQA-7 control panel and bearing computer for improved man/machine interface. The Triple Vernier portion of this program is applicable to 167 P-3C (115 P-3C NUDS and 52 P-3C UD-I/II). The Triple Vernier Interactive Control Panel (ICP) and bearing computer is applicable to 222 P-3 aircraft (115 P-3 NUDS, 30 P-3C UD-I and 78 P-3C UD-II). The DICASS modification is applicable to 252 P-3 aircraft (115 P-3C NUDS, 85 P-3C UD-I/II, and 52 P-3B MOD).

Development Status: The Triple Vernier, DICASS, improved control panel and improved bearing computer represent corrections to deficiencies of functions already incorporated in the AQA-7 and do not require approval for service use. The AQA-7 received ASU in March 1977.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5(3V/DICASS)	167/190	$40,000		$25,085		$26,688		$15,451	167/190	$117,135
O&MN Install.		$12,915		$9,114		$7,898		$4,988		34,915
APN-5 Spares		$9,167		$3,009		$4,960		$3,961		10,897
GRAND TOTAL										$171,937

Installation Data: Installation of AFC kits will be accomplished by contractor field teams and organizational level. Component modification will be accomplished by factory turn-around program.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: P-3C Inertial OMEGA Update (OSIP 87-81)

Models of Aircraft Affected: P-3C

Description/Justification:

The LTN-72 Navigation System is a more sophisticated, reliable, self contained, all weather, easy to maintain worldwide navigation system that is independent of ground-based navigation aids. The LTN-72 is a replacement for the ASN-84 which historically has had a high failure rate, is difficult to maintain, piece parts are obsolete and no longer in production, and is a frequent cannibalization item. This change affects 167 P-3C aircraft (115 P-3C NUD (Non-Update), 22 P-3C UD-II (Update II) and 30 P-3C UD-I (Update I)).

The LTN-211 OMEGA Navigation System (ONS) is a low cost stand alone commercial set built to ARINC 500 standards. It provides automatic and direct read-outs for latitude/longitude, waypoints distance to go, digital outputs for horizontal situation indicator (HSI), automatic flight control, etc. Current commercial reliability design is to 1500 hours MTBF. The ONS consists of a receiver processor unit, control display unit and an antenna. Performance accuracy is expected to be less than 3 NM. This affects 115 P-3C NUD aircraft.

Development Status: LTN-211 obtained approval for service use in January 1981. LTN-72 obtained approval for service use in October 1979.

Project Financial Plan:

	FY 1982 & Prior Qty	FY 1982 & Prior Cost	FY 1983 Qty	FY 1983 Cost	FY 1984 Qty	FY 1984 Cost	FY 1985 Qty	FY 1985 Cost	Cost to Complete Qty	Cost to Complete Cost	TOTAL Qty	TOTAL Cost
APN-5 (LTN-72/LTN-211)	68/49	$20,588	50/45	$16,950	49/21	$15,812					167/115	$53,350
O&MN Install.			(33/6)	$1,060	(48/42)	$9,1[illegible]	(42/49)	$10,9[illegible]	(37/18)	$7,[illegible]	(167/115)	31,187
APN-6 Spares		$2,988				-0-						2,988
GRAND TOTAL												$87,525

Installation Data: Installation will be accompli hed by contractor ield teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Infrared Detecting System (IRDS) (OSIP 57-78)

Models of Aircraft Affected: P-3A/B/C

Description/Justification:

IRDS is an electro-optical surveillance system capable of recognizing and identifying surface targets including submarine periscopes and snorkels under direct nighttime conditions. The system consists of a night imaging sensor and associated electronics and display. A video recorder will be used in conjunction with the system. It will be capable of inflight recording and provide video film for postflight analysis. The IRDS installation displaces the KA-74 camera system. Therefore an optical window is being provided for the flight station escape hatch for use with a hand held camera. An auxiliary display is provided for the TACCO station in P-3C aircraft.

Development Status:

1. Interim IRDS - 11 Hughes GFE Systems for 66 Pod mounted P-3A/B/C aircraft, 4 Texas Instrument (TI) GFE Systems for 16 pod mounted P-3B aircraft. Production Hughes systems commenced delivery in December 1972. Flight test completed March 1973 with Hughes system. TI system commenced delivery in September 1975; flight test completed November 1975. Aircraft have been deployed with AN/AAR-37 and AN/AAR-40 systems.

2. Production AN/AAS-36 IRDS - 258 GFE systems planned for 278 nose mounted P-3A/B/C aircraft (144 P-3C, 134 P-3A/B). Production AN/AAS-36 IRDS commenced delivery in October 1978. Approval for service use was received August 1979.

OSIP 87-72

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 Proc.	342	$89.744	18	$16,443		$8,319		$13,110		$39,807	360	$167,423
APN-5 Install	(90)	1,891									(90)	1,891
Total APN-5		$91,635		$16,443		$8,319		$13,110		$39,807		$169,314
O&MN Install.	(188)*	$8,980	(27)	$1,511	(24)	$1,430	(14)	$820	(14)	$820	(267)	13,645
APN-6 Spares		$949				-0-						949
GRAND TOTAL												$183,908

*Include one P-3C prototype with AAS-36.
Includes one P-3B prototype with AAS-36.
Includes one P-3A prototype with AAS-36.

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) and Contractor field teams. Production leadtime is 18 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: P-3A/B/C PARKHILL (KY-75) (OSIP 71-82)

Models of Aircraft Affected: P-3A/B/C

Description/Justification:

The KY-75 PARKHILL provides HF secure voice capability to satisfy DOD policy with respect to tactical voice communications. This modification addresses 133 P-3A/B TACNAV MOD and 216 P-3C (115 NUD, 30 UD-I, 71-UD-II) aircraft.

Development Status: The PARKHILL system has been developed for joint service use and has received approval for service use. P-3C aircraft installation will be verified by FOT&E. KY-75 is being procured by the National Security Agency.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	83	$4,306	72	$2,564	71	$3,986	61	$4,968	62	$3,466	349	$19,290
O&MN Install.			(16)	$1,006	(72)	$4,355	(74)	$4,477	(187)	$11,314	(349)	21,243
APN-6 Spares		$58		-0-								58
GRAND TOTAL												$40,591

Installation Data: Installation will be accomplished by contractor field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: P-3B Special Project Aircraft (OSIP 29-82)

Models of Aircraft Affected: P-3B

Description/Justification:

This modification replaces obsolescent equipment in four P-3B Special Project Aircraft by means of:

a. Procurement of common Navy systems for increased capability, reduced operator workload and common logistics.
b. Installation and support of special mission equipment provided by Intelligence Agencies.
c. Update of RF distribution hardware for selected intelligence gathering subsystems.
d. Procurement of special mission equipment as directed by the Chief of Naval Operations.
e. Transition to P-3C airframes.

Development Status: Approval for service use is not required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$3,400		$5,403	1	$5,885	1	$2,700	2	$6,210	4	$23,598
OAMN Install.				$1,562		$1,724	(1)	$2,562	(3)	$5,000	(4)	11,848
APN-6 Spares		-0-		$424		$312		$321				1,057
GRAND TOTAL												$36,503

Installation Data: Installations will be accomplished by drive-in Mod at the Naval Air Rework Facility (NARF), the Naval Air Development Center (NADC), or contractor facilities.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ALR-66 ESM System (OSIP 48-83)

Models of Aircraft Affected: P-3B/C

Description/Justification:

The present P-3 electronic sensor monitoring (ESM) system is obsolete and lacks the required sensitivity, frequency coverage and bearing accuracy for threat warning. The ALR-66 is a current technology ESM system which will provide automatic indication of the bearing, range and classification of each threat radar transmission. The ALR-66 is designed so that its threat library can be updated at the organizational level without hardware modification.

Development Status: OPEVAL on the P-3 was completed in January 1982. FOT&E completed in November 1982. Approval for Service Use (ASU) is scheduled for March 1983.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$12,975	21	$10,063	53	$25,173	40	$20,427	168*	$68,638
O&MN Install.	(25)	$995	(1)	$50	(21)	$1,050	(93)	$4,650	(140)	6,745
APN-6 Spares		$1,853		$1,877		$4,695				8,425
GRAND TOTAL										$83,808

* Prior to FY 1983 CNO directed the procurement of 53 P-3B kits, 28 installations and 19 ALR-66 systems to support deployed forces.

Installation Data: Installation will be accomplished on-site by Naval Air Rework Facility (NARF) field teams for P-3B aircraft. Installation of P-3C kits will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Ditching Improvements (OSIP 49-83)

Models of Aircraft Affected: P-3C

Description/Justification:

This modification enhances the ditching capability of P-3C aircraft by providing the following structual improvements:

a. Reinforce the lower surfaces of the NAV/COM fold down table to provide a more durable and shatterproof surface.
b. Install reinforcing clips to provide additional support to the lavatory and dinette forward walls and to the upper ends of the vertical hat section stiffeners of the galley cabinet.
c. Install a retention latch on the aft edge of the dinette seat.

The above changes were recommendations resulting from the investigation of the VP-[illegible] accident of October 1978.

Development Status: This modification is being incorporated into production P-3C aircraft. Approval for service use (ASU) is not required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	49	$147	49	$56	49	$59	49	$63	196	$ 325
O&MN Install.			(12)	$103	(49)	$788	(135)	$2,171	(196)	3,152
APN-6 Spares				-0-						-0-
GRAND TOTAL										$3,477

Installation Data: Installation will be accomplished on-site by contractor field teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: On-Top Position Indicator (OTPI) Replacement (OSIP 50-83)

Models of Aircraft Affected: P-3A/B

Description/Justification:

The R1651 is directly interchangeable with the R1047 on-top position indicator (OTPI). The R1047 is a less accurate tube type design and is no longer in production or supportable. The R1651 incorporates a solid state design and has demonstrated 1,000 mean flight hours between failure (MFHBF) as compared to the 400 MFHBF of the R1047. The R1651 weighs 5 pounds compared with the 51 pounds of the R1047.

Development Status: The R1651 is incorporated in P-3C aircraft.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	53	$603	53	$247	53	$263			159	$1,113
O&MN Install. "O" Level			(53)	-0-	(53)	-0-	(53)	-0-		-0-
APN-6 Spares		$9								9
GRAND TOTAL										$1,122

Installation Data: Installation will be accomplished by organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Navigation System Improvement (OSIP 53-77)

Models of Aircraft Affected: P-3A/B

Description/Justification:

The P-3A/B modernization program provides for major improvements in the following critical areas: tactical and geographic navigation, tactical displays, data management, reliability maintenance, crew workload, and system integration. The major changes made to the existing P-3A/B aircraft avionics are:

a. Replacement of the ASN-42 inertial system with LTN-72.
b. Replacement of the analog ASA-47 navigation computer with the ASN-124 computer system with magnetic tape load.
c. Replacement of the analog ASA-16 tactical display system with an integrated tactical display which uses the ASA-66 (GFE) display as a major component.
d. Replacement of the analog ASA-13 pilot's plotter system with the P-3C inventory ASA-66 CRT.
e. Addition of ARN-99(V)-1 OMEGA navigation receiver converter.
f. Modification of the ACA-7 DIPAR to include Vernier translator.
g. Addition of soft landing gear and fuel dump airframe changes to any P-3A aircraft receiving this mod.

The ASN-124 computer will integrate the ASW, NAV, and display components to optimize the man-machine interface. The P-3A/B modernization program will increase the P-3A/B operational mission effectiveness through extensive improvements in equipment reliability, maintainability, human engineering, and tactical and geographic navigation performance.

Development Status: Approval for Service Use (ASU) was obtained in November 1977.

OSIP 53-72

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	116	$162,533			19	$20,379					135	$182,912
O&MN Install.	(62)	$4,083	(34)	$4,413	(16)	$10,126	(4)	$1,086	(10)	$2,995	(126)	22,703
APN-6 Spares		$3,541										3,541
GRAND TOTAL												$209,156

Installation Data: Installation to be accomplished by Naval Air Rework Facility (NARF) Drive-In and by NARF Field Teams. Production leadtime is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Advanced Signal Processor Modernization (OSIP 90-84)

Models of Aircraft Affected: P-3C

Description/Justification:

The Advanced Signal Processor (ASP) provides the Fleet with significantly improved ASW acoustic detection and classification capabilities which are essential for target prosecution in average and poor water conditions. This modification is especially critical in view of the minimum quantity of new Update III aircraft entering the P-3 Fleet. This program installs the ASP with associated receivers, displays and recorders into P-3C Update I (30 aircraft) P-3C Update II (80 aircraft) and P-3C nonupdated (115 aircraft). This acoustic update will provide a common configuration with Update III and is in compliance with NDCP #WO484-AS dated 23 June 1981.

Development Status: ASP received Provisional Approval for Service Use (PASU) in July 1982 and will receive Approval for Service Use (ASU) by January 1984.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$23,200	10	$73,507	213	$2,022,352	225	$2,119,059
O&MN Install.							(225)	151,875
APN-6 Spares		$987		$3,036		$5,715		9,738
GRAND TOTAL								$2,280,672

Installation Data: Installation will be accomplished on-site by contractor field teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 6

Modification Title and No.: BEARTRAP (OSIP 81-84)

Models of Aircraft Affected: P-3C

Description/Justification:

This modification will provide a BEARTRAP capability to one P-3C Update II aircraft. The BEARTRAP equipment provides special acoustic signal conditioning and recording for acoustic intelligence collection. The modification will correct a documented operational deficiency. BEARTRAP configured aircraft retain all the standard ASW capabilities.

Development Status: Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	1	$2,500			1	$2,500
O&MN Install.			(1)	$500		500
APN-6 Spares		[illegible]				95
GRAND TOTAL						$3,095

Installation Data: Installation will be accomplished by Naval Air Development Center (NADC), Warminster.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: HF Simultaneous Operations (SIMOPS) (OSIP 82-84)

Models of Aircraft Affected: P-3C

Description/Justification:

The P-3C aircraft has two High Frequency (HF) radios installed. However, it is not possible to independently operate both radios in the transmit and receiver modes simultaneously due to the presence of radio frequency interferences. Each radio has the following communications modes: (1) voice, (2) teletype; and (3) data link. As presently configured, the aircraft can neither transmit simultaneously on both radios nor can it simultaneously receive voice or teletype while receiving data link communications. The lack of this capability severely restricts communications and limits the total integration of the P-3C in the Fleet Command, Control and Communications structure. The Fleet need for this capability has been documented by operational requirements from CINCLANT and CINCPAC. The HF communication subsystem improvement will consist of: (1) modification of the currently installed AN/ARC-161 radio sets (2 per aircraft) to add radio frequency filtering to allow for simultaneous transmit and receive operation and (2) modification of the aircraft communications switching matrix, A-368, to allow utilization of both HF radio sets simultaneously. This modification affects 235 P-3C aircraft (115 NUDS, 30 Update I, 80 Update II, and 10 Update III).

Development Status: The AN/ARC-161 HF radio set is currently in production and is approved for service use on the P-3C aircraft. This modification to enable two radio sets to operate simultaneously is minor and Approval for Service Use (ASU) is not required.

OSIP 82-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$6,000	48	$4,960	186	$22,225	235	$33,185
O&MN Install.			(1)	$25	(234)	$2,340	(235)	2,365
O&MN Training		$275						275
APN-6 Spares		-0-		$73		$78		151
GRAND TOTAL								$34,976

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: BRU-14/A Bomb Rack (OSIP 83-84)

Models of Aircraft Affected: P-3A/B

Description/Justification:

The BRU-14/A bomb rack is to be installed on P-3A/B TAC/NAV Mod aircraft at bomb bay stations 2C, 4C and 8C in replacement of the present Aero 65/A bomb rack. The Aero 65/A bomb rack is presently unsatisfactory for carriage of nuclear and other ordnance. The use of BRU-14/A bomb rack will allow the aircraft to carry nuclear and other ordnance in a safe locked mode.

Development Status: This modification is the same as the P-3C design. No Approval for Service Use (ASU) required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	12	$1,331	12	$193	108	$1,909	132	$3,433
O&MN Install.			(12)	$12	(120)	$120	(132)	$132
O&MN Training		$25						25
APN-6 Spares		$10		$5				15
GRAND TOTAL								$3,605

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) Field Team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: CP-3A (OSIP 84-84)

Models of Aircraft Affected: P-3A

Description/Justification:

With the retirement of C-118 and C-131 aircraft from Navy inventory, there is a need to replace this quick reaction medium lift logistic support capability. The cargo/passenger conversion of P-3A aircraft is considered a cost effective supportable way to satisfy this requirement. This conversion will include:

a. A 100-inch wide by 80-inch high cargo door.
b. A cargo floor capable of supporting 300 pounds per square foot and accepting standard military pallets.
c. A maximum seating capacity for 64 passengers.
d. An upgraded navigation communication system including an LTN-211 OMEGA, dual LTN-72 inertials, dual VIR-31A VHF Comm ranging, dual ARC-161 HF Transceivers, a 618MA-3A VHF Comm Set and a Primus 400 weather radar.

The above configuration will provide a maximum cargo load of 10,000 pounds with a range of approximately 3,800 nautical miles.

Development Status: P-3A has Approval for Service Use (ASU). The CP-3A conversion adds systems which are already operational in the P-3 Fleet. Testing will be limited to Naval Air Test Center (NATC), Patuxent River confirmation of suitable installation.

OSTP 84-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$4,580	4	$5,564	4	$5,954	9	$16,098
O&MN Install.			(1)	$2,250	(8)	$18,000	(9)	20,250
APN-6 Spares		$296		$685		$733		1,714
GRAND TOTAL								$38,062

Installation Data: Installation will be by contractor drive-in modification.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FLIR Reliability Improvement (OSIP 102-79)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The forward looking infrared (FLIR) system currently installed in the S-3A has consistently exhibited low reliability. This improvement will result in a FLIR installation which incorporates the major components currently installed in the P-3C and A-7 aircraft FLIR systems. These systems are currently exhibiting a reliability more than three times higher than the present S-3A system mean time between failure (MTBF) of 175 hours versus 49 hours.

Development Status: Development effort will consist of production engineering required to repackage the existing P-3C/A-7 FLIR components into the S-3A FLIR weapons replaceable assemblies (WRA's).

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	17	$12,766				-0-	34	$7,148	28	$6,380	79	26,294
O&MN Install.	(5/*	$100	(12)	$232		-0-			(62)	1,195	(79)	1,527
O&MN Training				$100								100
APN-6 Spares		$2,177				-0-		4,859				7,036
GRAND TOTAL												$34,957

* Includes one prototype.

Installation Data: Installation will be accomplished by a contractor component update program.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: S-3A Environmental Control System (ECS) Turbine Fan Assembly Modification (OSIP 52-83)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The S-3A has recently experienced a high catastrophic failure rate of the environmental cooling system (ECS) turbine that is responsible for cooling and pressurizing the airplane. The result of these catastrophic failures has been a reduction in mission capable (MC) rates. An engineering analysis has been conducted into the causes for these failures, and the recommendation was to replace the existing bearing with one made of a more durable material and increase its lubrication. This change will increase the mean time between failure (MTBF) from 200 hours for the existing ECS to 300 hours for the turbine with the recommended improvements.

Development Status: Approval for service use (ASU) is not required. Testing is limited to contractor demonstration.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	40	$382	36	$32	33	$31	48	$49	157	$494
O&MN Install.			(20)	$22	(36)	$40	(101)	$104	(157)	166
APN-6 Spares		$33								33
GRAND TOTAL										$693

Installation Data: Installation to be accomplished by the Naval Air Rework Facility (NARF) during Component Rework.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: S-3A Bleed Air Shut-Off Valve (OSIP 102-81)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The S-3A bleed air shut-off valve controls the bleed air supply both to and from the engine, and failure of this valve will result in an inability to start the engine and/or air-condition or pressurize the aircraft. An engineering investigation was conducted by the Naval Air Rework Facility, Alameda. This investigation revealed that an average of 2.6 discrepancies per valve existed on those returned to the depot for repair. The most common discrepancies were found to be defective thermostatic switch, excessive bridge seal leakage and corroded bearings. The improved switch provides for a longer isolation chamber which physically moves the switch further from the heat source. The incorporation of this change is expected to provide a significant improvement to the bleed air shut-off valve reliability by increasing the mean time between failure (MTBF).

Development Status: Naval Air Rework Facility (NARF) Alameda has conducted several engineering investigations on this valve resulting in the above engineering change proposal (ECP) recommendations. No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	71	$114	75	$111	17	$27	163	$252
O&MN Install.						-0-		-0-
APN-6 Spares		$35		$26		$12		73
GRAND TOTAL								$325

Installation Data: Installation will be accomplished during depot level rework at no additional cost as installation time is identical to the time already allotted to the replacement of the original components.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Display Generator Unit (DGU) Mod (OSIP 58-83)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The display generator unit (DGU) has consistently been a top 10 readiness improvement summary evaluation (RISE) item. Additionally, 1200 separate parts comprised of 27 individual parts are the subject of a 5-year protect buy because of parts obsolescence in each DGU so that a redesign is absolutely essential for supportability. This redesign effort, in addition to replacing the obsolescent parts, will provide a 300 percent improvement in reliability and correct existing maintainability problems. This would result in a proposed increase of the Mean Time Between Failure (MTBF) to 1000 hrs.

