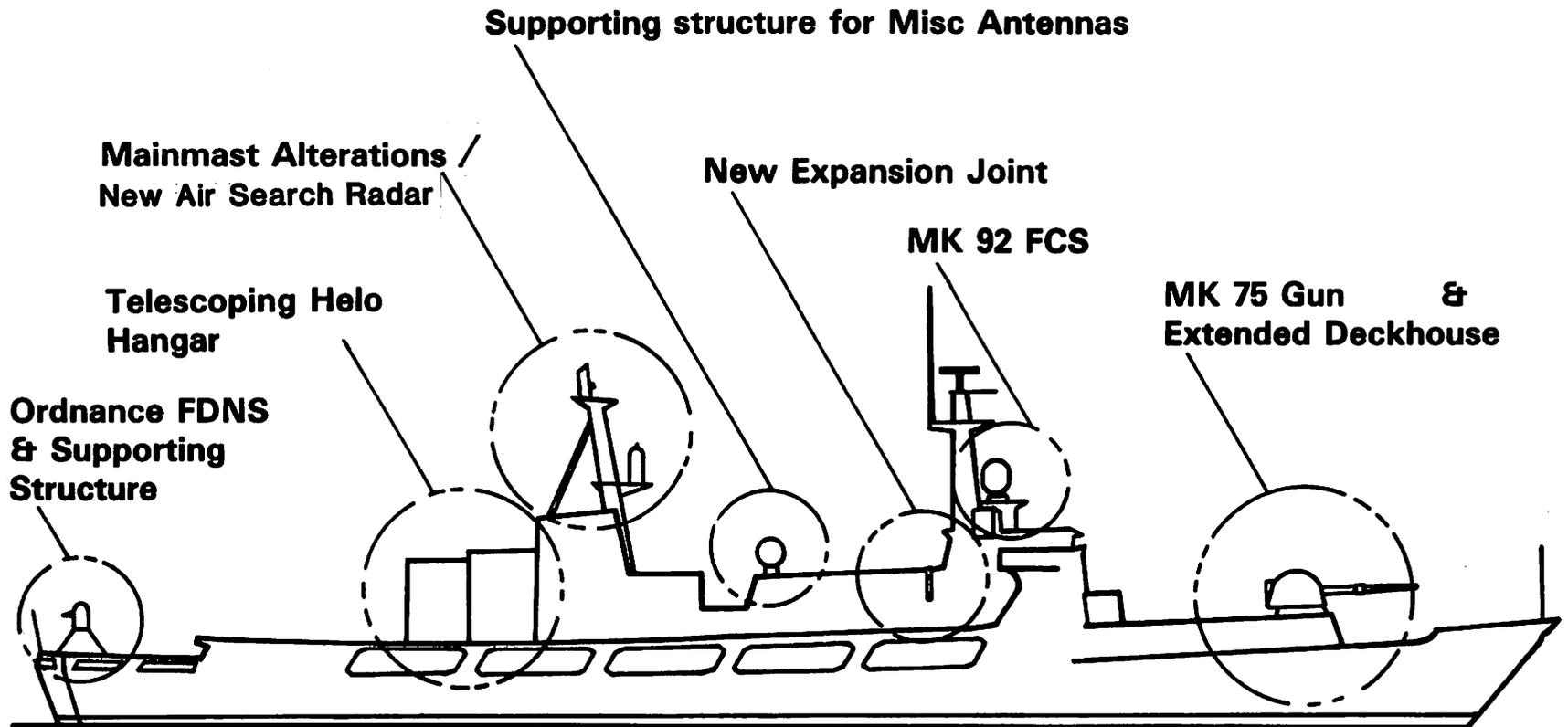


378' FRAM

Major Structural Alterations



UNITED STATES GOVERNMENT
memorandum

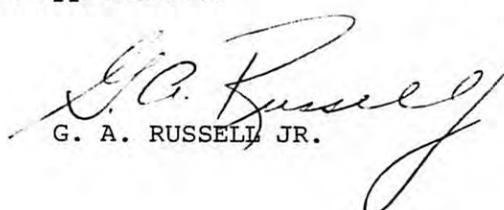
DATE: November 11, 1986

REPLY TO
ATTN OF: LT G. A. RUSSELL JR. USCG RIO Bath, ME

SUBJECT: 378 WHEC FRAM Article; Review

TO: Commandant (G-BPA-2)

1. Attached is an article concerning the 378' WHEC FRAM program which I have developed. I intend to submit the article to the U.S. Naval Institute PROCEEDINGS and/or the U.S. Coast Guard Academy Alumni Bulletin if given authorization to do so.
2. In addition to the text, I will be submitting several photographs taken of USCGC HAMILTON (WHEC 715) during various stages of the FRAM. These photographs were taken by another member of the RIO staff and I have received authorization from him for their use. I will also be submitting a line drawing of a representative cutter.
3. Your review and approval of this article for publication is hereby requested. I may be contacted at (207) 443-3311 Extension 4154, should you need to reach me. Your cooperation in this matter is appreciated.


G. A. RUSSELL JR.

*make copy
for file*



LT G. A. RUSSELL JR.
COMBAT SYSTEMS COORDINATOR
U.S. COAST GUARD
RESIDENT INSPECTOR OFFICE

TEL: (207) 443-3311
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OPTIONAL FORM NO. 10
(REV. 1-80)
GSA FPMR (41 CFR) 101-11.6
5010-114

☆ GPO : 1985 O - 461-275 (428)

Approved for
Public Release

U.S. Coast Guard
Washington, D.C.

THE U. S. COAST GUARD 378' WHEC FRAM

Date 11/14/86

Read by: W.H. Lewis

See page 9

The 378 WHEC Fleet Rehabilitation and Modernization (FRAM) program is the largest contract of its type ever awarded by the Coast Guard. The contract award price was approximately 352 million dollars for twelve ships. Nearly 30 million additional dollars worth of Coast Guard furnished equipment as well as roughly 294 million dollars worth of U.S. Navy equipment and installation funds are also earmarked for the program. As can be expected, rumors and misunderstandings abound concerning the scope of the project and the changes to be accomplished. The purpose of this article is two-fold: First; to describe the FRAM program and the major changes involved in order to dispel these misconceptions. Second; to evaluate the impact of these changes in terms of tactical employment of the enhanced operational capability, revisions to the billet structure, and increased training requirements.

Originally conceived as a major mid-life availability, the FRAM program was expanded following an agreement by the Navy/Coast Guard (NAVGARD) Board to utilize the opportunity to perform a major upgrade of the cutters' Combat Systems. This upgrade, as well as the original program to standardize and either overhaul or replace aging mechanical and support equipment, are the major features of the FRAM.

The contract for the FRAM was split between two shipyards (West Coast and East/Gulf Coast) in order to contribute to the national goal of preserving industrial capacity for mobilization.

The awards of the negotiated, fixed price, multi-year contracts were made on 17 June 1985 and the first cutters entered the respective shipyards (Bath Iron Works and Todd Seattle) in October 1985. The initial cutters are scheduled for an eighteen month availability, decreasing with the benefits of the learning curve to a twelve month period after several completions. (USCGC HAMILTON faces a nine to ten month delay created by unanticipated work required on the reduction gears) No more than two of the four East Coast cutters and three of the eight West Coast cutters will be involved in FRAM at one time because of operational requirements. The final cutters should be completed in 1990.

The Program Manager for the FRAM is the recently created Office of Acquisition (G-A) at Coast Guard Headquarters. The Naval Sea Systems Command (NAVSEA) is participating in the role of Ships' Logistic Manager (SLM). A Resident Inspector Office (RIO) was created at each shipyard. Somewhat analogous to a Navy Supervisor of Shipbuilding (SUPSHIP), each RIO is tasked with contract administration, design review, and quality assurance functions. A Logistic Support Group (LSG) and an Integrated Logistics Overhaul Group (ILO) at each FRAM site handle the offload and inventory of all Operating Space Items (OSI) and Store Room Items (SRI). They are also tasked with disposal of excess items, repair or replacement of unserviceable equipment and parts, and procurement of spares for new equipment. The OSI and SRI requirements will be determined jointly by the Navy and the Coast Guard and will be reflected in a comprehensive Combined Allowance for Logistic Maintenance Support (CALMS) update. Upon

completion of the FRAM, each cutter will be backloaded with the supplies and spares staged in storeroom mock-ups at the LSG/ILO warehouse facility.

ENGINEERING ASPECTS:

A major part of the FRAM Program is the complete overhaul of the Main Propulsion systems. Both Main Diesel Engines (MDE), both Main Gas Turbines (MGT) and both Reduction Gears (CGC HAMILTON only) will be removed from the cutters and returned to the manufacturers (Or selected subcontractors for the MGTs) where they will be disassembled, fitted with any unaccomplished improvements, and completely rebuilt to like-new condition. The Emergency Gas Turbine (EGT) generators will also be either overhauled or replaced with standardized equipment. A modern, standardized console will replace the existing Main Propulsion Console. New Ships Service Boilers will be installed in CGC HAMILTON, as will two new Ships Service Generators, each rated at 550KW.

Auxiliary systems will also be either overhauled or replaced. Included are all pumps, compressors (Except High Pressure air) and valves, as well as much of the existing Machine Shop equipment. The Heating, Ventilation and Air Conditioning (HVAC) system will be completely re-designed, and any existing components will be overhauled prior to re-installation. Fire-fighting capability will be improved by enlarging the scope of the Aqueous Fire-fighting Foam (AFFF) system, and installing

HALON systems in several machinery spaces. A PROBE system will be installed to simplify Fueling At Sea (FAS) evolutions.

In addition to the usual replacement of wasted plating and structural members, considerable structural alterations will be accomplished. Conversion of the existing Flume tank to an Engineering supply storeroom with a modular storage system will take full advantage of the available space. Numerous fuel tank and piping system alterations will be accomplished as will renewal of the coating system of all tanks. The Command, Control and Communications (C3) spaces will be relocated from the 01 and 02 levels to the Third Deck. Relocation, redesign and renovation of berthing spaces will be conducted in conjunction with the C3 space relocation. Alterations to the superstructure include the installation of a retractable hangar, conversion of the Mainmast to a tripod design, as well as construction of an extension of the forward deckhouse and a Radar room atop the Pilothouse. A complete Trim and Stability study will reflect changes created by the installation of new equipment and the structural alterations.

COMBAT SYSTEMS UPGRADE:

Upgrading of the Combat Systems and other electronic capabilities of the 378' WHEC is a major aspect of the FRAM program. Table I provides a comparison of the existing and post-FRAM major Combat Systems. The AN/SPS-40B Air Search radar will replace the outmoded AN/SPS-29D, and will provide a much improved capability to detect and monitor air contacts. The MK-92 Mod 1

Fire Control System (FCS) will replace the outmoded MK-56 Gunfire Control System (GFCS), providing a quantum leap in the cutters' ability to track and engage both surface and air threats. This system will also provide a more accurate Naval Gunfire Support (NGFS) capability. A new space will be constructed on the 04 level (Atop the pilothouse) to accommodate the MK-69 Transmitter/receiver. The addition of the Raytheon Collision Avoidance System (RAYCAS) to the AN/SPS-64V surface search radar will provide automatic tracking of surface contacts, enhance collision avoidance, and assist in computing vessel intercepts and stationing maneuvers. The capability of the AN/WLR-1C Electronics Surveillance Measures (ESM) suite will be enhanced with a Band 10 update and addition of the AN/SLA-10B. In addition, a MK-36 Mod 1 Super Rapid Blooming Offboard Chaff (SRBOC) launcher system will be installed to improve the Electronic Counter Measures (ECM) capability. The AN/SQS-38 SONAR will be retained, as will the MK 309 Mod 0 Underwater Battery Fire Control (UBFC) and the AN/SLQ-25 (NIXIE) torpedo countermeasure system. The addition of the AN/SQR-17A(V)1 Acoustic Signal Processor and a Sonobouy storage area will provide a significant passive SONAR detection capability. When employed in conjunction with an embarked Light Airborne Multi Purpose System (LAMPS I) helicopter the system will also provide a long range active capability when needed for targetting. The capabilities provided by all of these sensors will have an effect across the broad spectrum of Coast Guard mission areas, including Military Operations, Law Enforcement (LE) and Search and Rescue

(SAR). All that is needed to fully exploit these increased capabilities is the tactical application of innovative thought processes both in doctrine and at the user level.

In addition to improved sensor capability, The FRAM also provides for replacement of the aged MK-30 5"/38 caliber gun system with the MK-75 Mod 0 76mm gun system. The new gunmount will be located on the 01 level at the same location as its predecessor. The forward deckhouse will be extended to accommodate the foundation and house the control booth and loading space for the MK-75. The decrease in the size of the main battery will be more than offset by increases in the rate of fire, reliability and maintainability of the new system. Two 20 millimeter machine guns will be retained as secondary armament, with additional small arms firepower provided by 50 caliber and M-60 machine guns. The MK-32 Surface Vessel Torpedo Tube (SVTT) will be retained as the shipboard Anti-Submarine Warfare (ASW) launcher, with an upgrade from Mod 5 to Mod 7. A stand-off ASW capability will be added by fully integrating the LAMPS I system.

