DEPARTMENT OF THE NAVY
USS CONSTELLATION (CV 64)
FPO SAN FRANCISCO, 96635

IN REPLY REFER TO:
CV64:SFOMS:LGM:gg
4700
Ser 313
07 MAR 1984

From: Commanding Officer, USS CONSTELLATION (CV 64)
To: Commander Naval Air Force, U. S. Pacific Fleet

Subj: USS CONSTELLATION (CV 64) Complex Overhaul FY83 End of Overhaul Report

Ref: (a) COMNAVAIRPACINST 4700.1D

Encl: (1) USS CONSTELLATION (CV 64) End of Overhaul Report, Puget Sound Naval Shipyard, Bremerton, WA., 6 DEC 1982 - 23 JAN 1984

1. In accordance with reference (a), enclosure (1) is submitted.

L. F. BULL

Copy to:
COMCARGRU ONE
COMCARGRU SEVEN
CO, PSNS
CO, USS RANGER (CV 61)
CO, PERA (CV)

1983

DEPARTMENT OF THE NAVY
USS CONSTELLATION (CV 64)
FPO SAN FRANCISCO, 96635

IN REPLY REFER TO:
CV64:011:ROP:dcn
5750
Ser 321
08 MAR 1984

From: Commanding Officer, USS CONSTELLATION (CV 64)
To: Chief of Naval Operations (OP-05D2)

Subj: Command History

Ref: (a) OPNAVINST 5750.12C

Encl: (1) USS CONSTELLATION (CV 64) End of Overhaul Report

1. USS CONSTELLATION (CV 64) changed homeport from San Diego, California, to Bremerton, Washington, effective 6 December 1982, in order to commence a fourteen month complex overhaul at Puget Sound Naval Shipyard. The 235 million dollar overhaul was completed two weeks early and on budget, and CONSTELLATION changed homeport back to San Diego, California, effective 23 January 1984. Thus, the entire calendar year 1983 was spent in overhaul.

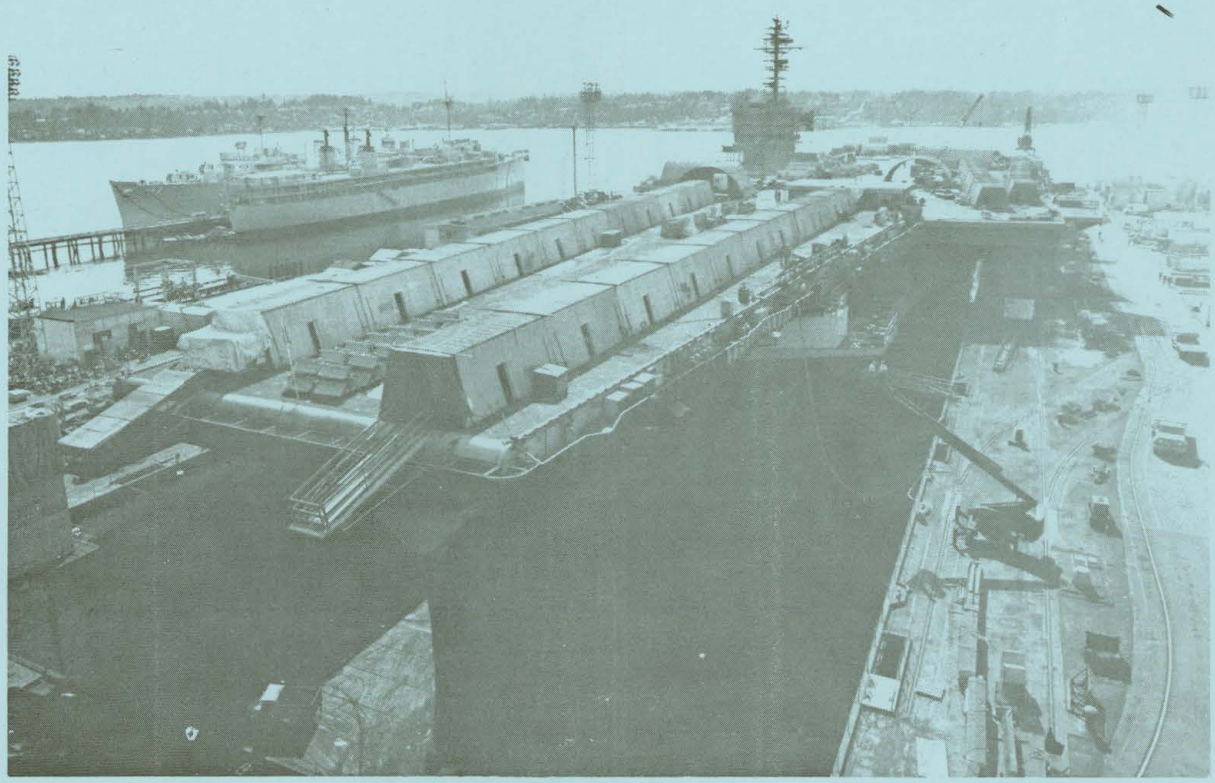
2. Enclosure (1) constitutes the command history of USS CONSTELLATION (CV 64) for calendar year 1983 and is forwarded in accordance with reference (a).

3. Captain Lyle F. BULL, USN, [redacted]/1320, served as Commanding Officer, USS CONSTELLATION (CV 64) throughout calendar year 1983.

L. F. BULL

USS CONSTELLATION CV-64

END OF OVERHAUL REPORT



PUGET SOUND NAVAL SHIPYARD

6 Dec. 1982 to 23 Jan. 1984

CONTENTS

SECTION I

GLOSSARY OF TERMS

ASF - Assist Ship's Force; Shipyard assistance furnished to the ship in the nature of services, labor, special tools or equipment.

CIA - Controlled Industrial Area; where the ship will be berthed. Requires security pouch and parking sticker for access.

COH - Complex Overhaul.

CSMP - Current Ship's Maintenance Project; a file of all outstanding deferred maintenance actions representing the ship's total outstanding maintenance work load.

KEY EVENT - A standard four digit number that relates to a milestone of a ship's availability.

KEY OP - Key Operation; a portion of a job constituting a logical work sequence bound by reasonable breaking points and separately identified within the job to permit effective management of the production effort.

MAN-HOUR - One man working for an hour; can be industrial, operational, absences, etc. Eight man-hours equal one man day.

PERA (CV) - Planning and Engineering for Repair and Alteration of aircraft carriers.

PSNS - Puget Sound Naval Shipyard, Bremerton, Washington.

SARP - Ship Alteration and Repair Package; a listing of all SHIPALTs and repairs that will be done during COH.

SFOMS - Ship's Force Overhaul Management System.

SHIPALT - Ship Alteration; a change in a ship's configuration encompassing change or improvement of an existing capability or addition of a new capability. It can be further subdivided into:

D Alt - Improvement of existing capability normally funded by TYCOM.

K Alt - Addition of a new capability normally funded by NAVSEA but can be funded by TYCOM.

SOAP - Supply Overhaul Assistance Program; a program to assist ships during an availability to adjust storage space, accomplish rebinning, inspect material to ensure its readiness for use, and purify and replenish stock (OPNAVINST 4441.4 refers).

TYCOM - Type Commander; COMNAVAIRPAC for Pacific Fleet aircraft carriers.

TYPE DESK - PSNS representative for NAVSEA and NAVAIRPAC. Concerned with formulation, funding and overall coordination of the Shipyard Work Package.

SECTION II

EXECUTIVE SUMMARY

1. General. CONSTELLATION entered Dry Dock #6 at Puget Sound Naval Shipyard on 4 December 1982 for a scheduled 14 month Complex Overhaul (6 December 1982 - 6 February 1984). The conclusion of the Risk Assessment Conference chaired by COMNAVSEASYSCOM on 13 October 1982 was that, while a 6 February 1984 completion date was achieveable, the ability of ship's force and the shipyard to complete all scheduled work within the allotted time was "high risk". A strong sense of team spirit, atmosphere of mutual cooperation and professional rapport established early in the relationship between the ship and shipyard were key factors that ultimately made possible an accelerated but orderly completion of overhaul on 23 January 1984 - two weeks ahead of schedule.

2. Planning. Planning required by ship's force in preparation for overhaul commenced during an extended Indian Ocean/Western Pacific deployment (OCT 81 - MAY 82) and continued through a six month operational period in CONUS leading up to overhaul. The main thrust of this long range planning was to update/validate the CSMP and to identify/order the long lead material items in support of what was expected to be ship's force work. Approximately eight months prior to COH commencement, the skeleton SFOMS organization (including Overhaul Department) was identified, PERA CV representatives initiated the SFOMS training cycle for key supervisors and the ship check was started by shipyard personnel. The Pre-Overhaul Tests and Inspections (POT & I) and INSURV inspections were completed on 3 September 1982, three months prior to COH. The ship's force and shipyard work packages were finalized at a Work Definition Conference completed on 21 September 1982. The final SARP, dated 1 December 1982, was distributed after overhaul commenced.

3. Execution

a. Considerable effort was made to establish and maintain a sound professional working relationship with the shipyard. An "Open House" for shipyard workers and their families was held on board CONSTELLATION on the first full day in the shipyard. This was a particularly worthwhile endeavor that had a positive effect on the entire Bremerton community. A Shipyard Worker of the Month program sponsored by the ship was also an effective means of developing and maintaining the sense of team effort considered essential to a successful overhaul.

b. CONSTELLATION arrived in the shipyard just prior to the Christmas holiday season. The primary efforts during the holiday season were to complete the crew move off to the EX-USNS GAFFEY, and to provide the crew ample opportunity to get their dependents settled in the local community. A 50% leave policy for the crew was authorized during the holiday season. Although industrial work commenced on arrival, the major thrust of the overhaul started after New Year's Day.

c. The number of shipyard personnel dedicated to CONSTELLATION's overhaul rose sharply to approximately 2,500 during the second month. With the exception of peaks nearing 2,800 personnel during the sixth and seventh months to support undocking, shipyard manning on the project remained relatively stable

at 2,500 through the tenth month. Manning on the project started a steady decline in the eleventh month that continued until the end of overhaul. This manning profile had a close correlation with the relative number of firewatches the ship was required to provide in support of shipyard work. During the peak manning periods, over 12,000 ship's force man-hours per week were dedicated to firewatch support. Shipyard assistance with forecasting firewatch requirements greatly reduced wasted man-hours and enabled the ship to provide 100% firewatch support without outside assistance.

d. Due to generally excellent communications between the ship and shipyard and the close scrutiny that shipyard progress was subjected to, few major problems went undetected or without solutions for very long. Shipyard progress on major SHIPALTs and Key Events was closely tracked by ship's force as well as the shipyard. Overall progress and associated problems in the various areas were briefed by department heads at weekly meetings with the Commanding Officer. The Senior Ship's Superintendent was frequently in attendance. The Shipyard Repair Officer's Weekly Progress Meeting was an excellent forum for airing problems with the various shipyard codes, Shop Heads, superintendents and the Senior Ship's Superintendent. The Shipyard Commander's Weekly Conference was another excellent forum for raising issues that had not been resolved at the lower management levels. The ship submitted official agenda items for this conference on only three occasions and for each, immediate corrective action was initiated. Due to the complexity of the project, indepth involvement by ship's force in tracking shipyard progress and, where possible, providing assistance, were essential ingredients to a successful overhaul.

e. Early in the overhaul, the ship's prospective Fox Division Officer was assigned TAD to the shipyard as a Combat Systems Ship Superintendent. Strongly recommend future carriers in overhaul follow suit.

f. The cleanliness of the ship required immediate attention as soon as industrial work commenced. With the mutual cooperation and assistance of the shipyard, the ship was able to maintain a relatively high standard of cleanliness while in the industrial environment.

e. A tremendous side benefit of overhaul was the on-the-job training received by many ship's force personnel. The training received while working alongside experienced shipyard workers on many of the ship's most complicated systems will undoubtedly be of great value to maintaining a high standard of operational readiness after overhaul.