Development Status: LORAL, the current supplier of the DGU, has under development for NAVAIR, an updated version of the DGU which has been designated a universal display generator (UDG). The UDG is undergoing qualification testing with production planned in FY 1984. This UDG will be modified for S-3A application. Approval for service use (ASU) for an S-3A application is not required. An Airframe Change is required to install the modified unit.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$4,561		$13,010	60	$15,329	99	$24,527	159	$57,427
O&MN Install.							(159)	$0,952	(159)	0,952
O&MN Trainer Install.								$30		30
O&MN Training								$50		50
APN-6 Spares				-0-		$1,378		$1,565		2,943
GRAND TOTAL										$70,302

Installation Data: Installation will be accomplished by contractor field mod teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: S-3A STCU Reliability Improvement (OSIP 55-83)

Models of Aircraft Affected: S-3A, KS-3

Description/Justification:

The speedbrake trim control unit (STCU) in the S-3A is responsible for electrically commanding key flight control inputs in both the pitch and roll axes. This STCU has continued to be a reliability problem with a mean time between failure (MTBF) of 242 hours. Several repetitive failure modes will be corrected by this program to improve the reliability to 363 hours MTBF.

Development Status: Lockheed is continuing engineering investigations and working with the Naval Air Rework Facility (NARF) Alameda to identify modes. An engineering change proposal (ECP) will be developed to correct the high failure deficiencies.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$1,026	120	$1,271	37	$422			159	$2,719
O&MN Install.					(74)	$696	(85)	$805		1,501
O&MN Factory Training						$11				11
APN-6 Spares		$61		$489		$278				828
GRAND TOTAL										$5,059

Installation Data: Modification will be by a turnaround program with the supplier.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: S-3A Nose Landing Gear Fail-Safe Steering System (OSIP 57-83)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The nosewheel steering system of the S-3A depends on electrical signal inputs from several components in the system to command the steering actuator either right or left. An electrical open or short failure in two of these components has resulted in at least 34 nosewheel hard overs in the last 6 years. Fortunately, none of these hard overs have occurred during a critical time in the landing or takeoff evolutions; however, the potential exists for this failure during one of these critical situations with resultant aircraft damage. In order to eliminate these hard over failures, a self-monitoring system will be procured. This system will be built to fit within existing volume and weight envelopes of the existing nosewheel steering system.

Development Status: A similar fail-safe steering system has been developed and tested on the A-7 aircraft. This system can be modified for use on the S-3A nose landing gear (NLG) steering system.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	68*	$666	61	$131	30	$68			159	$ 865
O&MN Install.			(68)*	$119	(61)	$102	(30)	$50		271
O&MN Factory Training				$103						103
APN-6 Spares		$79		$56		$29				164
GRAND TOTAL										$1,403

* Includes trial kit installation.

Installation Data: Installation will be by contractor field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Auxiliary Power Unit Increased Power (OSCP 106-82)

Models of Aircraft Affected: S-3A

Description/Justification:

This change consists of providing an auxiliary power unit (APU) that will be capable of producing increased compressed air (80 ppm vice 48 ppm and 46 psia vice 30 psia at 120° ambient temperature) while simultaneously providing 45 KVA vice 2 KVA electrical power.

The increased air and power input will allow the S-3A avionics systems to be operated on the ground without dependence upon ground air conditioning or electric power for avionics maintenance and checkout. The present APU does not provide adequate cooling air to prevent avionics equipment damage from overheating during prolonged ground operation.

The increased electrical power will allow all aircraft electrical systems to be operated in flight after loss of an engine-driven generator, thus providing an additional operational and safety factor. This change would result in a proposed increase of the Mean Time Between Failure (MTBF) to 850 hrs.

Development Status: This mod will be a derivative of the APU now being developed for the F-18 aircraft. Qualification tests for the F-18 APU have been completed. RDT&E,N Program Element Number 53210N and project number W1631 - AS apply.

OSIP 106-83

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6		$3,500		$3,604	32	17,206	51	$21,777	73	33,158	156	$ 79,245
O&MN Install.							(32)	$5,841	(124)	$10,986	(156)	24,527
O&MN Install. Trainer						$101		$353				454
O&MN Factory Training								$500				500
O&MN Interim Support										$643		643
APN-6 Spares						$2,229		$2,281		$2,067		7,576
GRAND TOTAL												$113,145

Installation Data: Installation will be accomplished by contractor field mod teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ICS Communications Control Group (CG-2 25-84)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The inter-communication system (ICS) communications control group presently installed in the S-3A has consistently been unreliable resulting in a high percentage of the aircraft being operationally degraded. This set of equipments will be replaced by an ICS communication control group of new design. This new set will feature state-of-the-art large scale integration and microprocessor technology in place of the hard wired logic existing in the present set and will substantially reduce the number of components required to generate and process all of the communications signals. Application of current technology will result in significantly improved reliability and maintainability characteristics. This change is necessary to accommodate future changes such as the ARC-182 radio, JTIDS and the Global Positioning System (GPS). This change would result in a proposed increase of the Mean Time Between Failure (MTBF) to 500 hours.

Development Status: An Aeronautical Equipment Reliability Maintainability Improvement (AERMIP) program for development of the new communication control group is currently being prepared at the Naval Air Development Center, Warminster, PA. Provisional approval for service use is expected in December 1984. RDT&E,N Program Element Number 25634N and project number W1041 apply.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	5	$2,669	45	$6,049	107	$15,658	157	$24,376
O&MN Install. 'Off Level		-0-		$57				57
O&MN Training				$107				107
APN-6 Spares		$248		$2,607		$3,600		6,455
GRAND TOTAL								$31,094

Installation Date: Installation will be at organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: S-3A Weapon System Improvement Program (Redesignated S-3B) (OSIP 2-81)

Models of Aircraft Affected: S-3A

Description/Justification:

The S-3A Weapon System Improvement Program (WSIP), redesignated S-3B, will increase the effectiveness of the S-3A throughout its useful service life by providing improvements in detection, classification, localization, and attack capabilities.

WDCP W0489-AS, approved by SECNAV in June 1981, authorized development of improved ASW capabilities through use of new acoustic processing techniques. Capability to use in-development sonobuoys will be provided. On-board processing, display and control systems will be expanded to provide new capabilities without operator overload. ASW and surface search capability will be enhanced by increased range to permit earlier detection of surfaced submarines, submarine periscopes and small surface vessels. Inverse Synthetic Aperture Radar (ISAR) capability will provide standoff identification of surface targets. The ESM system will be improved to increase its frequency coverage and bearing accuracy. HARPOON launch capability and chaff and flare dispensing for self defense will be added.

Development Status: DNSARC (milestone IIB) review occurred 24 February 1981. WDCP W0489-AS Revision 1 was approved by SECNAV on 6 June 1981. The TEMP (No. 140-1) was approved by OPNAV on 10 September 1981. RDT&E,N Program Element Number 64217N applies. Major Program Milestones include TECHEVAL and Provisional Approval for Service Use (PASU) scheduled for May 1985, and Approval for Service Use (ASU) scheduled for August 1986.

OSIP 2-85

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	18	$108,813	142	$793,614	160	$ 902,427
O&MN Install.			(160)	$28,621	(160)	28,621
O&MN Training		$342		$3,662		4,004
APN-6 Spares		$9,795		$61,461		70,256
GRAND TOTAL						$1,005,308

Installation Data: The leadtime for the kits and OPF is 24 months. The kits will be installed by contractor field teams at Navy facilities.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ASN-130 Inertial Navigation System (OSIP 1-85)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The AN/ASN-92 inertial navigation system has long been a significant readiness degrader for the S-3A and has been at the top of the common avionics Readiness Improvement Status Evaluation (RISE) report for the last year. This change would replace the three Weapon Replaceable Assembly (WRA) AN/ASN-92 system with the single WRA AN/ASN-130 currently flying in the F/A-18. Additionally, an interface device would be required to adapt the AN/ASN-130 to the S-3A. The proposed change would increase the Mean Flight Hours Between Failure (MFHBF) from 49 hours for the AN/ASN-92 to 500 hours for the AN/ASN-130 and interface device.

Development Status: The design and testing of the interface device is being funded by the Aeronautical Equipment Reliability/Maintainability Improvement Program (AERMIP) which started in the third quarter of FY 1982. PASU on the ASN-130 will be in the first quarter of FY 1984.

OSIP 1-85

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$1,698	153	$67,204	157	$68,902
O&MN Install.			(157)	$413	(157)	413
O&MN Software				$500		500
APN-6 Spares				$1,701		1,701
GRAND TOTAL						$71,516

Installation Data: Installations will be by a Naval Air Rework Facility (NARF) Field Team at North Island and Cecil Field. For configuration purposes and logistic support consideration, this change should be installed on a squadron by squadron basis. Initial lead time for kits is 14 months. Follow on buys are 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 6

Modification Title and No.: Avionics Shut Down Switches (OSIP 03-84)

Models of Aircraft Affected: S-3A

Description/Justification:

Approximately 35 percent of run time on the avionics is accumulated on the ground when power is applied for maintenance on unrelated equipment. This change would incorporate on/off switches for the entire avionics suite so that specific Weapon Replacement Assemblies (WRAs) could be energized as required, thus adding 15 percent to the Mean Time Between Failure (MTBF) of avionics components. The switches would be wired into the weight-on-wheels switch to alleviate failure modes in flight.

Development Status: A partial engineering analysis has been completed on this design. A 40 percent MTBF improvement on selected WRAs was realized during feasibility tests. Final design will be dependent on approval of this Operation and Safety Improvement Program (OSIP). No Approval for Service Use (ASU) is required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	68	$1,283	90	$565			158	$1,848
O&MN Install			(50)	$377	(108)	$813	(158)	1,190
APN-6 Spares		$53						53
GRAND TOTAL								$3,091

Installation Data: Kit lead time is 14 months. Kits will be installed by a contractor field team at North Island (NORIS) and Cecil Field.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Pitch Trim Actuator (OSIP 37-84)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The pitch trim actuator (PTA) in the S-3A continues to be a significant mission capable degrader with an excessively high removal rate. The most prevalent failure mode is corrosion in the core of the electrical brake and main actuating motors causing motor burnout and attendant failure. In order to preclude this failure mode, the high iron content parts will be coated with a corrosive resistant substance that will increase the Mean Time Between Failure (MTBF) from 300 hours to 500 hours. This should increase the mission capability of the airplane by 2 percent.

Development Status: Naval Air Systems Command (NAVAIR) is funding an evaluation of seven candidate coatings in FY 1982. The procedure used will be to coat seven PTA motor cores and subject them to a salt water spray test to select the optimal coating. The tests will be completed in FY 1983. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	40	$400	40	$103	77	$219	157	$722
O&MN Install.			(40)	$20	(77)	$57		77
APN-6 Spares		$64		$48		$88		200
GRAND TOTAL								$999

Installation Data: Modification will be installed at the depot incident to normal repair. Equipment leadtime is 10 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ASA-82 Tactical Display System (OSIP 41-85)

Models of Aircraft Affected: S-3A

Description/Justification:

The multi-purpose displays (MPD's) serve to display all tactical information to the flight crew members. Four common System Replaceable Assemblies (SRAs) in the four MPD's account for 40 percent of the MPD failures. Additionally, the MPD's utilize hybrid circuit technology; and nine of the nineteen hybrids used in the MPD are currently obsolete with the remaining ten projected to be obsolete within 5 years. The Aviation Supply Office has purchased a 5-year protect buy of the nine obsolete components; however, the SRA's need to be redesigned to ensure continued supportability. An additional benefit will be an increase in Mean Time Between Failure (MTBF).

Development Status: The hybrid replacement candidates have all been identified and preliminary design approaches established. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	8	$9,695	144	$36,194	152	$45,829
O&MN Install			(152)	$3,420	(152)	$3,420
O&MN Software		$100				100
APN-6 Spares		$2,334		$1,742		4,076
GRAND TOTAL						$54,325

Installation Data: Installation will be by the vendor by a forced turn-around program at the vendor's facility. Leadtime for the kit is 14 months. Installation will consist of modification to four Weapon Replaceable Assemblies (WRAs).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APS-116 (OSIP 95-84)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

Ten percent of the AN/APS-116 Shop Replaceable Assemblies (SRAs) have been identified as being responsible for over 50 percent of the AN/APS-116 failures. These SRAs are to be replaced with current technology SRAs that will increase the Mean Flight Hours Between Failure (MFHBF) of the AN/APS-116 to 500 hours. The SRAs to be replaced include: Low Noise Radio Frequency (RF) Amplifier, Low Voltage Traveling Wave Tube (TWT) Power Supply, Antenna Drive, Antenna Shock Isolators, and Quick-Disconnenct Oil Fittings. The existing SRAs are a significant contributor to the AN/APS-116 standing on the Readiness Improvement Status Evaluation (RISE) summary, i.e., number 5. Replacement of the existing SRAs will provide the reliability improvement necessary to remove the AN/APS-116 from the RISE summary.

Development Status: Development has been completed on the new SRAs, which are in engineering test at Texas Instruments. No installation kits are necessary, and Approval for Service Use (ASU) is not required. The new SRAs are a direct replacement for the existing SRAs. An avionics Change (AVC) is required to document the modification and associated Integrated Logistic Support (ILS) impact. A flight test will be performed by Naval Air Test Center (NATC) to verify satisfactory operation of the modified radar.

OSIP 05-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$1,156	12	$1,349	143	$18,345	157	$20,850
O&MN Install. "I" Level		-0-						-0-
APN-6 Spares		-0-		$1,911		$2,057		3,968
GRAND TOTAL								$24,818

Installation Data: Installation of the new SRAs will be accomplished at the Intermediate level. No airframe changes are required.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Non-Ice/Low Limit Control Valve (OSTP 89-84)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The non-ice/low limit control valve is an integral part of the environmental control system responsible for damping surges in the system caused by power fluctuations. This damping is accomplished through a feedback mechanism, and excessive damping rate and/or failures of the valve have resulted in pressure buildup in the duct causing duct separation. This phenomenon occurs primarily on full power application such as on takeoff power application and has resulted in numerous aborted takeoffs/sortie losses. The valve is currently high non-mission capable supply in the Fleet, and the addition of a position feedback circuit to the sensor will reduce the damping, thus reducing the failure and abort rates.

Development Status: This proposed change is in the process of being prototyped to be evaluated in an S-3A. Full validation of the change should be completed by the third quarter of FY 1983. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	88	$1,755	71	$883	159	$2,638
O&MN Install. "O" Level		-0-				-0-
O&MN Install. (NAMT)			(1)	$8		8
APN-6 Spares		$890				890
GRAND TOTAL						$3,536

Installation Data: Installation will be accomplished at the Organizational level. The NAMT kit will be contractor installed. Kit leadtime is 15 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Bleed Air High Stage Regulator Valve (OSIP 00-84)

Models of Aircraft Affected: S-3A, KS-3A

Description/Justification:

The bleed air high stage regulator valve (commonly known as the 14th stage air augmentation valve) has recently had a significant mission capable (MC) impact on both coasts due to an unanticipated high failure rate. The primary failures have occurred as a result of two premature diaphragm failures and weakening of a drive spring. This change would increase the life of the diaphragm by reducing the activating air supply temperature by 200°F and would also alter the spring processing for longer life. The net effect will be a decreased failure rate and an increase in aircraft availability.

Development Status: The failure modes have already been identified and improvements proposed. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	72	$262	48	$7	35	$6	155	$275
O&MN Install.			(72)	$7	(83)	$8	(155)	15
APN-6 Spares		$10		$7				17
GRAND TOTAL								$307

Installation Data: Design, development and kits will be furnished by the prime contractor. Installation will be accomplished at depot incident to normal repair.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Replacement of TSEC/KY-28 with TSEC/KY-58 (OSIP 91-84)

Models of Aircraft Affected: S-3A

Description/Justification:

The TSEC/KY-58 is a secure voice equipment designed to operate with Ultra High Frequency (UHF) and Very High Frequency (VHF) Half-Duplex Radio operations. The TSEC/KY-58 was developed to replace the TSEC/KY-28 and will be mated with a Z-AHQ interface adapter to permit the TSEC/KY-58 to operate with the existing TSEC/KY-28 wiring. The replacement of the TSEC/KY-28 with the TSEC/KY-58 will result in an increase in subsystem reliability by improving the Mean Flight Hours Between Failures (MFHBF) from 662 hours to 1200 hours. Justification for the TSEC/KY-58 is stated in the Chief of Naval Operations (CNO) Secure Voice Plan dated July 1979.

Development Status: The TSEC/KY-58 and Z-AHQ are fully developed and Approved for Service Use (ASU) by the Office of the Secretary of Defense (OSD) Memorandum dated 24 June 1976. Procurement of the TSEC/KY-58 is budgeted by the Naval Telecommunications Command which will supply the TSEC/KY-58 and Z-AHQ equipment to the Naval Air System Command. Development of an installation kit is not required, but Naval Air Rework Facility (NARF) Alameda will prepare an airframe change (AFC) to document the Government Furnished Equipment List (GFEL) change and Integrated Logistic Support (ILS) impact. Flight tests will be performed by Naval Air Test Center (NATC) to verify satisfactory operation of the KY-58 in S-3A aircraft.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5		$123		$123
O&MN Install. "O" Level		-0-		-0-
APN-6 Spares		-0-		-0-
GRAND TOTAL				$123

Installation Data: Installation will be accomplished at the Organizational level. No installation kits are required.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Battle Group Passive Horizon Extension System (OSIP 28-85)

Models of Aircraft Affected: S-3A

Description/Justification:

Battle Group Commanders require the capability to exploit all electromagnetic emissions by detecting, localizing, classifying, identifying and tracking them for timely decision making in order to defend against hostile stand-off weapons. Battle Group Passive Horizon Extension System (BGPHES) will provide that capability beyond FY 1986. The S-3A with BGPHES installed will replace the EA-3B.

Development Status: The BGPHES concept was demonstrated in FY 1980. Design is almost completed, and hardware assembly and test is scheduled for FY 1983 and FY 1984. A DNSARC II decision is scheduled for FY 1983. Provisional Approval for Service Use (PASU) and DNSARC III decisions are scheduled for FY 1984.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$31,496	36	$172,924	40	$204,420
O&MN Install.			(40)	$10,050	(40)	10,050
O&MN Training				$100		100
O&MN Support				$5,600		5,600
APN-6 Spares		$4,332		$16,188		20,520
GRAND TOTAL						$240,690

Installation Data: Installation will be accomplished by contractor field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: S-3A Wing Fold System Modification (DCP 107-

Models of Aircraft Affected: S-3A, US-3A

Description/Justification:

A number of field incidents have been reported in which wing fold locking system component failures have caused premature extension of the wing fold lock pins which damage the "T" block and lug bushings. This could ultimately preclude locking of the wing in the fully spread position or allow the "flags" to be retracted while the wing is yet unlocked. This redesign would eliminate two proximity switches and a two-sided time delay relay thus simplifying this mechanism and reducing aborts as a result of their malfunction.

Development Status: The redesign has been prototyped, tested and approved for service use.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	54	$921	25	$390	22	$353	24	$411	38	$693	163	$2,777
O&MN Install.	(0)	$42	(26)	$148	(26)	$130	(25)	$134	(77)	$412	(163)	876
APN-6 Spares						-0-						-0-
GRAND TOTAL												$3,653

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Flight Control System Mod (OSIP 132-84)

Models of Aircraft Affected: US-3A

Description/Justification:

In US-3A Navy Preliminary Evaluation (NPE) and Board of Inspection and Survey (BIS) trials, the Naval Air Test Center (NATC) reported several flying qualities deficiencies that limit the mission capabilities of the aircraft and adversely influence safe operation. In 1975 a systematic re-evaluation of the flight control system was undertaken to define a set of flight control system modifications that offers improvement without degradation. Through extensive analysis, simulation, and flight test, a modification package has emerged which resolves three separate problems: increased elevator authority in the landing configuration (ability to cope with more mistrim than is now possible), decreased elevator authority in high speed tactical flight (less sensitivity in high speed dashes), and adequate control authority after loss of both hydraulic systems (emergency system now installed is adequate to return for landing but questionable during landing and rollout). The flight testing has included both land and sea based trials. In all cases, pilot reaction has been highly favorable.

Development Status: Development and testing of the flight control system modification is complete.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$652	2	$1,445			3	$2,09
O&MN Install.			(1)	$63	(2)	$126		18
APN-6 Spares		-0-						-0
GRAND TOTAL								$2,28

Installation Data: Installation will be accomplished by contractor field mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: US-3A Starter Control Valve (OSIP 60-83)

Models of Aircraft Affected: US-3A

Description/Justification:

The existing engine starter control valve, despite several attempts at improvement, has only realized a mean operating time of 150 starts before failure and is the source of numerous aborted sortie attempts and reduced mission capable (MC) rates. This change will replace the existing engine start control valve with one which has completed Navy qualification testing and is projected to have a mean operating time of 10,000 starts before failure. Incorporation of this new start control valve will greatly benefit the operation of the US-3A.

Development Status: Approval for service use is not required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$14	6	$45	4	$32	12	$91
O&MN Install. "O" Level				-0-				-0-
APN-6 Spares				-0-				-0-
GRAND TOTAL								$91

Installation Data: Installation will be accomplished at organizational level by replacing the old valve with new valve.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Acti ity 5

Modification Title and no.: US-3A Environmental Control System (ECS) Turbine Fan Assembly Modification (OSIP 35-84)

Models of Aircraft Affected: US-3A

Description/Justification:

The US-3A has recently experienced a high catastrophic failure rate of the environmental cooling system (ECS) turbine that is responsible for cooling and pressurizing the airplane. The result of these catastrophic failures has been a reduction in mission capable (MC) rates. An engineering analysis has been conducted into the causes for these failures, and the recommendation was to replace the existing bearing with one made of a more durable material and increase its lubrication. This change will increase the Mean Time Between Failure (MTBF) from 200 hours for the existing ECS to 300 hours for the turbine with the recommended improvements.