In order to meet the Navy certification requirements for the LAMPS I system, a major upgrade of helicopter interface capability will be accomplished. The cutters will be certified to land, service, arm and maintain the SH-2, enabling them to deploy with the Navy helicopter embarked. In addition, they will be certified to land and provide limited service for the H-1 and possibly the H-60B. Vertical Replenishment (VERTREP) capability will be certified for the above helicopters, as well as the H-3 and H-46. Navy certification for Helicopter In Flight Refueling

(HIFR) capability will include the above plus the H-53 and H53E variants. In addition to Navy certification, the cutters will remain capable of deploying with the Coast Guard's short range helicopters (HH-52A and HH65A) and will be capable of landing the HH-3F and its potential replacements. VERTREP and HIFR Capability will be provided for all Coast Guard helicopters. Interoperability with most, if not all, NATO shipboard helicopters should not be difficult to attain, being predominately a certification process (or waiver thereof).

Several changes are required in order to attain the certifications noted above. A retractable hangar will be installed on the Flight Deck to provide shelter for helicopter storage and maintenance requirements. The former Balloon Shelter will be incorporated into the hangar area and the after spaces on the 01 level are being reconfigured to accommodate a fairly sizeable Aviation Workshop. The Torpedo Magazine has been redesigned to increase the number of torpedos carried onboard, as well as to provide the capability of carrying both the MK-46 and MK-50 torpedo in air and ship launched configurations. A large sonobouy storage compartment will also be provided. Extensive Visual Landing Aids (VLA) will be installed. These will include a glide slope indicator, deck status lights, deck and hangar wash lights, sequentially flashed line-up lights, and wave-off lights. Controls for the VLA package will be located at the Helicopter Control Station (HCS) located on the bridge. An improved closed circuit television system will provide the capability to monitor all approach and flight deck operations from the HCS.

The communications capability of the 378 WHEC's, will also be upgraded. Installation of a satellite directional antenna system and a Naval Modular Automated Communications System (NAVMACS-A) will enhance the fleet broadcast reception capability and reduce handling requirements in the message processing center. A manual Single Audio System (M-SAS) will be installed in order to provide flexible voice communications. The PARKHILL and VINSON systems will be added to the existing NESTOR capability to provide a much wider range of secure voice capability. All existing transmitters and receivers will be overhauled or replaced with modern equipment.

Planning for the post-FRAM installation of additional systems has been incorporated into the FRAM design to a varying extent. A control room and magazine for the MK-15 Close In Weapon System (CIWS) will be provided in anticipation of the installation of this equipment (most likely on the fantail) beginning in 1988. Also scheduled for installation during this same period are two quadruple HARPOON surface to surface missile (SSM) launchers (canister type) which will be integrated with the MK-92 FCS. The Navy will provide twelve HP-9020 Desk Top Computers (DTC) beginning in 1988 to interface with LINK 14. These computers can perform a number of additional labor saving tasks if properly interfaced with other equipment in the Combat Information Center (CIC). Some type of helicopter recovery system is being planned for post-FRAM installation, but details are not yet readily available. Replacement of the 20mm machine guns with the M-242 25mm Chain Gun was also planned, but acceptance of this system by the Navy has been delayed.

PERSONNEL AND TRAINING REQUIREMENTS:

The installation of advanced electronic systems results in a concomitant^a increase in the number of personnel required to operate and maintain the systems. In addition, the complexity and volume of data to be assimilated in order to effectively employ the enhanced capabilities of the post-FRAM 378 WHEC requires a significant amount of training at all levels. In order to meet these requirements, several changes to the billet structure are being implemented. The Weapons Officer billet has been upgraded to a Lieutenant (O-3) and he (or she) will be trained as a second Tactical Action Officer (TAO). The duties of the Electronic Warfare Officer and the Intelligence Officer, formerly collateral duties for the Electronic Maintenance Officer (EMO) and Combat Information Center Officer (CICO), have been combined to create an additional Lieutenant (Junior Grade) billet. The Chief Petty Officer billets have not been changed significantly, but additional Petty Officer billets have been provided in some technical and operational rates (e.g. RD, ET, FT, GM, ST). Some Electronic Technicians will be trained to fill billets as Electronic Warfare Operators and several additional Radarmen will be provided to ensure that adequate personnel are available to operate at required levels of readiness.

The extensive training requirements for most of the officers and rated personnel were recognized long ago. In response to this need, a pipeline training program has been developed and

implemented. Early identification and selection of personnel to fill billets with long lead time training requirements is a key aspect of the program. This becomes very evident in view of the fact that some personnel are scheduled to spend over a year in various resident training programs prior to reporting aboard. Subsequent to the Precommissioning crews, the pipeline training program will become even more critical as replacement personnel will have to be fully trained prior to reporting aboard. The billet structure is not adequate to permit the loss of personnel to attend prolonged training commitments.

TACTICAL APPLICATIONS:

The Coast Guard has always been proud of its multi-mission capabilities. The 378' WHEC class has typically been a versatile platform which is easily adapted to meet the requirements of many of these missions, often performing many of them during a single deployment. Three of these missions; Search and Rescue, Law Enforcement, and Military Readiness have many complementary aspects. For example, experience in Law Enforcement barrier patrols and interdiction operations is closely related to similar Military Readiness requirements. The training which the Anti-Submarine Aircraft Controllers (ASAC) receive is quite valuable when a cutter is controlling multiple aircraft in a SAR case. The FRAM will provide equipment which will enhance the cutters' capabilities in all three of these mission areas.

Search and Rescue missions will benefit from the capability of the SPS-40B air search radar for control of search aircraft and location/vectoring of aircraft in distress. The upgrade of communications systems will enhance this vital aspect of the mission, while the flight deck upgrade and additional systems required for LAMPS I certification will improve the ship/helo interface capability in marginal weather conditions. The ability to operate with a number of different helicopters in addition to those in the Coast Guard inventory will provide considerable versatility for SAR missions (Including Combat SAR).

Law Enforcement missions can be conducted more covertly by applying the capabilities provided by the SQR-17A(V)1 Acoustic Signal Processor. A Sonobouy pattern can be positioned by using an embarked SH2, a Coast Guard helicopter, or even by the cutter itself. When employed in conjunction with the AN/WLR-1C, The cutter can monitor the progress and possibly even identify vessels transiting an area of interest or a choke point while remaining totally passive to avoid detection. Simultaneously, an ASW presence can be maintained, and valuable experience in the employment of these systems provided to the operators. With imagination and sound tactical application of the new systems, there are numerous additional methods that can be employed to improve existing procedures.

For Military Operations, the FRAM will provide a highly versatile platform, and the installation of HARPOON SSM's and the MK-15 CIWS shortly after the FRAM will enhance the capabilities of the cutters even further. The addition of LAMPS I and HARPOON

make the 378' WHEC a viable unit for SAU/SAG roles, especially when teamed with an Anti-Air Warfare (AAW) capable platform. The SQS-38 Sonar and LAMPS I provide an excellent capability as an inner screen pouncer in a battle group, as a convoy escort, and for ASW missions in relatively shallow waters such as an Amphibious Operation Area (AOA). Choke point and quarantine operations are second nature for Coast Guard units, as the Law Enforcement Mission employs essentially the same procedures. Whenever feasible, a LAMPS detachment should deploy with the FRAM 378 WHEC's in order to provide joint familiarization and training. The SH2 can perform all the roles of an embarked Coast Guard helicopter while also providing an increased military presence. The MK-75 Gun system, MK-92 FCS, and MK-36 SRBOC provide a reasonable self-defense capability in the event the cutter is tasked in a stand alone role (which is standard for most Coast Guard operations). The post-FRAM addition of HARPOON and the MK-15 CIWS will significantly enhance this capability.

CONCLUSION:

Both the Coast Guard and the Navy will reap long term benefits from their capital investment in the 378' WHEC FRAM program. The overall capability of the cutters will be enhanced by the modernization of the Combat Systems suite and reliability will be improved as the overhaul and replacement of the Engineering plant is completed. The increased maintenance requirements for newly installed systems should be offset by a

few additional technicians and the decrease in preventive and corrective maintenance requirements of worn out or outdated existing systems. The Coast Guard will gain more versatile cutters with enhanced capabilities in all mission areas. For an investment approximately equal to the cost of one FFG class vessel, the Navy will have available twelve modernized ASW/ASUW capable platforms, fully operational with trained crews. The Coast Guard's long standing presence in the Caribbean and Bering Sea regions makes the FRAM 378' WHEC a platform which can be less volatile than a gray hull, yet very capable and effective for "showing the flag" in certain situations in these regions.

A less tangible, yet nonetheless significant benefit of the FRAM, is the experience which both services will gain as a result of their cooperative approach to the program. Each should derive a better understanding of the requirements and capabilities inherent to the missions of the other as a result of FRAM planning conferences and the countless meetings conducted to administer the program. The potential exists for increased cooperation and improved communication between the services as a result of the program. Additionally, the prospect of more frequent joint training and operations will be significantly enhanced and should be exploited in order to provide the taxpayers with the most return for their investment in the program.

TABLE 1
MAJOR COMBAT SYSTEMS COMPARISON

SYSTEM	EXISTING	POST-FRAM
Fire Control System	MK-56 GFCS	MK-92 FCS
Main Battery	MK-30 5"/38	MK-75 Mod 0 76mm
Air Search Radar	AN/SPS-29D	AN/SPS-40B
ESM	AN/WLR-1C	Same with Band 10
Hangar	None	Telescoping Hangar
ASW Weapon	MK-32 Mod 5 SVTT	MK-32 Mod 7 SVTT
Helicopter Capability	HH-52A, HH-65A	Same plus LAMPS I
SONAR	AN/SQS-38	AN/SQS-38
Acoustic Signal Processor	None	AN/SQR-17A(V)1
AAW Decoy	5"/38 Chaff	MK-36 Mod 1 SRBOC
Surface Radar	AN/SPS-64	AN/SPS-64 (RAYCAS)
Data Link	Link 14	Link 14 with HP-9020
Secure Voice	NESTOR	Add PARKHILL, VINSON
Underwater Fire Control	MK-309 Mod 0 UBFC	Same
Torpedo Countermeasure	AN/SLQ-25 (NIXIE)	Same



U.S. Department of
Transportation

News:

Office of the Assistant Secretary for Public Affairs
Washington, D.C. 20590

FOR RELEASE MONDAY
June 17, 1985

CG 08-85
Contact: Werner Siems
Tel.: (202) 426-2304

COAST GUARD CONTRACTS FOR SHIP MODERNIZATION

The U.S. Coast Guard today awarded two contracts totaling \$352,353,940 for rehabilitation and modernization of the Coast Guard's twelve 378-foot high endurance cutters. Work is scheduled to begin in October. These are the largest vessel rehabilitation and modernization contracts in the history of the Coast Guard.

The Coast Guard's eight cutters based on the West Coast will be renovated by Todd Pacific Shipyards Inc. at Seattle. The four cutters based on the East Coast will be renovated by Bath Iron works at Bath, Me. The project combines the ships' regular 15-year mid-life overhaul with modernization.

The work involves the removal and replacement of complex weapons systems, installation of new electronic systems, relocation of Combat Information Centers, and modifications to the design of the vessels. In order to maintain an industrial base to help support the country's maritime fleet in time of a national emergency, it was determined to require that the work be done both on the West Coast (8 vessels) and on the East Coast (4 vessels).

Fleet Rehabilitation and Modernization (FRAM) is normally performed after 15 years of service life, and, in this program, will permit the 378 foot cutters to operate effectively for the second half of their projected 30 year service life. This modernization will standardize existing ship systems throughout these ships, thereby reducing difficulties in training, reliability, and logistics support. The installation of new weapons and electronics systems will enhance the ability of the Coast Guard to perform assigned missions with the Navy in national emergencies as well as its ability to perform its missions of Enforcement of Laws and Treaties and Search and Rescue.

The contracts will require the first vessels on each coast to enter the shipyard in October 1985 and will require that the last vessels on the East and West Coasts be completed by March 1989 and March 1990 respectively.

-more-

The vessels have the following homeports:

<u>Ship</u>	<u>Homeport</u>
Chase Hamilton	Boston, Massachusetts
Dallas Gallaten	New York City, New York
Munro Jarvis	Honolulu, Hawaii
Boutwell Mellon	Seattle, Washington
Midgette Sherman Rush Morgenthau	Alameda, California

The awards are fixed price multi-year contracts covering four years for the East Coast effort and five years for the West Coast effort. The contracts provide for economic price adjustment for all years after the first year.

The Coast Guard directed the use of certain subcontractors, regardless of which prime contractor was awarded the contracts. These subcontractors are:

Sperry Marine Systems, Charlottesville, Virginia
Fairbanks Morse Engine Division, Beloit, Wisconsin
Envirovac, Rockford, Illinois
Solar Turbine, Dallas, Texas
Maritec, Belmont, Maine

The other major subcontractors, selected by the prime contractors, are as follows:

For Bath Iron works, Hopeman Brothers, Waynesboro, Va., and John J. McMullen, New York, NY.

For Todd Pacific Shipyards, Inc., Energy Maintenance Corp., Farmington, Conn., National Tank, Seattle, and Quality Diesel Engines, Inc., Seattle.