4. Ship's Force Work Package. The ship's force work package was initially estimated to be 1.0 million man-hours (125,000 man-days). During the course of the overhaul, 1,245,976 man-hours (155,747 man-days) of ship's force industrial labor was documented. This increase in man-hours was caused by growth as well as underscoping of the original work package. The number of man-hours of industrial labor accomplished by each department is as follows:

DEPARTMENT	MAN-HOURS ACCOMPLISHED
AIR	90,320
AIMD	122,615
COMMUNICATIONS	23,321
DECK	23,623

ENGINEERING	510,080	
EXECUTIVE	9,377	
MEDICAL/DENTAL	4,038	
NAVIGATION	2,641	
OPERATIONS	75,179	
OVERHAUL	338,115	
SUPPLY	2,282	
WEAPONS	44,385	
TOTAL	1,245,976	(155,747 MAN-DAYS)

5. Major milestones were completed as follows:

EVENT	DATES
Ship Check by PSNS (Subic)	17-28 APR 82
Return from WESTPAC Deployment	22 MAY 82
INSURV Inspection	30 AUG 82
Pre-Overhaul Tests and Inspection	30 AUG 82
Establish Advance Party at PSNS	13 SEP 82
Work Definition Conference	21 SEP 82
Risk Assessment Conference	13 OCT 82
Begin Rip-out #1MMR	17 NOV 82
Begin Transit to Bremerton	29 NOV - 3 DEC 82
Final SARP Issued	1 DEC 82
Enter Dry Dock #6	4 DEC 82
Commence COH	6 DEC 82
Complete Crew Move Off	15 DEC 82
Quarterly Review Conference #1	12 JAN 83
Quarterly Review Conference #2	21 APR 83
Flood Dry Dock	16 JUN 83
UNDOCK	18 JUN 83
LOE #1 (#1 MMR)	9 AUG 83
Quarterly Review Conference #3	9 AUG 83
LOE #2 (#4MMR)	20 SEP 83

LOE #3 (#2MMR)	18 OCT 83.
Complete Crew Move-Aboard	29 OCT 83
LOE #4 (#3MMR)	8 NOV 83
Quarterly Review Conference #4	22 NOV 83
Crew Certification PHASE 1	6 DEC 83
Dock Trials	14 DEC 83
Crew Certification PHASE II	5 JAN 84
FAST CRUISE	5-6 JAN 84
SEA TRIALS	8-13 JAN 84
Complete COH/Change of Homeport	23 JAN 84
Transit to San Diego	23-27 JAN 84
PSNS Warranty Period	23 JAN - 26 APR 84

6. Special Considerations

a. Advanced Beach Detachment. An advanced party was positioned in the shipyard 3 months prior to commencement of COH. This detachment played an instrumental part in what proved to be a smoothly executed change of homeport.

(1) The initial advance party should be in place approximately 3 months prior to COH; as follows:

(a) OIC (CDR/LCDR). Recommend this officer remain as OIC GAFFEY throughout the majority of overhaul. Shipboard experience and skill as negotiator is extremely beneficial.

(b) LCPO (E8/E9).

(c) AKC or SKC to negotiate with the shipyard for adequate storage facilities for SFOMS material and material to be off-loaded on arrival; act as a liaison between PERA (CV), ISSOT and PSNS; initiate contracts for material handling equipment; and oversee the storage of SFOMS material.

(d) MMC (E7/8/9) for turnover of the valve barge.

(e) RMC for liaison with NTCC Bremerton.

(f) Yeoman.

(g) Two good PO's for housing liaison.

(2) The following personnel should arrive about one month prior to the ship's arrival:

(a) PN (E5/6) for management/receipt of incoming PCS personnel.

(b) LDO/CWO Material Officer, BTC/MMC, HTC, and a good non-rate for the valve barge. The valve barge is a significant capability, particularly for ship's force overhaul of pumps and turbines. It should be manned with top quality personnel for maximum utilization.

(c) E6 and E5 RM (one versed in OCR message format and one tech controller).

(d) GAFFEY Staff should include:

(1) Assistant OIC (Junior Officer).

(2) LPO (E6).

(3) Four (E5) and 22 non-rates for maintenance Detail.

(4) DP3 programmer (TRS-80) for berthing assignment/control.

(5) Eight Engineering personnel for GAFFEY repair detail: 2 HT's, one MM (AC/R qualified), one EM, one IC and 3 FN.

(3) Sixty days prior to effective date of change of homeport, prospective personnel receipts were screened and parent commands were requested to direct transferees to report to Bremerton vice San Diego if the report NLT date was within 30 days or less of change of homeport date. Accordingly, PCS receipts began to arrive at Bremerton 30 days prior to the ship's arrival. This provided a valuable manpower source for the advanced party.

b. Parking. Recent changes in policy severely restrict POV parking in the CIA. These changes were in the process of implementation during the final month of overhaul. It is sufficient to state that ship's scheduled for overhaul should generally expect POV parking spaces to be inconveniently located and insufficient in number.

c. Security Pouches. Every member of the crew is required to wear a security pouch (which contains the Military ID Card) at all times while in the CIA. The serialized pouches are closely controlled, accountable items. CONSTELLATION's Security Officer (Weapons Officer) was the controlling custodian.

d. Access to and use of shipboard spaces by shipyard personnel warrant special attention from two perspectives:

(1) Many shipyard shops require the use of shipboard spaces as offices and work centers during the entire overhaul. This requirement was closely coordinated by the ship's Overhaul Manager and the Senior Ship's Superintendent who made the determination concerning the validity of each requirement. Formal turnover procedures between the owning department and the shipyard tenant were required. Spaces were normally returned to ship's custody in a condition that

was equal to or better than original. To minimize the impact on ship's force during the move-aboard evolution, the majority of spaces allocated for shipyard use were Air Wing spaces.

(2) Shipyard workers required access to numerous ship spaces on a 24 hr/day basis. The responsibility for centralized key/access control was assigned to the CMAA office. Keys for access to restricted spaces, such as accountable storerooms and security areas, were maintained by the cognizant department. Despite these arrangements, occasional work stoppages, damaged doors and/or cut locks occurred.

e. The tile in many passageways was well preserved during overhaul by covering the decks with plywood. Vacuum cleaners authorized for shipboard use greatly facilitated the cleaning effort.

7. Internal Control Program. COMNAVAIRPAC San Diego Ca message 020100Z Nov 83 requires a Management Control Review be conducted in the functional area of Maintenance/Repair and Overhaul. CONSTELLATION completed a 14-month complex overhaul (COH) two weeks ahead of schedule and on budget at 235 million dollars. It is imperative that time, manpower and funds for a COH be used most effectively. It requires thorough advance planning and intense management by both the shipyard and ship. Although the major portion of the work on CONSTELLATION was accomplished by the shipyard, ship's force accomplished a significant amount of repairs. In fact, the largest ever attempted by a ship's force. In addition to refurbishing voids, ventilation systems, ammunition magazines, storerooms and berthing areas, CONSTELLATION's crew overhauled three-quarters of the ship's rotating machinery. Early completion of the overhaul on budget attests to the planning, management and internal control exercised by the shipyard and the ship and the close cooperation and coordination between the two which prevailed throughout the overhaul.

SECTION III

OVERHAUL

1. Organization. Overhaul Department was organized using the structural guidelines, areas of responsibilities and other recommendations outlined in the SFOMS Manual (NAVSEA S9081-AA-SHP-010/SFOMS, Feb 1979, REV: Aug 1982). Major differences between the classic SFOMS Department outlined in the SFOMS Manual and CONSTELLATION's Overhaul Department (Figure I) are as follows:

a. Assist Ship's Force (ASF) requests were initiated by individual departments and serialized and tracked (for accounting purposes) by the Supply Officer. Final approval authority rested with the Executive Officer.

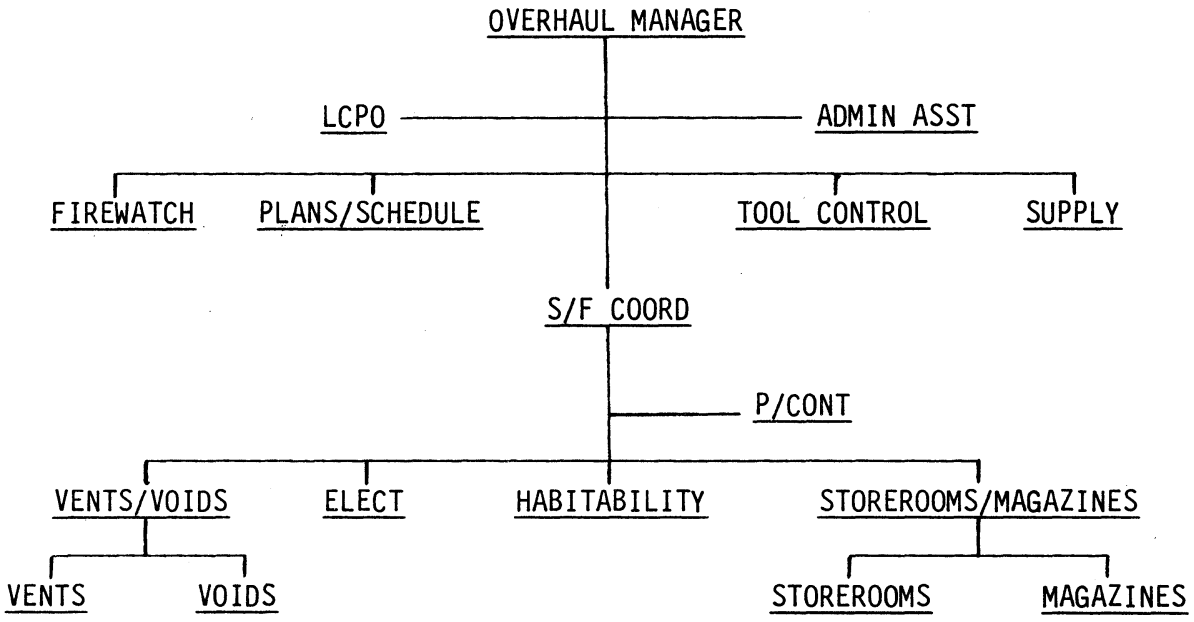
b. The Tool Coordinator and Firewatch Division Officers reported directly to the Overhaul Manager.

c. Quality Assurance and Intermediate Maintenance Activity (IMA) responsibilities were handled by individual departments.

d. The Planning and Scheduling Coordinator also served as Shipyard Coordinator in all areas except for Quality Assurance, IMA, Tool Control and Firewatch as noted above.

e. The Supply Coordinator served as an advisor to the Overhaul Manager but remained directly responsible to the Supply Officer for the performance of his duties.

Figure I



2. Manning. Overhaul Department was the largest of 16 departments in the ship's organization during overhaul. Manning during the peak period of the overhaul averaged 575 enlisted personnel (all paygrades) and 20-25 officers. Approximately 90% of those assigned to Firewatch Division were in paygrades E-4 and below. In the remainder of the department, approximately 76% were in paygrades E-4 and below. The following table provides a typical distribution of manpower within the department:

DISTRIBUTION OF ENLISTED PERSONNEL IN OVERHAUL DEPARTMENT

I. SUPPORT FUNCTIONS	# PERSONNEL ASSIGNED	% DEPT TOTAL
ADMIN	3	
ADP	6	
PRODUCTION CONTROL	3	
TOOL CONTROL	10	
SUPPLY	13	
(SUBTOTAL)	35	6%
II. PRODUCTION WORK CENTERS (See NOTE 1)		
VENTS	45	
VOIDS	45	
MAGAZINES	25	
STOREROOMS	20	
ELECTRICAL	25	
HABITABILITY	80	
(SUBTOTAL)	240	42%
III. FIREWATCH DIVISION	300	52%
(DEPT TOTAL - AVG)	575	

NOTE 1: Numbers reflect the average number of personnel assigned during the period of time required to complete that particular work package.