Development Status: Approval for service use (ASU) is not required. Testing is limited to contractor demonstration.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$6			6	$ 6
O&MN Install.			(6)	$6		6
APN-6 Spares		-0-				-0-
GRAND TOTAL						$12

Installation Data: Installation to be accomplished by the Naval Air Rework Facility (NARF) during Component Rework.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: US-3A Bleed Air Shut-off Valve (OSIP 26-84)

Models of Aircraft Affected: US-3A

Description/Justification:

The US-3A bleed air shut-off valve controls the bleed air supply both to and from the engine, and failure of this valve will result in an inability to start the engine and/or air-condition or pressurize the aircraft. An engineering investigation was conducted by the Naval Air Rework Facility, Alameda. This investigation revealed that an average of 2.6 discrepancies per valve existed on those returned to the depot for repair. The most common discrepancies were found to be defective thermostatic switch, excessive bridge seal leakage and corroded bearings. The improved switch provides for a longer isolation chamber which physically moves the switch further from the heat source. The incorporation of this change is expected to provide a significant improvement to the bleed air shut-off valve reliability by increasing the Mean Time Between Failure (MTBF).

Development Status: Naval Air Rework Facility (NARF) Alameda has conducted several engineering investigations on this valve resulting in the above engineering change proposal (ECP) recommendations. This ECP was approved by the NAVAIR change control board on 21 June 1981 for the S-3A, OSIP 102-81.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	6	$10			6	$10
O&MN Install			(6)	$3		3
APN-6 Spares		-0-				-0-
GRAND TOTAL						$13

Installation Data: Installation will be concurrent with component rework.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Selective Jettison of Wing Stores (OSIP 96-84)

Models of Aircraft Affected: US-3A

Description/Justification:

The US-3A normal configuration in flights from the Indian Ocean to Diego Garcia is a single AERO-10 drop tank and a cargo pod. Arrested landings are prohibited with an AERO-10 with a full or partially full fuel load. The US-3A currently can jettison either both wing stores or neither wing store, so if a fuel transfer malfunction occurs, the choice is either to jettison both the AERO-10 and the cargo pod (loaded with mail and/or parts) or to violate Naval Air Training and Operating Procedures Standardization Program (NATOPS) and trap aboard with both stores in place. This change would allow the US-3A to selectively jettison either wing store while still retaining emergency jettison capability in the event of an engine failure immediately after takeoff.

Development Status: The feasibility and preliminary design of this change has already been accomplished. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$249			6	$249
O&MN Install.			(6)	$16		16
APN-6 Spares		-0-				-0-
GRAND TOTAL						$265

Installation Data: Modification will be installed by a Naval Air Rework Facility (NARF) Field Team. Kit leadtime is 14 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Pitch Trim Actuator (PTA) (OSTP 87-84)

Models of Aircraft Affected: US-3A

Description/Justification:

The pitch trim actuator in the S-3A continues to be a significant mission capable degrader with an excessively high removal rate. The most prevalent failure mode is corrosion in the core of the electrical brake and main actuating motors causing motor burnout and attendant failure. In order to preclude this failure mode, the high iron content parts will be coated with a corrosive resistant substance that will increase the Mean Time Between Failure (MTBF) from 300 hours to 500 hours. This should increase the mission capability of the airplane by 2 percent.

Development Status: Naval Air Systems Command (NAVAIR) is funding an evaluation of seven candidate coatings in FY 1982. The procedure used will be to coat seven PTA motor cores and subject them to a salt water spray test to select the optimal coating. The tests will be completed in FY 1983. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$16			6	$16
O&MN Install			(6)	$3		3
APN-6 Spares		-0-				-0-
GRAND TOTAL						$19

Installation Data: Installation will be accomplished at depot incident to normal repair. Kit leadtime is 10 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Non-ice/Low Limit Control Valve (OSIP 08-84)

Models of Aircraft Affected: US-3A

Description/Justification:

The non-ice/low limit control valve is an integral part of the environmental control system responsible for damping surges in the system caused by power fluctuations. This damping is accomplished through a feedback mechanis and excessive damping rate and/or failures of the valve have resulted in pressure buildup in the duct causing duct separation. This phenomenon occurs primarily on full power application such as on takeoff power application and has resulted in numerous aborted takeoffs/sortie losses. The valve is currently high non-mission capable supply in the Fleet, and the addition of a position feedback circuit to the sensor will reduce the damping, thus reducing the failure and abort rates.

Development Status: This proposed change is in the process of being prototyped to be evaluated in an S-3A. Full validation of the change should be completed by the third quarter of FY 1983. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	6	$80	6	$80
O&MN Install, "O" Level		-0-		-0-
APN-6 Spares		-0-		-0-
GRAND TOTAL				$80

Installation Data: Installation will be at the Organizational level. Kit leadtime is 15 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Bleed Air High Stage Regulator Valve (OSIP 90-84)

Models of Aircraft Affected: US-3A

Description/Justification:

The bleed air high stage regulator valve (commonly known as the 14th stage air augmentation valve) has recently had a significant mission capable (MC) impact on both coasts due to an unanticipated high failure rate. The primary failures have occurred as a result of two premature diaphragm failures and weakening of a drive spring. This change would increase the life of the diaphragm by reducing the activating air supply temperature by 200°F and would also alter the spring processing for longer life. The net effect will be a decreased failure rate and an increase in aircraft availability.

Development Status: The failure modes have already been identified and improvements proposed. Approval for Service Use (ASU) not required.

Project Financial Plan:

	FY 1984		TOTAL	
	Qty	Cost	Qty	Cost
APN-5	6	$2	6	$2
O&MN Install.		-0-		-0-
APN-6 Spares		-0-		-0-
GRAND TOTAL				$2

Installation Data: Design, development and kits will be furnished by the prime contractor. Installation will be accomplished at depot incident to normal repair. No additional manhours are required.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: E-2B Single Engine Rate-of-Climb Improvement (OSIP 112-82)

Models of Aircraft Affected: E-2B

Description/Justification:

The weight growth of the E-2B has created a situation in which the E-2B has a "negative" rate-of-climb during single engine operation on a tropical day. A recent test demonstrated that closing the forward main landing gear doors will increase the E-2B single engine rate-of-climb by more than 100 feet per minute. The safety improvement afforded E-2B aircraft when operating in hot weather is significant.

Development Status: Naval Air Rework Facility (NARF), North Island has designed a forward main landing gear closure system utilizing qualified "off the shelf" components. This system will be prototyped and tested at Naval Air Station (NAS) North Island. This change will have minimal reliability impact on the main landing gear hydraulic system as it will be utilized only when the operating area temperature exceeds approximately 75 degrees.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6		$243	4	$58	6	$94			10	$401
O&MN Install.			(4	$86	(6)	$96	(2)	$48		230
APN-6 Spares				$12		$19				31
GRAND TOTAL										$662

Installation Data: The MLG Door modifications is useful only during carrier operations during hot weather. Therefore, it is proposed to modify only the two USN deploying E-2B squadrons by NARF Field Mod Team at NAS Miramar and by Japan A/C Corp in WESTPAC.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Pylon Fixed Fairing (OSTP 36-82)

Models of Aircraft Affected: E-2C

Description/Justification:

USS FORRESTAL (CVA-59) and later aircraft carriers have sufficient deck overhead clearance to allow the E-2C rotodome to remain in the up and locked position. This provides the opportunity to remove the retraction mechanism and to replace the pylon doors with a lightweight fixed fairing, for a weight saving of 45 pounds. This change will be accomplished concurrently with installation of the passive detection system (PDS) improvements by a contractor field team.

Development Status: An engineering change has been processed for production incorporation in E-2C Aircraft #60. This change will simplify maintenance by eliminating a complex hydraulic system, thereby improving reliability as well. Present reliability is 234 hours with an estimated improvement of 100 percent.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	0	$356	9	$380	12	$542	12	$578	18	$944	60	$2,800
O&MN Install.			(9)	$225	(7)	$551	(9)	$733	(41)	$3,225	(60)	1,709
APN-6 Spares				$51		$54						105
GRAND TOTAL												$7,614

Installation Data: Installation will be accomplished by contractor mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: PARKHILL (KY-75) (OSIP 115-83)

Models of Aircraft Affected: E-2C

Description/Justification:

The Chief of Naval Operations secure voice plan requires installation of the KY-75 in model E-2C aircraft. The extensive electromagnetic compatibility (EMC) and TEMPEST engineering program needed for this installation will be accomplished on a production aircraft. An abbreviated test will be required on the first retrofit aircraft.

Development Status: KY-75 has been procured by the National Security Agency.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	20	$396	20	$317	20	$338	10	$180	70	$1,231
O&MN Install.					(20)	$121	(50)	$303	(70)	424
APN-5 Spares				-0-						-0-
GRAND TOTAL										$1,655

Installation Data: Installation will be accomplished by contractor mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Passive Detection System Improvements (PDS) (OSIP 49-82)

Models of Aircraft Affected: E-2C

Description/Justification:

Changes in the nature of the threat since the Passive Detection System (PDS) (ALR-59) was designed, and Fleet experience with the operator workload for the present configuration, require increasing the capability of the memory and making internal changes in one Weapon Replaceable Assembly (WRA). These changes will allow additional functions known as: (a) Special Pulse Repetition Interval (PRI) modulation detection, (b) automatic scan rate measurement, and (c) passive emitter location. Software changes will be needed in the PDS program as well as in the E-2C central computer (L-304) program.

Development Status: The contract has been executed for incorporation of the improvements in production E-2C Aircraft #69 which was delivered in February 1982. Testing will be limited to contractor evaluation with the Navy monitoring the demonstration.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	9	$10,174	9	$9,936	12	$14,172	12	$15,108	18	$24,660	60	$ 74,050
O&MN Install.			(3)	$988	(7)	$2,946	(9)	$4,144	(41)	$16,084	(60)	24,062
APN-6 Spares		$2,083		$3,873		-0-						5,956
GRAND TOTAL												$104,068

Installation Data: Installation will be accomplished by contractor mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Various Safety Mods (OSIP 59-81)

Models of Aircraft Affected: E-2C

Description/Justification:

Six safety-of-flight changes have been made in the E-2B aircraft that are also needed in the E-2C. They include: (1) installation of generator bearing failure warning circuits; (2) installation of propeller vibration indication circuits; (3) installation of circuits to indicate current flow to propeller de-icers; (4) improvement to bleed air overheat sensing to avoid inflight fire due to bleed air leak; (5) improving windshield wiper hydraulic plumbing to allow shutoff in case of a leak; and (6) revising and relocating the cockpit advisory and caution light panels to provide for additional indications. Production incorporation is in aircraft #69.

Development Status: These changes are installed in all model E-2B aircraft. Development is complete except for minor differences in E-2C airframe layout.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	15	$853	6	$318	12	$681	12	$726	15	$979	60	$ 3,557
O&MN Install.			(3)	$338	(7)	$927	(9)	$1,064	(41)	$4,845	(50)	7,074
APN-6 Spares		$156				-0-						156
GRAND TOTAL												$10,787

Installation Data: Installation will be accomplished by contractor mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Microwave Refractometer (AMH-3) (OSTP 77-80)

Models of Aircraft Affected: E-2C

Description/Justification:

AN/AMH-3 refractometers are required for model E-2C aircraft to allow direct measurement of changes in the refractive index structure of the atmosphere affecting electromagnetic propagation. This requirement is an element of the Meteorological Measurement System Project WOS-34. The change involves installing a sampling cavity extending outside the aircraft, and a processor/recorder and control/display unit. One cubic foot of space and a 40-pound weight increase are required. An engineering change proposal (ECP) has been processed for production effectivity for Aircraft #85.

Development Status: OPEVAL was completed in September 1979. Approval for service use was granted on 30 [illegible]80.

Project Financial Plan:

	FY 1982 & Prior		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	8*	$1,172	11	$783	[illegible]	$912	39	$[illegible]01	70	$6,368
O&MN Install.	(1)	$36			(6)	$240	(63)	$2,525	(70)	2,801
APN-6 Spares		$69		$87						156
GRAND TOTAL										$9,325

* One (1) Prototype.

Installation Data: Installation will be accomplished by the airframe contractor during a coordinated retrofit program together with eleven other changes.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: T56-A-425 Engine Water Injection (OSIP 63-83)

Models of Aircraft Affected: E-2C

Description/Justification:

E-2 aircraft using these engines require additional power for safe climb out in the event of a single engine failure or takeoff/catapult at maximum gross weight on a tropical day. The probability of such an event occurring has greatly increased with the advent of Indian Ocean operations. The addition of components to permit water injection will provide the required power during the critical period of about 90 seconds while climb is being established. A system for injection of a water-methanol mixture has been in use for many years in commercial aircraft using these engines, and in model P-3 Navy aircraft. However, the hazard associated with storage and handling of methanol aboard carriers requires that a water-only system be used for carrier-based E-2 aircraft. Due to the power surge resulting from abrupt cutoff of fluid flow when water-only is used, it is necessary to substitute a modulating cutoff valve for the on-off valve used in other aircraft installations. Otherwise the components are the same as those that are used in the proven water-methanol systems.

Development Status: Component bench qualification of the modulating cutoff valve by Allison was completed in February 1983. Allison test cell qualification and 50 hour durability run on the T56-425A water augmented engine will be complete in March 1983. Subsequent testing by Naval Air Test Center (NATC) Patuxent River will verify NATOPS single engine performance data and carrier suitability. Approval for Service Use (ASU) is not required for the water injection modification. Production effectivity is aircraft #A85 scheduled for delivery in February 1984.

OSIP 63-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	$2,693	15	$2,792	15	$2,975	30	$6,559	70	$15,019
O&MN Install.					(6)	$988	(64)	$6,476	(70)	7,460
APN-6 Spares		$136		$798		$278		$615		1,827
GRAND TOTAL										$24,306

Installation Data: Installation will be accomplished by a contractor mod team and during a mod program at the contractor's facility.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: TRAC-A (Weapon Improvement) (OSIP 64-83)

Models of Aircraft Affected: E-2C

Description/Justification:

The sidelobes of a radar antenna permit jamming signals to enter the receiver and reduce the range of target detection. As jamming power increases through advances in technology the threat to operational use of the radar increases. Since the radar in an E-2C is its primary detection capability, a jammer is its principal threat. The TRAC-A is a new antenna and associated interfacing hardware for the radar which will permit the E-2C to keep pace with the jamming threat. Production incorporation aircraft #81 will have the complete installation. Aircraft #'s 78, 79 and 80 will have interface hardware only. kits marked * include antennas for those three aircraft kits. This program modifies the E-2C aircraft by installing two ECP's:

(a) ECP-300 installs the new antenna and an 8 channel rotary joint.

(b) ECP-306 installs two additional side lobe jammer cancellers.

Development Status: RDT&E,N Program Element Number 24152N refers to the new antenna (ECP-300) only. DT IV and OT IV conducted in May and June 1982 resulted in continued production. These changes are scheduled for incorporation in FY 1982 production aircraft beginning with #A-81.

OSIP 64-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	8	$31,231	11**	$40,412	12	$46,536	39***	$168,975	70	$287,154
O&MN Install.					(6)*	$1,171	(64)#	$12,172	(70)	13,343
APN-6 Spares		$7,794		$1,585		$1,603		$6,962		17,944
GRAND TOTAL										$318,441

* 6 each ECP-306 kits, 6 each new radomes and 2 each retrodomes.
** 11 each ECP-306 kits, 5 each new domes and 3 each retrodomes.
***3 each retrodomes. (FY 1989)
2 each 300/306 installations plus 3 each radome only installations. (FY 1991)

Installation Data: Installation will be accomplished at the contractor's plant.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ARC-182 Combination Radio (OSIP 27-84)

Models of Aircraft Affected: E-2C

Description/Justification:

The AN/ARC-182 combination radio is a new radio for most tactical aircraft. It provides VHF-FM (30-88MHz), VHF-FM (108-156MHz), VHF-AM/FM (156-174MHz) and UHF-AM/FM (225-400MHz) secureable voice communications. Navy Decision Coordinating Paper W0661-CC approved the combination radio AN/ARC-182 for tactical aircraft, including E-2 aircraft.

Development Status: The radio is being developed under RDT&E,N Program Element Number 24163N, Project W0661CC. Provisional Approval for Service Use (PASU) is scheduled for July 1983. Approval for service use is scheduled for September 1983. Production effectivity is aircraft #95.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		FY 1988	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	5	$2,817	20	$12,100	49	$31,795	74	$46,712
O&MN Install.					(74)	$5,466	(74)	$5,466
APN-6 Spares		$640		$2,054				2,694
GRAND TOTAL								$54,871

Installation Data: Installation will be accomplished at the contractor's plant.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: 10 KVA Emergency Generator (OSIP 105-79)

Models of Aircraft Affected: E-2C

Description/Justification:

The presently installed 3-KVA emergency generator cannot provide adequate power for emergency feathering/unfeathering, air-start, anti-ice/de-ice, or for essential bus loads needed for safe flight on single engine. A 10-KVA emergency generator was cancelled in model E-2B aircraft. The 31 GFE procured for the E-2B will be used on the E-2C. Engineering for the E-2C installation has utilized much of that accomplished for the E-2B. Weight increase is 25 pounds. The uprated generator occupies the same space as the one being removed. This change was authorized by ACCB 701-105, 26 April 1979, E-2C production incorporation in aircraft #69.

Development Status: The generator and associated installation components have been used in F-111, A-4, and F-4 aircraft.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	32	$1,369					10	$289	18	$565	60	$ 2,223
O&MN Install.			(3)	$701	(7)	$1,716	(9)	$2,206	(41)	$10,049		14,672
APN-6 Spares		$13				-0-						13
GRAND TOTAL												$16,908

Installation Data: Installation will be accomplished by the prime contractor mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Passive Detection System (PDS) Waveguide Transition (OSIP 100-84)

Models of Aircraft Affected: E-2C

Description/Justification:

Moisture entering the PDS waveguide transition section that mates with the coaxial connector has been causing corrosion that degrades the performance of the Passive Detection System. The existing transition fitting will be replaced with sections incorporating valves to permit purging the waveguide with dry nitrogen.

Development Status: Developed and incorporated in production E-2C #A-69. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	21	$176	17	$109	22	$155	60	$440
O&MN Install.			(6)	$21	(54)	$190	(60)	211
APN-6 Spares		-0-						-0-
GRAND TOTAL								$651

Installation Data: Installation will be accomplished by contractor mod team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Collision Avoidance Strobe Light Installation (OSIP 101-84)

Models of Aircraft Affected: E-2B

Description/Justification:

The Chief of Naval Operations has directed installation of strobe lights for collision avoidance and grouped model E-2 series aircraft with transports for earliest installations. Lack of military qualified light necessitates use of an existing civilian light with modifications. This light is being installed in the E-2C aircraft via airframe change 278. The kit contains modifications required to eliminate EMI affecting the E-2 series mission electronics, and can be installed in model E-2B with minimal problems.

Development Status: Developed and installed in model E-2C aircraft.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	$205			10	$205
O&MN Install.			(10)	$124		124
APN-6 Spares		$26				26
GRAND TOTAL						$355

Installation Data: Naval Air Rework Facility, North Island (NARF NORIS), the CFA for model E-2B, will prepare an Airframe Change based on data for E-2C Record AFC 278. Installation will be accomplished by NARF Field Teams, using AFC 278 kits with modifications, if any, required for adapting to the E-2B configuration. Installation time estimates by Grumman for model E-2C is 247 manhours.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: E-2C Anti-Jam Link-4A (OSIP 37-85)

Models of Aircraft Affected: E-2C

Description/Justification:

Link-4A is a digital link used for target data exchange between E-2 and F-14. The present installation is highly vulnerable to jamming/interference. Proposed modification to existing Link-4A equipment to provide anti-jam (AJ) protection has been strongly endorsed by AIRLANT/PAC and CINCLANTFLT/PACFLT.

Development Status: Prototype flight testing was completed in October 1980. Integration and evaluation in the E-2C and F-14 are currently being done by Grumman. Production effectivity is aircraft #95.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,870	74	$26,276	75	$28,146
O&MN Install.			(75)	$5,236	(75)	$5,236
APN-6 Spares		$16		$323		339
GRAND TOTAL						$33,721

Installation Data: Installation will be accomplished by contractor field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Airframe Readiness Improvement (OSIP 103-84)

Models of Aircraft Affected: E-2B/C

Description/Justification:

Three sources of excessive maintenance effort and reduced aircraft readiness affecting E-2 aircraft are (1) rudder hinge fittings, (2) air cycle turbine bearings, and (3) hydraulic actuator seals. Improvements in all three are scheduled for incorporation in E-2C production #A-95 for delivery in February 1985.

Rudder hinge fitting problems resulted in a modification to preclude catastrophic failure, a 365-day inspection program, and procurement of bushing kits to support inspection/maintenance. However, the fleet continues to have problems with rapid rudder hinge wear, rapid corrosion of fittings, and damage resulting from maintenance and repair efforts.

Air cycle turbine bearings must be lubricated at 200-hour intervals, and even with this attention are subject to failure which has impacted E-2C readiness. Modern technology has made available air bearings which will eliminate the scheduled maintenance and reduce failures.

Replacement of "O" ring seals with "T" seals in E-2C main landing gear actuators demonstrated a 300 percent increase in reliability. A similar seal change will be made in the aileron, elevator, rudder, and wingfold actuators.

Development Status: These changes are in development for incorporation in production aircraft #A-95. Approval for Service Use (ASU) is not applicable.