Competition for these contracts was keen. The following firms were considered for final selection:

East Coast Offerors

Avondale Shipyards, Inc. (Avondale), Jefferson Parish, Louisiana
Bath Iron Works (Bath), Bath, Maine
Norfolk Shipbuilding and Drydock Corporation, (Norfolk), Norfolk, Virginia
Pennsylvania Shipbuilding Company (Penn Ship), Chester, Pennsylvania

West Coast Offerors

Marine Power & Equipment Company (MPE), Seattle, Washington
National Steel & Shipbuilding Company (NASSCO), San Diego, California
Northwest Marine Ironworks (NWM), Portland, Oregon
Southwest Marine, Inc. (SWM), San Diego, California
Todd Pacific Shipyards, Inc. (Todd), Seattle, Washington

Combined Offerors (Both Coasts)

Avondale Shipyards Inc., Jefferson Parish, Louisiana
Southwest Marine, Inc. (ASI/SWM), San Diego, California

Tacoma Boatbuilding Company, Pierce, Washington
Boston Shipyard Corp. (TBD/BSC), Suffolk, Massachusetts

#

378' WHEC FRAM

Project Management Plan

1985-1990

378' WHEC FRAM PROJECT MANAGEMENT PLAN

LETTER OF PROMULGATION

1. Purpose. The purpose of this Project Management Plan (PMP) is to formalize and present the management strategy specifically applicable to the 378' WHEC FRAM. Chapter 16 of the Planning and Programming Manual (COMDTINST M16010.1A) and the 378' WHEC FRAM Project Manager's Charter require the Project Manager to plan and execute the project and provide the Project Manager with authority and the management "tools" to accomplish the project objectives. These include the latitude to cross program lines, a procedure for conflict resolution, the Project Manager's authority and responsibility for scheduling project tasks and monitoring their completion, and controls over the obligation of project funds. The most critical elements for timely project execution are free and open information flow, division level acceptance of FRAM activity responsibilities, a general willingness to air problems and conflicts as they arise, and a positive attitude toward achieving FRAM objectives. Project management must respond to a multitude of specialized issues that do not neatly fall into any one functional area of responsibility. Further, FRAM project requirements may at times conflict with the priorities of other programs. Execution of this PMP is heavily dependent on the expertise and resource levels within the functional support areas.

The Navy FRAM program guidance is contained in the jointly promulgated NAVSEASYS/SPAWARSYS/Coast Guard 378' HAMILTON Class FRAM Program Management Plan. The other complimentary documents are the FRAM Integrated Logistic Support Plan (under development), FRAM Offload and Outfitting Plan, and the SECAS/ILO for the FRAM Program (NAVSEA TL 760-AA-PRO-010)

2. Action.

a. Those functional managers responsible for planning and accomplishing FRAM activities shall take this Project Management Plan as both guidance and tasking in matters pertaining to the project. Status and financial reports must be regularly submitted in the normal course of business so as to permit accurate assessment of progress and to afford early corrective action to be taken when problems arise. In addition to regular reports, the Project Manager must be immediately informed whenever a situation arises which potentially impacts the project scope, schedule or budget.

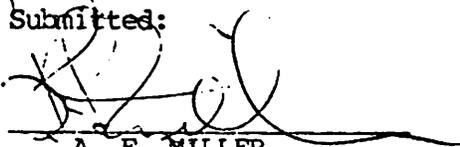
b. The FRAM Project Manager shall manage the FRAM project as outlined in this plan. The Project Manager shall act as necessary to identify and resolve all problems arising in the execution of this plan and, if unable to reach a workable resolution, shall immediately inform the Chief, Office of Acquisition. The FRAM Project Manager shall be the primary source of project information which shall be promulgated in periodic status reports, replies to official inquiries, briefings and other presentations. The Project Manager will maintain the FRAM financial plan, request project funds and monitor logistic support development.

c. This PMP reflects the status of the FRAM project as of 1 March 1986. The provisions and requirements of this PMP are effective immediately and shall be fully implemented within 60 days after the promulgation date.

3. Distribution.

Copy:	G-CSP	G-FAC	G-WPE	G-T	G-TPP	PACAREA (Po)
	G-CPA	G-E	G-FLP	G-OIS	G-W	CCGDTWELVE (o)
	G-CBU	G-ENE	G-LPL	G-OSR	G-WP	CCGDTHIRTEEN (o)
	G-CPE	G-ECV	G-MP	G-P	G-RE	CCGDFOURTEEN (o)
	G-B	G-EP	G-NP	G-P-1	G-RER	378'WHEC (12)
	G-F	G-OP	G-PTE	G-WER	G-FQA	RIO BATH
	G-D	G-FP	G-OLE	G-PO	G-N	RIO SEATTLE
	G-DMT	G-FCP	G-ODO	G-R	CCGDONE (o)	NAVSEA 91
	G-CMA	G-PE	G-NSR	G-EAE	CCGDTHREE (o)	NAVSEA 913
	G-K	G-OSR	SICP	E/GICP	LANTAREA (Ao)	NAVSEA 913-B3

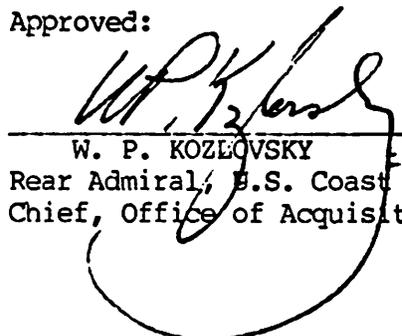
Submitted:



A. F. MILLER

Captain, U.S. Coast Guard
378' WHEC FRAM Project Manager

Approved:



W. P. KOZLOVSKY

Rear Admiral, U.S. Coast Guard
Chief, Office of Acquisition

378' WHEC FRAM
Project Management Plan

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Executive Summary

The FRAM project is a class renovation and modernization to standardize and replace aging equipments onboard the 378' WHEC's. The Project is essentially a mid-life maintenance availability additionally involving extensive aviation, command and control, and weapon system upgrades. The FRAM focuses attention on five key areas; mission performance, long standing space configuration problems, equipment obsolescence, class standardization, and service life extension. Secondary FRAM objectives include safety of shipboard evolutions, improved logistic support, habitability improvements, combat survivability, and ease of law enforcement operations.

The scope of the FRAM work is both extensive and complex. Nearly 75% of the shipboard electronics will be either changed out or modified. About one-third of the existing engineering systems (propulsion, electrical, auxiliary, etc.) will be overhauled or replaced. Major internal space reconfigurations are brought about by relocation of Radio Central and CIC from the 0-2 deck level down to the third deck. Lastly, sophisticated weapon systems will be installed allowing these cutters to fully meet their wartime projected operational requirements.

The FRAM is being accomplished at two commercial shipyards. A negotiated procurement process resulted in the award of firm fixed-price contracts with provisions for economic price adjustment. One contract was awarded in the East/Gulf Coast Zone for four ships, and one in the West Coast Zone for the remaining 8 ships. Procurement in both costal zones was necessary to ensure the maintenance of an adequate industrial base in the event of national emergency or mobilization. The initial pair of 378' cutters entered their respective shipyards in October 1985.

The FRAM schedule is keyed directly to the contract award date, 17 June 85. The duration of the FRAM shipyard phase ranges from 18 months for the first pair of cutters, down to 12 months with the benefits of the learning curve. A one month offload period will precede the shipyard phase and a one month backload period plus a four month ready for sea period (five months for HAMILTON and MELLON) is planned before each cutter is deemed "ready for operation." The last cutter is scheduled to depart the West Coast shipyard in March 1990. The FRAM extends over 5 program funding years (FY 1985-89) and contains a 3-2-3-3-1 program year (cutters commencing FRAM) sequence. This plan is consistent with our AC&I budget submissions and Capital Investment Plan projections.

The purpose of this Project Management Plan (PMP) is to identify the organizational elements within the Coast Guard which are responsible for accomplishing specific activities within scheduled timeframes; culminating with the return to the user districts of fully operational cutters with logistic support programs in place. The Navy FRAM Program Management Plan contains the Navy commitment and a description of the support provided the FRAM project.

Project Scope

The 378' WHEC FRAM is a class renovation and modernization to standardize and replace aging equipments. The project genesis dates to 1981 when the Coast Guard consolidated the results from the Cutter Suitability Evaluation Board (CSEB), the Mid-life Maintenance Availability (MMA) work lists, and the recommendations from NAVGARD Boards.

The project scope has changed considerably since its inception from a relatively straight forward engineering MMA, into a complex modernization involving weapons, command and control, and aviation system upgrades. The Sponsor's Requirement Document (SRD) lists the operational and military requirements, and sets the parameters for measuring trade-offs in executing this program. The Coast Guard's 378-Foot FRAM Specification dated October 1983 (as modified), sets forth the description of work to be accomplished on each cutter to meet the criteria of the SRD.

The FRAM focuses attention on five key areas; (1) mission capability to satisfy the sponsor's operational requirements, (2) correction of long standing problems related to reliability and maintainability of installed systems, (3) replacement of obsolete or unsupportable equipments, (4) equipment standardization among the four sub-classes, and (5) service life extension beyond the year 2000. Other benefits of the FRAM include greater command and control effectiveness, safety of operations, combat survivability, personnel habitability, and ease of law enforcement operations.

The scope of the FRAM work is extensive and complex; involving equipment replacements and additions, extensive rearrangement of spaces, and repair/redesign work. Nearly 75% of the electronics equipment will be either changed out or modified. The following generalized statements of work contain the major system renovations for the FRAM and represent about 90% of the shipyard production costs:

- Update and standardize main propulsion control consoles
- Overhaul main propulsion systems
- Replace turbine clutches with SSS clutches on the reduction gear
- Modify & repair reduction gear
- Replace evaporator (HAMILTON only)
- Overhaul & standardize EGT Generators
- Modify ship service generators and replace MG sets
- Upgrade firefighting systems (AFFF/Halon)
- Renovate berthing & messing areas
- Overhaul & redesign HVAC systems
- Upgrade flight deck (LAMPS I certification)
- Install helicopter hanger
- Replace AN/ARN-118 DME with AN/URN-25 TACAN
- Install MK27 auxiliary gyrocompass
- Relocate & reconfigure CIC & Radio Central
- Replace 5"/38 mount with MK75 76MM gun
- Replace MK56 FCS with MK92 FCS
- Install SRBOC decoy system
- Rearrange magazine handling spaces
- Replace AN/SPS 29 with AN/SPS 40 air search radar
- Install NAVMACS A+ message handling system

Install Fleet Satellite Communications Systems
Upgrade secure communication systems and UHF capability
Install Radar Collision Avoidance System,
Install LAMPS I electronic suite (CIC)
Modify & upgrade antenna systems
Upgrade ESM System
Conduct trim & stability studies
Install Probe Refueling System

Objectives

Project objectives are threefold and can be expressed in terms of time (schedule), cost (budget) and performance (scope). Specifically, these objectives are:

Schedule. Award Multi-year negotiated contracts to East & West coast shipyards during June 1985. The initial set of cutters entered their respective East & West Coast shipyards during October 1985. Duration of the FRAM shipyard work will range from 18 months for the first pair of cutters down to 12 months with the benefits of the shipyard learning curve. For each cutter, start of FRAM will commence with a one month offload period directly before the shipyard phase. A one month logistics materiel backload plus a three month post-availability ready for sea period are planned before the end of FRAM for each cutter. The FRAM project will terminate when the last cutter completes ready for sea activities. No shipyard retrofit period is planned post-FRAM.

Cost Targets. Program costs for shipyard production, contract modifications, government furnished equipment, project administration, logistic support activities and escalation on the contract should not exceed those AC&I funds provided by Congress for executing the FRAM. The project financial plan is shown in Appendix F of this Plan. Navy funding for weapon system installations shall be obligated during the year transferred.

Performance. Shipyard contractors shall meet description of work, FRAM specifications, supplies/services and delivery schedules, over the five program years, as specified in contract numbers DTCG23-85-C-32075 and 32076, as modified. Government furnished information (GFI) and government furnished equipment (GFE) will be provided in accordance with the contract specifications. Coast Guard Program and Support Managers shall specify the logistical support requirements to ensure that each cutter is properly re-commissioned; fully crewed with trained personnel; and adequately outfitted and provisioned for return to operational status four months after the shipyard phase.

Project Management Organization

Matrix Environment. The matrix organization is one in which management functions flow both vertically (traditional direction along functional organizational lines) and horizontally (planning, scheduling and integration along project lines). Appendix A depicts the modified matrix organization utilized for FRAM Project management.

A matrix organization offers economy and efficiency in the management of major system acquisitions. The Project Manager is responsible for overall planning while the functional staff members of the FRAM organization execute the project activities. All FRAM task leaders are responsible to both the Project Manager and their functional supervisor concurrently for information flow on conflict resolution, resource requirements, project issues, and status reporting. This "Two Bosses" situation requires the utmost in cooperation, commitment, and communication for the project to proceed effectively. The payoff is that the project can be accomplished with a minimum of personnel resources and organizational changes. The word "functional", when applied to Project Management, is a collective term referring to program, facility, and/or support elements in the matrix organization.

Project Manager Responsibility and Authority. The Project Manager is, by charter designation, the focal point of the matrix organization and accountable for the timely execution of the FRAM Project scope, within established schedule and budgetary constraints. Specifically, the Project Manager is held directly accountable for FRAM project planning including maintenance of this Project Management Plan, for scheduling the project activities, for identifying and resolving project conflicts arising between organizational elements, for integration of the logistic support planning, and maintenance of up-to-date project documentation files. Additionally, the Project Manager is responsible for maintaining the FRAM financial plan and preparing AC&I budgetary documents as required to fund the project. The Project Manager monitors and reports progress on the project. Management oversight is exercised by the Chief, Office of Acquisition.