3. Management

a. Numerous personnel turnovers within the department occurred due to PCS transfers, discharges and TAD training requirements imposed by other departments. Close coordination with other departments resulted in a controlled turnover of personnel with minimum impact on production goals. Due to heavy firewatch requirements throughout the overhaul, firewatch personnel were seldom sent TAD or transferred without a relief. Personnel in the remainder of the department were occasionally released without relief for short duration schools, provided their absence was not critical to the production effort. The ship's Indoctrination Division (I-Division) was used as a source of manpower on several occasions with minimum impact on the other departments.

b. Watch requirements in support of four duty sections, training and/or priority industrial work in other departments dictated the number of personnel that could ultimately be assigned to Overhaul Department. Air, AIMD, Communications, Deck, Navigation, Operations and Weapons Departments were the primary sources of manpower. Engineering Department was able to spare only a

few welders and electricians without jeopardizing its own critical work. Supply, Executive, Chaplain, Medical, Dental, Safety and Training Departments were generally not tasked to assign personnel because of the essential services they continued to provide to the crew during overhaul. The average number of personnel provided by each department is indicated in the following table:

PRIMARY SOURCES OF MANPOWER FOR OVERHAUL DEPARTMENT

DEPARTMENT	# PERSONNEL	% OF TOTAL IN OVERHAUL DEPARTMENT
AIR	230	40%
AIMD	85	16%
COMMUNICATIONS	25	3%
DECK	65	11%
NAVIGATION	10	2%
OPERATIONS	80	14%
WEAPONS	80	14%
TOTAL	575	100%

b. Special action taken to keep production on schedule included the following:

(1) Used the ship's restricted/extra duty personnel after hours and on weekends.

(2) Used Hard Labor Brig Prisoners from Seattle Brig. An estimated 10,000 man-hours was realized in this program.

(3) Worked 6 day work weeks as required to meet short range goals.

(4) Worked duty section personnel after hours and on weekends/holidays.

(5) Tasked Firewatch Division to perform industrial work on a not to interfere basis with firewatch requirements.

(6) Solicited (and received) assistance from other departments on a not to interfere basis with their own high priority work and training requirements.

(7) Tasked work centers within the department to assist those who fell behind schedule.

(8) Established aggressive short range goals which, when achieved on time, resulted in a day-off. This greatly enhanced both productivity and morale.

(9) As work centers completed their assigned work packages, personnel were reassigned to the remaining projects within the department. Thus, by the 11th month of overhaul, the department's industrial work package had been reduced to three specific areas: Habitability, Electrical and Vents.

c. Progressive disestablishment of the department commenced during the eleventh month of overhaul. Selected personnel were released to Air Department

on a priority basis to support catapult and arresting gear testing requirements. Personnel in Firewatch Division, and those with industrial skills essential to the remaining habitability, electrical and ventilation system work, were retained. These remaining divisions were disestablished as follows:

(1) Habitability Division - During the 12th and 13th months, manning was gradually reduced to approximately 30 personnel. The division was then reassigned to Executive Department as a permanent Habitability Division.

(2) Electrical Division was reduced to fifteen personnel by the end of the 13th month. These personnel were tasked to assist the ship's E-Division during the scheduled six week Post Overhaul SRA in San Diego.

(3) Starting in the 10th month, Firewatch Division was able to release, without relief, personnel slated for PCS transfers and/or discharge. At the end of the 11th month, it became possible to start releasing personnel to their parent departments at a rate of 15-20 per week. By the week prior to sea trials, manning had been reduced to approximately 80 personnel. All Firewatch personnel were released to their parent departments during sea trials. The division was reactivated with 60 personnel during the one week in-port period following sea trials. The division was permanently disestablished when the ship sailed for San Diego.

4. Personnel Administration

a. Annual leave was granted/controlled in accordance with the ship's policy of not more than 14 consecutive days. The average number of personnel on leave at any one time was approximately 5%, with the exception that a 50% leave policy was approved during the Christmas/New Year's Holiday Season.

b. Enlisted performance evaluations and officer fitness reports were initiated and processed by the department. Feeder inputs were either solicited from or provided to other departments on a case basis.

c. Weekly Professional Development Boards conducted by the department enhanced morale, professional development and retention while in the overhaul environment.

d. The department absorbed a fair share percentage of those few personnel on the ship whose personal behavior required disciplinary action. Except in the most chronic and serious cases, those personnel were retained in the department and processed accordingly. Deserters and others in long term confinement or medical status were administratively released to their parent departments.

5. Work Accomplished. Overhaul Department documented 338,145 man-hours of industrial labor while completing the following ship's force industrial work:

a. Vents. Repaired, cleaned and completed Quality Assurance Checks on 534 systems. Installed 50 new systems in renovated berthing compartments. Removed/installed vent motors repaired by E-Division .

b. Voids. Preserved and painted 246 voids.

c. Magazines. Preserved and painted 39 magazines.

d. Storerooms. Preserved and painted 79 storerooms.

e. Berthing. Totally renovated 50 berthing compartments. Installed new bunks, lockers and associated furnishings for over 2,724 personnel.

f. Electrical

(1) Installed Lighting SHIPALT in 37 magazines that converted lighting from incandescent to fluorescent.

(2) Installed an Electrical Power Distribution System SHIPALT associated with electrical circuits in heads and berthing areas. This SHIPALT was initally considered to be beyond the capability of ship's force to complete. The final stage was completed on 23 February 1984.

(3) Installed new electrical circuits in 50 renovated berthing compartments, including overhead compartment lights and 2,724 berth lights.

(4) Rewired 3 squadron ready rooms and numerous other spaces to correct electrical safety discrepancies.

(5) Removed over 30 tons of dead-end cable from existing wireways.

5. Overhaul Manager. A Commander was assigned as Overhaul Manager for the entire overhaul. With the exception of controlling ASF Requests as noted previously, he performed all duties of the Maintenance Manager Billet described in the SFOMS Manual and served as department head for the 575 man Overhaul Department. Although department heads were individually responsible to the Commanding Officer for ship's force or shipyard industrial work performed in their departments, the Overhaul Manager was required to be knowledgeable on the status of major SHIPALTS, scheduled Key Events and significant problems being encountered in any area. He was additionally responsible for:

a. All matters concerning establishment, operation, administration and eventual disestablishment of Overhaul Department.

b. Coordinating manpower requirements with other departments.

c. Coordinating the Crew Move-aboard from EX-USNS GAFFEY.

d. Coordinating Quarterly Progress Review Briefings and tours/briefs for visiting Flag Officers.

e. Coordinating a worker of the month program for shipyard employees.

f. Coordinating the assignment of shipboard spaces for use by the various shipyard shops and trades.

6. Ship's Force Coordinator. A Commander was assigned as Ship's Force Coordinator. He was responsible to the Overhaul Manager for all matters concerning the department's industrial work package and served as assistant

department head. He established production goals for the various production work centers, tracked and briefed the status of the department's work package at weekly department head meetings and chaired the department's weekly production meetings and professional development boards.

7. Plans/Schedules. The Plans and Schedules Officer reported directly to the Overhaul Manager. He tracked shipyard progress on major key events and SHIPALTs, identified potential areas of interference between the ship's force and shipyard work packages and kept the Overhaul Manager informed on major problem areas. Additionally, he prepared the weekly SITREP message for the Overhaul Manager. This billet was assigned to a senior LCDR who had considerable experience in the shipyard environment.

8. Firewatch Division

a. The Firewatch Division Officer reported directly to the Overhaul Manager for the operation and administration of the division. Additionally, he coordinated directly with shipyard general foremen concerning predicted watch requirements for the following week as well as estimates for the following month. An LDO LT was assigned as division officer until his PCS transfer during the ninth month when he was relieved by a LCDR. A minimum of two junior officers (LT/below) were assigned as assistants at all times.

b. In addition to a division LCPO and LPO, each shift had its own LCPO, and a first class LPO. Second class petty officers, occasionally augmented by strong third class petty officers, served as roving monitors for the work force. One monitor per twelve to fifteen firewatches proved to be optimum. Strong monitors were the key to an aggressive and successful firewatch program, and deserve the majority of the credit for the fact that no major fires or serious injuries occurred during the overhaul.

c. The administrative burden in Firewatch Division was both large and predictable. Performance evaluations, counseling and disciplinary matters proved to be full time tasks for the assistant division officers. A first class petty officer was placed in charge of the division's administration section. He was primarily responsible for tracking personnel utilization, preparing weekly utilization reports, and obtaining projected watch requirements for the upcoming week. He tracked and adjusted the number of personnel in each shift and duty section as required to ensure all watch requirements were met. No work stoppages occurred due to the lack of firewatches.

d. The division was initially manned by 300 personnel. In order to provide 24 hour, 7 days per week coverage of shipyard hotwork requirements, the division was divided into three shifts (day, swing and mid) and further divided into three duty sections to cover weekend requirements. Personnel stood duty one weekend in three, but were exempt from all other watch bills. The three shift duty section organization was used throughout the overhaul except for a 9 week period which is discussed in the final paragraph in this section.

e. Firewatch requirements at the beginning of overhaul were well below that anticipated. To preclude numerous wasted man-hours, the division was tasked, on a not to interfere basis with watch requirements, to provide maximum

assistance with the crew move off to the EX-USNS GAFFEY, maintaining hangar deck cleanliness and production work in Overhaul Department. The initial ripout of 50 berthing areas scheduled for renovation during overhaul, as well as the initial preservation work in 10 of these compartments, was accomplished by Firewatch Division.

f. The number of actual watchstanders available in the division averaged approximately 85% of total manning. Supervisors and administrative personnel, and personnel in a leave, medical and UA status comprised the remaining 15%. When watch requirements exceeded this 85% factor, administrative personnel, supervisors and monitors also stood firewatches. Where possible, single watches were assigned to cover several welders working in the same area. In the most extreme cases, temporary augmentation with trained personnel from the ship's duty section was required.

g. The following is an analysis of average daily firewatch requirements:

COH MONTH	SHIFT DAY	SWING	MID	TOTAL	NOTES
2	127	48	34	209	
3	127	43	30	200	
4	193		72	265	(1)
4	127	37	27	191	
4	282			282	(2)
5	292			292	(2)
6	175		60	235	(1)
6	197	62	40	299	
7	193	63	41	297	
8	188	57	36	281	
9	174	58	35	267	
10	174	53	34	261	
11	126	39	31	196	
12	75	24	21	120	
13	42	14	10	66	

NOTES:

(1) The division was split into two 12 HR shifts during first two weeks of 4th and 6th months.

(2) The division operated on a 3 duty section basis for 7 weeks. Over every three day period, each section worked one day 0700 - 1600, was in a 24 hour duty status the following day and had the third day off. Sections were staggered such that, on any given day, one third of the division was off duty, two thirds were on duty during the peak period 0700 - 1600

and one third was in a duty status for a full 24 hours to cover Grave Shift requirements.