OSIP 103-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	16	$484	17	$434	47	$1,350	80	$2,268
O&MN Install.					(80)	$1,120	(80)	120
APN-6 Spares		$96		$96				192
GRAND TOTAL								$2,580

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF), North Island during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Attitude Gyro Change (OSIP 82-82)

Models of Aircraft Affected: E-2C

Description/Justification:

The cockpit instrumentation in model E-2C requires an excessively wide pilot scan pattern during an ACLS approach, which could be hazardous in night bad weather conditions. An attitude director indicator is available which provides in a single instrument the cross-pointers, turn and slip indicators, a bug which can be driven from the angle of attack sensor, and the basic attitude director and flight director functions. Installation of this instrument would improve safety by allowing the same instrument SCAN for ACLS approaches as for all other flight conditions.

Development Status: Developed and in use in E-2B aircraft. This change will be incorporated in production aircraft #A85.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	$509	6	$112	11	$220	12	$255	38	$922	70	$2,018
O&MN Install.							(6)	$113	(64)	$1,206	(70)	1,319
APN-6 Spares		$16		$18		$36						70
GRAND TOTAL												$3,407

Installation Data: Will be installed by the contractor during the TRAC-A radar modification program.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Structural Fatigue Improvements (OSIP 107-84)

Models of Aircraft Affected: T-38

Description/Justification:

Results of Northrop/Air Force Durability and Damage Tolerance Assessment (DADA) Study recent 1,200 hour structural inspections, fleet experience, and counting accelerometer data from worldwide USAF T-38 aircraft identify potential structural fatigue items which require attention. Initial structural improvements will consist of modification/replacement of known problem areas which have been identified such as modification of the fuselage dorsal longeron. Due to the critical nature and the safety of flight aspects of this item, Northrop/USAF have recommended that the dorsal longeron be modified and/or replaced in all USN/USAF severe use aircraft. This program will also replace and/or modify those structural items in the T-38 aircraft considered to be highly corrosion prone items such as magnesium.

Development Status: The improvements have been developed by the USAF and the contractor and have been approved by the Air Force. Navy Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$316			6	$316
O&MN Install.			(6)	$501		501
APN-6 Spares		$24				24
GRAND TOTAL						$841

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) Field Mod Team. Kit leadtime is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Navy/Air Force T-38 Standard Configuration Update (OSIP 108-84)

Models of Aircraft Affected: T-38

Description/Justification:

This program will incorporate selected Air Force approved time-compliance technical orders involving kits to assure the Navy a safe, reliable adversary/project support aircraft which is supportable through the Air Force Logistics System. Although design and configuration management of the basic T-38A aircraft resides within the Air Force, procurement and installation of kits as well as the assurance that these aircraft are kept updated, is the sole responsibility of the U.S. Navy.

Development Status: The improvements are developed by the Air Force and contractor and approved by the Air Force in response to discrepancies reported by all users of the T-38. Navy Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$184		$200		$700		$1,084
O&MN Install.				$175		$755		930
APN-6 Spares		$28		$30		$105		163
GRAND TOTAL								$2,177

* Total of six aircraft.

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) Field Mod Team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Fuel Control with Manual Metering Back-up System (OSIP 67-83)

Models of Aircraft Affected: T-34C

Description/Justification:

A manual fuel metering system has been developed, is being evaluated and will be installed which backs up the hydropneumatic fuel control of the Pratt and Whitney PT6A-25 engine. This change is necessitated by malfunctions of the automatic fuel control which have resulted in an inordinate number of power losses, some resulting in forced landings, two of which resulted in significant damage.

Development Status: The manual back up system with control linkage for dual cockpit installation has been developed and successfully flight tested. It is now being evaluated for the impact it may have on the flight training syllabus. Long lead tooling for the fuel control modification has been provided.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	90	$445	85	$257			175	$702
O&MN Install.			(90)	$82	(85)	$78		160
APN-6 Spares				-0-				-0-
GRAND TOTAL								$862

Installation Data: Installation will be accomplished by the maintenance support contractor, Beech Aerospace Services, Inc., on site. Kit lead time is 6 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Improved Landing Gear Actuation System (OSIP 68-83)

Models of Aircraft Affected: T-34C

Description/Justification:

The T-34C landing gear is actuated by an electric motor operating a mechanical linkage. Landing gear and landing gear doors are locked in position by mechanical action of the gear linkage at the extremes of travel. Experience, in the form of high replacement rates and two landing accidents, has demonstrated that the loads upon the linkages are higher than anticipated resulting in galling of bearing points, bending/cracking of linkage elements, and translation of the actuator. The proposed modification will reduce the stresses in the linkage to eliminate static overload and enhance structural life of linkage elements to a level compatible with normal major aircraft inspections.

Development Status: The modification is under development by the contractor as a product improvement. Federal Aviation Supplemental Type Certification will be obtained by Beech Aircraft Company prior to installation in Naval Aircraft.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	60	$536	115	$543			175	$1,079
O&MN Install.			(60)	$66	(115)	$127		193
APN-6 Spares				-0-				-0-
GRAND TOTAL								$1,272

Installation Data: Installation will be accomplished by contractor field service personnel. K' lead time is 9 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FAA Configuration Update (OSIP 10-85)

Models of Aircraft Affected: T-34C

Description/Justification:

This program will incorporate selected Federal Aviation Agency (FAA) approved contractor Service Bulletins (SBs) and FAA coordinated contractor's All Operator Letters (AOLs) that will assure the Navy a safe and reliable training aircraft throughout the T-34C service life.

Development Status: Improvements are developed by the contractor and approved by FAA in response to discrepancies reported by all users of T-34C aircraft.

Project Financial Plan:

	FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-3		$200		$794		$ 994
O&MN Install.		$200		$400		600
O&MN Training				$10		10
APN-6 Spares		-0-				-0-
GRAND TOTAL						$1,604

* Total quantity of 175 aircraft.

Installation Data: Installation will be accomplished by contractor field service personnel.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: NICAD Battery (OSIP 106-84)

Models of Aircraft Affected: T-34C

Description/Justification:

The T-34C is presently configured with an 18 amp-hour lead-acid battery. Operational experience has proven this battery capacity to be inadequate, resulting in considerable engine damage due to hot starts and a high battery replacement rate. Physical dimensions preclude installation of a higher capacity lead-acid battery without major structural modification. A nickle-cadmium (NICAD) battery installation of 24 amp-hour capacity, similiar to that used in other aircraft manufactured by Beech Aircraft Corporation, has been successfully installed in NASA's T-34C.

Development Status: Satisfactory NICAD batteries are readily available from commercial sources.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	90	$336	85	$212			175	$548
O&MN Install.			(90)	$40	(85)	$38		78
O&MN Training		$10						10
APN-6 Spares		-0-						-0-
GRAND TOTAL								$636

Installation Data: Installation will be accomplished by Contractor Field Service Personnel. Kit leadtime is 9 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FAA Configuration Update (OSIP 28-84)

Models of Aircraft Affected: T-44A

Description/Justification:

This program will incorporate selected Federal Aviation Agency (FAA) approved contractor Service Bulletins (SB's) and the FAA coordinated contractor's All Operator Letters (AOL's) that will assure the Navy a safe and reliable training aircraft throughout the T-44A service life.

Development Status: The improvements are developed by the contractor and approved by the FAA in response to discrepancies reported by all users of T-44A aircraft.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$100		$600		$4,100	*	$4,800
O&MN Contr. Install.				$52		$572		624
APN-6 Spares		-0-						-0-
GRAND TOTAL								$5,424

* Total quantity of aircraft is 58.

Installation Data: Installation will be accomplished by contractor field service personnel.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: T-39D Omnibus Configuration Update (OSIP 71-83)

Models of Aircraft Affected: T-39D

Description/Justification:

The T-39D aircraft have recently undergone a complete remanufacturing Service Life Extension Program (SLEP), extending the service life to 15,000 flight hours to operate into the mid 1990's. It is necessary to update the aircraft with the latest Federal Aviation Agency (FAA) bulletins, as appropriate, to reflect the Navy CT-39 and Air Force CT-39 configured aircraft. Procurement of the following items will continue in FY 1984:

a. Standby Attitude Gyro
b. Navigation System
c. Pot Air Mixing Valve Position Indicator
d. 45 Degree Increased Turn Radius

Additional changes will be identified by the Navy, FAA and Air Force in the out-years.

Development Status: Approval for service use is not required.

OSIP 71-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$955		$1,926		$251		$900		$4,032
O&MN Install. ("O" & "I" Level)				-0-						-0-
O&MN Factory Trng.		$30								30
APN-6 Spares		$142		*280		$38		$135		$605
GRAND TOTAL										$4,667

* This funding will provide changes for a total of 37 aircraft.

Installation Data: Installation will be accomplished by orgainzational and intermediate level maintenance.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: High Intensity Anti-Collision Strobe Lights (OSIP 72-83)

Models of Aircraft Affected: T-39D

Description/Justification:

The T-39D aircraft have recently undergone a complete remanufacturing (Service Life Extension Program (SLEP) extending the service life to 15,000 flight hours to operate into the mid 1990's. It is necessary to update the aircraft with the latest Federal Aviation Agency (FAA) bulletins applicable to T-39 aircraft operating characteristics to incorporate configured aircraft.

The strobe lights have been overwhelmingly accepted by commercial operators and the FAA as an effective anti-collision measure. They improve safety of flight by increasing daylight conspicuity.

Development Status: Approval for service use (ASU) is not required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$83	19	$177	17	$155	37	$415
O&MN Install.	(1)	$5	(19)	$117	(17)	$106		228
O&MN Factory Trng.				$10				10
APN-6 Spares				$31		$25		56
GRAND TOT.								$709

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF), Pensacola field team and during Standard Depot Level Maintenance (SDLM). Kit lead time is 3 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FAA Configuration Service Bulletin Update (OSIP 78-81)

Models of Aircraft Affected: CT-39E/G

Description/Justification:

Federal Aviation Regulations require manufacturers of commercial aircraft and engines to investigate all discrepant conditions, failures, and potential safety problems reported by all certificated operators. The results of these investigations with recommended corrective action are reviewed/approved by the FAA and provided to all operators as service bulletins.

Since acquisition of the eighteen (18) CT-39E/G's a dedicated effort has been initiated to determine the status of each aircraft with respect to Service Bulletin incorporation. The results of this investigation indicates a wide disparity between aircraft configurations. Collation of available documentation and fleet screen information has evolved a baseline configuration that if implemented by updating each aircraft during its DLM cycle would insure configuration commonality with attendant increased supportability and decreased MORS. Aircraft safety will also be improved by standardizing areas affecting NATOPS.

To ensure a safe, reliable, FAA certified aircraft, and to provide a program that will assure continued life extension at minimum cost, the Navy must maintain configuration and integrity compatible with FAA certified commercial models by incorporation of applicable service bulletins.

Development Status: All Service Bulletins are FAA certified. Approval for service use is not required.

OSIP 78-31

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$438		$338		$236		$351		$600		$1,963
O&MN Install.		$82		$69		$155		$155		$300		751
APN-6 Spares						-0-						-0-
GRAND TOTAL												$2,724

Installation Data: Installation will be accomplished at DLM by the contractor. Where time and level permit, organic organizational capabilities will be exercised to effect incorporation to realize efficiency, expediency, and cost savings.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: CT-39 Weather/Mapping Radar RCA-400 System (CSIP 108-82)

Models of Aircraft Affected: CT-39E/G

Description/Justification:

Until recently, no substantial improvements have been made to the CT-39 avionics package since acquisition of 18 aircraft over the period 1967-1975. Four out of 18 aircraft are still equipped with older weather mapping radar systems, all of which are experiencing decreasing reliability. This condition makes support difficult and results in higher NORS. The high utilization of these aircraft and their operational mission requirements in CONUS and overseas demand state-of-the-art avionics. These aircraft operate in areas and weather conditions which require pilot aids to guarantee aviation safety. Such situations as long overseas flights; unreliable or unavailable foreign NAVAIDS; operations in and around critical proximity to hostile frontiers, buffer zones; sustained operations in adverse weather conditions as well as operations in high density air traffic control zones require the most operationally effective avionics to provide adequate safety to both passengers and aircrew.

It is anticipated that support of the remaining four WXR-80 radars will be dropped in the near future due to the same repair problems previously experienced with the WP-103.

Development Status: The Weather/Mapping Radar RCA-400 system is FAA certified and is operational in commercial Sabreliner aircraft.

Project Financial Plan:

	FY 1982		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	7	$243	4	$201	11	$444
O&MN Install.	(7)	$48	(4)	$31		79
APN-6 Spares		$115		$56		171
GRAND TOTAL						$694

Installation Data: Installation will be accomplished by commercial Standard Depot Level Maintenance (SDLM) and Field Team. Kit lead time is 3 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: CT-39 Angle of Attack SL112B600 System (OSIP 3-86)

Models of Aircraft Affected: CT-39E/G

Description/Justification:

The 18 CT-39E/G aircraft are the U.S. Navy's version of the business/commercial Sabreliner model 265-60. The aircraft were accepted as off-the-shelf passenger/cargo transports. The avionics systems installed in the aircraft were selected from the systems readily available and which met both the mission requirements of the Navy and minimum engineering to adapt to an off-the-shelf aircraft. An angle of attack system was not available from commercial sources during acquisition but since then has been developed and certified. The high utilization of these aircraft and their operational mission requires sustained operations in adverse weather conditions as well as high density air traffic control zones. This operational environment requires pilot aids to guarantee avia ion safety. Current configuration of the CT-39 aircraft requires pilot calculations based on the aircraft gross weight to determine airspeed for all modes of flight. Airspeed instrument errors especially at higher angles of attack, because of static system errors, and excess landing weight from fuel quantity inaccuracies, unknown payload or mathematical error will raise the stall speed above the calculated airspeed. Angle of attack, on the other hand, directly defines the aerodynamic condition of the aircraft regardless of weight, altitude, attitude, load factor or bank angle. It is unsurpassed as an approach cue and in cruising flight offers a precise yet simple means of optimizing endurance or range.

Development Status: The ACA SL112B600 System is FAA certified off-the-shelf and is operational in commercial Sabreliner aircraft.

OSIP 3-85

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$149	12	$218	18	$367
O&MN Install.	(6)	$86	(12)	$172		258
APN-6 Spares		$31		$44		75
GRAND TOTAL						$700

Installation Data: Installation will be accomplished by commercial Standard Depot Level Maintenance (SDLM) and drive-in mod. Kit lead time is 3 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: TH-57 Service Bulletins (OSIP 74-83)

Models of Aircraft Affected: TH-57

Description/Justification:

The TH-57 helicopter is a commercially supported aircraft. Service bulletins are issued as required by the manufacturer which must be complied with in order to maintain manufacturer's warranties. Research over the last 5 years was used to estimate the funds required for this effort over the next 5 years. These changes are being incorporated in 36 TH-57A helicopters.

Development Status: All Service Bulletins are FAA certified. Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$100		$100		$381		$1,344		$1,925
OAMN Install.		$120		$126		$126		$252		624
APN-6 Spares				-0-						-0-
GRAND TOTAL										$2,549

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM) and by field mod team/drive-in mod.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Anti-Collision Lights (OSIP 109-84)

Models of Aircraft Affected: TH-57A

Description/Justification:

The TH-57A helicopters procured in 1968 do not have strobe-type anti-collision lights. These lights are required for safety as the aircraft is utilized in a very congested area with student aviators (Naval Air Station, Whiting Field).

Development Status: Development is complete. No Approval for Service Use (ASU) is required. This program will provide standard BHT anti-collision lights and an airframe change to be installed by contractor field team on site.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	36	$515		$185	36	$700
C&MN Install.	(1)	$4	(35)	$73		77
APN-6 Spares		-0-				-0-
GRAND TOTAL						$777

Installation Data: Installation will be accomplished by contractor field team. Kit lead time is 9 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: TH-57 ECS and YAW Axis SAS Program (OSIP 111-84)

Models of Aircraft Affected: TH-57 Advanced Training Helicopters

Description/Justification:

This program will add an Environmental Control System (ECS) and a Yaw Axis Stability Augmentation System (SAS) to 25 TH-57 helicopters procured in FY 1981. These additions are being incorporated in all other TH-57 helicopters being procured in FY 1982 through FY 1984. This modification is to assure that all the aircraft doing the same mission have a common configuration and meet the operational requirement.

Development Status: The TH-57 is a Navy version of the FAA certificated Bell Jet Ranger Model 206 helicopter. The ECS and Yaw Axis SAS are in production and are certified for use in the Bell Model 206. This change is being incorporated in FY 1982 production aircraft.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	25	$1,422			25	$1,422
O&MN Install.			(25)	$298		298
APN-6 Spares		-0-				-0-
GRAND TOTAL						$1,720

Installation Data: Installation will be accomplished by contractor field team. Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: High Intensity Anti-Collision Strobe Lights (OSIP 65-83)

Models of Aircraft Affected: T-2C

Description/Justification:

Predicated upon a realistic VTXTS program Initial Operational Capability (IOC) date, it is anticipated that the T-2C aircraft will be in the Navy inventory until 1995. Accordingly, it is proposed that high intensity anti-collision strobe lights be installed on T-2C aircraft. The strobe lights will improve safety-of-flight by providing anti-collision lights of high intensity. Tests have indicated that due to their high intensity, strobe anti-collision lights are sighted before the aircraft is seen. The rotating beacon anti-collision lights have been declared inadequate by the Naval Safety Center for daylight observation in high density traffic conditions. Evaluations conducted by the Navy proved that strobe lights offer best known corrective measures to increase daylight observation. The high intensity anti-collision strobe lights are overwhelmingly accepted by commercial operators and the Federal Aviation Agency (FAA) as an effective anti-collision measure.

Development Status: An anti-collision strobe light suitable for T-2 aircraft is currently available in the Navy supply system. One T-2C aircraft (NSN 159158) has been successfully prototyped and tested by the Naval Air Rework Facility (NARF) Pensacola and the Chief of Naval Air Training (CNATRA).

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$100	104	$500	88	$406	192	$1,006
O&MN Install.			(104)	$137	(88)	$126		263
O&MN Factory Trng.				$20				20
APN-6 Spares				$8		$7		15
GRAND TOTAL								$1,304

Installation Data: Installation will be accomplished by the Naval Air Rework Facility (NARF) and the commercial depot. Kit lead time is 1 month.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Laser Air-to-Air Gunnery Simulator (LATAGS) (OSIP 104-84)

Models of Aircraft Affected: T-2C

Description/Justification:

This program will provide wiring and mounting provisions to accept ATAGS Device 3B63 in the T-2C aircraft cockpit.

The Laser Air-to-Air Gunnery Simulator (LATAGS), Device 3B63 is an eye safe, semiconductor laser designed as a substitute for live ordnance firing in the Naval Air Training Command air-to-air gunnery syllabus. The system was developed to compensate for the increasing lack of opportunity to conduct actual live gunnery firing within Naval Training Command (NATRACOM). Positive feedback to the student of his performance in air-to-air target tracking and recognition of acceptable firing parameters are required to achieve air-to-air gunnery training objectives. This feedback is not consistently obtained because of the lack/erosion of air-to-air gunnery training ranges, increasing support problems with the T-2C .50 caliber gun installation and dwindling personnel and other resources available to maintain gun systems.

Development Status: The GFE for the ATAGS installation is a separately funded NAVAIR program line item (APN-7). Operational test and Evaluation (OT-IIa) was completed in August 1982. OT-IIB OPEVAL is completed. Approval for Service Use (ASU) on ATAGS is planned for March 1983.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	63	$42	68	$7	61	$6	192	$ 55
O&MN Install.			(63)	$32	(129)	$66	(192)	98
APN-6 Spares		-0-						-0-
GRAND TOTAL								$153

Installation Data: Installation will be accomplished by Naval Air Rework Facility (NARF) Pensacola Field Team and during Standard Depot Level Maintenance (SDLM) by the contractor. Kit lead time is 9 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: TC-4C Mod Update (OSIP 22-85)

Models of Aircraft Affected:

Description/Justification:

The TC-4C (modified Gulfstream I) incorporates all A-6 TRAM weapons system avionics in a simulated A-6 cockpit; providing an excellent Bombardier Trainer. This program will update the TC-4C A-6 cockpit to the 1986 A-6E TRAM configuration and provide improved instrumentation and other safety changes for the TC-4C.

The A-6 cockpit changes include:

(1) Addition of the A-6 Horizontal Situation Indicator (HSI), Vertical Gyro and Standby Compass.
(2) Wiring changes to allow relocation of cockpit control boxes to current A-6 configuration.
(3) Installation of the integrated missile panel and avionics interface unit.

TC-4C changes include:

(1) A new flight director and autopilot.
(2) Installation of a complete ICS system.
(3) Installation of an additional transformer/rectifier to allow the auxiliary power unit to provide backup power for the TC-4C DC system.
(4) Hydraulic system changes to allow use of the auxiliary hydraulic system for ground maintenance.

Development Status: No hardware development is required. The new autopilot and flight director will be FAA approved commercial equipment. Other changes are primarily duplication of wiring to install A-6 equipment. Considerable nonrecurring effort is required for wiring design due to the unique TC-4C configuration.