The authority of the Project Manager must be, of necessity, consistent with his responsibility to produce corporate results on an operationally high priority project that is schedule sensitive and politically visible. Accordingly, he is authorized to task the functional elements (Program and Support Managers) toward completion of project objectives. The Project Manager has the authority to take all action necessary to ensure the acquisition is completed in accordance with approved project management plans, statements of work, schedules, and financial ceilings. The Project Manager shall have direct access to FRAM task leaders and all FRAM related information originated within the functional staffs. In addition to tasking and access, the Project Manager is also authorized to request and receive, in a timely manner, summaries of project information including progress reports, financial status, cost accounting and budgetary information.

The Project Manager has approval authority on all project procurement requests over \$100,000. The Project Manager also has intermediate approval authority on all changes in financial plans and will chair the ad hoc contract modification review panels. The Project Manager is the only individual authorized to change this Management Plan.

Responsibility of the FRAM Logistic Support Manager. The FRAM Logistic Support Manager functions in a matrix environment similar to the Project Manager. This key individual is responsible to the Project Manager for planning, coordination, and integration of the various support system elements. These primary duties include establishment of FRAM Offloading and Outfitting Plans, tracking of Navy GFE, management of the Integrated Logistic Overhaul (ILO) Program, and the development of an 378' WHEC Integrated Logistics Support Plan. The support elements to be integrated include maintenance and repair parts, maintenance (PMS), training, and operating/technical data. Special emphasis is placed on the interaction of such critical areas as provisioning, repair part and PMS analyses, inventory control, and configuration management. Integrated Logistics Support (ILS) concepts shall be incorporated wherever feasible. An organizational diagram depicting the relationship between staff elements responsible for logistic management is shown in Appendix A.

Responsibility of Functional Management. Technical guidance and direction for project task completion shall come from the designated, facility and support divisions. This is appropriate as the functional managers not only have the resident technical expertise, but have direct management control over their staff elements. Accordingly, Division Chiefs share in the responsibility of project activity completion and shall be accountable to the Project Manager to perform those assigned tasks within cost and schedule constraints allowed for the project.

Program and Support Managers should review the activities listed in Appendices B and C of this PMP and forward recommended changes or status updates to the Project Manager as they occur. As the technical experts in their functional fields, they have the responsibility to insure that all tasks required to accomplish this project which come under their functional area are accomplished, whether specifically listed in this Plan or not.

Tasks Leaders are designated by their Division Chiefs as key members of the project team and represent the interface between the functional staff and the project staff. They coordinate the accomplishment of assigned project work activity and communicate task performance and problem identification to both their Functional Manager and the Project Manager.

In addition to formally designating project task leaders, each Program and Support Manager shall also identify a suitable member of their division staff to function as their Integrated Logistic Support (ILS) coordinator. ILS coordinators shall be the focal point within each division for logistic support analysis and planning. Additionally, the ILS coordinators shall be members of the Integrated Logistics Support Management Team and shall be responsible to the FRAM Logistic Support Manager for their program's input into the 378' WHEC Integrated Logistic Support Plan (ILSP).

The duties and responsibilities of the Commanding Officer, Resident Inspector Office (RIO) at each FRAM shipyard were established by the Chief, Office of Engineering. These responsibilities are technical review, quality assurance, contract administration, and materiel logistic support. In addition to the RIO monthly status report, close, continuous communications regarding both progress and problems will be maintained between RIO, G-ENE, the Project Manager, and the FRAM Logistic Support Manager.

Contract Execution. In light of the FRAM objective to achieve the highest degree of standardization feasible, close coordination of design detail, where possible, is needed. This is especially challenging since FRAM shipyard work will be accomplished by two independent contractors under administration of separate RIOs.

The Chief, Office of Acquisition will control contract modifications which are estimated to result in a cost increase greater than \$100,000 per ship; or which result in a change to basic design characteristics or operational capabilities; or which require an extension of a cutter delivery date. The Project Manager will chair an ad hoc panel to review proposed modifications and make recommendations to G-A. The review criteria shall be operational requirements, cost and schedule impacts, logistic support requirements, engineering/technical feasibility and contractor claim potential. The Project Manager will forward all approved contract modification proposals to G-ENE for transmittal to the RIO for implementation.

Conflict Resolution. Organizational conflicts are an inherent part of the matrix environment and pose real leadership challenges to all project management principals. Project conflicts can, and must be resolved through effective communications and coordination. Conflicts which arise between demands of this project, and those imposed by other functional responsibilities, should be resolved as low as possible within the organization. The Chief, Office of Acquisition will be the arbitrator of all conflicts involving the FRAM Project.

Acquisition Strategy

In accordance with the departmentally approved Selection Plan, the method of procurement was competitive negotiations. The resulting contracts are multi-year firm fixed-price contracts, with economic price adjustment. Each program year includes a contract line item for labor (12,000 hrs) and material for open and inspect repair work which could not be specified at time of award. The solicitation was structured to allow for a joint award for all 12 cutters, or two contract awards; one for the East Coast (four cutters) and one contract for the West Coast (eight cutters).

The work on these vessels is being performed on both East and West coasts, in order to maintain an adequate industrial base with which to support these cutters after FRAM in the event of national emergency or mobilization.

The FRAM Engineering Specifications were published to commercial shipyards under Solicitation No. DTCG23-84-R-31014. Shipyard contracts, DTCG23-85-C-32075 and 32076 were awarded on 17 June 1985. Navy logistics support for the FRAM, including installation and testing of U.S. Navy furnished equipment, is reflected in NAVSEA instruction 4700.13 (378 FRAM Program Management Plan) promulgated in November 1984. The Navy sponsored Ship Equipment Configuration Accounting System (SECAS), and Integrated Logistics Overhaul (ILO), for the FRAM Program has been developed and implemented. The Integrated Logistic Support Plan (ILSP) is under development.

Planning and Scheduling Systems

The FRAM Project Manager is responsible for planning and scheduling the project. Planning involves the identification of activities needed to complete the project, the determination responsibility for completing the activities, the specification of a time frame for completion of each activity, and the estimation of the resources (funds, people, facilities, etc.) needed to complete each activity. The Responsibility Chart (Appendix B) reflects the identified FRAM activities and the Division or other element responsible for planning and completing each activity. Appendix C describes the FRAM activities.

FRAM Work Breakdown Structure. Critical Path Methods (CPM) will be used to assist in planning and scheduling project activities. A project work breakdown structure (WBS) is a traditional tool of project management to assist in CPM development. The WBS allows many of the activities of a large project to be broken down into manageable work segments to assist in planning and controlling the project. The principle advantage of a WBS is that it provides specific information to those responsible for actually completing the project work. Thus, functional managers can anticipate work requirements in advance.

The FRAM WBS results from an analysis of the project to identify work components (tasks or activities). For each activity in the WBS the following information must be identified:

Organizational Element--The designation of responsibility for the completion of an activity or task.

Task Description--The task is specified in terms of the activity objective or completed work product, where possible. In some cases the task will repeat for several or all of the 378 WHECs.

The WBS identification system uniquely specifies each FRAM task and activity. For example,

FR13-OLE(715)

FR--Designates FRAM project work.

13--Task 13 (issue decommissioning OFCO).

OLE--Identifies G-OLE as the Division responsible for completing the work to issue the decommissioning OFCO.

(715)--Specifies that the task applies to a particular cutter, in this case, the preparation of the decommissioning OFCO for HAMILTON.

CPM Scheduling. Most FRAM tasks are dependent on the completion of other project tasks and this dependency is used as a basis for scheduling tasks that

impact on one another. The estimated time to complete each task (in days) along with the task interdependencies are input into a computerized CPM scheduling program. The resultant schedule indicates start and finish dates for each task, calculates the slack, or float, and identifies the FRAM Project critical path tasks. (The critical path tasks being those tasks whose duration directly effects the duration of the the entire project.)

The Project Manager will use the task planning estimates of the task leaders and Division Chiefs to construct a CPM schedule of all FRAM tasks. This schedule will show the tasks on the critical path and will indicate the slack available for those tasks not on the critical path. This information will be made available to all persons interested. CPM graphic representations will be periodically distributed.

Task Management. The fact that the FRAM project is centrally managed by the FRAM Project Manager is not intended to conflict with existing Coast Guard functional and organizational authority. Each FRAM activity will be managed by the Division Chief organizationally responsible. Central FRAM management, i.e., management of the FRAM project as a whole, will be based on the activity management information provided by the Division Chiefs. The planning process will be built on initial time estimates for each task and its immediate predecessor tasks. The required information can most easily be provided in the format shown in Appendix G for task planning (which may be hand written.) The Project staff will supply copies of the report format, or it may be duplicated from Appendix F.

The Division Chiefs will assign a FRAM task leader to each task. The FRAM task leaders will be responsible to their Division Chiefs for the completion of assigned tasks. The task leader is responsible for keeping the FRAM Project Manager informed regarding the status of FRAM tasks as outlined in the Reporting Section of this Plan.

Resource Management. The resources devoted to the FRAM project are personnel both AC&I and OE billets), FRAM AC&I funds, and capital assets such as computer and word processing equipment. Personnel and capital assets will be managed by the responsible Division Chiefs. When conflicts arise in personnel or asset management which may affect the completion of FRAM tasks as scheduled, the Project Manager will be informed.

Scheduling Techniques and Displays. The FRAM Project Manager will maintain the FRAM WBS task computerized data base. The data base will be updated monthly with the information reported by the FRAM task leaders in accordance with the Project Monitoring, Control and Reporting Section of this Plan.

The Critical Path Method (CPM) will be used to construct a current FRAM schedule from the project data base. Each FRAM schedule will show which of the ongoing and future tasks are on the project critical path. The variances between planned and current progress will be produced. The Project Manager will provide, as resources permit, FRAM CPM information, graphs, or printed schedules to persons concerned with the project.

Monitoring, Control and Reporting

The essential definitions of responsibility within the FRAM Project are that the Project Manager is responsible for the integration of FRAM Project activities into a unified effort while Division Chiefs are responsible for the completion of individual FRAM tasks. The task leader has a dual responsibility as reflected in the FRAM Project Organization Diagram: both the Division Chief and the Project Manager must be kept informed of the status of each FRAM task.

Reporting. Project monitoring, control and reporting will be accomplished by information flow which reflects the scope and schedule status of FRAM activities, and cumulatively, the FRAM Project as a whole. Three questions need periodic answering:

- a) To what degree has the scope of a task been completed?
- b) How does actual progress towards completion of a task compare to the planned progress for the period?
- c) Has the forecast scope, schedule completion date, or cost of a task changed since the last report?

FRAM periodic reporting will be on a monthly basis. Task leaders will prepare the status reports which will be routed through the responsible Division Chiefs (with a copy to the Office Chief) to the Project Manager before the last working day of the month. The critical element of the status reports is the information conveyed, not the format. These are to be working level reports.

In addition to periodic project status reports, a report (oral or written) must be made to the FRAM Project Manager immediately when any action occurs which may impact the scope, schedule or cost of any FRAM task.

Critical Path Determinations. The FRAM Project Schedule will show those tasks initially on the project critical path. Critical path tasks are those whose duration directly impacts on the duration of the FRAM Project. As the Project continues, actual progress may cause previously non-critical tasks to become critical. Tasks Leaders and Division Chiefs will be immediately notified by the Project Manager when the critical path status of any FRAM task changes.

Project Team Feedback and Notification. The FRAM project status documents are the monthly status reports, written notifications of scope, schedule, or cost estimate changes and various computer generated charts and graphs reflecting FRAM project status. Copies of FRAM status documents shall be routed to those involved in the FRAM Project.

Logistic Support Requirements

The objective of FRAM logistic support is to ensure that each cutter is returned to operational status fully supported. The overall program goal is to seek the highest system effectiveness at the minimum life cycle cost. Logistic support involves manning levels, pipeline training, sparring, technical manuals, operational instructions, tools and test equipment, PMS analysis, repair parts analysis, and configuration management (APL's) as well as outfitting and provisioning. Other FRAM support categories are precommissioning activities, including crew training, remanning of the cutters, and establishment of OE financial support.

Integrated Logistic support for systems in general can be described in terms of ten elements:

- Maintenance planning
- Manpower and personnel
- Supply support
- Support Equipment
- Technical data
- Training and training support
- Computer resources support
- Facilities
- Packaging, handling, storage and transportation
- Design interface

In execution, each element is addressed by planning and analysis to develop the specific requirements and implement logistic support. Integration is achieved by recognizing and accommodating the impact of each element upon other support elements in the system and more broadly within the Coast Guard.

The most effective integrated logistic support is obtained by full consideration of the support elements throughout the design and implementation of a system. This is not possible during FRAM because the system design was largely fixed. However, as a matter of policy, integrated logistic support will be provided to the extent practical with the objective of realizing as many logistic support benefits as possible.

Planning. Logistic support planning is needed to fully accomplish the FRAM objectives. The Integrated Logistic Support Plan (ILSP) will identify specific support requirements and the activities needed to satisfy these requirements with respect to the overall FRAM schedule. FRAM Logistic support planning will be accomplished by the ILS coordinators through the various program and Support Managers. The Logistic Support Manager will oversee the development the ILSP.