9. Tool Control Division

a. A Division Officer (Ensign/1525) and ten enlisted personnel (2 E-6, 8 E-4/Below) provided control, PMS and repair of pneumatic tools owned by the ship as well as those on a loan from Shipyard Tool Room #3.

b. An excellent control, accountability and PMS program was maintained through the use of a closely controlled issue and receipt system. Each transaction was recorded on a receipt that recorded the name of the custodian, ID/serial number of the tool and issue/return due date. A copy of each receipt was then posted in the appropriate slot on a VIDS Board that displayed the entire inventory of tools. As tools were returned, receipts were removed from the VIDS Board, maintenance was performed and the tool was returned to stock RFI. The VIDS Boards greatly facilitated accurate tracking of overdue and/or misplaced equipment.

c. Tool inventory audits were conducted approximately every 6 weeks. The results of these audits were promulgated to each department head. Frequently, tools reported as missing on one audit would reappear and be accounted for on a subsequent audit. Occasionally, missing tools were located in the shipyard tool room. Strict control and accountability of air hoses proved to be a most difficult task because of the tremendous number required to support ship's force and shipyard work.

d. The basic inventory of pneumatic tools owned by the ship included the following:

150 - needle guns
65 - pneumatic scalers (nuckle busters)
45 - air chipping hammers with chisels
18 - 7" disk sanders
20 - orbital sanders
15 - horizontal grinders
10 - vertical grinders (7")
12 - 1/2" drills (pneumatic, plus a good stock of bits)
10 - 3/8", 90 degree angle drills (plus a good stock of bits)
3 - Desco (large) deck descaling machines (with various heads)
20 - multi purpose Desco (small) crawler kits (with various head/wheel attachments

e. Shipyard Tool Room #3 served as a good source for consumables and additional tools required by ship's force, as follows:

3 - 5 gal paint pots, guns and hoses
25 - 7" disk sanders
50 - needle guns
25 - deck crawlers
10 - nukie grinders
1500 - air hoses

f. Special equipment and/or consumables not readily available from Navy sources were procured from commercial vendors:

EQUIPMENT	VENDOR
Pneumatic Air Fittings	George Warden Co, Inc. (Seattle)
Airless Paint Spray	Graco (Seattle)
Stud Welding Systems	Western Stud Welder (Seattle)
Welding Leads & Connectors	Bremerton Welding Supply
DC Welding Power Supplies & Cables	Bremerton Welding Supply
Special Drill Bits	Tacoma Screw Products (Bremerton)
Pneumatic Tool Parts (Ingersol Rand)	Pacific American Commercial (Seattle)
Miscellaneous	Campbells Industrial Supply (Seattle)

10. Production Control/ADP

a. Production Control/ADP Division was assigned to a LCDR for the first 6 months and to an AVCM for the remainder of the overhaul. An AKC and AOC were assigned as coordinators for the storerooms and magazines work packages.

b. A dedicated effort to identify major points of interference between the ship's force and shipyard work packages was made throughout the overhaul. A TRS-80 Computer was used to provide a sequenced listing (by compartment number) of all ship's force and as many shipboard jobs as could be identified by compartment. This listing was used to identify possible sources of interference. While time consuming, tedious and less than 100% effective, the effort greatly reduced the number of cases where interference caused work stoppages or rework of previously completed Key Operations.

c. VIDS Boards were used to track production progress in the various work centers.

d. A staff of 6 DP's processed SFOMS reports for the ship. Each Wednesday, Departmental SFOMS Coordinators submitted 5A reports to the ADP Section. The data was then key punched by S-7 Division and delivered to the shipyard for processing over the weekend. All SFOMS reports were then available for distribution on the ship each Monday morning. Data was current

as of the close of business the previous Wednesday.

e. The data produced in the various SFOMS reports established a satisfactory record of industrial man-hours documented during overhaul. However, the reports were not particularly useful in terms of establishing and achieving specific production goals.

f. A TRS-80 computer was used to track personnel and to produce various types of alphabetical personnel rosters. Various aspects of the same program were used to provide work center rosters and rosters sorted according to parent department. A profile of manning, sorted by paygrade and work center, proved to be particularly useful as a management tool.

11. Vents/Voids Divisions. The vents and voids work packages were completed under the cognizance of the ship's DCA who reported to the Ship's Force Coordinator as the Vents/Voids Function Head. A division officer and assistant division officer in each of the two divisions were responsible for the routine operation and administration of their divisions. The DCA provided the technical knowledge concerning the intricacies of the vent systems and essential safety and gas-free requirements for the voids. This organization capitalized on the DCA's extensive knowledge in those two areas without burdening him with administrative and personnel management matters. Both work packages were developed using the PERA (CV) computer package generated from historical data.

a. Voids Division

(1) Manning in Voids Division averaged 45-50 personnel until the 8th month of overhaul when the work package was essentially completed. An LCPO, LPO (E-6) and three additional E-6's responsible for scheduling, production, safety and career counseling were assigned. Personnel in the Boatswain's Mate rating provided the primary training, supervision and quality assurance.

(2) Work teams of 4-5 men each were formed. Two teams handled painting requirements. Remaining teams performed the necessary chipping, grinding and preparatory work. Each team was directly supervised by an E-5 and a strong E-4. A key element of success was to quickly identify the strong petty officers and appoint them as team leaders, regardless of seniority.

(3) A strong safety program was implemented and maintained. Primarily as a safety consideration, work in voids was restricted to normal working hours. After hours, duty section personnel were utilized to augment Firewatch Division and other production work centers.

(4) No voids below the 4th deck were scheduled for completion by ship's force. Work in four of the spaces was deferred due to required structural repairs that were beyond ship's force capability. Lower deck voids were completed prior to undocking to minimize problems associated with being waterborne; i.e., temperature, condensation and inadvertent flooding.

(5) Production goals of 8-10 spaces per week were set and frequently exceeded. Temporary work stoppages and set backs in production were caused by a variety of factors, including: inadvertent floodings, temperature,

condensation and interference between ship's force and shipyard work. Close liaison with the shipyard and flexible scheduling greatly reduced the number of work stoppages due to interference and contributed considerably to the excellent rapport that existed between the two work forces.

(6) Due to ongoing work at or below the 4th deck, shipyard workers frequently worked in (or were required to transit) voids that had already been cleaned, painted and preserved. Additional cleaning and touch-up in many spaces was required. Where possible, covers were installed to reduce the number of open voids that could be used as receptacles for industrial debris.

b. Vents Division

(1) The vents work package included installing new vent ducting in 50 renovated berthing compartments; cleaning, repairing and completing quality assurance checks on 534 existing systems; and removing and installing fan/blower motors repaired by the ship's E-Division.

(2) Shipyard vent work was initially limited to repairing systems located in the main machinery spaces and installing new systems associated with SHIPALTS. After overhaul commenced, the ship requested funding/authorization for shipyard repairs to additional systems that were beyond the capability of ship's force to repair. The shipyard was subsequently authorized to repair 51 systems that had water tight ducting from the skin of the ship to approximately 30 feet inboard. Additionally, the Shipyard manufactured repair parts for installation by ship's force. Approximately 2,000 man-hours of ASF funds were used for this purpose.

(3) Personnel in the AMS Rating provided the essential training and supervision for the 45 man division. The primary work at the beginning of overhaul was cleaning and repairing existing systems. Starting in the 4th month, and while continuing the cleaning/repair effort at a reduced pace, 4-5 man teams were used to install new vent ducting in renovated berthing compartments. During peak periods, as many as four such teams were required to keep the berthing project on track for timely completion.

(4) By the 10th month of overhaul, approximately 95% of the systems had been cleaned and 80% of the new ducting in berthing compartments had been installed. The manning was then drastically reduced to alleviate manning shortfalls in Habitability Division.

12. Magazines/Storerooms

a. During the first six months of overhaul, overall responsibility for the magazines and storerooms work packages was assigned to a LCDR Function Head. A Division Officer, Assistant Division Officer, LCPO and an average of 20-25 personnel were assigned to each of the two divisions. Although the Assistant Division Officer billets were not required from the standpoint of efficient leadership, operation and administration of the divisions, they served the useful purpose of providing valuable training for inexperienced junior officers. The function would have operated just as efficiently (and did so after the 8th month) as a single division with one Division Officer, one Assistant Division Officer and one Division LCPO.

b. During the course of the overhaul, 39 magazines and 79 storerooms were preserved and painted by ship's force. All magazines were completed by the 11th month. The final storeroom was completed during the 13th month. An additional 8 storerooms were painted by the shipyard due to extensive industrial work accomplished by them in those spaces.

c. Production goals of 2.0 storerooms and 1.5 magazines per week were established but not achieved due to delays and rework requirements caused by any one or more of the following:

(1) Access Cuts.

(2) Space flooded with salt water.

(3) DFM/JP-5 spills.

(4) Interference with installation of CHT plumbing and components in numerous spaces.

(5) Inability to complete the priming or final paint phases on time due to hot work being conducted in adjacent spaces.

c. Quality assurance checks were made following completion of each phase of preservation; i.e., surface preparation, priming and final painting. Paint was controlled by Deck Department and issued only after completion of the appropriate quality assurance check for each phase. Final checks for discrepancies were made during the formal turnover of each space to the owning department.

d. Division paint teams were also used to paint berthing compartments being renovated by Habitability Division. These requirements were coordinated by the Ship's Force Coordinator and/or the Habitability Officer.

13. Electrical Division

a. A CWO4 from Communications Department was assigned as Division Officer. Division manning included an LCPO (ATC), and approximately 25 personnel in the AE, AT, AQ and RM ratings. The division worked closely with personnel from the ship's E-Division who were responsible for all quality assurance checks and for completing the final hook-up. This concept greatly expanded the quantity of electrical work that could be accomplished by the ship during overhaul.

b. Electrical work in support of the habitability work package was coordinated as a joint effort of the Habitability Officer, Electrical Division Officer and the Ship's Force Coordinator who closely monitored progress in all work centers and established priorities accordingly.

c. Electrical Division required the full time use of an arc stud welding machine and qualified welders for the installation of light stanchions, brackets and other hardware.

d. A major effort to remove dead-ended electrical cable from existing wireways was undertaken. The subsequent removal of over 30 tons of such cable opened clogged wireways and substantially improved the ship's electrical safety program and EMI characteristics.

e. A small tiger team was formed to restore battle lantern circuits throughout the ship during the final phases of the overhaul and during the Post-Overhaul SRA.

14. Habitability

a. The Habitability work package consisted of total renovation of 50 crew berthing compartments in which new berths, lockers and associated accessories were installed for 2,724 personnel. Additionally, 5 heads, which were in various phases of renovation when overhaul commenced, were completed.

b. The Habitability Officer reported directly to the Ship's Force Coordinator. A Division Officer, Division LCPO and two CPO's formed the essential leadership structure of the division. Division manning gradually increased from 45 personnel to approximately 80 by the 6th month. As work packages were completed in other work centers in Overhaul Department, additional personnel became available for assignment to the habitability project. Manpower eventually peaked at 138 personnel during the 10th month.

c. Although a significant manpower shortage existed in Habitability Division during the first half of the overhaul, a satisfactory rate of production was achieved. This was possible only because considerable work was delegated to other work centers. The initial rip-out phase was completed almost entirely by personnel in Firewatch Division on a not to interfere basis with watch requirements. Responsibility for the initial labor intensive preparation of the spaces for painting was delegated to other work centers in Overhaul Department as well as to other departments in whose spaces the work was scheduled. Additionally, painting was completed by experienced paint teams from Voids, Magazines or Storerooms Divisions and electrical and vents work was completed by the respective divisions in Overhaul Department. The work force in Habitability Division was primarily responsible for installing sub-bases; construction/installation of berths, lockers, deck underlay, tile and accessories; touch-up and turnover to owning departments. The division was also responsible for the complex logistics associated with the storage and movement of habitability materials from warehouses located in the shipyard and local area.

d. A staff of 11 Technical Representatives from Designers and Planners, Inc. worked (under NAVSEA contract) with the division throughout the overhaul. Their technical assistance was a critical contribution to a successfully completed self-help project.

e. The renovation of each of the 50 berthing compartments was completed in 10 major phases. The normal order of completion, and an estimated percentage of the overall work represented by each phase is provided below:

PHASE	PERCENT OF TOTAL WORK
Surface Preparation/Primer Paint	25%
Install berth/locker sub-bases	10%
Ventilation and lagging	12%

Overhead lights	14%
Final paint	8%
Install berths/lockers	14%
Install berth lights	5%
Intall deck underlay and tile	7%
Install accessories	3%
Final touch-up/turnover inspection	2%
TOTAL -	100%

f. Overall progress on the project was measured using the above percentages to establish a point system. The entire project was assigned a value of 5,000 points (50 compartments x 100 points per compartment). Production goals were based on a requirement to complete a given number of points each week. Overall progress, in terms of total points completed to date, was graphically tracked and briefed at weekly department head meetings. Although this system contained inherent inaccuracies, it was a valuable management tool when used in conjunction with other charts that reflected the actual work that had been completed in each of the 50 compartments.

g. Lessons Learned/Recommendations

(1) The rip-out phase must be closely supervised to reduce the potential for ripping out the wrong compartments and to preclude inadvertent damage to items as telephones, MC and sound powered circuits, OBA lockers, scuttlebutts, mirrors and many salvagable locker parts.