OSIP 22-85

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,670	7	$4,045	8	$5,715
O&MN Install.			(8)	$232	(8)	232
APN-6 Spares		$125		$569		694
GRAND TOTAL						$6,641

Installation Data: TC-4C airframe modification will be accomplished by the support contractor during annual inspection/update. A-6 cockpit update will be accomplished by the contractor. Kit lead time is 10 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 3

Modification Title and No.: C-9B FAA Configuration Update (Commercial Service Bulletins) (OSIP 75-81)

Models of Aircraft Affected: C-9B

Description/Justification:

Federal aviation regulations require manufacturers of commercial aircraft and engines to investigate all discrepant conditions failures, and potential safety problems reported by all certified operators. The results of these investigations with recommended corrective actior are reviewed/approved by the Federal Aviation Agency (FAA) and provided to all operators as service bulletins. Each service bulletin is a complete technical directive that provides corrective change information or detailed modification instructions. To ensure a safe, reliable, FAA certified C-9B aircraft, and to provide a program that will assure continued life extension at minimum cost, the Navy must maintain configuration and integrity compatible with FAA certified commercial models by incorporation of applicable service bulletins. The incorporation of certain service bulletins also serves to preclude extensive repairs/repetitive inspections such as aft pressure bulkhead reinforcement. Crew equipment requirements in accordance with FAA directives will be incorporated to ensure maximum safety in case of emergency. Engine service bulletins will be used to standardize configuration such as Pratt and Whitney (PB 4E) eighth stage bleed valve incorporation. This will ensure safe, reliable engines. These changes will be accomplished on 2 active and 13 reserve aircraft.

Development Status: All service bulletins have been accomplished on commercial aircraft and engines. Prototype verification has been previously accomplished and approved by the FAA.

OSIP '5-81

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$250		$770		$864		$2,300		$7,100		$10,984
O&MN Install.				$466		$246		$498				1,210
APN-6 Spares				$116		$129		$300		$1,065		1,610
GRAND TOTAL												$13,804

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARN-118 TACAN (OSIP 114-84)

Models of Aircraft Affected: C-9B

Description/Justification:

This modification replaces the existing ARN-113 TACAN with an AN/ARN-118. The vendor for ARN-113 is no longer in the TACAN business, consequently cost and turnaround time for repair of this system have become prohibitive. AN/ARN-118 will be incorporated in FY 1981 production aircraft.

Development Status: The AN/ARN-118 TACAN is approved for service use.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	15	$772			15	$ 772
O&MN Install.			(15)	$261		261
APN-6 Spares		30				30
GRAND TOTAL						$1,063

Installation Date: Installation will be accomplished by contractor field mod team or drive-in mod. Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Canted Thrust Reverser Retrofit (OSIP 115-84)

Models of Aircraft Affected: C-9B

Description/Justification:

Thrust Reversers, on affected Navy aircraft, operate from the vertical and are operationally power restricted to prevent reingestion of exhaust gases and foreign object damage (FOD). Since 1976 all cases of ingested FOD have been on aircraft without the canted thrust reversers installed with a resulting overhaul cost of $1,944,000. This modification rotates the thrust reversers approximately 18 degrees from vertical by modifying thrust reverser door assemblies, fairing assemblies, and associated controls. Rotating the door assemblies permits use of full available power that will provide additional operational capability (greater breaking power) without reingesting engine exhaust gases and minimize possibility of FOD damage. Canted thrust reversers were production incorporated on the last seven C-9B aircraft delivered to the Navy/Marines.

Development Status: This modification has been incorporated in production.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	8	$381			8	$381
O&MN Install.			(8)	$219		219
APN-6 Spares		$57				57
GRAND TOTAL						$657

Installation Data: Installation will be accomplished by contractor field mod team. Kit lead time is 12 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: C-1A Aircraft Nacelle/Wheel Well Rewiring (OSIP 62-81)

Models of Aircraft Affected: C-1A

Description/Justification:

All C-1A aircraft have been in service between 22 and 24 years. The electrical wiring in certain areas of the aircraft is in a deteriorated condition due to exposure, aging, oil and solvent spills, and accumulated physical abuse. A recently completed Analytical Rework Program (ARP) highlights the wiring deterioration problem and recommends rewiring in the wheel wells and nacelles. Since the aircraft are planned to continue in service into the late 1980's, it is necessary to replace this wiring to preclude numerous electrical problems that arise as a result of deterioration. Improved electrical wire and components developed and adopted by the Defense Department will be used to provide the safety, reliability, and electrical integrity which is rapidly deteriorating in the aircraft. Technological advances in electrical materials since the 1950's, when the C-1A was built, will provide improved reliability and safety over the replaced wiring. New insulting materials resist the effect of thermal excess and contaminants, such as oil, hydraulic fluid and moisture. Electrical connectors will benefit from improved plating and sealing materials and techniques which reduce corrosion.

Development Status: Rewiring will be accomplished using military specification material (wire, connectors, etc.).

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	21	$477	10	$200	6	$120			37	$ 797
O&MN Install.			(6)	$192	(20)	$720	(11)	$396		1,308
APN-6 Spares						-0-				-0-
GRAND TOTAL										$2,105

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) at the Commercial Depot facility.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: VIR-31A/VHF-20B Communication/Navigation (OSIP 112-84)

Models of Aircraft Affected: C-2A

Description/Justification:

The AN/ARN-87(V) VHF Comm/Nav equipment in C-2A aircraft is obsolete and difficult to support. There is no support available for it aboard the carriers to which the C-2A delivers cargo. The reprocurement C-2A configuration includes modern, supportable VHF communication and VHF navigation equipment, the VHF-20B and the VIR-31A, which should also be installed in the 12 SLEP C-2A's.

Development Status: The VH-20B and the VIR-31A have been in production for several years and are installed in many aircraft. Approval for Service Use (ASU) is not applicable.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	12	$660					12	$660
O&MN Install			(6)	$25	(6)	$25		50
O&MN Training		$40						40
APN-6 Spares		$60						60
GRAND TOTAL								$810

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) and by Naval Air Rework Facility (NARF) Field Team. Kit lead time is 15 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Airframe Readiness Improvement (OSIP 113-84)

Models of Aircraft Affected: C-2A

Description/Justification:

Three sources of excessive maintenance effort and reduced aircraft readiness are common to C-2A and E-2 series aircraft: (1) rudder hinge fittings (2) air cycle turbine bearings, and (3) hydraulic actuator seals. Improvements are scheduled for incorporation in E-2C production number #A-85 for delivery in March 1984. The kits and instructions will be applicable to model C-2A aircraft also.

Development Status: In development for incorporation in E-2C #A-85. Approval for Service Use (ASU) is not applicable.

Project Financial Plan:

	FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	12	$482					12	$482
O&MN Install.			(6)	$110	(6)	$110		220
O&MN Training		$55						55
APN-6 Spares		$48						48
GRAND TOTAL								$805

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) and by Naval Air Rework Facility (NARF) Field Team. Kit lead time is 15 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FAA Configuration Update (OSIP 77-83)

Models of Aircraft Affected: UC-12B

Description/Justification:

This program will incorporate selected Federal Aviation Agency (FAA) approved contractor Service Bulletins (SB's) and the FAA coordinated contractor's All Operator Letters (AOL's) that will assure the Navy a safe and reliable transport aircraft throughout the UC-12B service life.

Development Status: The improvements are developed by the contractor and approved by FAA in response to discrepancies reported by all users of UC-12B's.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$67		$300		$600		$1,700		$2,667
O&MN Contr. Install.				$52		$157		$627		836
APN-6 Spares				-0-						-0-
GRAND TOTAL										$3,503

Installation Data: Installation will be accomplished by contractor field service personnel.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Mission Avionics (OSIP 64-81)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The Minimum Essential Emergency Communication Network (MEECN) Master Plan established the requirement to expand present capabilities of the strategic military communication network. This necessitates modification of the existing VERDIN receive and transmit terminal with the Enhanced VERDIN Processor (EVP), 1600 Baud Kits, and modifications to the very low frequency (VLF) power amplifier (PA). New VLF processors will also improve reliability and maintainability and reduce the weight and volume substantially.

Development Status: The EVP has completed prototype development and has passed all environmental, EMI, EMC and Tempest tests. Several EVP airborne software modes are still under development. The 1600 Baud Kits have completed development at Rockwell International, Newport Beach, CA and have been verified and tested by the Naval Ocean Systems Center. Both the 1600 Baud Kits and the Enhanced VERDIN Processor were Navy operationally tested 15 January to 1 February 1979. Power Amplifier equipment modification analyses are being conducted to determine the minimum modifications necessary to expand operation of the VLF PA and cooling system to 1600 baud. Provisional approval for service use (PASU) was granted in June 1980 as well as limited production approval for 57 receivers.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$9,550	4	$8,534	2	$3,159	6	$9,401	4	$5,473	18	$36,117
O&MN Install.					(4)	$38	(4)	$38	(10)	$95	(18)	171
APN-6 Spares		$834		$1,252		$262						2,348
GRAND TOTAL												$38,636

Installation Data: Installation will be accomplished by Naval Electronic System Engineering Activity by Field Team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Survivable Time Standard (STS) (OSIP 29-85)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The present 0-1622/ARC rubidium frequency and time standard (FTS) supporting VERDIN has a history of poor reliability, maintenance problems and insufficient battery operation time (15-30 minutes). Further, the present system cannot supply the time code output required by TACAMO, necessitating calibration from a source external to the airplane. The new FTS system will consist of two crystal time standards and one satellite receiver. The satellite receiver will be able to receive accurate time updates from the Navy's TRANSIT satellite system and also maintain accurate time for an extended period. The crystal standards will be capable of maintaining accurate time for extended periods (50-72 hours) when aircraft power is not available. This new system will greatly enhance TACAMO in its ability to accomplish its mission. Difference in weight and space will be negligible from the present FTS.

Development Status: Two prototype crystal time standards with backup battery capability have been developed and tested. One prototype satellite receiver has been developed and tested. A contract was let in January 1982 to develop preproduction time systems for enviro ntal, bench, reliabilit and technical evaluation testing. Approval for service use (ASU) is expected in March 1983. RI ,N Program Element Number 11402N applies.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$1,990	16	$5,120		$7,110
O&MN Install.			(18)	$90		90
O&MN Factory Trng.		$65				65
APN-6 Spares		$208		$1,125		1,333
GRAND TOTAL						$8,598

Installation Data: Installation will be accomplished by the Naval Avionics Center by field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Communications Central ERCS Monitor for TACAMO (OSIP 85-83)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

This effort will enable TACAMO to continuously monitor Emergency Rocket Communication System (ERCS) broadcasts in the communications central area.

Development Status: Both the UHF transceiver (AN/ARC-159) and antenna planned for use in this system presently exist in the EC-130 flight deck. The Naval Avionics Center (NAC) is integrating the radio into the TACAMO communications system. Approval for service use (ASU) is not required. RDT&E,N Program Element Number 11402N applies.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$880	3	$100	5	$83	4	$72	18	$1,135
O&MN Install.			(6)	$25	(6)	$25	(6)	$26	(18)	76
O&MN Factory Trng.		$80								80
APN-6 Spares		$13		-0-						13
GRAND TOTAL										$1,304

Installation Data: Installation will be accomplished during Commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: LTN-211 OMEGA (OSIP 86-83)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The OMEGA navigation set is a long-range over-water navigation system currently in use on Navy aircraft. The OMEGA military version, to be replaced, the AN/ARC-99(V), has an average unit price of over $100,000, while the recently purchased Navy's commercial version (LTN-211 OMEGA/VLF) has a unit price of approximately $15,000, with a 5-year warranty. Due to its commercial airline usage, software modification/updates are accomplished at no cost to the Government. Commercial repair facilities are worldwide and mean time between failure (MTBF) in excess of 1,500 hours is currently being achieved.

Development Status: Development is complete. The LTN-211 OMEGA/VLF is in Navy operational aircraft.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$487	4	$404	4	$102			14	$993
O&MN Install.			(6)	$79	(4)	$53	(4)	$53		185
O&MN Training				$68						68
APN-6 Spares		$2		-0-						2
GRAND TOTAL										$1248

Installation Data: Installation will be accomplished during Commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APX-100 IFF (OSIP 87-83)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The 14-year old AN/APX-72 IFF will be replaced with the AN/APX-100 IFF transponder. The APX-100 installation is 13 pounds lighter, 0.1 cubic feet smaller, and provides a mean time between failure (MTBF) increase from 200 hours to 1000 hours. Flight-line maintenance time is reduced from an average of 3 hours to about 30 minutes.

Development Status: The APX-100 is in production EC-130 and is in the U.S. Navy's F-18 and LAMPS MK III programs. This program will retrofit EC-130G/Q to standardize the APX-100.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	7	$1,001	5	$127	1	$17			14	$1,1[illegible]
O&MN Install.			(6)	$20	(6)	$20	(2)	$7		47
O&MN Trng.		$75		$16						91
APN-6 Spares		$3		-0-						3
GRAND TOTAL										$1,286

Installation Data: Installation will be accomplished during commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Solid State Weather Radar (AN/APN-59E) (OSIP 88-83)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The AN/APN-59E weather radar is a solid-state version of the AN/APN-59B weather radar. The solid-state design affords a reliability improvement of 219 hours versus 18.4 hours for the B model. The APN-59E replaces the older radar directly without aircraft wiring or mounting changes and can be accomplished in the squadron in 8 manhours. The weight and volume of the new radar are unchanged.

This radar is used as a navigation aid and for severe weather avoidance. The older radar is becoming increasingly difficult to logistically support. Depot maintenance for all AN/APN-59B radars installed in Navy/Marine aircraft is performed at Warner Robbins AFB. The Air Force intends to phase out this support within the next two years.

The Air Force has initiated procurement of 2,000 AN/APN-59E radar sets. The Navy EC-130Q new aircraft procurement includes the AN/APN-59E radar.

Development Status: TECHEVAL is complete.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$934	4	$217	3	$173	13	$1,324
O&MN Install. "O" Level		-0-						-0-
O&MN Factory Trng.		$36						36
APN-6 Spares		$173		-0-				173
GRAND TOTAL								$1,533

Installation Data: Installation will be accomplished by the fleet.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Multiple Satellite Access (OSIP 30-85)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The present TIP II design utilizes wing tip pods with selectable antennas to obtain reception from various satellites. The requirement for multiple satellite access was identified by COMOPTEVFOR. Further details are classified.

Development Status: The Naval Avionics Center (NAC) is developing an integration kit and testing will be completed in FY-84. RDT&E,N Program Element No. 11402N applies. Change consists of the addition of like components of the OE-242 system; therefore, Approval for Service Use (ASU) is not required.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$1,446	14	$1,610	18	$3,056
O&MN Install.			(18)	$972	(18)	972
O&MN Training		$104				104
APN-6 Spares		$153		$286		439
GRAND TOTAL						$4,571

Installation Data: Installation will be accomplished by the Naval Avionics Center by field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: EMP Layer I (OSIP 77-81)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

There is a JCS requirement for nuclear hardening in TACAMO Aircraft. The specifics of the TACAMO EMP hardening program are classified. It consists of devices to improve the electromagnetic shielding of the fuselage as well as general filtering throughout the aircraft. This includes such items as feed-through capacitors and specially designed filters. Where filtering is not practical voltage limiters (spark gaps, arrestors, diode limiters, etc.) will be utilized to reduce the energy presented to the units.

Development Status: RDT&E,N Program Element Number 11402N applies. TECHEVAL and OPEVAL are complete. Provisional approval for service use (PASU) is expected in February 1983.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$5,020	5	$13,731	1	$4,439		$2,722	7	$25,912
O&MN Install.					(3)	$879	(4)	$1,173	(7)	2,052
O&MN Factory Trng.		$339		$119						458
APN-6 Spares		-0-		$375		$1,052				1,427
GRAND TOTAL										$29,849

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: EMP Hardening (Layers II and III) (OSIP 3?-82)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

TACAMO EMP Hardening Layers II and III consist of shielding electronic wiring. This is accomplished through individual cable shields or through compartmentalization. Additionally, the hardening consists of general filtering throughout the aircraft on paths where it does not disrupt normal signal flow. Where filtering is not practical voltage limiters will be utilized to reduce the energy presented to the units. The installation of EMP hardening kits will add an estimated 450 pounds to the aircraft weight.

Development Status: RDT&E,N Program Element Number 11402N applies. TECHEVAL and OPEVAL are complete. Provisional approval for service use (PASU) is expected in February 1983.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$5,262	5	$15,524	1	$3,740		$1,[illegible]	7	$25,546
APN Install.					(3)	$998	(4)	$1,331		2,329
O& M Factory Trng.		$55		$859						914
APN-6 Spares		-0-		$127		$1,148				1,275
GRAND TOTAL										$30,064

Installation Data: Installation will be accomplished by the prime contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Short Trailing Wire Antenna (STWA) Exit Assembly Improvements (OSIP 110-83)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The short wire exit tube of the OE-159/USC-13 antenna group is pressurized with sulfur hexafloride (SF_6) in order to preclude arcing associated with the high power VLF transmission line. During operations at low temperatures the Squadrons have experienced SF_6 leakage in the STWA exit tube which has resulted in operational constraint of the assembly. This modification to the exit tube assembly will improve the sealing capability at low temperatures and simplify maintenance of the exit tube assembly.

Development Status: Investigation of the installation procedures for O-rings, guide bushings and insulators has been completed. RDT&E,N effort under Program Element Number 11402N continues and a permanent fix will complete development in May 1983. A contract was executed in October 1982 to perform evaluations and tests. Approval for service use (ASU) is not required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	6	$234	6	$66	6	$75			18	$375
O&MN Install.			(6)	$11	(6)	$11	(6)	$10		32
O&MN Training		$10								10
APN-6 Spares		$16		-0-						16
GRAND TOTAL										$433

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) at the commercial depot.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Narrowband Encryption (OSIP 111-83)

Models of Aircraft Affected: EC-130G/Q

Description/Justification:

The TACAMO TIP II communications subsystem is configured to meet initial TIP II requirements of the 1970's. Now, encryption of one additional circuit is required (details are classified).

Development Status: A prototype installation of the crypto device and interfacing hardware has been successfully flight tested. The added equipment is identical to equipment used in the current TACAMO configuration.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	7	$1,516	7	$444	4	$205			18	$2,165
O&MN Install.			(6)	$21	(6)	$21	(6)	$21	(18)	63
O&MN Trainer Install.				$105						105
APN-6 Spares		$128		-0-						128
GRAND TOTAL										$2,461

Installation Data: Installation will be accomplished by the Naval Avionics Center by field team.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: KC-130F (SLEP) (OSIP 15-78)

Models of Aircraft Affected: KC-130F

Description/Justification:

The criteria for the KC-130F SLEP program provides a service life increase to meet an Initial Operational Capability (IOC) for a replacement aircraft, i.e., a minimum of 10,000 flight hours. Based on fatigue analysis and analytical rework, the KC-130F cannot continue in service without this SLEP. To accomplish this objective the following must be performed:

Aircraft Modifications: To include replacement of outer wings; rework of known fatigue sensitive structure in the fuselage, main landing gear wheel area, and empennage area; modification of the main landing gear area; and replacement of the center wing engine truss mounts. By effecting these changes to the airframe, the take-off gross weight of the aircraft is coincidently increased by 20,000 pounds (13 percent) and an extension of a minimum of 10,000 hours of service life can be realized.

Reliability and Maintainability Modifications: Significant improvements in reliability and maintainability can be realized by accomplishing the modifications noted and by updating the UHF radio equipment (ARC-159). Standard Depot Level Maintenance will be accomplished as the aircraft is undergoing SLEP.

Development Status: A specification for the airframe rework was prepared by the Naval Air Rework Facility, Cherry Point, and coordinated with the fatigue analysis performed by the Naval Air Development Center.

OSIP 15-78

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5 Proc.	26	$58,662	5	$ 6,461	6	$8,297					37	$ 73,420
APN-5 Install.	(8)*	6,814									(8)	6,814
Total APN-5		$65,476		$ 6,461		$8,297						$ 80,234
O&MN Install.	(4)	$11,375	(8)	$27,064	(7)	$24,842	(9)	$29,391	(2)	$7,098	(20)	$ 98,770
APN-6 Spares		$1,483		-0-								1,483
GRAND TOTAL												$180,487

* (3) included in procurement costs.

Installation Data: Installation will be accomplished by a contractor facility.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Long Range Navigation System (OSIP 78-83)

Models of Aircraft Affected: C-130F, KC-130F

Description/Justification:

Present C/KC-130F aircraft use Loran A (APN-70), celestial (periscopic sextant) and pressure pattern (SCR-718) as long range navigation aids. Celestial navigation is weather limited and is reduced to a single line of position during daytime flight. Due to the time required to gather celestial data, it is after the fact navigation. Pressure pattern navigation provides a semi-accurate course line of position but is dependent upon celestial data for any degree of accuracy. Pressure pattern navigation is unusable between latitudes 10°N and 10°S. The remaining Loran A stations were decommissioned during 1980. Although the APN-70 is being modified to the APN-70B, this old receiver does not provide the accuracy that Loran C was designed to provide. The APN-70 and APN-70B are unusable in precipitation conditions due to noise levels. Loran C coverage in the NATO region is non-existant south of 55°N.

The SCR-718 has a 38 mean flight hour between maintenance (MFHBMA) and the APN-70B, 28 MFHBMA.

The proposed program will install an LTN-72 inertial navigation system (INS), and LTN-211 Omega and a True Airspeed System. Both the INS and Omega systems are highly reliable. The LTN-211 Omega is achieving in excess of 1,500 mean flight hours between failure (MFHBF). A modern navigation system is required if the C/KC-130F aircraft are to have a global all-weather mission capability.

Development Status: The LTN-72 INS and LTN-211 Omega have completed development. They are currently being procured on the new production EC-130Q aircraft.

OSIP 78-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	11	$2,523	20	$3,790	16	$2,564			47	$ 8,877
O&MN Install.			(11)	$249	(20)	$593	(16)	$362		1,204
O&MN Training				$300						300
APN-6 Spares		$7		$14						21
GRAND TOTAL										$10,402

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Fuel Quantity System R&M Improvement (OSIP 70-83)

Models of Aircraft Affected: C-130F, KC-130F, KC-130R

Description/Justification:

The proposed fuel quantity system improvements will replace the present fuel quantity system components with modern components currently being installed in the aircraft production line. During the Jan-March 1982 period, 1,964 manhours were documented against the present fuel quantity system and the mean flight hours between maintenance action (MFHBMA) was 28 flight hours.