In all cases, planning will address budgetary matters and identify funding requirements and sources. The Project Manager will ensure that the FRAM Financial Plan contains planned AC&I obligations for FRAM support.

The following planning efforts are required:

- 1) Preparation of a 378' WHEC Post-FRAM Integrated Logistic Support Plan (ILSP) to include:

- a) Cutter description and operating profile
 - b) Maintenance Philosophy and Planning Concepts
 - c) Organizational, Intermediate, and Depot Level Maintenance
 - d) Spare and repair parts analysis
 - e) Training Philosophy.
- 2) Determination of manning requirements.
- 3) Precommissioning Plan to include schedule of phased activities, pipeline training requirements, and other crew training support.
- 4) Planning of FRAM materiel logistic support activities for engineering, hull, electrical, medical, ordnance, aviation, and electronics to provide, upon return to operational status;
- a) Authorized on board equipment configurations
 - b) Spare and repair parts
 - c) Spare parts allowance lists
 - d) Technical manuals and operating instructions
 - e) Tools and Test equipment
 - f) Requisition information for all items ordered, but not received.
- 5) Planning as required to furnish:
- a) COMTAC library
 - b) Classified Material
 - c) Applicable publications, instructions, and directives
 - d) Current damage control information
 - f) Engineering drawings and ship information booklets
- 6) Planning as required to furnish the initial outfit.
- 7) Planning as required to issue OFCOs for decommissioning and recommissioning cutters.

Execution: Support tasks identified during planning will be included in the FRAM Work Breakdown Structure (WBS) and will be scheduled along with other FRAM tasks. Support activities that are not appropriate for inclusion in the WBS will also be tracked by the Project Manager. Changes in support plans will be noted by Division Chiefs in their monthly reports. If it becomes apparent that a support activity or task will not be accomplished on time or will impact on other FRAM tasks in an unplanned manner, the details will immediately be reported to the Project Manager.

Financial Planning

The objectives of FRAM financial management are to ensure that; adequate financial resources are obtained for the project, and obligated on time, carryover is minimized, funds are obligated as authorized, an audit trail and historical record are maintained, and higher level reporting requirements are satisfied. Financial planning begins with bottom up estimation. Approval and authorization are top down. Budget execution is at the lowest level and adequate reporting is provided.

Planning and Reporting. The Project Manager will maintain the FRAM financial plan and obligation plan. The financial plan reflects the estimated program costs for each fiscal year as well as the anticipated funding authorizations. The obligation plan contains the planned obligation estimates for the current and following three quarters and is a consolidation of the obligation levels approved for each fund administrator.

The FRAM project scope includes the following cost categories:

Prime Contracts

- Prime contract obligations
- Approved modifications to prime contracts
- Economic price adjustments

Supporting Costs

- Government furnished equipment/Government furnished information

Related Costs

- Contract Administration
- Outfit and spares
- Material logistic support costs
- Personnel logistic support costs
- Other costs

Each fund administrator will provide a quarterly fund status report at the close of each quarter. This report will contain the total obligated during the quarter, the quarter ending account balance, an obligation plan for the next four quarters and the estimated funding requirements, by fiscal year, to complete the project. Obligations will be related to the above cost categories. Sufficient detail will be included to allow the Project Manager to understand how the planned expenditures will support the project. Reports will be submitted to ensure that the Project Manager receives the quarter closing report no later than the fifth working day of the next fiscal quarter. The Project Manager may require amplifying information or reassessment of financial needs as each budget proceeds through successive Coast Guard budget stages.

When Congressional appropriation and authorization of AC&I funds are completed for a budget year, the Project Manager will chair a FRAM budget meeting with

all fund administrators requesting funds for that year. The project budget, financial plan, obligation plan will be presented and reviewed. Project funds will then be distributed.

Appropriated AC&I FRAM project funds will be received by G-APA-2 and distributed to fund administrators as directed by the Project Manager.

FRAM 378' WHEC Capabilities and Modifications

Capability Summary. The Post-FRAM performance will be: 180 Alpha days per year, 45 day self-sustained endurance and a 16,900 nautical mile range. The ships will be air capable with the H-3, H-52, SH-2, and H-65 helicopters. Ships will be equipped for a LAMPS 1, Level 1, Class 1 navy flight deck certification including a telescoping hangar (for SH-2 and H-65) and limited aviation workshop areas. The tie down systems areas will be modified to accept this diversity of aircraft. After FRAM the ships may have permanent ballast and will displace more than the pre-FRAM ship. The communication suite will be capable of communications guard for an escort vessel in a naval task group, including secure communications.

The RHIB with single point davit is a current shipalt and will be retained. The MK 75/76 mm gun will replace the 5"/38 and the MK 92 Gunfire Control System will replace the MK 56 Gunfire Control System. A Super Rapid Blooming Overboard Chafe (SRBOC) system with mounts and ammunition will be installed.

The AN/SPS 40B Air Search Radar will replace the AN/SPS-29 radar. NAVMACS A+ system will be installed in conjunction with the satellite receiving system. This will also permit an upgrade to use of the DAMA (Demand Assigned Multiple Access) equipment when it becomes available from the Navy. Minor preparations will be made for follow-on installation of CIWS (Close in Weapon System).

The following systems do not have capability enhancement of significant scope but will be retained as current capabilities:

Communications, boat handling, towing, RAS/FAS, messing, laundry, magazine sprinkler system, armory, small arms, cargo handling and stowage, undersea weapons, fresh water production and storage, recreation equipment, maneuvering, consumable storage, classified materiel security, medical, NBC defense assets.

Significant Modifications:

Personnel. The main deck officer berthing will be modified due to superstructure modifications. The modified spaces will receive new furnishings. A two-person officer stateroom will be located on the 02 deck.

The CPO berthing and mess/lounge will be configured for two two-person staterooms and three four-person staterooms. There will be a private head for each stateroom including a shower, water closet and sink. These staterooms will be above the CPO mess/lounge on the 01 deck. The lounge will include changes in access.

Crew berthing will be located on the second deck. It will include one four-person, one six-person, six fourteen-person, two sixteen-person, and one twenty-person compartments. There will be a private head including showers, sinks, and water closets for each compartment.

The visitor berthing on the 02 deck will consist of two, four and six-person berthing areas.

The Wardroom will not be effected except for the sheathing and decking modifications.

All maronite paneling will be removed. Paneling will be restored in personnel living spaces with a NOMEX based panel. Other spaces will receive no paneling or will be divided by sheet metal or expanded metal.

The Heating, Ventilation and Air conditioning (HVAC) systems will be cleaned, repaired, and updated for the new configuration.

Equipment in the galley, CPO mess, officer's pantry, CO's pantry and messdeck will be replaced with new equipment.

Damage Control. Fire fighting systems, AFFF and Halon, will be renewed or added respectively. A new central AFFF station will be installed. Halon 1301 flooding systems will be placed in the paint storage room, flammable stores, engine room, gas turbine enclosures and the steering gear room.

The galley hoods will have a "Wet Chemical Solution Extinguishing System" installed as stand alone systems.

A new emergency eductor system will be installed in the engine room.

Command and Control. Radar related systems will be significantly upgraded. The AN/ARN-118 DME will be replaced with the with the AN/URN-25 TACAN. This will provide range and bearing data to aircraft from the TACAN unit rather than range alone. The AN/SPS 40B air search radar will replace the AN/SPS 29. This new radar uses modern digital technology. A Radar Collision Avoidance System will be installed. RAYCAS V ARPA stands will replace the 16 inch radar displays on the bridge and in CIC. The 12" CRT on the bridge will remain. Surface summary plot capability will be added in CIC that ties coastal charts to radar images and records this data in real time while underway.

Communication systems will receive several improvements. The general emphasis is to make the communications system more flexible, secure and distributed. NAVMACS A+ message handling system will be installed. This is a computerized automated message handling system. It is designed to filter the fleet satellite transmitted messages for those that are addressed to the ship. The Fleet Satellite Communications System is necessary for current Navy operations and is a prerequisite system to DAMA. The secure communication systems will be improved to accommodate current Navy secure voice equipment and Parkhill systems. The AN/URT-23s are being replaced by GSB 900's. The Model 28 teletype will be replaced by the Model 40. The number of operator positions will be reduced from 6 to 4.

The new LAMPS I capabilities require systems to coordinate with LAMPS electronics and the aircraft. This equipment will be installed in CIC.

The current ESM system capabilities will be upgraded to accommodate a band 10 in the WLR-1. The medium frequency and low band high frequency direction finding capabilities will be retained. There will be an added ELT C3 based data system.

The phone system will have completely new wiring installed, but no replacement for the Pulse 120 central unit is planned for FRAM.

The electromagnetic pit sword will be replaced with a doppler speed log system.

Other minor enhancements will be incorporated.

Weapon Systems. The 5"/38 mount and MK 56 fire control system will be replaced with the MK75 76MM gun and MK 92 fire control system. This modification includes the addition of the necessary interfaces, ammo handling spaces, and superstructure support. This weapon is intended to give the 378 a modern anti-air capability. The Super Rapid Blooming Chafe (SRBOC) decoy system will be installed. This system is designed for distraction of enemy offensive weapon systems.

Engineering. The main propulsion systems will be overhauled to provide renewed propulsion systems. This includes the main gas turbines, free turbines, main diesel engines, and reduction gears with their related equipment. Solid state fuel controls will replace the main gas turbine hydro-mechanical fuel controls. All ships will have HERO class type SSS clutches. This requires a change in the turbine brake assembly for the secretary class and the Hamilton. All main propulsion control consoles will be updated and standardized to the HERO class type.

The evaporator will be replaced on Hamilton only.

The emergency gas turbine generator on Hulls 715-718 will be replaced with a solar gas turbine generator. On Hulls 719-726 the existing solar gas turbine will be overhauled.

The probe refueling system, currently in use by the Navy, will be installed for underway refueling.

The deck plates in machinery spaces will be replaced with stainless steel deck plates and all of the machinery space ladders will be steel. Weather deck ladders will remain aluminum but will be renewed.

Heating, ventilation, and air conditioning systems, as well as the reefer systems, will be renewed.

The tank level indicating systems will be replaced by a magnetic sensor floating type.

Trim & stability studies will be completed. A post FRAM inclining experiment will be conducted and analyzed to determine the damage control characteristics of the class.

Aviation. The flight deck will be altered to comply with navy requirements for LAMPS 1 (Light Airborne Multipurpose System), Level 1, class 1 certification. The flight deck will continue to support Coast Guard helicopters. There will be a telescoping hangar and LAMPS instrument landing equipment as part of the above changes. Level 1, class 1 includes day, night and instrument only landings, vertical replenishment and in-flight refueling capabilities.

Structural. CIC, radio central & ET shop will be relocate and reconfigured. This involves moving these spaces to the third deck and configuring them for adequate security and efficient use. See the Personnel discussion above for a description of the utilization of the space previously occupied by these areas.

The magazine handling spaces will be altered to accommodate 76mm ammunition, improved torpedo handling (including LAMPS helo rearming), and Close in Weapons System (CIWS) ammunition. Internal control rooms for the new weapons will be added.

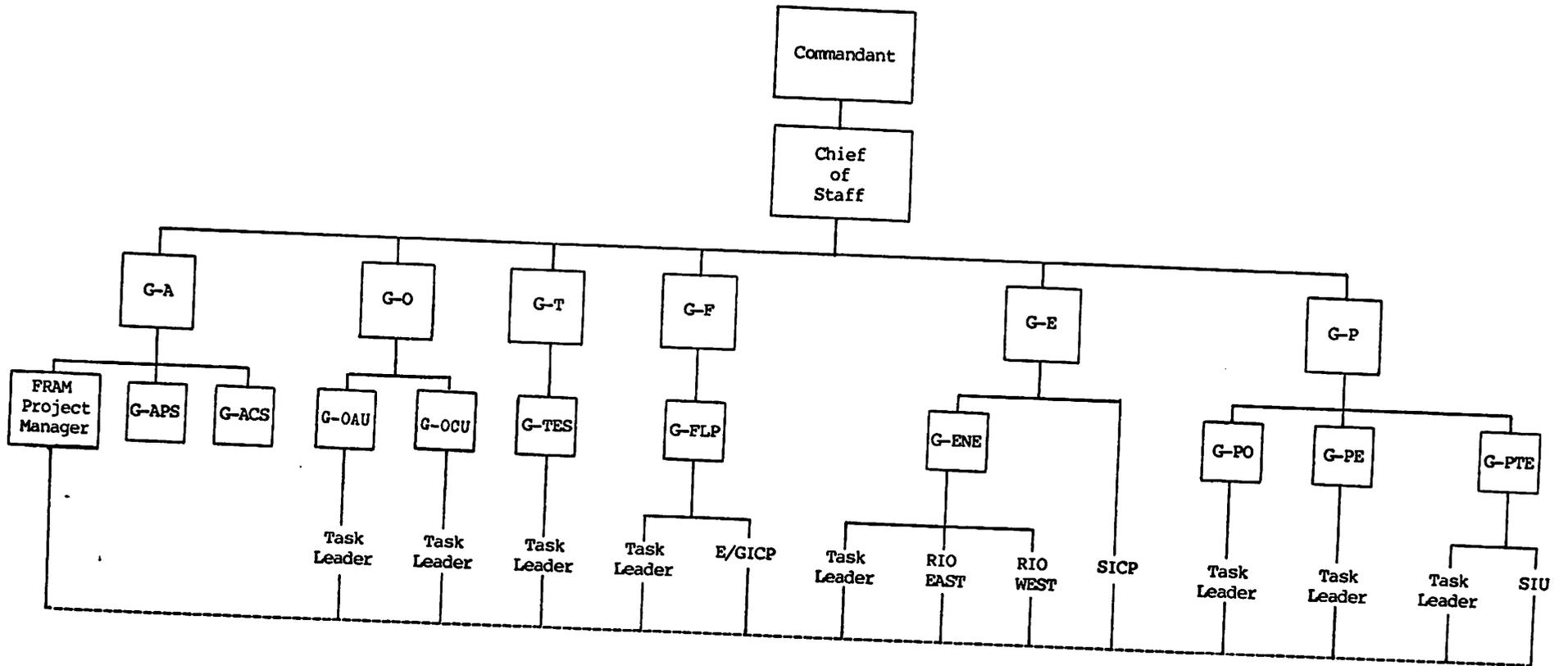
The forward cargo hatch will be moved to the O1 deck aft of the 76 mm mount. It will be placed on top of the new forward superstructure with a cargo trunk to the existing hold.