(2) Accurate inventory and accountability of habitability self-help materials must be maintained. Many of the problems encountered while completing this work package can be attributed to the fact that self-help materials had been stored in as many as five different warehouses in the shipyard over the three year period preceding overhaul and an accurate inventory and locator file of the stock on hand was nonexistent. The inventory problem was further compounded by the fact that Superior Steel Door and Trim Company provided modular berths that were frequently packaged with parts belonging to a different type of berth. Numerous disruptions and delays in the production effort resulted. During the overhaul, Designers and Planners, Inc. were eventually tasked by COMNAVAIRPAC to inventory and consolidate remaining supplies in the available warehouses. The optimum solution would be to have one easily accessible warehouse for the storage of all self-help materials.

(3) An aggressive ongoing quality assurance organization is required within Habitability Division. Historically, the quality of work tends to decline as a result of efforts to increase production and when skilled personnel are transferred.

(4) A Supply Officer dedicated to expediting SFOMS materials is essential throughout the entire overhaul. A small staff of personnel familiar

with requisitioning, expediting, tracking and open purchase procurement procedures will greatly reduce the potential for production delays due to the lack of materials.

(5) Habitability Division should have two permanently assigned trucks for the timely transportation of materials to the ship.

(6) Arc stud welding machines were in constant demand and short in supply. An inventory of six machines, with an appropriate maintenance support program is recommended.

(7) Berthing compartments required to support crew move aboard must be identified early in the overhaul period and given the appropriate priority for completion. A list of these compartments should be provided to the Senior Ship's Superintendent as well as to the cognizant department heads.

SECTION IV

AIMD

1. Facilities. AIMD facilities received extensive work center modifications during COH to accommodate installation of the numerous units of sophisticated test equipment required to support the introduction of F/A-18 aircraft to the fleet. While not the only driving factor, F/A-18 support requirements necessitated a majority of the 17 major SHIPALTS completed in AIMD spaces. Detailed long range planning and total cooperation at all levels of participation were the two critical ingredients for this successful COH.

2. Personnel.

a. In preparation for COH, key AIMD personnel were tasked to develop major portions of an Overhaul Department organization plan - specifically, the production, admin and material support functions. The AIMD Production Control Officer and Production Control CPO were assigned TAD to Overhaul Department to implement the plan. Applying their production control expertise, AIMD personnel established a VIDS board tracking system for monitoring work progress in terms of space turnover, space in-work, stage-of-completion, etc. The AIMD Quality Assurance Officer was assigned TAD to Overhaul Department for the purpose of establishing the ship's tool control program. Also recommended was the assignment of a dedicated Overhaul Department Supply Division. As a result, S-6 Division became responsible for SFOMS materials.

b. AIMD provided a TRS-80 computer to aid production tracking and data collection within Overhaul Department. In addition, a special software package developed by AIMD personnel was used to identify sources of interference between the shipyard and ship's force work packages. IM-2 Division provided vent fabrication expertise for Overhaul Department's Vents Division which ultimately absorbed all aviation structural personnel. Many AIMD electrical personnel were assigned to Overhaul Department's Electrical Division. Implementation of an aviation oriented tool control program (staffed exclusively by AIMD personnel) effectively ensured a very low level of lost, stolen or missing tools and equipment. An expected result of the broad AIMD staffing policy was that, while retaining an average of 38% of it's personnel in support of unique departmental functions, AIMD became manpower critical. This figure does not include the AIMD beach det in San Diego.

3. Programs. With manning at approximately 38% of normal strength, AIMD was still responsible for maintaining critical AIMD functions that could not be shut down during COH. These functions included but were not limited to:

a. The Aeronautical Technical Publications Library.

b. Classified Material Control.

c. Individual Material Readiness List (IMRL) program.

d. VAST maintenance, verification.

e. Aeronautical Equipment Calibration Lab.

f. Material Control.

g. Maintenance admin.

h. A team to rehab selected AIMD/Air Wing spaces. *

i. General Damage Control requirements. **

* The rehab team or "Tiger Team" was organized within IM-1 Division to do flooring, painting, stripping, insulation and many other minor repair/overhaul tasks for AIMD's 210 assigned spaces.

** The Damage Control (DC) team ensured that all shipboard 3M requirements were satisfied in each AIMD space.

4. Beach Det. The CV-64 Beach Det, San Diego, CA, operated independently in the COMNAVAIRPAC GSE rehab center at NAS North Island. Under the direction of the Det O-in-C (IM-4 Division Officer) the IM-4 Division, with some support from the NARF, overhauled 392 pieces of support equipment (SE), incorporating all relative SEC's. While most work was accomplished by the det or the NARF, assistance from commercial vendors was required for some engine and component work. All fork lifts were overhauled by P.W.C. at Naval Station, San Diego (32nd Street).

5. Objectives. In view of the above, all AIMD overhaul objectives were either met or work arounds were identified. During the course of the overhaul, several specific areas became management intensive. Significant lessons learned include:

a. Management Turnover. Approximately seven months into the COH, AIMD experienced a compete turn over in upper management. Four key officer billets, including the AIMD Officer, the IM-1 Division Officer, the Production Control Officer, and the IM-3 Division Officer, had personnel changes within a three month period due to normal rotation. While continuity and momentum remained at a high level, AIMD was a little "out of step" as the new officers came on line.

SOLUTION: Stagger rotation of key management billets to occur prior to or after COH and then, not all at the same time.

b. IMRL. During the COH, AIMD was tasked to transfer many items of support equipment (SE). Some were transferred permanently as the IMRL was tailored and others were temporarily loaned to other activities (cross-decked). While not unusual, and easily managed in a different environment, nearly 4,000 line items (over 7,000 pieces) of SE create a monumental management problem during COH for several reasons:

(1) As the ship opens to accommodate the overhaul, security becomes critical. Locks are broken and movement of equipment from space to space is required. Inventories lose their validity.

(2) Technical personnel are transferred and billets gapped due to manpower draw down - other personnel are TAD. Items cannot be found and associated equipment is misplaced. Items lose their identity.

(3) Many high value items have direct application in other fields of work or are appealing from a personal point of view. Pilferage requires extra man-hours and unfunded monetary obligations.

(4) Decentralized production control leaves transfer, receipt and shipping of material to individual divisions. Item tracking becomes complex and difficult. Cross-decked items lose their visibility.

SOLUTION: Prior to entering the shipyard, each division officer must have an accurate accounting of his required IMRL and associated equipment. This should go well beyond the required annual inventory and include pictures, bar coding, or other means of identification as he may need to identify these items at a later date without benefit of technical expertise. Recommend the entire AIMD IMRL be moved ashore to a secure warehouse (preferably at NAS North Island) to facilitate management and maintenance of equipment, liaison with the beach det and liaison with COMNAVAIRPAC. Initiate a mechanized inventory of cross-decked items for tracking purposes. A TRS-80 computer worked well with a file consisting of the following fields: PART NO, SERNO, NOMEN, IMRL #, W/C, DATE, AUTH, DESTINATION, PAYBACK and TYPE OF TRANSFER.

c. Environment. The moment industrial work begins, dust will proliferate throughout the ship. Anything not covered or protected in some way will be inundated with dust and grit. This is critical to electronic components and equipment.

SOLUTION: Plan ahead. Order protective material and consumables to ensure system integrity for equipment remaining on board. Check it regularly as someone will always want to see what's inside.

d. Calibration. While most of AIMD's calibration equipment and calibration standards are not IMRL items, many are required to support the IMRL. Problems encountered while maintaining a CAL LAB on board during COH are the same as those associated with the IMRL. Working closely with the CAL LAB at NAS Whidbey Island helped but AIMD was still unable to fully maintain the calibration cycle. 450 of the 1700 items on FORMAT 310 were either repaired, refurbished or overhauled; however, the entire effort was virtually negated due to unsatisfactory environment, personnel shortages, reduced technical expertise and inadequate security.

SOLUTION: Complete off-load of the CAL LAB at the same location as the IMRL would be ideal.

e. VAST. It is necessary throughout COH to continually exercise and verify all VAST stations. When Engineering Department starts to overhaul major equipment, problems associated with insufficient air conditioning and unstable power will arise.

SOLUTION: Keep Engineering Department informed of scheduled requirements and retain one MMG-1 on board as an alternate power source.

SECTION V

AIR

1. V-1 Division - Flight Deck

a. The single most important element for successful overhaul was the development of a complete, well-planned work package. It consisted of the following:

(1) Sandblasting, priming of external island structure.

(2) Rework of aircraft electrical service station (Power Hatches).

(3) Repair of catwalks.

(4) Repair/rework of padeyes.

(5) Test/replacement of padeyes.

(6) Rework of deck edge elevators.

(7) Installation of new deck edge water wash down system.

(8) Installation of two (2) additional 1 1/2" AFFF Stations on bow.

(9) Re-design/overhaul of flight deck control.

(10) Rehab of all divisional spaces; voids, work centers, offices, berthing and passageways.

b. All scheduled work was closely monitored by division personnel. Early liaison among division personnel, Overhaul Department, shipyard and contractors was beneficial in defining the scope, responsibilities and schedules of work within divisional spaces.

c. Weather was a major factor in all topside work. A maximum effort was required during fair weather to compensate for time lost in foul weather.

d. Flight deck cleanliness required cooperation between V-1 personnel and all shipyard shops involved on the flight deck. Close coordination with Shop 72 riggers was required for timely exchange of flight deck dumpsters. All flush deck washdown nozzles were removed and replaced with plugs prior to any positioning of shipyard equipment or shelters on the flight deck to prevent damage and ensure internal integrity. All deck hatches were secured. Temporary covers were made for missing/damaged hatches.

e. Security of spaces and material from weather, vandalism and theft required constant attention. Storage of equipment on the flight deck was not permitted with the exception of the crash and salvage locker. All spaces were locked and posted with division, phone number and point-of-contact.

f. The complete renovation of flight deck control was performed by private

contractor. Construction commenced ten (10) weeks prior to sea trials. While 10 weeks proved to be sufficient, longer lead times should be programmed by CVs contracting for similar renovations.

g. Nonskidding of the flight and hangar decks was scheduled for post-COH availabilities.

2. V-2 Division - Catapults and Arresting Gear

a. Close coordination with Overhaul Department was required to ensure appropriate V-2 personnel were returned prior to the commencement of arresting gear and catapult tests.

b. Midway through the COH, Air Department started holding weekly progress meetings with all shop foremen associated with catapult, arresting gear and JBD work. These meetings greatly facilitated the ability to monitor/track shipyard progress.

3. V-3 Division - Hangar Deck

a. With the hangar bay being used by ship's force, shipyard and private contractors for storage, offices and staging space, hangar deck cleanliness was a twenty-four hour per day effort. The Alpha Working Party was tasked to assist in cleaning the hangar and flight decks. This enabled V-3 to devote more time to the division's work package. A CONDOR boom lift proved to be invaluable throughout the overhaul for reworking the hangar bay areas and replacing overhead lights. An 80' CONDOR, provided by CNAP at PSNS, proved too large for hangar deck work and was traded with Shop 72 for a smaller one. Ensure selected personnel attend CONDOR Boom Lift School for safety of operation. A close relationship with Shop 72 personnel enabled successful coordination of all hangar bay and flight deck evolutions.

b. All departments were required to tag cognizant equipment stored on the hangar bay with division, point-of-contact and telephone extension. These tag procedures, together with close coordination with Hangar Deck Control, minimized lost equipments.