The proposed improvement will replace: (1) the existing 48 fiberglass tank units with metal tank units; (2) the existing internal tank wiring with new wiring which has improved insulation and conductor; (3) the nuline miniature connectors on the tank probes with threaded stud terminal strips; and (4) the fuel quantity indicator transistor amplifier with a microelectronics amplifier.

With these improvements there will be a substantial improvement in reliability and aircraft mission capability.

Development Status: The proposed fuel quantity improvements are installed and approved for service use (ASU) in later model Navy C-130 aircraft.

OSIP 79-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	14	$1,205	25	$774	23	$612			61	$2,591
O&MN Install.			(14)	$159	(24)	$294	(23)	$261		714
O&MN Training				$75						75
APN-6 Spares		$5		$9						14
GRAND TOTAL										$3,394

Installation Data: Installation will be accomplished concurrent with Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Solid State Weather Radar, AN/APN-59E (OSIP 90-83)

Models of Aircraft Affected: C-130F, KC-130F, KC-130R

Description/Justification:

The AN/APN-59E weather radar is a solid state version of the AN/APN-59B weather radar. The solid state design affords a reliability improvement of 219 hours versus 18.4 hours for the B model. The AN/APN-59E replaces the older radar directly without any aircraft wiring or mounting changes and can be accomplished in the squadron in 8 manhours. The weight and volume of the new radar are unchanged.

This radar is used as a navigation aid and for severe weather avoidance Additionally, this radar is mission essential equipment for the Marine KC-130 aircraft aerial refueling evolutions for rendezvous control of the receiver and tanker aircraft.

The old radar is becoming increasingly difficult to logistically support. Depot maintenance for all AN/APN-59B radars installed in Navy/Marine aircraft is performed at Warner Robins AFB. The Air Force intends to phase out this support and has initiated procurement of 2,000 AN/APN-59E radar sets.

Development Status: Currently installed in new EC-130Q aircraft.

Project Financial Plan:

	FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	21	$3,143	30	$2,958	51	$6,101
O&MN Install. "O" Level				$8		8
O&MN Training				$100		100
APN-6 Spares		$809				809
GRAND TOTAL						$7,018

Installation Data: Installation will be accomplished by organization level maintenance.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Replacement of AN/ARC-38A with AN/ARC-190 Radio (OSIP 81-83)

Models of Aircraft Affected: C-130F, KC-130F

Description/Justification:

The AN/ARC-38A is an HF voice radio. It is a very old radio, difficult to support, has 39 mean flight hours between maintenance action (MFHBMA) and consumed 1,528 maintenance manhours during the 3-month period of Jan-March 1982. One of the two original AN/ARC-38's in the C/KC-130F was replaced by an AN/ARC-94 during the 1960's. The AN/ARC-94 is used on most later model C-130 aircraft. The Air Force initiated development and production of the AN/ARC-190 to replace older AN/ARC-38A equivalent radios and to provide growth flexibility to meet future HF improvement requirements. The AN/ARC-190 mean flight hours between failure (MFHBF) is estimated to be 1,000 hours in lieu of 50 hours for the AN/ARC-38A.

HF voice communication is a mandatory requirement and safety of flight consideration for long range over-water flights. The old and unreliable AN/ARC-38 does not support C-130 aircraft mission requirements.

Development Status: Development of the AN/ARC-190 was initiated in 1979. All qualification tests have been completed with production deliveries to the Air Force on schedule. Approval for service use (ASU) is expected in the fourth quarter of FY 1983.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	11	$914	20	$1,167	16	$348			47	$2,429
O&MN Install.			(11)	$32	(19)	$79	(17)	$49		160
O&MN Training				$75						75
APN-6 Spares		$144		$196						340
GRAND TOTAL										$3,004

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No. VHF Comm/Nav Equipment (OSIP 117-84)

Models of Aircraft Affected: C-130F, KC-130F, KC-130R

Description/Justification:

The proposed program will replace the old VHF communications and navigation equipment and related wiring with modern equipment and new wiring.

The VHF navigation equipment installed in the affected aircraft are the ARN-14 VOR receiver, the ARN-18 and ARN-67 glide slope receivers, and the ARN-32, 51Z4, and 51Z3 marker beacon receivers. This equipment is used for enroute navigation and for instrument approaches. This equipment is old, out of production, vacuum tube equipment. Maintenance is difficult because of old age, unavailability of repair parts and the proliferation of equipment within the C-130 fleet. The old equipment will be replaced with a modern VIR-31A which combines the VOR, glide slope, and marker beacon receivers into one integrated system. The average Mean Flight Hours Between Failure (MFHBF) for the old equipment is 53 flight hours versus approximately 3,100 flight hours for the VIR-31A. The old equipment has a 100 KHZ separation between channels, however, overseas air traffic control requires a 50 KHZ separation.

The old VHF communications equipment installed in the affected aircraft are the ARC-73, ARC-84, and ARC-101 radios. This equipment is old. out of production. vacuum tube equipment. Maintenance is difficult because of old age, unavailability of repair parts and the proliferation of equipment within the C-130 fleet. The old equipment will be replaced with modern ARC-186 VHF radios. The average MFHBF for the old equipment is 86 flight hours versus approximately 1,200 flight hours for the ARC-186. The old equipment has a 50 KHZ separation between channels, however, overseas air traffic control requires a 25 KHZ separation.

Development Status: Development is complete. The VIR-31A is commercially available, designed to meet the requirements of ARINC characteristics, and is FAA approved. The VIR-31A is installed in Navy aircraft. The Air Force is replacing all old VHF radios with the ARC-186. Approval for Service Use (ASU) for the ARC-186 is in process.

OSIP 117-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	$2,782	16	$2,155	42	$6,217	61	$11,154
O&MN Install.			(3)	$53	(58)	$1,242	(61)	1,305
O&MN Training				$50				50
APN-6 Spares		$211		$348		$258		817
GRAND TOTAL								$13,326

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Direct Air Support Center (DASC) Provisions (OSIP 118-84)

Models of Aircraft Affected: KC-130F, KC-103R

Description/Justification:

The AN/UYQ-3 is a modified shelter used as a direct air support center (DASC) for control and coordination of fixed and rotary wing aircraft. It contains seven operating positions each with access to radio transceivers operating in the HF, VHF, and UHF bands. The AN/UYQ-3 can operate from within the KC-130 aircraft, from a truck (M-35), or from a fixed ground location. This program will incorporate the DASC provisions in the KC-130R aircraft and install the DASC provisions in the remaining KC-130F/R aircraft.

Development Status: Developed and currently installed in eight KC-130F aircraft.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	18	$503	20	$342	8	$146	46	$ 991
O&MN Install.			(18)	$606	(28)	$942	(46)	1,548
APN-6 Spares		$32						32
GRAND TOTAL								$2,571

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Ground Proximity Warning System (OSIP 119-84)

Models of Aircraft Affected: C-130F, KC-130F, KC-130R

Description/Justification:

The Ground Proximity Warning System (GPWS) is a safety aid that provides a warning to the flight crew of imminent inadvertent contact with the ground. The GPWS provides voice warnings to allow the flight crew to immediately identify the cause of the warning. The warning modes are excessive rates of descent, excessive closure rates to terrain, descent after takeoff, proximity to terrain gear up, proximity to terrain flaps up, descent below glideslope and descent below minimums.

A recently published report of a British airline survey of 217 worldwide jet "total loss" accidents occurring between 1962 to 1976 highlighted the fact that the takeoff and landing phases of a flight consumed 6 percent of the flight time and accounted for 75 percent of the lost aircraft. It is during these critical flight phases that the GPWS will increase flight safety.

In 1977 a Navy C-130 crashed in the water after a night takeoff resulting in the loss of the aircraft and all persons onboard. The following investigation found that the only equipment that could have prevented that accident was a GPWS. Installation of a GPWS in all Navy C-130 aircraft was identified as NAVSAFECEN Accident Report Recommendation (ARREC) No. 770691A.

Development Status: Development is complete. The GPWS is a commercially available, off-the-shelf product that meets ARINC Std. 594. The GPWS has been installed in C-9B aircraft and new EC-130Q aircraft procurement includes a GPWS. GPWS computer software must be validated and compatibility flight testing is required for verification of interface, software, and installation of the GPWS in the subject C-130 aircraft.

OSIP 119-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	24	$1,055	23	$823	14	$340	61	$2,218
O&MN Install.			(1)	$6	(60)	$347	(61)	353
O&MN Training				$70				70
APN-6 Spares		$111						111
GRAND TOTAL								$2,752

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Strobe Anti-Collision Lights (OSIP 120-84)

Models of Aircraft Affected: KC-130F, KC-130R

Description/Justification:

This program will replace the red rotating beacon anti-collision lights with high intensity strobe anti-collision lights. This program will also add a rock shield for the lower anti-collision light located behind the nose landing gear and relocate the upper anti-collision light from the top of the vertical stabilizer to the top of the aft fuselage to provide accessibility for maintenance.

The high intensity strobe anti-collision lights will greatly increase the inflight visibility of the C-130 aircraft to other aircraft. The increasing number of near mid-air collision reports and the high density air traffic areas that the C-130 aircraft is required to fly in require the increased aircraft visibility to other aircraft provided by the strobe anti-collision lights. Additionally, an Air Force study notes the potential for a 78 percent reduction in bird strikes with strobe anti-collision light equipped aircraft. An operational requirement has been established for high intensity strobe anti-collision lights on all naval aircraft.

Development Status: Development is complete. The high intensity strobe anti-collision lights are installed on C-130F and P-3C aircraft.

OSIP 120-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	22	$824	24	$685	8	$244	54	$1,753
O&MN Install.			(1)	$26	(53)	$1,340	(54)	1,366
APN-6 Spares		$43						43
GRAND TOTAL								$3,162

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Emergency Exit Lights (OSIP 121-84)

Models of Aircraft Affected: C-130F, KC-130F

Description/Justification:

The affected aircraft use one cell battery powered flashlights mounted near each of the seven aircraft exits for emergency exit lighting. In an emergency situation at night that includes loss of aircraft electrical power, flight crew personnel must locate the exits in the dark. This situation seriously impedes emergency evacuation of the aircraft. Additionally, the original one cell lights are no longer available. This program will install an emergency exit lighting system that is common to later model C-130 aircraft. The replacement emergency exit lighting system uses battery powered lights that contain an inertia switch that actuates each light when subject to a decelerating force exceeding 2.5g's . All emergency exit lights will also automatically illuminate upon loss of aircraft electrical power. Each light can also be removed from its mount and used as a conventional flashlight.

Development Status: Development is complete. Installed in KC-130R, and FC-130Q aircraft.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	10	$96	19	$108	18	$109	47	$313
O&MN Install.			(10)	$76	(37)	$279	(47)	$55
APN-6 Spares		$10						10
GRAND TOTAL								$678

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Cargo Handling System (OSIP 19-85)

Models of Aircraft Affected: KC-130F

Description/Justification:

The A/A32H-4A Cargo Handling System for the C-130 aircraft is a dual rail system providing greater expediency and safety in air logistics and air delivery. This system is presently installed by the USAF and NATO countries in various models of the C-130 aircraft. This system is compatible with the Marine Corps MCL-1 Cargo Loaders and the pallets and nets will supplement the ground support equipment for other transport aircraft. Installation of the dual rail system requires the addition of adapters to the 3,600-gallon fuel tank installation in the KC-130. COMNAVAIRPAC Msg 020129Z Jul 77 strongly recommended to CNO that the KC-130 aircraft be equipped with this system. Twenty-eight rail/roller kits have been obtained from USAF surplus.

The A/A32H-4A system is compatible with the USAF C-141 and C-5 aircraft systems. Another compatible system is being prototyped in a Navy RH-53 for future consideration for installation in cargo helicopters.

Development Status: Development is complete. The system is presently installed on 5 LC-130R, 7 C-130F and 14 KC-130F aircraft.

OSIP 19-85

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	15	$1,068	25	$1,971	40	$3,039
O&MN Install.			(40)	$643	(40)	643
O&MN Training		$10				10
APN-6 Spares		$57				57
GRAND TOTAL						$3,749

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Helo Air-To-Air Refueling (OSIP 20-85)

Models of Aircraft Affected: KC-130F, KC-130R

Description/Justification:

The existing KC-130F/R aerial refueling system is designed for high speed aerial refueling of fixed wing tactical aircraft. With the introduction of the CH-53E into the Marine Corps inventory, it is necessary to add to the KC-130 aircraft the capability for low speed aerial refueling of rotary wing aircraft. The Air Force has HC-130 aircraft designed for aerial refueling of rotary wing aircraft and this proposed program will make use of the HC-130 equipment. The major changes will involve use of the HC-130 large low speed paradrogue assembly, a surge control valve, and modifications to the KC-130 refueling pods to accept the large paradrogue. After the changes are incorporated and before an aerial refueling mission, maintenance and/or flight crew personnel will install either the small high speed paradrogue or the large low speed paradrogue depending upon the aircraft to be refueled. The paradrogues cannot be changed in flight.

Development Status: Minimal development of the modifications is required as they are presently used on the Air Force HC-130 aircraft or export aircraft, however a trial installation and flight testing will be required to demonstrate the compatibility of the low and high speed paradrogues for deployment and stowage.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	18	$1,621	36	$2,705	54	$4,326
O&MN Install.			(54)	$312	(54)	312
APN-6 Spares		$98		$141		239
GRAND TOTAL						$4,877

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ARN-118 TACAN (OSIP 122-84)

Models of Aircraft Affected: C-130F, KC-130F

Description/Justification:

The tactical air navigation (TACAN) system provides the aircraft with bearing and distance to ground stations and is used for enroute navigation and for instrument landing approachs. This program will replace the old vacuum tube AN/ARN-21 TACAN with the modern solid state AN/ARN-118 TACAN. The AN/ARN-21 has 126 channel capability only whereas the AN/ARN-118 has 252 channel capability. The ARN-118 requires no change in aircraft wiring and can be installed at the organizational maintenance level in less than 4 manhours. The reliability of the ARN-21 is 41 Mean Flight Hours Between Failure (MFHBF). The reliability of the ARN-118, based upon 7,700 ARN-118's installed in Air Force aircraft (including all C-130 aircraft), is 840 MFHBF.

Development Status: The AN/ARN-118 is approved for service use.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	23	$750	24	$493	47	$1,252
O&MN Install. "O" Level		-0-				-0-
O&MN Training		$50				50
APN-6 Spares		-0-				-0-
GRAND TOTAL						$1,302

Installation Data: Installation will be accomplished by organizational level maintenance.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Air Refueler Tank Quantity Indicator (OSIP 123-84)

Models of Aircraft Affected: KC-130F, KC-130R

Description/Justification:

The affected KC-130F/R aircraft use a 3,600-gallon fuel tank that is mounted in the aircraft cargo compartment for the aerial refueling mission. This 3,600-gallon fuel tank is the only fuel tank in the aircraft in which the fuel quantity cannot be visually checked during the preflight inspection. This situation requires total reliance on the electrical fuel quantity indicator for that tank. There have been instances where that indicator was in error but the flight crew, being unable to verify the actual fuel quantity, ran short of fuel inflight because the electrical indicator showed more fuel in the 3,600-gallon fuel tank than was actually in the tank. This program will install a filler neck on the 3,600-gallon fuel tank which will allow the flight crew to visually check the fuel quantity during the preflight inspection.

Development Status: Development is complete. The filler neck is installed on the National Science Foundation LC-130F/R aircraft 3,600-gallon fuel tanks.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	15	$134	20	$114	19	$115	54	$363
O&MN Install.			(15)	$34	(39)	$88	(54)	122
APN-6 Spares		-0-						-0-
GRAND TOTAL								$485

Installation Data: Installation will be accomplished concurrent with commercial Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FEWSG, AN/ARC-153, HF Radio (OSIP 31-84)

Models of Aircraft Affected: EA-6A FEWSG

Description/Justification:

A requirement exists for the Fleet Electronic Warfare Support Group (FEWSG) EA-6A aircraft to receive and jam C^3 network normally operated in a double sideband mode. The EA-6A aircraft presently operates without a capability to function in the HF mode, which is a requirement when providing electronic countermeasures against mobile sea ranges. The AN/ARC-153 has the double sideband high power capability to meet FEWSG mission requirements in support of the aggressor ORANGE force requirements.

This program provides for modification procurement installation and initial support of four radio sets for the four FEWSG (VAQ-33) EA-6A aircraft.

Development Status: The AN/ARC-153 is a fully developed radio used in the S-3A aircraft. The shop replaceable assemblies (SRA's) used in the ARC-153 are identical to those used in the ARC-157 and ARC-191 radios and are currently in production for the Navy and the U.S. Air Force by Collins Radio.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$1,439			4	$1,439
O&MN Install.			(4)	$277		277
APN-6 Spares		$27				27
GRAND TOTAL						$1,743

Installation Data: The four VAQ-33 aircraft will be modified by Naval Air Rework Facility (NARF) field teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-170 Generic Simulator (OSIP 137-84)

Models of Aircraft Affected: EA-6A FEWSG

Description/Justification:

The Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT). It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises and Fleet Operational Training. Four EA-6A aircraft are currently assigned to VAQ-33. These aircraft are based at the Naval Air Station, Key West, Florida.

New threat anti-ship missiles (ASM's) must be simulated by FEWSG in support of Fleet missions. To provide for this requirement, and in accordance with NDCP 0898AA, new missile seeker simulators are being developed for pylon (pod) installation on selected FLWSG aircraft including the four VAQ-33 EA-6A aircraft. The first of these simulators is designated AN/ALQ-170. This program provides for the modification of the FEWSG EA-6A aircraft to permit squadron installation of the AN/ALQ-170 when required.

Development Status: The AN/ALQ-170 pod is now under development and will be fully evaluated and accepted by FEWSG prior to September 1983. Formal approval for service use (ASU) is not required since the equipment will see service only with FEWSG. RDT&E,N Program Element Number 24575N applies.

OSIP 137-84

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$812			4	$ 812
O&MN Install.			(4)	$277		277
APN-6 Spares		$56				56
GRAND TOTAL						$1,145

Installation Data: The four FEWSG aircraft will be modified by Naval Air Rework Facility (NARF) field teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ERA-3B LTN-72E Inertial Navigation System (OSIP 138-84)

Models of Aircraft Affected: ERA-3B

Description/Justification:

The Litton LTN-72 Inertial Navigation System (INS) is designed for accurate navigation independent of external navigational aids. Installation of the LTN-72 INS in the ERA-3B aircraft will enable the FEWSG mission commander to accurately position the ERA-3B aircraft for maximum effectiveness in execution of the FEWSG mission. Fleet electronic warfare (EW) training, mobile sea range missile exercise, and RDT&E EW support missions all require accurate positioning of the ERA-3B during jamming operations. Other navigational equipment becomes ineffective in this jamming environment. The LTN-72 INS incorporation in the ERA-3B will enhance the FEWSG mission significantly and greatly contribute to the navigational capability. The INS will also provide stabilization and position data to the new FEWSG Airborne Jammer System (FAJS).

Development Status: This modification will primarily use equipment that is currently installed in Navy aircraft. Nonrecurring engineering is required to integrate the system and adapt it for use in the ERA-3B aircraft. Approval for service use (ASU) is not required as the ERA-3B is a Fleet support aircraft and not operated aboard carriers. Flight tests are scheduled to verify the installation and navigational accuracy.

Project Financial Plan

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$725	4	$816	3	$385	8	$1,926
O&MN Install.			(1)	$11	(7)	$79	(8)	90
O&MN Factory Trng.				$85				85
APN-6 Spares				$11				11
GRAND TOTAL								$2,112

Installation Data: The Naval Air Rework Facility (NARF), Alameda will install the change during aircraft Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1985

Appropriation: APN - Activity 5

Modification Title and No.: I/J Band Jammer (OSIP 94-83)

Models of Aircraft Affected: ERA-3B and NKC-135 FEWSG

Description/Justification:

The Fleet Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT). It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises and Fleet Operational Training. These aircraft are based at the Naval Air Station, Key West, Florida

In accordance with the FEWSG NDCP (0898-AA), a series of new jammers is being designed. They are capable of increased jamming power and a wide range of frequency and modulation control modes. This program provides for the procurement, installation and initial support of I/J band jammers in the NKC-135 and ERA-3B aircraft. Specific "targets" of this new jammer will include various Navy shipboard electromagnetic systems. The flexibility to install the same band jammer in four of five positions has been designed into the system to meet mission requirements. Assets are included in this program to allow this flexibility in two squadrons and the NKC-135A aircraft.

Development Status: Seven of the ten installation components required to make up one I/J band jammer have been tested and accepted by FEWSG. The remaining I/J components will be fully tested and accepted by FEWSG prior to June 1983. Formal approval for service use (ASU) is not required since the equipment will only see service with FEWSG (VAQ-33 and VAQ-34). RDT&E,N Program Element Number 24575N applies.