Engineering stores will be located in the modified flume tank and the existing engineers's store room.

Modifications Not Part of FRAM. For clarification, the following systems or equipment will not be installed during FRAM:

- a) Harpoon Missile
- b) TACTAS (Towed array Sonar)
- c) CIWS (Close in Weapons System); however minor preparations will be completed including control room and magazine additions.
- d) SLQ-32 (Advanced Electronic Surveillance System)
- e) Evaporators will not be renewed with the exception of the Hamilton
- f) DAMA (Demand Assigned Multiple Access) equipment is planned to be added to 378 WHECs as it becomes available from the Navy after FRAM. This system will permit prioritized communications access to fleet communications systems. No preparations other than space and weight provisions for DAMA will be part of FRAM. Only preparations to accept the system will be part of FRAM.

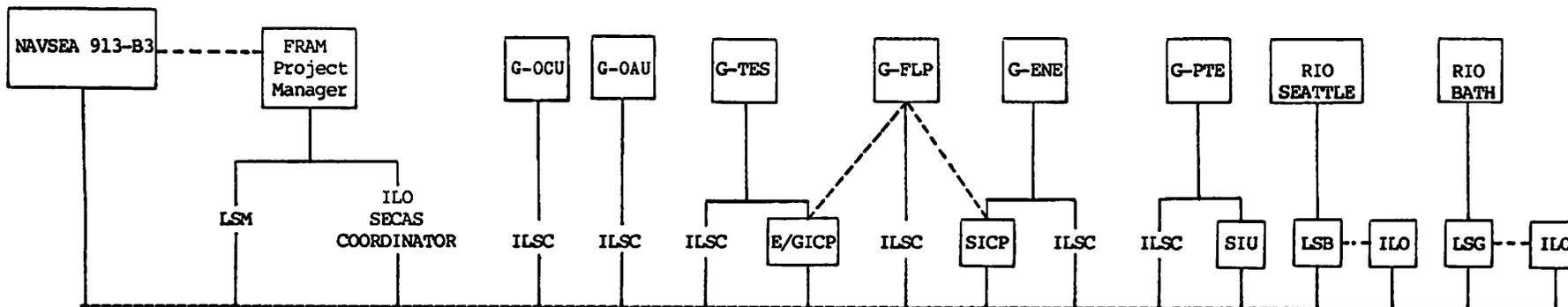
FRAM PROJECT ORGANIZATION



A-1

Note: G-OLE/G-ODO will remain with these facility responsibilities until G-OCU (Cutter Division) is organizationally effective (anticipates June 1986).

FRAM PROJECT LOGISTIC ORGANIZATION



LSM Logistic Support Manager
 ILSC Integrated Logistic Support Coordinator
 LSG Logistic Support Group
 LSB Logistic Support Branch
 ILO Integrated Logistic Overhaul Team

FRAM Responsibility Chart

Organizational Elements

Task/Activity Description	(APW)	(APS)	(Navy)							Target	
	PM	LSM	OCU	TES	ACP	ENE	RIO	ILO	PTB	Other	Date
Maintain PMP	R	A	A	A		A					
Maintain FRAM financial Plan	R	A				A				A-CPA	
Submit Status Reports		R	R	R		R	R		R		Monthly
Maintain CPM Database/Network	R	A	A	A		A					Monthly
Present Project Status Reviews	R										Monthly
Administer Project AC&I Funds	R									A-Ep/APA	
Schedule Ship Entry for FRAM	A									R-AREA	
Update Sponsors' RQMT Document			R								
Establish Post-FRAM Manning Level		A	R	A		A				A-CPA	25/EOF
Prepare Home Port Recommendations			A							R-OP	25/EOF
Prepare OFCOs		A	R							A-CPA	20/SOP, 20/ACC
Submit AC&I RCPs		A		A		A				R-APA	JAN 86
Submit OE RCPs (PRECON Activities)			R							A-PTE	MAR 86/NOV 86
Submit OE RCPs (Follow-on Support)		A	R							A-PTE	NOV 86

Task/Activity Description	(AFM)	(APS)	(Navy)								Target
	PM	LSM	OCU	TES	ACP	ENE	RIO	ILO	PTE	Other	Date
Designate ILS Coordinators			R	R		R			R	R-PLP	
Maintain Offload & Outfitting Plan		R					A	A		A-SICP	
Generate Baseline CALMS		A				A				R-SICP	SOP
Generate Baseline ERPAL		A		A						R-EICP	SOP
Coordinate Post-FRAM outfit Lists		R	A			A				A-ICP's/PLP	50/EOF
Prepare Elex Test Equip Allowance		A		R						A-EICP/SPAWAR	50/EOF
Deliver Post-FRAM CALMS		A				A		A		R-SICP/A-SPCC	ACC/16
Deliver Post-FRAM ERPAL		A		A				A		R-EICP/A-SPCC	ACC/16
Establish Configuration MGMT Policy		A		A		A				R-APS	OCT 86
Develop Integrated Logistic Support Plan		R	A	A		A			A	A-PLP/NAVSEA (SLM)	NOV 86
Concept of Operations/Op. Profile			R								MAY 86
Prepare Maintenance Philosophy (HM&E)		A		A		R				A-ICPs	JUL 86
Prepare Maintenance Philosophy (Elex)		A		R							JUL 86
Prepare Training Philosophy			R	A		A					
Prepare Material Support Plan		A				A				R-APS, A-PLP	JUL 86
Maintain Master Pipeline Training List		A	R			A			A	A-TPP	
Execute Pipeline Training Plan									R	A-PO/PE/SIU	JAN 86
Prepare PRECOM Training Plan		A	R			A	A			A-District	MAR 86
Administer OE Support Billets			R						A	A-CPA	
Administer GFE Contracts (CG)				A	R	A	A			A-APS	
GFE/GPI Coordination		A		A	A	R	A			A-NAVSEA/SPAWAR	
Track/Monitor Electronics GFE		A		R			A			A-SPAWAR	WKLY
Track/Monitor Ordnance/HM&E GFE		A				R	A			A-NAVSEA (SLM)	WKLY
Provide Quality Assurance Support			A	A		A				R-AQA	
Develop Integ. Test Plans (ITP)				A (Elex)		R (Weps)				A-NAVSEA (PERA)	

B-3

Task/Activity Description	(APM) (APS)		OCU	TES	ACP	ENE	RIO	(Navy)			Target Date
	PM	LSM						ILO	PTE	Other	
Deliver Ship to Contractor							R				A-Ship CO
Provide Systems Engineering Support				A		A					R-APS
Prime Contract Administration				A	A	A	R				A-LPL
Conduct Contract Mod Review (\$100K) R			A	A	A	A	A				
Approve Contract Mods (\$100K)	A				A						R-G-A
Configuration Mgmt	A		A	A		A	A				R-APS
Conduct Inclining Exp. (Delivery)						A	R				
Checkout and Certify Weapons systems			A	A		A	R				A-NAVSEA (SLM)
Conduct Acceptance Trials				A		A	R				A-Dist/NAVSEA/SPAWAR
Ship Acceptance (PRAM Contractor)			A			A	R				A-Dist
Schedule SECAS Validation		A									R-SICP
Execute Offload/Backload Activities		A					A	A			R-Ship/A-District
Process Materiel-Offload Site		A					R	A			A-ICPs/ILO
Issue Crew PCS Orders											R-PO/PE
Onload Nav Charts							A				R-NSR Backload
Onload Intel Pubs							A				R-OIS A-District Backload
Onload CMS/CONTAC				R			A				A-PCO/District Backload
Develop PRECOM Plans			R				A		A		A-PE/PO 50/ACC
Develop RFS Activity Plan			R	A		A					A-AREA 50/ACC
Designate Crew Asmby Sites			R								A-Districts APR 86
Establish Crew Asmby Sites			A				A				R-PCO, A-SUPCENSE/PO/PE
Conduct Phase I Training							R				16/ACC
Conduct Phase II/III Training			A								R-PCO, A-AREA 10/6/ACC

Task/Activity Description	(APM) (APS)		OCU	TES	ACP	ENE	(Navy)			Other	Target
	PM	LSM					RIO	ILO	PTE		Date
Publish Stability Data						A				R-Contractors	
Prepare DC/Ship Info Books						R	A				25/EOF
Implement Mat'l Processing Data Sys		A					A			R-TDS	EOF
Develop Organization Manual			R							A-PCO	JAN 87
Coordinate Follow-on Pipeline Training			R						A		
Execute OFCO							A			R-PCO/District	ACC
Schedule WSAT/CSSQT			A							R-AREA, A-District	26/ACC
Execute RFS Plan			A							R-Ship, A-AREA/Dist	ACC/4

Remaining Project Activities as of 1 March 1986

Codes:

R -- Responsible to Project Manager for completing activity

A -- Assist in completing activity

EOF -- End of FRAM

SOF -- Start of FRAM

ACC -- Acceptance (From Contractor)

XX/EOF -- Wks before end of FRAM

ACC/X -- Wks after Acceptance

XX/SOF--WKS before Start of FRAM

Note:

(1) G-OLE/G-ODO will remain with these facility responsibilities until G-OCU (Cutter Division) is organizationally effective (anticipates June 1986).

RESPONSIBILITY DESCRIPTIONS

The following FRAM responsibility descriptions amplify the information displayed in the Responsibility Chart (Appendix B). These descriptions identify activities, describe their key deliverable elements and indicate the organizational element responsible for completion. Assistance provided from other organizational support elements also is identified. These descriptions are not intended to be complete scope descriptions of each project activity.

Maintain Project Management Plan. (Project Manager). Scope and schedule changes will be prepared by the Project Manager and submitted to the Chief, Office of Acquisition for approval. When the PMP is amended to reflect changes in project activity responsibility or the addition of new activities, those affected organizational elements will be consulted prior to being tasked to complete project activity.

Maintain FRAM Financial Plan. (Project Manager). A Financial Plan adequate to support budget requests and to provide management information regarding the project will be maintained by the Project Manager. The Financial Management Section of the PMP contains the details regarding financial planning and preparation of obligations plans.

Submit Status Reports. (All involved Organizational Elements). Periodic written status reports will be submitted as detailed in the Monitoring, Control and Reporting Section of this PMP. The format of written status reports is not prescribed. Reports will normally be originated by the task leader and should be signed at division level before submittal to the Project Manager. The monthly status reports to the Project Manager shall be prepared and submitted prior to the last working day of the month. A copy of all project related correspondence which has not otherwise been routed to the Project Manager will be attached to the status report.

Maintain Project CPM Database/Network. (Project Manager). The Project Manager will construct and maintain a CPM database reflecting project activities. Computer prepared graphic representations will be periodically prepared by the Project Manager to illustrate progress and status. Graphics will also be available to support planning efforts including recovery planning and alternative approaches to problem solving. Organizational elements responsible for identifying and executing project activities will be consulted for assistance in establishing the CPM database.

Present Project Status Reviews. (Project Manager). The Project Manager will present monthly project status review to the Chief, Office of Acquisition, and open to all support managers, summarizing project activity for the month.

Administer Project AC&I Funds. (Project Manager). Project funds will be administered as described in the Cost Accounting and Financial Planning Section of this PMP.

Schedule Ship Entry for FRAM. (AREA).

Update Sponsor's Requirements Document. (G-OCU). SRD to be updated to reflect current operational requirements. Because of the potential schedule

and cost impacts of changes to the project scope, all proposed SRD changes should be discussed with the Project Manager prior to being sent forward to the Chief, Office of Operations for approval.

Establish Post-FRAM Manning Level. (G-OCU). Conduct analysis and crewing model studies to determine manning level required to accomplish operational missions and support cutter in condition of appropriate readiness. Analysis must also consider operation and support of the installed equipment configuration. Prepare supporting documentation and pursue through decision-making process to final authorization of manning from Coast Guard budget process. G-CPA and Facility Managers will assist in reconciling 378' WHEC requirements with other Coast Guard program requirements. This is a high priority activity which provides planning factors for other Program and Support Managers.