4. V-4 Division - Aviation Fuels

a. All JP-5 was off-loaded prior to entering the shipyard. JP-5 was on-loaded before the end of overhaul for system tests. During sea trials, PSNS provided a fuel truck for helo operations.

b. Fuel hoses were stored at Warehouse 513 at PSNS. Additional storage was available at the Manchester Fuel Farm. Upon request, PSNS provided additional hose racks to the Manchester Fuel Farm.

c. Immediately after accepting tanks cleaned by PSNS, the tops were sealed, painted purple and labeled with appropriate phone numbers. This deterred personnel from indiscriminately opening tanks to trace piping. Open tanks tended to collect trash which required ship's force to remove. Tank security was checked weekly at a minimum.

5. V-5 Division - Primary Control. Early liaison by V-5 with PSNS design

permitted design changes in the Prifly Shipalt. Design changes or recommendations need to be identified prior to arrival for COH in order to have a reasonable chance of being incorporated.

SECTION VI

CHAPLAIN

1. Library Operations. The ship's library was extensively utilized during the overhaul period by CONSTELLATION crewmembers. A small, temporary library was established aboard EX-USNS GAFFEY while departmental spaces were being rehabilitated. The following lessons were learned:

a. Upon arrival, all nonreference hardcover books were packed in cartons in the order in which they were shelved. Each carton was numbered sequentially and a list made of which books were packed in which carton. The cartons were then stowed in a secure place until library rehabilitation was complete.

b. All reference books and current books received while the ship was in overhaul were utilized to maintain a small, temporary library facility.

c. The Crew's Library remained open on a 24 hour-per-day basis during the overhaul period as it afforded the crewmembers a needed "quiet zone".

2. Training. The overhaul period was accompanied by a high rate of enlisted personnel turnover. A training plan administered by the Leading RP for newly arrived RPs and for nonrated personnel striking for the rate proved beneficial.

3. Counseling. Chaplains should be aware of unusual stress situations created by the yard period, both for crewmembers and for their families. The following suggestions pertain to Family Advocacy:

a. Encourage cooperation with the Family Advocacy Board at Bremerton Naval Hospital, as they relate to the Child Abuse Committee, the Sexual Abuse Committee and the Spouse Abuse Committee. This will prove beneficial, as it enhances the ability to keep current on the progress and needs of problem families.

b. Encourage implementation of the Family Service Center at Puget Sound Naval Shipyard. This will greatly facilitate the counseling load. Bangor and the Hospital centers are already overloaded.

4. Chapel. Chapel services (both Sunday and weekday) were conducted in Classroom #2 aboard EX-USNS GAFFEY due to the industrial work and lack of support services aboard USS CONSTELLATION.

SECTION VII

COMMUNICATIONS

1. General. The Communications Department enjoyed a most successful overhaul due to advanced planning, day-to-day tracking of shipyard and ship's force jobs to preclude mutual interference, close cooperation with key personnel throughout the shipyard, and a positive cooperative attitude and approach within the department.

2. Accomplishments

a. Departmental manning/ship's force work package: A total of 23,321 industrial man-hours were accomplished by the Communications Department. Average departmental E-1 thru E-9 manning during overhaul was 90 personnel. For the majority of overhaul, a maximum of 42 personnel were assigned to nondepartmental tasks such as PSNS Shore Patrol, Message Processing Center manning, NTCC Bremerton staff augmentation, Master-at-Arms Force augmentation and Overhaul Department. Signals (CV) Division was responsible for the renovation of 10 interior compartments and several interior and exterior passageways and ladderways in the superstructure. Radio (CR) Division overhauled 34 spaces and passageways including complete renovation of a newly assigned berthing space and head. The scope of the ship's force work package necessitated shifting to three section duty for a one month period (OCT 83) and the establishment of a six man night overhaul crew.

b. Ship Alterations: The following D and K SHIPALTS were scheduled for installation during this overhaul:

(1) D 6024 - Installation of AN/SSQ-69 Searchlights: Due to non-availability of the SSQ-69 searchlights and power supplies in the supply system, this alteration was not completed. The foundations and wiring for the searchlights were installed pending receipt of the remaining equipment.

(2) K 4363 - Install TSEC/KY-75 HF System. Refer to paragraph g. for details.

(3) K 5080 - Install TSEC/KY-58 VHF/UHF System. Refer to paragraph g. for details.

(4) K 5196 - Install Single Audio System (SAS). Refer to paragraph g. for details.

(5) K 5198 - UHF Growth Radio. Refer to paragraph h. for details.

(6) K 5194 - Install Comm Security System. This alteration provided the mounting, cable kits and ancillary hardware required for the installation of the Minimum Essential Capability (MEC) secure voice equipments required by SHIPALTS 5080K and 5193K.

c. Stowage Space: Adequate, secure and environmentally safe storage

space at PSNS was not available for use by the Communications Department. The need for such stowage space was partially filled by using the fifth deck of PSNS Building 91 for bulk storage not requiring a controlled climate, and by leasing a commercial storage facility of the "U-Store-It" type for $98.00 per month for temporary storage of unclassified electronic equipment requiring a controlled climate.

d. Antenna Repair Package: Nine trussed whip and fan wire antennas were overhauled by PSNS. Close coordination with shipyard personnel ensured that the rigging of these antennas (particularly the diameter of the cable used on the trussed whips) was accomplished in accordance with current specifications. The shipyard was amenable to ship's force requests for information and provided timely feedback. Due to the lack of an adequate space to stow and rework deck edge whip antennas, eight CONSTELLATION whip antennas were shipped to Naval Weapons Station, Seal Beach, CA via the Navy Supply System for rework. Approximate cost per antenna was $1K. Antennas were required to support combat systems testing in the latter quarter of overhaul. Problems encountered with this method of antenna overhaul were due primarily to a late decision (by ship's force) which imposed a short fused requirement on the repair facility at Seal Beach. ASF funds were used to procure proper packing and shipping material. Recommend that future CV's going through overhaul at PSNS ship their antennas to Seal Beach at the earliest opportunity to provide ample lead time for overhaul and return shipment.

e. Teletype/Electronic Equipment Overhaul Package: Approximately three months prior to entering overhaul, CONSTELLATION contacted Naval Electronics Center, San Diego to determine the capability of performing class B overhauls on selected teletypes and other electronic equipment. This decision was based on the knowledge that there was insufficient "bench space" at PSNS to support a ship's force overhaul of such a large quantity of equipment, the anticipated lack of stable electrical power and fresh water aboard ship, the lead time required to procure sufficient repair parts, and the limited number of qualified technicians. Funding of approximately $80K was made available for this project and the following equipments were overhauled by NAVELEX, San Diego:

(1) PP-3054 Power Supplies (6)

(2) AN/SRA-57 Coupler Drawers (8)

(3) AN/SRA-17B/C Couplers (2)

(4) AM-4823 Frequency Controllers (6)

(5) AN/SRR-19A/B LF Radio Receivers (2)

(6) AN/URR-27 VHF Radio Receiver (2)

(7) RD-390 MF Radio Receivers (5)

(8) AN/URT-7 VHF Radio Transmitter (1)

(9) AN/URA-17 Converters (10)

(10) AN/UGC-6 Teletypes (6)

(11) AN/UGC-48 Low Level Teletypes (3)

(12) AN/UGR-9 Low Level Teletypes (4)

(13) AN/UGC-59 Low Level Teletypes (1)

(14) AN/FGC-79 Teletypwriter Sets (4)

(15) TT-605 Reperforator (1)

(16) TT-69 Teletype Unit (1)

(17) AN/FGC-100 Teletypewriter Sets (3)

A total of 67 pieces of equipment were delivered to NAVELEX prior to and at varying times throughout the overhaul. Equipment pickup was also accomplished by ship's force personnel - including a qualified teletype repairman (RMC) who performed initial quality control checks prior to accepting the equipment. The material condition of the equipment received from NAVELEX, San Diego was outstanding. No equipment was damaged during transit to Bremerton.

f. Single Audio System (SAS) S/A 5196K: Installation of this system proceeded without problem. Because the system is totally new and differs radically from traditional methods of remote patching of secure and non-secure voice circuits, intense training is required. Two senior technical controllers were sent TAD to USS ENTERPRISE (CVN 65) for real time, at-sea training. The support and information received from CVN 65 proved to be most valuable. Formal on site training by TRACOR personnel was conducted at NAS North Island. Preliminary on site training by TRACOR was scheduled prior to sea trials. TRACOR also provided training/technical assistance during sea trials.

g. Secure Voice Upgrade: SHIPALT 4363K specified the receipt and installation of 10 KY-75 cryptographic devices and SHIPALT 5080K specified the installation of 14 KY-58 cryptographic devices. However, the CNO Secure Voice Plan (dtd Nov 81) and information received from COMNAVTELCOM indicated that total equipment installation on both of these SHIPALTS would be deferred due to the nonavailability of sufficient quantities of KY-75's and KY-58's. Current on board assets are 7 KY-75's in Radio Central for GENSER use, one KY-75 for installation in SSES and 3 Ky-58's installed in Radio Central for GENSER use.

h. Line-of-Sight AN/WSC-3 UHF Radio Installation: Existing AN/URC-20/21 UHF radios were removed and replaced with 31 line-of-sight (LOS) AN/WSC-3 UHF transceivers under S/A 5198K. All radios passed scheduled combat systems testing. Joint shipyard/ship's force testing was conducted prior to sea trials.

i. Design changes: Thorough screening of the ship's SARP and PSNS drawing indexes enabled the department to compile a complete set of blue prints for all spaces and systems. Periodic review of these blue prints enabled the Communications Department to focus the attention of PSNS design engineers on potential problems associated with future SHIPALTS, specifically early CY 84 installation of the OTCIXS terminal equipment and planned upgrade of the ship's communications quality monitoring system. In all cases, early review of

blueprints is imperative if changes in equipment layout and space configuration are to be successfully incorporated and implemented.

j. Combat Systems Testing: Communications combat systems testing aboard CONSTELLATION was approximately two weeks behind schedule when started. The assignment of knowledgeable, senior Radiomen to assist PSNS test personnel enabled the department to make up the lost time and complete all scheduled communications combat systems tests within the alloted timeframe. Close coordination with test directors, Crypto Repair Facility (CRF), Shops 51 and 67 was required to ensure that equipment was reinstalled and/or repaired as necessary to support testing. A positive approach and daily liaison with the various PSNS codes were vital keys to a smooth and effective combat systems testing program.

k. Coordination with PSNS Design Engineers: Throughout the overhaul, several instances arose where modifications to existing plans were required to make installations more "operator friendly." The vital key to success in these cases was early identification of the problem areas and a close working relationship with Shop 51 personnel and appropriate design engineers.

l. Message Processing Center Operations during overhaul: Prior to entering overhaul, CONSTELLATION's advance party established a Message Processing Center (MPC) on board EX-USNS GAFFEY for the ship's use throughout the overhaul. A XEROX 5600 copier was leased to provide reproduction services. This equipment was found to be unsuitable for large scale shipboard message processing due to the frequent need for maintenance and very unstable shore power. Should other CV's adopt the GAFFEY MPC, it is recommended that an alternate copier be used, e.g., a XEROX 1045 or 1075. CONSTELLATION's communications guard was shifted to NTCC Bremerton upon arrival at PSNS and was not returned to the ship until 3 December 1983. Compliance with telecommunications procedures, particularly OCR message processing, was strictly enforced. On request, NTCC Bremerton provided OCR message preparation training. Prior to commencing overhaul at Bremerton, all OCR typewriters should be calibrated and thoroughly checked. All message drafters/releasers and clerical personnel should be thoroughly familiar with OCR message preparation procedures.

m. CMS/CRYPTO Repair Facility (CRF): All of CONSTELLATION's cryptographic equipment was delivered to CRF Bremerton during the first week of overhaul for class B overhaul. Overhaul was accomplished in a professional and timely manner and returned to the ship as required. Although CONSTELLATION's CMS account was not disestablished, routine CMS "draws" were curtailed until Nov 83. A CMS training assist visit was provided by NAVSECGRUACT, Skaggs Island, CA in Jun 83. Since the CMS account was essentially inactive, the training visit focused primarily on administrative and training procedures. CMS training visits and inspections by NSGA Skaggs Island are normally scheduled for the Northwest during the spring of each year.