OSIP 94-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2	$8,318	4	$11,550					6	$19,868
O&MN Install.					?)	$400	(4)	$262		662
APN-6 Spares		$1,506		$1,776						?,282
GRAND TOTAL										$23,812

Installation Data: ERA-3B installations will be accomplished by the Naval Air Rework Facility (NARF), Alameda personnel during Standard Depot Level Maintenance (SDLM) or by NARF field team. Four ERA-3B aircraft will also be modified to accept this jammer under OSIP 118-80. NKC-135A installations will be accomplished by McDonnell Douglas-Tulsa under a NAVELEX contract.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ERA-3B ESM Receiver (OSIP 95-83)

Models of Aircraft Affected: ERA-3B FEWSG

Description/Justification:

The SCI-2100 solid-state digital radio frequency receiver is a replacement for the AN/ALR-43 ESM Receiver that became obsolete in the 1960's and is no longer supportable. The SCI-2100 has the accuracy and the signal processing capability to allow it to be interfaced with the new Fleet Electronic Warfare Support Group (FEWSG) Airborne Jammer System (FAJS), while the AN/ALR-43 ESM Recevier cannot be so interfaced. The SCI-2100 will facilitate long range detection, direction finding, signal identification and accurate frequency set-on of the FAJS in support of the FEWSG mission. The SCI-2100 will enable strict adherence to frequency allocation plans for Fleet training exercises and electronic warfare (EW) demonstrations. This will preclude unintentional jamming or intrusion of civilian/military frequencies.

Development Status: The SCI-2100 manufactured by SCI and procured through the General Services Administration (GSA) is currently being installed in FEWSG AN/ULQ-13 vans. Approval for service use (ASU) is not required as the ERA-3B is a Fleet support aircraft and does not operate aboard aircraft carriers. Flight tests are scheduled to verify system integration and ESM receiver function.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$1,071	2	$1,827	1	$557			4	$3,455
O&MN Install.			(1)	$33	(2)	$66	(1)	$33		132
O&MN Factory Trng.				$91						91
APN-6 Spares				$486		$140				626
GRAND TOTAL										$4,304

Installation Data: Naval Air Rework Facility (NARF) Alameda will install the change kits concurrent with normal Standard Depot Level Maintenance (SDLM).

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FEWSG; Simulator Set, Countermeasures, AN/ALQ-170 (OSIP 33-84)

Models of Aircraft Affected: Various

Description/Justification:

Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of CINCLANTFLT. It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans, and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises, and Fleet Operational Training. These aircraft are based at NAS, Key West (VAQ-33) and VAQ-34 aircraft will be stationed at the Pacific Missile Test Center, Point Mugu.

As set forth in NDCP 0898-AA (FEWSG), a new series of missile simulators is required, to be mounted on high performance (EA-6A's, EA-4F's, and ETA-7C's) aircraft in order to simulate Antiship Missiles (ASM's) for Fleet exercises and training. Present systems simulate only older threat missiles. New specific threat simulators and, equally important, simulators for non-specific threat categories are needed.

This program provides for the procurement and initial support of FEWSG's Simulator Set, Countermeasures, AN/ALQ-170. Separate actions have already been taken to prepare the FEWSG host aircraft to accommodate the new simulators to include rewiring and changes in cockpit display capability.

Development Status: The AN/ALQ-170 is now under development. Engineering Development Models (EDM) will be fully tested and accepted by October 1983. The principal tests consist of: pod certification, which was accomplished during the fourth quarter FY 1982; environmental testing, which will be accomplished during the second quarter FY 1983; EMI and ECM/ECCM lab testing, which will be accomplished during the second quarter FY 1983; and reliability evaluation/improvement tests followed by flight tests and evaluation, which will be accomplished during the third and fourth quarters FY 1983. Formal Approval for Service Use (ASU) is not required since the equipment will see service only with FEWSG/VAQ-33/34. RDT&E Program Element No. 24575N applies.

OSIP 33-84

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	4	$12,421	6	$16,145	10	$28,566
O&MN Install.		-0-				-0-
APN-6 Spares		$2,965		$4,380		7,345
GRAND TOTAL						$35,911

Installation Data: No aircraft modifications required.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FEWSG; Simulator Set, Countermeasures, AN/ALQ-170, Variant (OSIP 14-85)

Models of Aircraft Affected: Various

Description/Justification:

Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of CINCLANTFLT. It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans, and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises, and Fleet Operational Training. These aircraft are based at NAS, Key West (VAQ-33) and VAQ-34 aircraft will be stationed at the Pacific Missile Test Center, Point Mugu.

As set forth in NDCP 0898-AA (FEWSG), a new series of missile simulators is required, to be mounted on high performance aircraft in order to simulate Antiship Missiles (ASM's) for Fleet exercises and training. Present systems simulate only older threat missiles. New specific threat simulators and, equally important, simulators for non-specific threat categories are needed. Accordingly, a new series of ASM simulators is being designed for procurement for FEWSG aircraft.

This program provides for the procurement and initial support for variants of the Simulator Set, Countermeasures, AN/ALQ-170. Such a modified simulator would incorporate new capability improvements and other state-of-the-art improvements which are needed to keep pace with new ASM threat data. Each variant will expand the capability of the AN/ALQ-170 to cover one particular threat or family of threats. Major components of these variant simulators will be totally interchangeable with those of the basic ALQ-170. In addition, they will be compatible with the FEWSG aircraft which have been adapted to carry the AN/ALQ-170.

Development Status: The AN/ALQ-170 is now under development and the follow-on variants will be derivatives of this program. The first variant EDM will undergo tests similar to those required prior to procurement of the basic AN/ALQ-170. These tests include: pod certification, which was accomplished during the fourth quarter FY 1982; environmental testing, which will be accomplished in the first quarter FY 1984; EMI and ECM/ECCM lab testing, which will be accomplished in the second quarter FY 1984; and reliability evaluation/improvement tests followed by flight tests and evaluation, which will be accomplished in the third and fourth quarters FY 1984. Because of the commonality of coponents between the variant and the AN/ALQ-170, testing should be less complex and time consuming. Formal Approval for Service Use (ASU) is not required since the equipment will see service only with FEWSG/VAQ-33/34. RDT&E Program Element Number 24575N applies.

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
AFN-5		$6,998		$23,910		$30,908
O&MN Install.		-0-				
APN-6 Spares		$1,453		$6,308		7,761
GRAND TOTAL						$38,669

* Simulators

Installation Data: The host aircraft are undergoing pylon wiring changes under FY 1979-1983 projects and will not require further mod for this new pod.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-167 and AN/AST-4 Pods (OSIP 119-83)

Models of Aircraft Affected: A-4, A-6, A-7

Description/Justification:

The AN/ALQ-167 Pod is an ECM device designed to work against U.S. Navy fighter radars to simulate threat defense ECM systems. The AN/AST-4 electronically simulates several types of threat anti-ship missile seek systems. These podded devices were first introduced into the fleet in 1980 and proved exceptionally useful in readiness exercises.

This program provides for the procurement and initial support of additional quantities of these pods for use by VC squadrons and other fleet.

No aircraft modifications are required to use these pods.

Development Status: Both equipments are service approved and require no development.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$200		$2,350		$2,229		$3,948		$8,727
O&MN Install.				-0-						-0-
APN-6 Spares				-0-						-0-
GRAND TOTAL										$8,727

Installation Data: No aircraft modifications required. These pods have been qualified on all applicable aircraft.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: FEWSG C^3 Simulator (OSIP 7-84)

Models of Aircraft Affected: ERA-3B

Description/Justification:

Fleet Electronic Warfare Support Group (FEWSG) is a separate command under the administrative and operational control of CINCLANTFLT. It provides support, with organic resources, to both Atlantic and Pacific Fleets. FEWSG is the nucleus of the Navy's "aggressor" (ORANGE) Force. It employs tactics, procedures, equipment vans, and the specially configured aircraft of VAQ-33/34 plus the two Navy NKC-135A aircraft to simulate various threats during TECHEVAL, OPEVAL, Fleet Readiness Exercises, and Fleet Operational Training. These aircraft are based at NAS, Key West (VAQ-33) and VAQ-34 aircraft will be stationed at the Pacific Missile Test Center, Point Mugu.

As set forth is NDCP 0808-AA (FEWSG) communications simulation devices are required in order to simulate communications indicative of advesary command, control, and communication (C^3) systems for Fleet exercises, research and development, and training. Accordingly, communication simulator devices are being designed for procurement.

This project outlines the funding required for procurement, installation and follow-on support for a FEWSG C^3 simulator. Such a simulator will incorporate digital technology and state-of-the-art components for maximum flexibility to keep pace with the validated threat. The FEWSG C^3 simulator will utilize off-the-shelf components to the maximum extent possible and is a low risk program.

Development Status: This is a new program. Engineering Development Models (EDM) will be tested and accepted prior to procurement of production systems. Formal Approval for Service Use (ASU) is not required since the equipment will see service only with FEWSG/VAQ-33/34.

OSIP 7-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1	$240	3	$692	4	$1,224	8	$2,156
O&MN Install.			(1)	$13	(7)	$91	(8)	104
O&MN Training				$60		$60		120
APN-6 Spares		$28		$97		$200		325
GRAND TOTAL								$2,705

Installation Data: Installation will be accomplished during Standard Depot Level Maintenance (SDLM) at the Naval Air Rework Facility (NARF) Alameda.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: C-131 Modernization for Safety, Reliability and Maintainability (S,R&M) (OSIP 08-83)

Models of Aircraft Affected: C-131H

Description/Justification:

The C-131H aircraft are twin, turbo-prop, commercial derivative (CONVAIR Model 580) medium class, utility transports. The Navy has three C-131H aircraft in the inventory. These aircraft were manufactured in 1954 and converted to turbo-prop configuration in the mid-60's for service life with the Air Force Presidential Support Wing. In the mid-70's they were flown by the Air National Guard and came into the Navy inventory in 1979 to partially satisfy the Congressionally approved Naval Reserve Airlift mission requirement. These C-131H's have been well cared for throughout their life, are low time, and are well-suited to their mission. The Navy has no plan to retire these aircraft.

Due to their varied program history, many system updates and Federal Aviation Agency (FAA) mandated changes were never incorporated into these aircraft. As a result, the aircraft are still flying with the originally installed equipment - 1940-50 vintage radios and instrumentation - creating high failure rate, high repair costs and safety of flight problems for the operator. Even with all systems operating, the aircraft's capability of safely flying in instrument conditions with its outmoded avionics is rated as marginal at best. This proposed modification program will incorporate up-to-date commercial or military standard "off-the-shelf" avionics systems and FAA mandated airframe changes applicable to in-service CONVAIR 580's.

Development Status: The equipment has been fully developed and is available, requiring only kit validation. Aporoval for Service Use (ASU) is not required where commercial experience has demonstrated ASU equivalence.

OSIP 98-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$100		$495		$431		$639		$1,665
O&MN Install.		$33		$63		$47		$275		418
APN-6 Spares				$74		$65		$96		235
GRAND TOTAL										$2,318

Installation Data: Installation will be accomplished on-site by the Reporting Custodian with Naval Aircraft Rework Facility (NARF) assistance, if required.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Propeller Replacement Program (OSIP 116-84)

Models of Aircraft Affected: C-131H

Description/Justification:

The C-131H aircraft are twin, turbo-prop, commercial derivative (CONVAIR Model 580) medium class, utility transports. The Navy has three C-131H aircraft in the inventory. These aircraft were manufactured in 1954 and converted to turbo-prop configuration in the mid 1960's for service life with Air Force Presidential Support Wing. In the mid 1970's they were flown by the Air National Guard and came into the Navy inventory in 1979 to partially satisfy the Congressionally approved Naval Reserve Airlift mission requirement. These C-131H's have been well cared for throughout their service life, are low time and are well suited to their mission. The Navy has no immediate plans to retire these aircraft.

Since the aircraft are commercial in derivation they have the Aeroproduct A6441FN-606A propeller installed. The Aeroproducts Company is no longer in business and support of the Aero 606A propeller has been the subject of various support problems in recent months. The limited spares (eighteen reported worldwide) and lack of longterm commercial support creates an undesirable situation which impacts aircraft readiness. Allison Corporation and Hamilton Standard Corporation report that attempts to overhaul the propellers are becoming difficult and an average of three to four blades are being rejected due to stress failures per month.

Hamilton Standard Corp. and Jay-Dee Aircraft Company have developed a propeller conversion kit to convert the Aero 606A propellers to the Hamilton Standard 54-8600-77 P-3 propeller. This proposed modification program will incorporate the Navy's P-3 propeller. This propeller can be supported into the 1990's at a relatively low cost. Failure to act on this issue could result in either grounding of the aircraft or a requirement for a replacement aircraft.

Development Status: The kit is fully developed and available, and requires only kit validation.

OSIP 116-84

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	3	$2,240			3	$2,240
O&MN Install.			(3)	$188		188
O&MN Training		$64				64
APN-6 Spares		$197				197
GRAND TOTAL						$2,689

Installation Data: Installation will be accomplished by the contractor.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Sea Water Actuated Release System (SEAWARS) (OSIP 96-83)

Models of Aircraft Affected: A-4, A-6, A-7, AV-8, F-4, RF-8, F-14, F-18, S-3, T-2

Description/Justification:

SEAWARS is a sensing and activation device that attaches to the current manual parachute fitting and provides automatic release upon immersion in sea water. SEAWARS will preclude parachute entanglement and water dragging which are major factors in several aircrew drownings per year.

Development Status: The design is in engineering development. Approval for service use is expected in April 1983.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	2,763	$8,173	2,770	$5,052	2,230	$4,510	7,763*	$17,735
O&MN Install. "O" & "I" Level				-0-				-0-
APN-6 Spares		$640		$487		$430		1,557
GRAND TOTAL								$19,292

*Quantity represents parachute activation devices.

Installation Data: Installation will be accomplished at organizational and intermediate levels.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AERO-7A/7B Rack Improvement (OSIP 97-83)

Models of Aircraft Affected: A-6E, KA-6D, A-4M

Description/Justification:

This program will greatly improve the reliability and maintainability of the AERO-7A and B racks reducing maintenance manhours and incidences of "hung" ordnance while increasing safety during loading and carrier operations. Changes to be incorporated are: (1) replace hanger bolts on AERO-7B, (2) redesign housing to accept new bushing and sway brace bolts, (3) replace safety switch, (4) incorporate a new material hook, (5) new cap assemblies, and (6) provide a quick disconnect for the firing cap. These changes should reduce maintenance costs over $100,000 per year based upon the elimination of hook changes alone.

Development Status: All development has been completed.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	1,631	$3,985	1,084	$1,933					2,715*	$5,918
O&MN Install.				$76		$152		$305		533
APN-6 Spares		$565		$232						797
GRAND TOTAL										$7,248

* Quantity represents racks.

Installation Data: Installation of the AERO-7A kit will be done at the Naval Air Rework Facilities, Norfolk and Alameda. Installation of the AERO-7B kit will be done during overhaul. Kit lead time is 16 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ULQ-16 Pulse Analyzer Set (MITSI) (OSIP 125-84)

Models of Aircraft Affected: ASW Aircraft

Description/Justification:

The AN/ULQ-16 Pulse Analyzer Set is a carry-on adjunct to ASW aircraft ESM receiving equipment. The ULQ-16 mounts on a standard aircraft rack and weighs 35 pounds. When used with an aircraft ESM receiver, the ULQ-16 measures key parameters of received radar pulsed signals. The ULQ-16 Pulse Analyzer Set has been highly acclaimed during a lengthy period of Fleet trials, including ease of installation with only a small amount of operator training required.

Development Status: The AN/ULQ-16 has been approved for service use and has been in production since March 1982.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	22	$990	70	$3,358	92*	$4,348
O&MN Install.		$154		$490		644
APN-6 Spares		$129		$434		563
GRAND TOTAL						$5,555

* GFE only.

Installation Data: Installation and initial training is accomplished by contractor tiger teams and is estimated to take less than 2 days.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Power Plant Changes

Models of Aircraft Affected: Various

Description/Justification:

The Component Improvement Program (RDT&E,N) engineers power plant changes which must then be incorporated into the appropriate engine population. Implementation of these changes requires procurement of kits and technical information. The request for funds to implement the changes is based on the phased incorporation schedule and change cost per engine.

Development Status: All engineering effort will be accomplished prior to procurement of kits.

Project Financial Plan:

	FY 1982 & Prior	FY 1983	FY 1984	FY 1985	Cost to Complete	TOTAL
Total APN-5	$21,123	$10,400	$12,007	$16,054	$60,291	$119,875
O&MN Install.	$10,184	$5,611	$5,886	$5,886	$17,658	45,225
APN-6 Spares	$3,125	$1,350	$1,550	$2,100	$7,850	15,975
GRAND TOTAL						$181,075

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Emergent Safety Requirements

Models of Aircraft Affected: Various

Description/Justification:

This item covers the procurement of kits to correct flight safety deficiencies. These deficiencies are unpredictable since they are revealed during actual operation of aircraft in the Fleet under diverse tactical and environmental conditions. These changes must have OPNAV authorization and will be reviewed by the NAVAIR Change Control Board.

Development Status: Not applicable.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$10,120		$5,400		$6,007		$6,955		$29,677		$58,159
O&MN Install.		$8,107		$4,404		$4,620		$4,620		$13,860		35,611
APN-6 Spares		$178		$540		$601		$696		$3,080		5,095
GRAND TOTAL												$98,865

Installation Data: These kits will be installed during SDLM, at organizational or intermediate levels, by contractors, or by field mod teams.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALQ-126B (OSIP 110-79)

Models of Aircraft Affected: A-4M, A-6E, A-7E, F-4S, RF-4B, FA-18, F-14, EA-6B, AV-8B/C

Description/Justification:

The AN/ALQ-126B is a self-protection jamming system designed to significantly improve reliability and ultimate performance from its predecessor, the ALQ-126A. The ALQ-126B system consists of equipment design changes to improve maintainability and reliability while significantly improving effectiveness. These design changes will have a negligible effect on equipment size and weight and the ALQ-126B remains a "drop-in" replacement for the ALQ-126A. Production will reflect a one for one replacement of the AN/ALQ-126A.

Development Status: TECHEVAL and OPEVAL are completed and Approval for Limited Production (ALP/PASU) was granted in August 1982. One hundred thirty-six units were procured in FY 1982. This cumulative total does not include the five production prototypes previously procured. FOT&E in the F-14, F-18, AV-8 and A-4 aircraft is to be completed in FY 1983. Approval for Full Production (AFP) is planned for FY 1983.

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	141	$112,499	236	$125,471	251*	$133,320	331*	$177,952	261*	$149,234	1,220*	$698,476
APN-6 Spares		$6,477		$13,953		$22,840		$41,786				85,056
GRAND TOTAL												$783,532

* GFE only.

Installation Data: The ALQ-126B is a direct replacement for the ALQ-126A.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1983

Appropriation: APN - Activity 5

Modification Title and No.: AN/ALR-45F (OSIP 109-79)

Models of Aircraft Affected: A-4M, OA-4M, F-4S, RF-4B, A-7E, KA-6D, AV-8C

Description/Justification:

The CP-1293 computer (ALR-67) and IP-1276 azimuth display have been designed such that they are interchangeable with the electrical pulse analyzer and azimuth display of the AN/ALR-45 receiving set. This provides a software reprogrammable analyzer, an alpha-numeric display of threat bearing and identification (I.D.), and interface capability with AN/ALQ-126B and AN/ALE-39.

Weight and space are the same as the ALR-45 pulse analyzer (22.5 pounds, 536 cubic inches) and the ALR-45F is a "drop-in" one for one replacement for the ALR-45.

Development Status: TECHEVAL and OPEVAL are completed and Approval for Limited Production (ALP)/PASU was granted in May 1982. Sixty-five units were procured in FY 1982 for a cumulative total of 108. Based on satisfactory performance as part of HARM OPEVAL (Phase II), Approval for Full Production (AFP) is being requested. RDT&E(N) Program Element is 64225N/W0619-TW. 618-TW).

Project Financial Plan:

	FY 1982 & Prior		FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	108	$32,159	32	$9,347	50	$16,049	82	$22,866	207	$51,872	479	$132,293
O&MN Install, "O" Level						-0-						-0-
APN-6 Spares		$2,213		$1,136		-0-						3,349
GRAND TOTAL												$135,642

Installation Data: The ALR-67 GFE is a direct replacement for ALR-45 analyzer and display to be installed at the organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APR-39 Improvement (OSIP 31-85)

Models of Aircraft Affected: AH-1J/T. CH-53 A/D/E, CH-46E, OV-10A/D

Description/Justification:

The AN/APR-39 improvement consists of: (1) replacing the existing AN/APR-39(V)1 analog processor with a current generation digital processor, (2) replacing the existing AN/APR-39(V)1 receivers with new receivers and antennas which expand the frequency coverage into the millimeter wave region, and (3) replacing the existing cockpit control panel with a similiar unit capable of handling increased power loads. The digital processor is required to provide threat signal discrimination, alpha numberic display and synthetic speech audio in order to reduce pilot workload in the nap-of-the-earth flight environment. The receiver and antenna update is required in order to provide warning of modern threat radars which are using the millimeter wave spectrum. The digital processor will interface with and display inputs from other aircraft sensors (laser, CW and missile warning sets); however, the existing cockpit control cannot power these devices and an updated panel is required. All replacement equipments will be form/fit compatible with existing aircraft configurations and no aircraft change kit is required.

Development Status: The AN/APR-39(V)1 is approved for service use and is being used on Marine Corps helicopters. The improvement program is a joint Army/Navy project with the Army as executive service. A joint memorandum of agreement details individual service responsibilities during the engineering development phase. Engineering development contract was awarded in October 1982. Navy TECHEVAL/OPEVAL will be complete in the first quarter of FY 1985 followed by approval for service use in the second quarter of FY 1985. A draft ACAT III TEMP is being prepared under RDT&E,N Program Element No. 63206N. The improved system has been given the nomenclature AN/APR-39A(V)1.

OSIP 31-85

Project Financial Plan:

	FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	224	$8,403	528	$15,073	752*	$23,476
O&MN Install. "O" Level		-0-				-0-
APN-6 Spares		$1,730		$3,107		4,837
GRAND TOTAL						$28,313

* GFE only.