Prepare Home Port Recommendations. (G-OCU). Evaluate the advisability of recommending home port changes to the Commandant for approval. Coordination of pipeline training, precom activities, and vessel delivery schedules may permit OG-20 savings as well as provide less personal disruption to crew members if crew swapping can be recommended as an alternative.

Prepare OFCOs. (G-OCU). Prepare and issue OFCO to decommission cutter prior to start of FRAM. Prepare the OFCO for commissioning each cutter upon completion of FRAM.

Submit AC&I RCP. (Project Manager). Prepare and submit RCPs for FRAM project AC&I funds in accordance with the financial plan.

Submit OE RCP (Precom Activities). (G-OCU). Prepare and submit RCPs for funding Precommissioning activities.

Submit OE RCP (Follow-on Support). (G-OCU).

Designate ILS Coordinators. (All Involved Organizational Elements). The LSM will be assisted in support planning efforts by the Integrated Logistic Support (ILS) coordinators representing the program and support managers. Logistic support planning includes those management and technical activities necessary to define, develop, acquire, and provide the required support during FRAM. It encompasses the preparation of the 378' WHEC Offload and Outfitting Plan, establishment of allowance lists to support the post-FRAM configuration, and preparation of the Integrated Logistic Support Plan (ILSP).

Maintain Offload and Outfitting Plan. (Logistic Support Manager). This Plan describes the offload, processing, staging and backload for the ship's materiel, which includes: Storeroom Items (SRI); CALMS items; ERPAL items; CMS and COMTAC; morale equipment; navigation charts and equipment; administrative directives, publications, and forms; memorabilia; technical manuals; test equipment; general use consumables (GUCL); and other material. The Plan will address responsibility and procedure for each of the materiel handling phases. The decommissioning and commissioning OFCOs for each vessel must be closely coordinated with this plan.

Generate Baseline CALMS. (SICP). SICP will produce a post-FRAM Baseline CALMS. The complex procedure used to develop and maintain CALMS will be fully

described in the ILSP. Briefly, a pre-FRAM CALMS is produced by validating the existing shipboard configuration and determining the provisioning requirements for this configuration. The pre-FRAM CALMS is then adjusted to provision planned equipment adds and deletes during FRAM. Further adjustments are made to support FRAM contractor furnished equipment. G-ENE will provide planned adds and deletes. SICP is responsible for quality review of CALMS documents at each level of completeness. G-APS will monitor the process. Navy support for logistics planning will be coordinated with Navy Ship's Logistic Manager (SLM), NAVSEA 913B.

Generate Baseline ERPAL. (EICP). EICP will produce a post-FRAM Baseline ERPAL. The complex procedure used to develop and maintain ERPAL will be fully described in the ILSP. Briefly, a pre-FRAM ERPAL is produced by validating the existing shipboard electronics equipment configuration and determining the provisioning requirements for this configuration. The pre-FRAM ERPAL is then adjusted to provision planned equipment adds and deletes during FRAM. Further adjustments are made to support FRAM contractor furnished equipment. G-TES will provide planned adds and deletes. EICP is responsible for quality review of ERPAL documents at each level of completeness. G-APS will monitor the process. Navy support for logistics planning will be coordinated with Navy Ship's Logistic Manager (SLM), NAVSEA 913B.

Coordinate Post-FRAM Outfit Lists. (Logistic Support Manager). There are several classes of materiel that are not addressed in other specified allowance lists. The FRAM Logistic Support Manager will coordinate the preparation of these outfit lists. The LSM will ensure that timely action is taken to provide the outfit list items. These articles and the responsibilities for determining their allowances are:

- Small arms allowance. (G-ODO)
- Small arms ammo allowance. (G-ODO)
- Other ammo--76MM, SRBOC, torpedoes. (G-ODO, Navy)
- Navigation Charts. (G-NSR)
- Memorabilia List. (RIO)
- General Use Consumable List (GUCL). (G-OCU)
- Morale equipment list. (Home District)
- Exchange Inventory. (Home District)
- Technical Manual List. (G-ENE, G-TES, G-OCU)
- Administrative Directives, Publications and Forms. (G-CMA)

Prepare Electronics Test Equipment Allowance List. (G-TES). Determine requirements for electronics test equipment based on the post-FRAM electronics suite configuration.

Deliver Post-FRAM CALMS. (SICP).

Deliver Post-FRAM ERPAL. (EICP).

Establish Configuration Management Policy. (G-APS)

Develop Integrated Logistic Support Plan. (Logistic Support Manager). Prepare, assemble, and promulgate the FRAM Integrated Logistic Support Plan (ILSP). The ILSP will reflect both the logistic support requirements for the FRAM project and the 378' WHEC class logistic support which will continue after FRAM. The Plan will contain the Maintenance Philosophy, Training

Philosophy, Pipeline Training Plan and Materiel Support Plan, in addition to other policy and planning concepts needed to fulfill logistic support of these cutters. Navy support for logistics planning will be coordinated with Navy Ship's Logistic Manager (SLM), NAVSEA 913B.

Develop Concept of Operations & Operating Profile. (G-OCU).

Prepare 378' WHEC Maintenance Philosophy (HM&E). (G-ENE). Prepare the 378' WHEC maintenance philosophy for Hull Mechanical and Electrical equipment which will become a part of the ILSP. This document will reflect the maintenance concepts and requirements for the post-FRAM cutters. It will address reliability and maintainability requirements and parameters, maintenance task times and personnel skill levels, and supply support and facility requirements. Maintenance philosophy impacts manning levels, crew training, on board and shore based materiel allowances, budgets requests, and supply support decisions

Prepare 378' WHEC Maintenance Philosophy (Electronics). (G-TES). Prepare the 378' WHEC electronics maintenance philosophy which will become a part of the ILSP. This document will reflect the maintenance concepts and requirements for the post-FRAM cutters. It will address reliability and maintainability requirements and parameters, maintenance task times and personnel skill levels, and supply support and facility requirements. Maintenance philosophy impacts manning levels, crew training, on board and shore based materiel allowances, budgets requests, and supply support decisions

Prepare Training Philosophy. (G-OCU).

Prepare Material Support Plan. (G-APS). The Materiel Support Plan addresses the actions required to establish and maintain materiel support for the equipment and systems configuration of post-FRAM 378' WHEC's. The Materiel Support Plan also includes the Materiel Logistic Support Plan which provides guidance and assigns responsibilities for the materiel logistic support of the FRAM project. This plan will be included in the ILSP.

Maintain Master Pipeline Training List. (G-OCU). The training requirements will take into consideration the equipment configuration, manning levels, operational requirements, readiness requirements and maintenance philosophy. The training requirements will be included in the ILSP.

Execute Pipeline Training Plan. (G-OCU). G-PTE will coordinate the implementation of the pipeline training Plan including the identification of funding requirements and sources of funding. G-ODO will assist in estimating training billet requirements and pipeline training costs. G-PO and G-PE will identify appropriate personnel and issue orders. The Ship Introduction Unit (SIU) will accomplish the training. G-CPA will issue billets.

Prepare Precommissioning Training Plan. (G-OCU). The Precom training plan will identify the tasks and responsibilities associated with crew precom training during FRAM. The Training Plan will contain the list of formal training for the crew, and will outline the strategy by which crew training will be accomplished. This plan will be included in the ILSP.

Administer OE Support Billets. (G-OCU). Track the OE support billets as they are assigned to FRAM support positions. Make recommendations to the Project Manager regarding the utilization and adequacy of the available billets as the FRAM progresses.

Administer Government Furnished Equipment (GFE) Contracts (Coast Guard purchased). (G-ACP). Perform those activities required to award contracts and administer these contracts to procure the GFE in support of the prime FRAM contracts. The GFE includes MK 27 gyrocompasses (11), SSS clutch assemblies (8), telescoping hangers (12), main propulsion consoles (9), MK 92/MK 75 fire control switchboards (12), and Hamilton ship service generator. Track the production and delivery of this equipment and notify G-ENE and the Project Manager when delay or any other problem arises which may impact on the project.

Coordinate Government Furnished Equipment (GFE) and Government Furnished Information (GFI). (G-ENE). Perform those activities necessary to assure the timely provision of all GFE and GFI to support the requirements of the prime FRAM contracts. GFE and GFI includes commercially procured items as well as the Navy furnished equipment and information. Notify the Project Manager when delay or any other problem arises which may impact on the project. The Navy furnished systems include LAMPS I, NAVMACS A+, TACAN, 4OB RADAR, MK 92 Fire Control System, MK 75 Gun, Super Rapid Blooming Overhead Chaff (SRBOC), Visual Landing Approach/Glide Slope Indicator system (VLA/GSI).

Track/Monitor Electronics GFE. (G-TES). Assist G-ENE in GFE/GFI coordination by tracking the electronics GFE/GFI through the Navy equipment management system or through commercial procurement, for other than Navy provided equipment, until the GFE/GFI is delivered to the FRAM contractors. Monitor equipment condition and completeness problems as they arise and take timely corrective action to support the requirements of the prime FRAM contracts. Notify the Project Manager and G-ENE when delay or any other problem arises which may impact on the project.

Track/Monitor Ordnance; and HM&E GFE. (G-ENE). Track the ordnance and Hull, Mechanical and Electrical (HM&E) GFE/GFI until the equipment or material is delivered to the FRAM contractors. Monitor equipment condition and completeness problems as they arise and take timely corrective action to support the requirements of the prime FRAM contracts. Notify the Project Manager and RIO when delay or any other problem arises which may impact on the project.

Provide Quality Assurance Support. (G-APS).

Develop Integrated Test Plans (ITP). (G-ENE).

Deliver Ship to Contractor. (RIO).

Provide FRAM Systems Engineering Support. (G-APS). Provide engineering technical support to the Project Manager and RIOs. G-ENE and G-TES will assist.

Prime Contract Administration. (RIO). The Commanding Officer, Resident Inspector Office (RIO) will administer the FRAM contract, review and approve

the detail design, bills of material, and yard procedures prepared by the FRAM contractor. Both RIOs shall coordinate design details and specification modifications to achieve the highest degree of standardization feasible.

Conduct Contract Modification Review. (Project Manager). The Chief, Office of Acquisition will control contract modifications which are estimated to result in a cost increase greater than \$100,000 per ship; or which result in a change to basic design characteristics or operational capabilities; or which require an extension of cutter delivery date. The Project Manager will chair an ad hoc panel to review proposed modification and make recommendations to the Chief, Office of Acquisition. The Project Manager will forward all approved contract modification proposals to G-ENE for transmittal to the RIO for implementation.

Approve Contract Modifications. (G-A). The Chief, Office of Acquisition will control contract modifications which are estimated to result in a cost increase greater than \$100,000 per ship; or which result in a change to basic design characteristics or operational capabilities; or which require an extension of cutter delivery date.

Manage Equipment Configuration. (G-APS).

Conduct Inclining Experiment (Delivery). (RIO).

Checkout and Certify Weapons Systems. (RIO).

Conduct Acceptance Trials. (RIO). Schedule, coordinate, and conduct acceptance trials.

Ship Acceptance (FRAM Contractor). (RIO).

Schedule SECAS Validation. (SICP). Schedule and coordinate the equipment configuration validation for each of the 12 cutters.

Execute Offload/Backload Activities. (Ship Commanding Officer). All materiel, other than SRI, will be offloaded by the ship's crew in conjunction with Logistic Support Group. The SRI materiel will be offloaded by the ILO team. The Offload and Outfitting Plan contains details applicable to this process.

Process Materiel-Offload Site. (RIO). The LSG and ILO will inventory, sort, dispose of excess and procure to reconcile materiel on hand against allowance/outfit/load lists. LSG and ILO will stage material in preparation for backload. The Offload and Outfitting Plan contains details applicable to this process.

Issue PCS Orders for Crews. (G-PO, G-PE). Prepare and issue PCS orders to officers and crew prior to decommissioning each cutter for FRAM. Prepare and issue PCS orders to assemble crew in anticipation of commissioning after completion of FRAM. Provisions of the commissioning OFCO, COMDTINST M4700.2, Ship Acceptance Procedures for New Construction and Renovation of Cutters, and the provisions the Pipeline Training and Precom Training Plans will apply to the timing of PCS orders.

Onload Navigation Charts. (G-NSR). The ship's allowance of navigation charts and publications will be ordered for delivery to the ship during Precom Phase III.

Onload Intel Publications. (G-OIS). G-OIS is responsible to ensure that required Intel publications are aboard each cutter prior to completion of FRAM.

Onload CMS/COMTAC Material. (G-TES). G-TES is responsible to ensure that required CMS/COMTAC material is aboard each cutter prior to completion of FRAM.

Develop Precom Plans. (G-OCU). Phase I personnel will report to the Resident Inspector's Office to assist in the final inspection and checkout of the cutter and its equipment. Phase II personnel will report to the Prospective Commanding Officer (PCO) at the primary crew assembly facility. The PCO will command the precommissioning detail. During Phase III, the remainder of the crew will report to the Prospective Commanding Officer for training and other preparation for cutter operations. Provisions of COMDTINST M4700.2, Ship Acceptance Procedures for New Construction and Renovation of Cutters apply.

Develop Ready for Sea (RFS) Activity Plan. (G-OCU). The return of each 378' WHEC to operational status involves a continuous coordinated process of pipeline training, phased activity, backload of materiel, shipboard tests and certifications, drills, CSSQT, and shakedown. The Training Plan and Precom Training Plan will address crew training while the RFS Plan will address the activities preparatory to returning a fully operational 378' WHEC to its operational commander. The commissioning OFCO will reflect the provisions of the RFS Plan.