n. Classified Destruction: PSNS has a classified waste shredder located in Building 91. Liaison by the CONSTELLATION advanced party enabled the ship to have Wednesday of each week reserved for classified destruction. Communications Department promulgated a schedule for the ship's departments. No significant problems were encountered in this area. Care must be taken to ensure that all shredder users are aware of the necessity to purge all burn

bags of foreign matter such as angle iron, soda cans, etc.

o. XEROX Support: The support received by CONSTELLATION from the local XEROX agent was considerably less satisfactory than that received from the agent in San Diego. Specifically, the local XEROX representative did not respond quickly to the needs of the ship when pickup and delivery of equipment was required.

p. Environmental Cabinets: CONSTELLATION's electronic environmental cabinets were not removed from the ship for overhaul and blower motor rewinding. For future overhauls, it is recommended these cabinets be shipped to SIMA, San Diego for Class B overhaul.

q. HF Antenna Base Insulators: Lateral movement was noted in some 35 foot trussed whip antennas following reinstallation. Recommend that an ASF request be submitted to PSNS for the removal of all antenna insulators for visual inspection, torque testing and repair as required.

r. Switchboards: Recommend that class B overhaul of switchboards be included as a standard item in the shipyard work package for all CV's. Deterioration and corrosion of switchboard wafers and seats contribute to degraded communications during combat systems testing.

s. Pre-COH Configuration Photographs: Prior to commencement of overhaul, recommend a full set of photographs be taken of all spaces with particular attention to patch panel labeling, DC markings and other equipment installation details. This will preclude confusion during the reinstallation phase of overhaul.

t. EMI/RFI Reduction: In preparation for the pre-COH INSURV inspection, CONSTELLATION established a team to remove dead-ended cable. In approximately fifteen months, the cable removal team was responsible for removing over 30 tons of dead-ended cable from the ship. The removal of this quantity of cable significantly reduced RFI, EMI and crosstalk on circuits when the communications suite was reactivated. Additionally, many of the personnel initially assigned to the cable removal team formed the core of Overhaul Department's Electrical Division.

u. Previously Removed Equipment/Wire Checks: Prior to starting combat systems testing, CONSTELLATION thoroughly checked all communications connectivity from Radio Central Switchboards to all remote operating positions throughout the ship. This effort enabled the ship to correct numerous associated problems prior to starting combat systems testing. During these wire checks, it was noted that equipment such as WRT-1 HF transmitters and STEAMVALVE equipments (which had been previously removed) were still reflected on switchboard positions and that the trunk lines for this equipment were still in place and dead-ended. These discrepancies undoubtedly contributed to cross talk problems experienced on selected voice circuits prior to overhaul. It is strongly recommended that all switchboards be checked by Shop 51 electricians during the POT & I so the scope of the problem can be identified and removal of the unused cables may be accomplished early in the overhaul.

3. Work Center Requirement. The need for a combat systems maintenance area or dedicated combat systems maintenance barge similar to the very successful

engineering valve barge was evident throughout the overhaul. As noted previously, there is a paucity of secure environmentally protected work/stowage space for use by ship's company on board PSNS. The procurement of a dedicated combat systems maintenance/overhaul work space with adequate power (i.e., 400hz, ventilation, etc.) and other support services would be most beneficial to future CV's undergoing COH at PSNS. This space could be used for overhaul of antennas, teletypes, HF transmitters and receivers, and other electronic equipment. Had such a space been available for CONSTELLATION, a better quality overhaul of many electronics equipments could have been achieved by ship's force. Many problems encountered with certain equipments (e.g., URT-23's) during the testing portion of the overhaul can be directly attributed to the lack of a full service, environmentally "clean" electronics workshop for use by ship's force technicians.

SECTION VIII

DECK

1. Exterior Preservation. The initial work package authorized PSNS to paint the underwater body and the sides, exclusive of overhangs, deck edge elevator undercarriages, areas reachable from staging on sponsons, recesses and catwalks. Through negotiations, the final work package authorized PSNS to sandblast and paint from the keel to the top of the catwalk bulwarks and deckedge elevator under carriages. ASF was used to paint the areas over the sponsons and in the elevator wells. The quality of the finished product was uniform and far superior to that which ship's force could have accomplished in the recessed areas. As PSNS scheduled all the work, mutual interference problems experienced by other CV's were eliminated.

2. BULK PAINT STOWAGE/ISSUE. With the exception of paint provided by NAVSEA as a part of the habitability package, all paint used by ship's force was ordered, stored and issued by Deck Department. The quantity of paint required for ship's force work was estimated by Overhaul Department from SFOMS input forms and ordered with SFOMS funds. PSNS provided two stowage facilities. The main stowage facility was in building 483 which had approximately 2,000 square feet of secure stowage reserved for use by ships in overhaul. This space was readily available but not adequate to store the quantities of paint required. The second facility was a temporary building located alongside dry dock #6. This space had sufficient space for 20 pallets of paint and was used as an issue facility. The following table approximates the quantities of key paint formulas used during overhaul and their principal uses:

FORMULA	NOUN NAME	QUANTITY (GAL)	USES
23	Red Deck	1000	Engineering, pump room bilges
20	Interior deck gray	275	Joiner doors, machinery
84	Zinc chromate primer	2750	Priming interior spaces
124	White	4500	Interior bulkheads, overheads
125	Pastel green	250	Interior bulkheads
150	Green primer	2400	Exterior decks, bulkheads, interior decks to be leveled, voids
152	White topcoat	920	Voids

3. Training. PSNS in-house schools were utilized to train personnel in spray painting and plastic boat repair. The increased in-house capability more than justified the expense.

4. Life Jackets. All life jackets were removed from the hangar deck and flight deck lockers and stowed in a boxcar provided by PSNS. About three months prior to sea trials, start up maintenance was initiated to ensure all would be checked and properly stowed prior to going to sea.

5. Liferafts. 93 of 209 Mark VI life rafts were removed from the ship prior to departure from San Diego. They were stored at North Island. Upon arrival in Bremerton, the remaining 116 were removed and shipped to North Island. Approximately five months prior to the end of overhaul, one BM2 and four SN's were sent TAD to SIMA, San Diego to overhaul the life rafts. The job was completed in five weeks. Six weeks prior to sea trials, 116 liferafts were shipped back to PSNS. They were installed four weeks prior to sea trials. One lesson learned was the need to carefully measure all straps as they are removed and note their locations. This will save many hours during reinstallation. All new straps were fabricated by SIMA, San Diego.

6. Boats. PSNS provided ship's force a boat shed next to dry dock #6 for overhauling the Captain's Gig and the motor whaleboats, one at a time. The Gig was moored at the Port Orchard Marina in a covered slip on a controlled access pier as the shipyard did not have any secure boat stowage. The motor whaleboats were moored to a breast out after their overhauls were completed. Recommend early overhaul of the boat engines to prevent getting caught in LOE crunches.

7. Accommodation Ladders. Due to a significant increase in the ship's draft over the years, the accommodation ladder lower platforms were normally awash in the upper most position. As a part of the work package, the ladders and their attachment points were modified to compensate for the increased draft.

8. RAS Winches. PSNS sub-contracted Western Gear to overhaul two double drum RAS winches. At the completion of their overhaul, the ship sent a BMC and an MM1 (from A-GANG) TAD to the factory for two weeks to witness the testing. Invaluable operational and maintenance training was received.

SECTION IX

DENTAL

1. GAFFEY. Prior to the ship's arrival in Bremerton, the dental spaces aboard EX-USNS GAFFEY were cleaned and painted by Dental Department personnel assigned to the advanced party. Shortly after the ship's arrival, the entire department and its support equipment were transferred to the GAFFEY. The department provided dental service on the GAFFEY for ten months before moving back to CONSTELLATION in October 1983. Major discrepancies in the material condition of the overhead and deck were noted during the turnover of the spaces to PSNS.

2. CONSTELLATION. CONSTELLATION's dental spaces did not receive any major improvements during the overhaul. Installation of a central evacuation system, bulkhead paneling and false overhead were installed just prior to commencement of overhaul. The most significant addition during overhaul was the installation of hard-wired battle lanterns in each dental operatory. New items purchased were a Sieman's Panographic X-ray Unit and X-ray Developer. Installation is scheduled for a post-COH availability. Dental Department personnel assisted with the rehabilitation of its own berthing compartment by chipping the entire compartment to bare metal.

3. PSNS Dental Clinic Support. The PSNS Dental Clinic provided Prosthodontic Laboratory Support and scheduled clinic time for CONSTELLATION patients. Additional support was provided by a Dental Officer who was assigned TAD to the ship for two months.

SECTION X

ENGINEERING

1. Docking. CONSTELLATION dry-docked on 6 December 1982, and undocked 18 June 1983. All major sea suction, discharge and sea chest valves were overhauled prior to undocking.

2. Major repairs and new systems:

a. Installed AFFF bilge sprinkling system in all MMR's/AMR's.

b. Installed Halon 1301 fire fighting system in all MMR's/AMR's.

c. Installed gravity drain bilge system for all MMR's/AMR's.

d. Completed ship's CHT system.

e. Upgraded all eight SSTG's from 1500 KW to 1750 KW.

f. Upgraded 47 aircraft service station from 25 kva to 26 kva LVR's.

g. Replaced logic controllers with relay type on number 3 and 6 lower stage elevator.

h. Replaced aircraft service station remote switches with push button type.

i. Replaced flight deck lighting control magamps with variacs.

j. Overhauled deckedge elevator motors. (4)

k. Overhauled flight deck JP-5 pump motors. (22)

l. Overhauled deckedge stanchion motors. (12)

m. Overhauled deckedge elevator sump pump motors.

n. Overhaued B&A crane motor.

o. Overhauled padeye motors.

p. Overhauled 28 volt DC rectifiers. (3)

q. Overhauled all flight lighting systems.

r. Overhauled bridge windshield wipers.

s. Overhauled dumb-waiter and package conveyer motors.

t. Replaced all main and auxiliary space lighting fixtures. (600)

u. Replaced all lighting fixtures in 37 weapons magazines and upgraded 50 berthing compartments with isolated lighting and receptacle power. This

required over 2,700 bunk lights, 2,600 overhead lights, 250 battle lanterns, 200 mirror lights, 80 red lights, 50 deck lights and 100,000 feet of cable. Also installed 17 ALB-5 panels, 68 ALB-1 panels, 68 transformers, 9 LC breakers and 50,000 feet of cable.

v. Upgraded lighting systems for miscellaneous staterooms, ready rooms, officer staterooms, shop's and passageways. 150 bunk lights, 400 overhead lights, 80 battle lanterns, 60 mirror lights, 20 red lights and 20,200 feet of cable were required.

w. Electrically overhauled the gig and two motor whaleboats.

x. Repaired sound power phone systems: 1JV, X1JV, 5JV1, 5JV2, 2JV, interspace communications, 2JZ, 7JZ, 12JZ, 4JG1, 4JG2, 4JG3, JA, JL, JX, X6J, XJA, X40J, X16J, 4JV, X20J, 2JV2.

y. Upgraded 1MC, 3MC and 5MC with new dinalec control cabinet and power amplifiers.

z. Upgraded MC systems with LS518A and LS519A intercom units: 26MC, 22MC, 21MC and 19MC.

aa. Replaced 500 damaged 1MC speakers and totally overhauled 5MC speaker system. 8,000 feet of cable was required.

bb. Dimension 2000 telephone system: replaced 300 of approximately 1,000 damaged or missing telephones. Replaced 4,000 feet of TT1½, 1,000 feet of TT5 and 5,000 feet of station wire. Replaced 12 circuit packs.

cc. Overhauled engine order telegraph, wrong direction and propellor order telegraph systems. Due to the degradation of these systems, extensive work was required and over 3,000 man-hours were expended.

dd. Overhauled all main space alarm, warning and indicating systems.

ee. Upgraded gyro to MK19 Mod 3B.

ff. Overhauled monitoring panels for HIPAC, LOPAC and O2N2 plants.

gg. Installed new circuit F, FH and FR alarm panels.

hh. Overhauled 29 main space ventilation fans which greatly improved ventilation flow.

ii. Overhauled switchboard unit cooler motors.

jj. Replaced 200 battle lanterns in main and auxiliary spaces.

kk. Overhauled all ship's service turbo generator switchboard switch gear and all diesel generator switchboard switch gear.

ll. Overhauled all controllers and motors in main and auxiliary machinery spaces. Replaced 8,000 feet of cable.

mm. Installed four degausing motor generators.

nn. Overhauled cathodic protection system.

oo. Overhauled over 460 ventilation fan motors.

pp. Electively overhauled ship's air conditioning units.