Installation Data: No airframe change is required. GFE will be installed at the organizational maintenance level by squadron personnel.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/ASH-20 Crash Position Locator R&M Improvement (PHASE II) (OSIP 77-82)

Models of Aircraft Affected: C-2A, KC-130R, P-3A/B/C, VP-3A

Description/Justification:

This item of safety equipment is in urgent need of R&M improvements which have been developed with Aircraft Equipment Reliability and Maintainability Improvement Program (AERMIP) funds and are ready for incorporation. The R&M improvements include the radio beacon battery maintainability mod, linear transducer and clamp, hydrostatic switch, and converter mount. These changes will be incorporated at the factory and the updated weapon replaceable assemblies (WRA's) will be provided to the operating activities in exchange for unmodified WRA's. Installation by organizational personnel will require less than 10 manhours for total removal and replacement effort. Ground support equipment will include a ground station required to analyze the tape recorder for post accident analysis.

Development Status: Development has been completed under the AERMIP program.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	107	$720	118	$310	23	$65			248	$1,095
O&MN Install.			(72)	$332	(116)	$561	(60)	$290		1,183
APN-7 GSE				$200		$75				275
APN-6 Spares		$229		$78		-0				307
GRAND TOTAL										$2,860

Installation Data: Installation in the aircraft will be accomplished by exchange of modified WRA's for unmodified WRA's at the organizational level. The WRA's will be reworked at the factory due to the need for factory test on the modification line and impracticability of putting together a kit for reworking fiberglass airfoils.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Angle-of-Attack (AOA) Indicator Reliability Improvement Program (OSIP 78-82)

Models of Aircraft Affected: KA-3B, NA-3B, RF-8G, EP-3E, E-2C, TA-7C, A-7E, NA-7C, NA-7E, NA-7A, P-3A, P-3B, P-3C, T-2C, OV-10A, OV-10D

Description/Justification:

The proposed modification replaces the motor, follow-up potentiometer off flag, bearing, switches, and most significantly, the electromechanical motor drive control of the angle-of-attack indicator SLZ-9028 (MS-28067) with solid state circuitry. This change was successfully demonstrated in an FY 1977 Aircraft Equipment Reliability and Maintainability Improvement Program (AERMIP). An improvement of 5 to 1 in mean time between failure (MTBF) is anticipated. Maintainability is also significantly improved. The indicator provides critical inputs to the stall warning system, automatic approach control (APC) and to the weapons release system(s). The solid state chopper circuit design is already used in the DOD inventory by the Air Force A-7 and F-4.

Development Status: Development was completed under the AERMIP program, RDT&E,N Program Element Number 25633N, Project 1041.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	300	$177	460	$286	424	$227			1,174	$ 690
O&MN Install.*			(300)	$75	(650)	$171	(824)	$214		460
APN-6 Spares		$156		$114		$88				358
GRAND TOTAL										$1,508

*Includes 600 spares.

Installation Data: A rotable pool will be established, and the weapons replaceable assemblies (WRA's) will be reworked at the factory.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: RT-868/APX-76 and RT-988/APX-76 R&M Improvement (OSIP 90-82)

Models of Aircraft Affected: F-4N/S*, E-2C, F-14A*, P-3C, S-3A, KS-3A, EP-3E, KC-130/F/R, SH-60B

Description/Justification:

This equipment urgently requires the incorporation of reliability and maintainability improvements and in-depth rework processing. The APX-76 exhibits a low mean-flight-hour-between-failure (MFHBF) of 146.1 hours and a high maintenance manhour requirement which degrades readiness in Continental United States (CONUS) and deployed aircraft. The incorporation of a new solid state transmitter will be accomplished in these equipments increasing equipment reliability to a projected 560 MFHBF.

Development Status: Development has been completed under AERMIP RDT&E,N Program Element Number 25633N, Project 1041.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	170	$183	204	$60	158	$50			532	$ 293
O&MN Install.**	(24)	$31	(288)	$439	(288)	$461	(76)	$122		1,053
APN-6 Spares		$8		$10		$11				29
GRAND TOTAL										$1,375

* 335 installs previously completed for F-4/F-14 aircraft.

** Includes 144 spares.

Installation Data: Installation in aircraft will be accomplished by exchange of modified weapons replaceable assemblies (WRA's) for unmodified WRA's at the organizational level. The WRA's will be modified and in-depth rework will be performed at the Naval Air Rework Facility, North Island.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APN-154(V) Radar Beacon R&M Improvement (OSIP 127-82)

Models of Aircraft Affected: A-6E, KA-6D, EA-6A/B, A-7E, F-14A

Description/Justification:

This item of automatic carrier landing system (ACLS) avionics is in urgent need of reliability and maintainability (R&M) improvements, which have been developed with Aircraft Equipment Reliability and Maintainability Improvement Program (AERMIP) funds and are ready for incorporation. The R&M improvements include modification of the RT-763A/B/C/D/E beacon transmitter to maintain its frequency, which is critical to the success of ACLS Mode I (fully automatic) operations. The redesigned frequency control portion of the radar beacon reduced scheduled maintenance actions on the radar beacon by a factor of 6 to 1 during a recent evaluation with two A-7E squadrons during a deployment.

Development Status: Development has been completed under the AERMIP Program, RDT&E,N Program Element Number 25633N, Project 1041.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$200	480	$1,490	480	$890	238	$589			1,198	$3,169
O&MN Install.*			(150)	$116	(480)	$388	(430)	$388	(366)	$329		1,221
APN-6 Spares				$222		$195		$253				670
GRAND TOTAL												$5,060

*Includes 228 spares.

Installation Data: Installation will be accomplished by exchange of upgraded weapons replaceable assemblies (WRA's) at the organizational level. The WRA's will be reworked at the factory because this is the only facility currently overhauling RT-763's and capable of expanding rapidly to meet the planned modification rate.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Reliability and Maintainability Improvement to the Receiver of the Radar Altimeter Set, AN/APN-171 (OSIP 101-83)

Models of Aircraft Affected: E-2C, SH-2F, SH-3D/G/H, UH-1N, UH-46D, HH-46A, CH-46D, CH-53A/D, RH-53D, CH-46E, CH-53E, AH-1J, OV-10A

Description/Justification:

The AN/APN-171 radar altimeter set is a safety of flight essential airborne low-altitude terrain tracking and altitude sensing radar system which provides accurate and continuous indication of aircraft altitude. Altitude range information is derived by utilizing a lock track loop allowing tracking of terrain ahead of or adjacent to the aircraft and provides warning of rapid changes of absolute altitude. Current RT configurations experience high failure and removal rates resulting in extremely high maintenance manhour (22,072 MMH/year) requirements and unsatisfactorily low mean flight hour between failure (MFHBF) (152 hours). This R&M improvement will replace the limited life tube style cavity oscillator in the receiver assembly with a solid-state frequency converter module. Reliability of the receiver is expected to double, while reducing mean-time-to-repair (MTTR) by 75 percent. The MFHBF for a solid-state RT unit is predicted to increase to a high of approximately 600 hours. This change will virtually eliminate the effect of degraded operation that is inherent in tube type designs thus eliminating the need for periodic replacement. Solid-state devices will only be replaced upon failure; there is no gradual effect with solid-state devices.

Development Status: Development has been completed under the Aircraft Equipment Reliability and Maintainability Improvement Program (AERMIP) RDT&E,N Program Element Number 25633N, Project 1041.

OSIP 101-83

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	74	$261	979	$1,880	150	$519	1,203	$2,660
O&MN Install."I" Level				-0-				-0-
APN-6 Spares		$35		$241		$42		318
GRAND TOTAL								$2,978

Installation Data: Installation will be accomplished at the intermediate level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APX-76 and RT-988/A IFF Interrogator Anti-Jam Modification (OSIP 133-84)

Models of Aircraft Affected: F-14A, F-4N, F-4S, S-3A, P-3C, KC-130F, KC-130R, EP-3E, SH-60B, E-2C

Description/Justification:

The U.S. Navy and the U.S. Air Force are developing modifications to the AN/APX-76 to improve resistance to the jamming threat. Vulnerability studies, equipment testing and testing of broadband equipment have shown that improvement is required and considerable improvement can be achieved by modifications. The change will require the replacement of three printed circuit cards in the RT-988( )/APX-76 (or RT-988( )) and one card in the SN-416( )/APX-76.

Development Status: NAVAIR and the Air Force (ASD) are procuring engineering development models of this change. Design, delivery and testing will be completed in FY 1983 under RDT&E,N Program Element Number 64211N.

Project Financial Plan:

	FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	384	$1,313	586	$3,284	970	$4,597
O&MN Install. "I" Level		-0-				-0-
O&MN Training		$50				50
APN-6 Spares		$286		$363		649
GRAND TOTAL						$5,296

Installation Data: Installation will be accomplished at the intermediate level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: RT-743B/ARC-51 R&M Improvement (OSIP 104-83)

Models of Aircraft Affected: Various

Description/Justification:

This equipment urgently requires the incorporation of R&M improvements and in-depth rework processing. The Naval Air Rework Facility (NARF), North Island, is currently conducting a Depot Rework Assurance Program (DRAP) on a limited population of this equipment. The incorporation of DRAP maintenance concepts will improve system operational readiness, reliability and reduced system support costs. The NARF will incorporate these maintenance concepts in the remaining equipment population and provide updated units to Continental United States (CONUS) and deployed operating activities. This is a follow-on procurement.

Development Status: Development has been completed under the existing NARF, North Island DRAP program.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	257	$321	362	$370	351	$368	193	$247	1,163	$1,306
O&MN Install.*			(336)	$691	(481)	$976	(754)	$1,530	(1,571)	3,187
APN-6 Spares		$73		$94		$119		$122		408
GRAND TOTAL										$4,901

*Includes 408 Spares.

Installation Data: Kit installations will be performed at the Depot level. The current depot induction rate is 40 WRA's per month.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: ID-663 Indicator Compatibility Improvement (OSIP 106-83)

Models of Aircraft Affected: E-2C, C-130

Description/Justification:

Upon installation of the AN/ARN-118 TACAN, an insidious compatibility problem with the common Government furnished equipment (GFE) ID-663 bearing, distance, headings indicator was revealed. When three ID-663's are driven by one ARN-118, the resulting impedance is sufficiently low to cause excessive heating of the ARN-118, and in turn, low reliability.

Development Status: State-of-the-art synchros are available to replace the existing ID-663 synchros in order to provide the correct impedance. Testing was done at the Naval Air Rework Facility, North Island, under an Aircraft Systems Fleet Support Work Unit Assignment using O&MN funds, P.E. 78012N, Subhead 47BS.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	66	$170	65	$135			131	$305
O&MN Install.*			(27)	$24	(146)	$133		157
APN-6 Spares		$25		$32				57
GRAND TOTAL								$519

*Includes 42 spares.

Installation Data: Installation will be accomplished by exchange of modified weapons replaceable assemblies (WRA's) at the organizational level. The WRA's will be modified by Naval Air Rework Facility (NARF), North Island.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Microstrip Antenna for the AN/APN-194(V) Radar Altimeter (OSIP 89-82)

Models of Aircraft Affected: A-6E, EA-6A, EA-6B, A-7E, A-7C, P-3B, P-3C

Description/Justification.

The microstrip antenna is an improved antenna system which enhances the performance of the AN/APN-194(V) radar altimeter. The antenna was initially developed by Honeywell, Inc. as a replacement for the AS-1233/APN-141 antenna to improve antenna performance and reliability under poor environmental conditions. The new antenna overcomes problems which were caused by hydraulic fluid contamination, excessive vibration levels and engine exhaust heat. The microstrip antenna is interchangeable with existing AN/APN-194 antennas and can, therefore, be replaced at the organizational level without modification to the aircraft. The device has been successfully tested under an Aircraft Equipment Reliability and Maintainability Improvement Program (AERMIP) project in the AV-8A, EA-6B, P-3B, and A-7E aircraft.

Development Status: Development and testing of the new antenna have been successfully completed under AERMIP RDT&E,N Program Element No. 25633N, Project 1041.

Project Financial Plan:

	FY 1982		FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-6	360	$266	300	$335	300	$359	171	$218	1,131	$1,178
O&MN Install. "O" Level						-0-				-0-
APN-6 Spares		$21		$33		$34		$34		122
GRAND TOTAL										$1,300

Installation Data: Installation will be accomplished at the organizational level. The new antenna is directly interchangeable with existing units.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Digital Air Data Converter (CoIP 34-84)

Models of Aircraft Affected: E-2C, EA-6A, EA-6B, KA-6D, A6E, C-2A, NEA-6B

Description/Justification:

Current air data computers are impacting readiness of Navy aircraft due to low reliability, obsolescence and nonstandardization. To resolve this problem a standard digital air data converter (DADC) is being developed (NDCP W0572) to replace the following air data computers: CP-1106, CP-1051, CP-1105, CP-828, CP-953, and CP-1095. The DADC is designed to be form, fit and function interchangeable with no airframe change required. In addition to being interoperable between aircraft, the mean flight hour between failure (MFHBF) will be increased from the current 105 hours to 400 hours. The standard DADC will use existing ground support equipment.

Development Status: Development is being funded under the Avionics Components and Subsystems Program (AVCS) Program Element Number 64203N, W0572. Approval for service use is planned for September 1983.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	50	$2,012	88	$3,793	434	$16,123	572	$21,928
O&MN Install. "O" Level		-0-						-0-
APN-6 Spares		$285		$670		$1,806		2,761
GRAND TOTAL								$24,689

Installation Data: Installation will be accomplished at the organizational level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APN-182(V) Navigation Set, Reliability Improvement (SP 114-83)

Models of Aircraft Affected: HH-3A, TH-3D, SH-3G, UH-3A, SH-3D, SH-3H, SH-3F, HH-46A, VH-3D

Description/Justification:

The AN/APN-182 Radar Navigation Set provides accurate and continuous heading, drift and vertical velocities, providing navigational information over an unlimited geographical area. The AN/APN-182 exhibits a high (25,500 maintenance man hour (MMH)) annual maintenance requirement at a low mean time between failure (MTBF) of 69 hours. The reliability and maintainability (R&M) improvement to the AN/APN-182 consists of replacing the current tube type high voltage power supply and Klystron transmitter with a solid-state transmitter (SSX) and a low voltage power supply (LVPS). Utilizing state-of-the art component and design, the new solid state system's reliability is projected to improve to 155 hours MTBF. The current 6 MMH/flight hour (FHR) rate will be reduced to 2 MMH/FHR (significantly enhancing equipment maintainability availability and reducing overall maintenance costs). This change will involve component replacement to the AN/APN-182 system and will not require any airframe change. No new PGSE hardware will be required; interface with existing PGSE is incorporated in the new solid state power supply design.

Development Status: Development was completed under AERMIP Project Element 25633N, Project 1041. Approval for service use is not required.

Project Financial Plan:

	FY 1983		FY 1984		FY 1985		FY 1986		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	20	$428	146	$1,143	144	$1,150	44	$374	354	$3,205
O&MN Install. "I" Level				-0-						-0-
O&MN Training				$50						50
APN-5 Spares		$40		33		$262		$75		610
GRAND TOTAL										$3,865

Installation Data: Installation is less than one hour and will be accomplished at Intermediate level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Replacement of TSEC/KY-28 by TSEC/KY-58 (OSIP 113-83)

Models of Aircraft Affected: F-14A, F-4S, RF-8G, RF-4B, A-7E, A-7C, A-7B, A-4M, A-4F, A-6E, KA-6D, RA-3B, EA-3B, ERA-3B, EA-4F, EA-6B, EA-6A, P-3C, P-3B, P-3A, S-3A, E-2C, E-2B, EC-130Q, EC-130G, EP-3E, RP-3D, KC-130F, KC-130R, OA-4M, OV-10D, OV-10A, TA-4F, AH-1T, AH-1J, AH-1G, HH-3A, SH-3H, SH-3D, SH-2F, CH-53E, CH-53D, CH-53A, RH-53D, CH-46E, CH-46D, HH-46D, HH-46A, HH-1K, UH-1N, UH-1E, KA-3B, A-4E, F-4N, F-4J, SH-3G, SH-3A, UH-3A, VH-3D, CH-46F, CH-46A, RH-53D, LC-130R, US-3A

Description/Justification:

The TSEC/KY-28 is a secure speech equipment designed to operate with UHF/VHF/AM/FM half duplex radio operations. The TSEC/KY-58 was designed to replace the TSEC/KY-28 secure speech equipment. The TSEC/KY-58 will be mated with a Z-AHQ interface adapter to permit the TSEC KY-58 to operate using existing TSEC/KY-28 wiring thus no aircraft wiring changes are required. Justification for use of the TSEC/KY-58 is stated in CNO secure voice plan dated October 1980.

Development Status: The TSEC/KY-58 secure voice equipment and the Z-AHQ adapter are fully developed and approved for service use by OSD memorandum dated 24 June 1976. The TSEC/KY-58 and the Z-AHQ are procured by the National Security Agency and distributed by the Naval Telecommunications Command. In addition, the PGSE, initial logistic support and training are provided as part of the initial KY-58 procurement.

OSIP 113-83

Project Financial Plan:

	FY 1983		FY 1984		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost
APN-5		$1,300		$830		$2,130
O&MN Install. "O" Level				-0-		-0-
APN-6 Spares				-0-		-0-
GRAND TOTAL						$2,130

Installation Data: The implementation into aircraft will be conducted by the Type Commanders (TYCOM'S) in consonance with ship/battlegroup implementation. Kit installation will be accomplished at Organizational Level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APN-153(V) Doppler Radar (OSIP 112-83)

Models of Aircraft Affected: A-4F, KA-6D, A-6E, RF-8G, E-2C, P-3A, P-3B, TC-4C, LC-130F, EC-130G, and EC-130Q

Description/Justification:

The APN-153 doppler radar contains vacuum tube technology that is becoming obsolete and increasingly difficult to maintain in a ready condition. This problem is a significant cause of its high maintenance manhours of 17,387 hours per quarter and high aircraft downtime of 60,415 NMC/PMC hours per quarter. The modification will replace the intermediate frequency (IF) amplifier module with a solid state device module that is form, fit, and function interchangeable at the module level. A 40 percent reduction in maintenance manhours and downtime is expected.

Development Status: Development will be completed under AERMIP Project Element Number 25633N, Project 1041 by March 1983. No approval for service use is required.

	FY 1983		FY 1984		FY 1985		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	311	$787	172	$439	172	$393	655	$1,619
O&MN Install. "I" Level				-0-				-0-
O&MN Training				$100				100
APN-6 Spares		$197		$74		$79		350
GRAND TOTAL								$2,069

Installation Data: Installation of kits will be at the Intermediate Level.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: Reliability and Maintainability Improvement to the Transmitter of the Radar Altimeter Set, AN/APN-171 Solid-State Transmitter (OSIP 127-84)

Models of Aircraft Affected: RH-46A, UH-46D, CH-46D, CH-46E, CH-53A, CH-53D, CH-53E, RH-53D

Description/Justification:

The AN/APN-171 radar altimeter set is a safety of flight essential airborne low altitude terrain tracking and altitude sensing radar system which provides accurate and continuous indication of aircraft altitude. The current receiver transmitter (RT) experiences high failure and removal rates resulting in extremely high maintenance manhour requirements (22,072 MMH/YR) and unsatisfactorily low reliabilty (152 mean flight hours between failure (MFHBF). This modification will change the existing limited life transmitter module with a state-of-the-art solid-state transmitter. Reliability improvement to be realized by using this new transmitter and an associated solid-state receiver are estimated to increase from the current low of 152 MFHBF to 1,750 MFHBF. In addition, meantime to repair (MTTR) of the RT unit will be reduced from the current 3-4 hours to less than 1 hour. This change will significantly reduce the degraded operation that is typical of vacuum tube circuits because solid state components tend to hold their characteristics until they fail. This will greatly reduce periodic maintenance requirements.

Development Status: The solid-state transmitter is in development under an AEPMIP Program RDT&E,N Program Element Number 25633N, project 1041. Testing was successfully completed in September 1982. Approval for service use is not required.

OSIP 127-84

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	247	$1,452	350	$1,042	643	$2,100	1,240	$4,594
O&MN Install.			(308)	$160	(932)	$486	(1,240)	646
APN-6 Spares		$207		$208		$222		637
GRAND TOTAL								$5,877

Installation Data: Kits are to be installed at the Naval Air Rework Facility (NARF). Kit manufacturing leadtime is 15 months.

MODIFICATION OF AIRCRAFT
FISCAL YEAR 1984

Appropriation: APN - Activity 5

Modification Title and No.: AN/APX-76 for VF Aircraft (OSIP 129-84)

Models of Aircraft Affected: F-4, F-14

Description/Justification:

The AN/APX-76 interrogator was procured for the F-4 on a one-for-two basis and was not procured with early F-14 production aircraft. All F-14 and F-4 have installation provisions for the APX-76. This outfitting level has resulted in considerable readiness problems as cross-decking and cannibalization are required, no equipment is available for pre-deployment installation, no operator or maintenance training is possible, and the integrity of aircraft provisions is not maintained. This program procures additional equipment to outfit VF aircraft one-for-one.

Development Status: The AN/APX-76 is approved for service use.

Project Financial Plan:

	FY 1984		FY 1985		Cost to Complete		TOTAL	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
APN-5	51	$2,183	50	$2,282	186	$9,900	287	$14,365
O&MN Install. "O" Level		-0-						-0-
APN-6 Spares		-0-						-0-
GRAND TOTAL								$14,365

Installation Data: The equipment will be installed at the organizational level.