Designate Crew Assembly Sites. (G-OCU).

Establish Crew Assembly Site. (Prospective Commanding Officer).

Conduct Phase I Precom Training. (RIO). Phase I personnel will report to the Resident Inspector's Office as specified in the Commissioning OFCO to assist in the final inspection and checkout of the cutter and its equipment. Provisions of COMDTINST M4700.2, Ship Acceptance Procedures for New Construction and Renovation of Cutters, as well as the provisions of the Precom Training Plan apply.

Conduct Phase II and III Precom Training. (Prospective Commanding Officer). Phase II personnel will report to the Prospective Commanding Officer (PCO) at the primary crew assembly facility. The PCO will command the precommissioning detail. During Phase III, the remainder of the crew will report to the Prospective Commanding Officer for training and other preparation for cutter operations. Provisions of COMDTINST M4700.2, Ship Acceptance Procedures for New Construction and Renovation of Cutters apply.

Publish Stability Data. (Contractors).

Prepare Damage Control/Ship Information Books. (G-ENE). Prior to recommissioning each cutter, accurate and usable stability information will be provided to the Cutter Commanding Officer. Requirements for fixed ballast (if

needed) will be determined. G-ENE will monitor the efforts of the contractor and RIO and will coordinate inclining experiments and calculations. The stability information as well as other required damage control information will be used to prepare the cutter Damage Control Book for delivery to the cutter PCO during precom phase II.

Implement Materiel Processing Data System. (G-TDS). This data system will provide an automated interface between the Automated Requisition Management System (ARMS) and Shipboard Computer Aided Maintenance Program (SCAMP). ARMS provides inventory ordering functions and SCAMP provides inventory tracking functions. This combination of ARMS and SCAMP will provide for the automated processing of requisitions. MILSTRIPS will be prepared by the SCAMP software and electronically transferred to the ARMS system. This system is designed to be used by the Integrated Logistics Overhaul (ILO) teams for their tracking and ordering of allowance list and spare part shortages and by the Logistic Support Groups (LSG) for their tracking and ordering of outfit shortages.

Develop Cutter Organization Manual. (G-OCU).

Coordinate Follow-on Pipeline Training. (G-OCU).

Execute OFCO. (PCO). This is the milestone activity for the commissioning of the cutter after the completion of FRAM in accordance with the commissioning OFCO.

Schedule WSAT/CSSQT. (AREA).

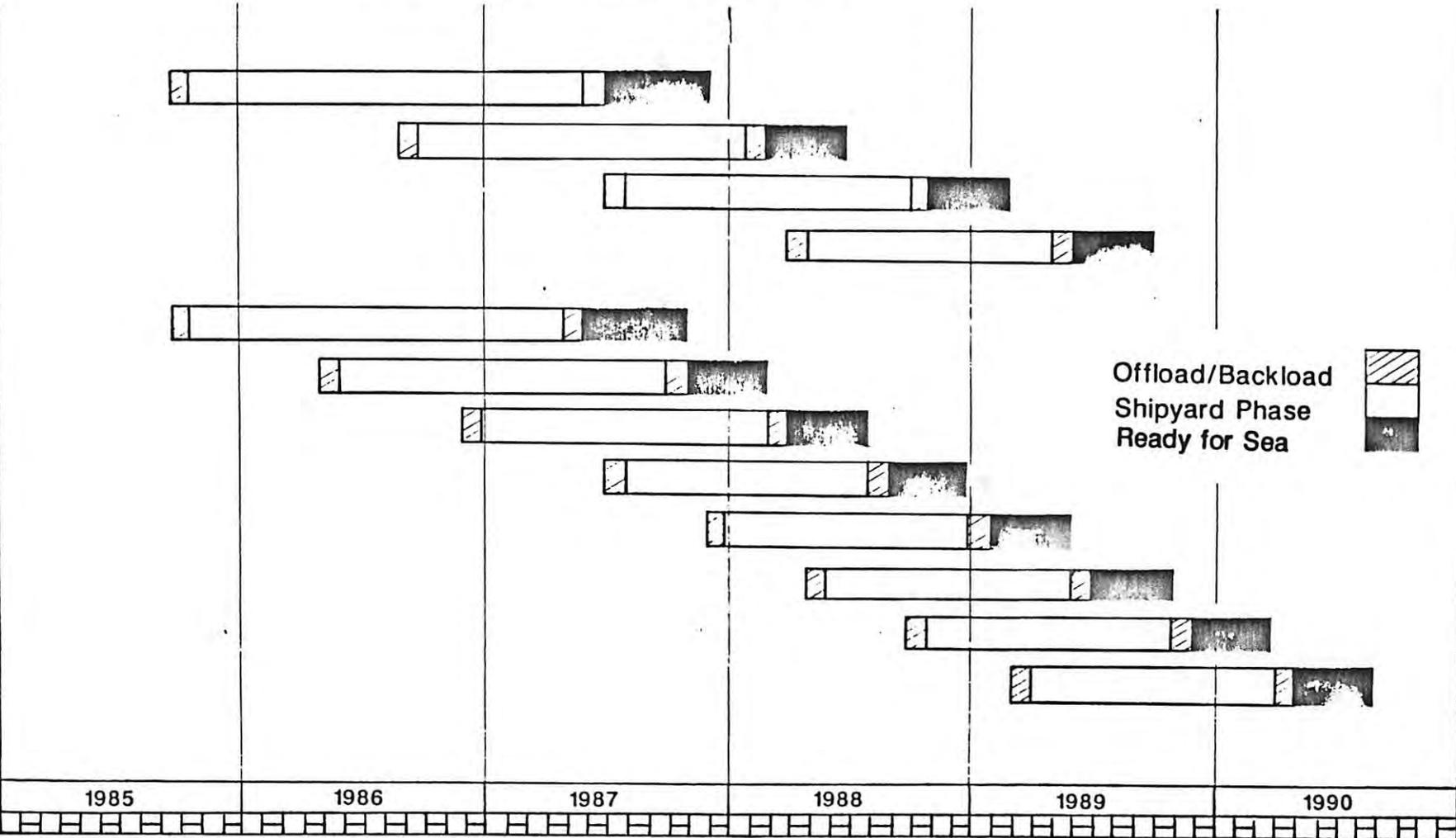
Execute Ready for Sea (RFS) Plan. (Ship CO). The RFS Plan will contain the activities occurring during the period from commissioning to the point in time when each cutter is ready for operations. Tests, certifications, exercises, and training will occur during this period. The Ship Commanding officer is responsible for executing the RFS plan aboard ship.

378' WHEC FRAM SCHEDULE

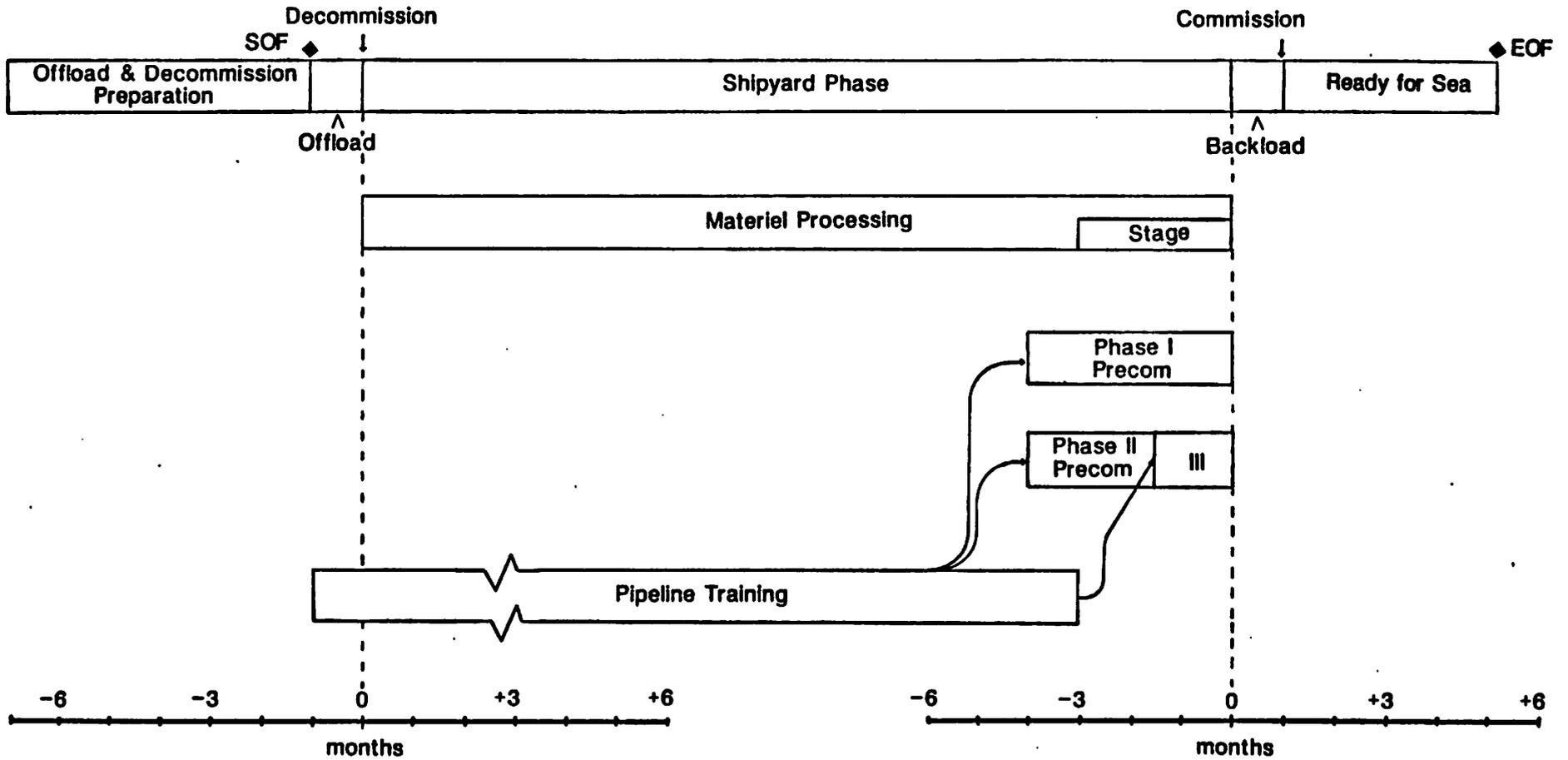
	Start Offload	Start Shipyard	Start Backload	Start Shakedown	Ready for OPS
1E HAMILTON	SEP 85	OCT 85	MAY 87	JUN 87	NOV 87
2E DALLAS	AUG 86	SEP 86	JAN 88	FEB 88	JUN 88
3E CHASE	JUN 87	JUL 87	SEP 88	OCT 88	FEB 89
4E GALLATIN	MAR 88	APR 88	APR 89	MAY 89	SEP 89
1W MELLON	SEP 85	OCT 85	APR 87	MAY 87	OCT 87
2W SHERMAN	APR 86	MAY 86	SEP 87	OCT 87	FEB 88
3W MUNRO	NOV 86	DEC 86	FEB 88	MAR 88	JUL 88
4W RUSH	JUN 87	JUL 87	JUL 88	AUG 88	DEC 88
5W BOUTWELL	NOV 87	DEC 87	DEC 88	JAN 89	MAY 89
6W MORGENTHAU	APR 88	MAY 88	MAY 89	JUN 89	OCT 89
7W JARVIS	SEP 88	OCT 88	OCT 89	NOV 89	MAR 90
8W MIDGETT	FEB 89	MAR 89	MAR 90	APR 90	AUG 90

378' WHEC FRAM Schedule

- Hamilton
- Dallas
- Chase
- Gallatin
- Mellon
- Sherman
- Munro
- Rush
- Boutwell
- Morgenthau
- Jarvis
- Midgett



Typical FRAM Event Sequence



D-3

378' WHEC FRAM FINANCIAL PLAN

	FY83	FY84	FY85	FY86	FY87	FY88	FY89	FY90
Contract East			35.2	28.8	26.6	25.4		
Contract West			63.6	29.3	57.5	57.3	28.6	
Escalation East				.2	1.6	3.7	1.5	
Escalation West				.5	2.7	6.5	9.4	1.9
GFE/GFI	1.9	.5	22.7	4.5				
Logistic Support			2.5	14.4	19.2	19.9	17.2	.5
C-3 Modification			5.0	2.4	3.3	3.3	1.0	
Program Related	.5	.1	5.9	12.9	27.3	28.5	21.0	3.6
Program Total	2.4	.6	134.9	93.0	138.2	144.6	78.7	6.0
Navy Funding			9.0	9.0	9.0	9.0		
Appropriations	15.0	67.138	73.35	55.5	131.2	135.6	78.62	5.9

378' WHEC FRAM Task/Activity Planning Information

Task/Activity Title: _____

Responsible Division: _____

Task Leader Name: _____

Phone: _____

Describe Task/Activity. Specify final work product: _____

Planned Start Date: _____

Total Calendar Days to Complete Task: _____

Predecessor Tasks (Tasks or Activities which must be completed prior to starting this Task):

Other Constraints: _____

Submitted: _____ Date _____
(Task Leader)

Reviewed: _____ Date _____
(Division Chief)