3. Problems encountered

a. Ship's force assist work requirements were not fully coordinated with Electrical Division. As a result, work was delayed due to the lack of pre-ordered material and lack of NAVSEA approval for alterations to the ship's power distribution systems. Scheduling delays, together with unprogramed work, package growth and loss of 30 divisional personnel required lower priority jobs to be deferred to post-COH availabilities.

b. Supply support for SFOMS work impacted start dates due to non-availability of material and produced a bow wave at the end of overhaul.

c. Without Electrical Division's knowledge, many communication systems, amplified sound powered phones and telephones were indiscriminately ripped out, removed due to their interference with other work or otherwised damaged by ship's force and shipyard personnel. This resulted in a severe degradation in system performance and required hundreds of unprogramed man-hours of additional work and over $150,000 dollars to correct.

4. Fire Main. A large growth in fire main valve repairs should be anticipated during overhaul. All fire main repairs should be completed one month prior to undocking. All 12", 10" and 8" fire main valves were removed and overhauled.

5. Fire Party. In accordance with requirements, a 38 member in port fire party was maintained on board at all times. This was accomplished by dedicating a space large enough for mustering, training and serving meals. Each meal was delivered from EX-USNS GAFFEY to the fire party mustering location. The Gaffey F/F team consisted of ten personnel from the rescue and assistance team who mustered with permanently assigned HT's aboard GAFFEY. Fire drills and classroom lectures were conducted daily.

6. Shipyard Coordination

a. Coordination difficulties between shipyard test shops and production shops were encountered. For example, during the initial phases of combat systems testing, much of the radar system was scheduled for testing while the cooling water system for the radar was still in the production phases. This was readily apparent on the chill water and air systems where the compressors and air conditioning units were available but piping systems were incomplete.

b. Excellent cooperation between ship and shipyard resulted in the first and second LOE completing as originally scheduled. These were the first CV machinery spaces to do so in the history of PSNS. Continuing the momentum from the first two LOE's, NR 2 MMR LOE was completed one week ahead of schedule and NR 3 MMR LOE completed two weeks ahead of schedule. This unprecedented accomplishment significantly contributed to completion of overhaul two weeks

early. Results of all LOE's were excellent as noted by the PEB.

c. Boiler inspections through the course of overhaul, particularly Completion of Overhaul Inspections (COI's), required the ship to assume responsibility for coordination between shipyard and type commander boiler inspectors to ensure boilers were ready to be inspected.

7. NR 1 MMR Ripout. Ripout of NR 1 MMR in San Diego by both ship's force and shipyard personnel was very successful. Excellent assistance by a PSNS Tiger Team permitted emergency repairs to NR 3T circ pump prior to getting underway for Bremerton.

8. Main Propulsion

a. Major propulsion space overhaul work by the shipyard included:

(1) Repairs and minor retubing of all eight boilers, including major refractory repair.

(2) Installation of six RIX air compressors and associated PC air, vital air and non-vital air systems modifications.

(3) Installation of OLV capabilities in automatic boiler control systems.

(4) Overhaul of all 24 forced draft blowers.

(5) Overhaul of all 12 main feed pumps and turbines.

(6) Overhaul of all six evaporators and evaporator pumps with complete retubing of NR 5 evaporator salt water heater condenser.

(7) Only minor repairs to 176 fuel tanks. Fuel tanks remained as a significant deficiency upon departure from overhaul.

b. Steam plant testing subsequent to LOE's required many scheduling changes. Such changes required daily management by the Chief Engineer and MPA to ensure proper plant configuration.

9. Ship's Force Work Package. Ship's force undertook the largest overhaul work package in CV history. It was identified at the Risk Assessment Conference as the highest risk area for completion of overhaul. On the contrary, the ship's force package was completed early with only two pumps requiring rework after light-off and steam plant testing. The ship's force package included the following major repairs:

a. Over 2,000 steam, oil and water system valves.

b. Sixteen fuel oil service pumps and 12 turbines.

c. Six main condensate pumps and two turbines.

d. Ten main feed booster pumps and six turbines.

e. Two lube oil service pump turbines.

f. All boiler safety valves.

10. Training. A concentrated high priority training program for the propulsion group began four months prior to the first LOE. This vigorous training resulted in 75% of the watchstanders being qualified when presented to the PEB. Some watchstations achieved 100% qualification. Early completion of LOE's resulted in a two week ECC training period prior to a full Christmas leave period. BT drills inlcuded low water, loss of fuel oil suction and residual deck fires. MM drills included loss of vacuum, hot condenser and hot bearing on main engines for all underway watch teams. Also, main machinery space fire drills were conducted on all sections. This training was critical in view of 75% turnover in machinery space personnel during overhaul with a corresponding 90% turnover of officers. Training resulted in early crew certification by COMNAVAIRPAC EMTT.

SECTION XI

EXECUTIVE

1. EX-USNS GAFFEY. Utilization of EX-USNS GAFFEY for berthing and messing of the crew was a significant advantage for effective administration, control and maximum productivity of the crew for ship's force work. Without the convenience of the GAFFEY, crewmembers would have to be bussed to messing and berthing ashore, wasting valuable man-hours for ship's force work.

2. GAFFEY Brig. There is a brig on GAFFEY which was renovated by ship's force and approved for use for confinement on bread and water during CONSTELLATION's overhaul while the ship's brig was being rehabilitated. The GAFFEY brig provided a valuable asset to the Commanding Officer in the prompt administration of discipline. When the GAFFEY brig was not available, 3 days bread and water lost effectiveness because of the processing and transit time involved in transferring the confinees to the Seattle Brig.

3. Drug/Alcohol Abuse. CONSTELLATION maintained a strong "Zero Tolerance" stand against drug and alcohol abuse. One thousand random urinalysis samples were collected every month throughout the overhaul, and the percentage of positive results were reduced from 17% at the beginning of overhaul to 3% at the end of overhaul. Substance Abuse Coordinator was the primary duty for a LCDR during overhaul. He was assisted by an E-7 Assistant Substance Abuse Coordinator, an E-8 Director of CAAC, an E-6 Counselor and a yeoman, all working full time to handle a dramatic increase in CAAC referrals during the industrial environment of overhaul. One month prior to completion of overhaul, CAAC was working a total of 531 clients, broken down by pay grade as follows:

E-7 and above	10
E-6	16
E-5	41
E-4	150
E-3 and below	314
	531

Of the total referrals, the following figures indicate how many were for drugs:

E-7 and above	0 out of 10
E-6	5 out of 16
E-5	16 out of 41
E-4	42 out of 150
E-3 and below	213 out of 314

Origin of referrals:

NJP/Civil	52%
Voluntary	9%
Other	39% (Department Head, Division Officer, Supervisor, Medical)

The legal workload increased across the board. During overhaul, CONSTELLATION processed 4 General Courts-martial, 94 Special Courts-Martial, 45 Summary Courts-Martial and over 500 Captain's Masts.

4. Special Services. A strong Special Services Program is essential as an alternative to drug and alcohol abuse. The Puget Sound area offers a wide range of recreational activities. CONSTELLATION's Ticket Rebate Program was very popular. Crewmembers were able to attend sporting events, concerts and various other activities and receive a 50% rebate up to $30.00 per month per man. Inlcuded in the Rebate Program were some leisure hobbies such as Scuba Diving classes, sailing classes, self-defense classes and flying lessons. Frequent weekend ski trips were also very popular. CONSTELLATION participated with winning teams in all NAVSHIPYD Puget Sound intramural sports including football, basketball, volley ball, bowling, and wrestling, and ran an inter-departmental softball league. CONSTELLATION's Welfare and Recreation Fund paid equipment rental fees and membership for all crewmembers at the NAVSHIPYD gymnasium and the Bremerton YMCA which is within walking distance of the ship just outside of the shipyard. This initiative significantly increased utilization of the facilities.

5. Manning. Overall, personnel manning was maintained at a higher level than was expected, except for nonrated personnel. Nonrate manning (nondesignated SA/SN, FA/FN, AA/AN) declined steadily throughout the overhaul until a critical shortage was reached during the last two months. The shortage was due, to a large extent, to the decline of general detail nondesignated nonrated population throughout the Navy. Total on board statistics for the beginning and ending of the overhaul are as follows:

	OFFICER	ENLISTED
START	143	2418
END	162	2421

6. Community/PSNS Liaison. The key element to a successful overhaul is the attitude of the crew toward the overhaul and toward the civilian work force of the shipyard. If a positive attitude is instilled early, supported and maintained, a spirit of cooperation and teamwork can be developed which gets the work done better and cheaper. A general visiting day for the shipyard on arrival and a meaningful Shipyard Worker of the Month Program helped the team spirit; but the most important ingredient was a genuine spirit of cooperation among the crew from the khaki leaders down to the men on the deckplates. At the successful completion of its overhaul two weeks ahead of schedule at cost, CONSTELLATION hosted a general visiting day which was attended by over 6,000 dependents and guests of NAVSHIPYD and CONSTELLATION personnel. The Northwest is very pro-Navy, and there are numerous opportunities for community involvement in and around the Puget Sound area throughout the year. Involvement of the crew in these events stirs a strong public sentiment which is carried over to the teamwork between shipyard and ship. CONSTELLATION developed a precision marching team and honor guard which made award winning performances in seven parades, including the Portland Rose Festival Grand Floral Parade, and several other patriotic community events. They also performed during half-time activities for "CONNIE NIGHT" in the Seattle Kingdome for professional baseball and soccer games. They served as an excellent and respected example of Navy pride and professionalism.

SECTION XII

EX-USNS GAFFEY

1. General

a. EX-USNS HUGH J. GAFFEY (IX-507) is now utilized as a berthing barge for CV's. It can berth 1896 personnel. Officers and CPO's occupied all 01 and 02 level and some main deck staterooms. Other staterooms were apportioned to the various departments, as were the open bay berthing areas. Apportionment was based on numbers of personnel per department who would not be living ashore. Departments with large percentages of nonrates were primarily assigned to open bay berthing and those with small percentages of nonrates were assigned to staterooms. Although many bachelors moved ashore during the course of the overhaul, it was not necessary to reapportion.

b. Some staterooms on board GAFFEY have mattresses in place - all others were provided from CONSTELLATION. One of the GAFFEY storerooms was used to store excess mattresses.

c. All television sets used on GAFFEY were provided by the ship.

d. Furniture in various amounts is in place in all GAFFEY spaces, however, augmentation is required.

2. Duty Berthing. Departmental Duty Berthing compartments were designated on board CONSTELLATION. These spaces were not scheduled for rehabilitation and were in the vicinity of functional heads.

3. Hotel Services. PSNS is responsible for providing hotel services and maintenance of the hotel systems on board GAFFEY. Since the ship was generally able to respond more quickly than the shipyard, ship's force effected repairs when possible, especially those of a minor nature.

4. Laundry. GAFFEY has two self-service laundries with a total of 19 washers and 20 dryers. The machines are commercial laundromat machines modified to run without money. PSNS issued a contract for their maintenance. Any damage due to neglect or vandalism was billed to the ship. Supply Department contracted for the laundering of bed and table linen, smocks, etc.

5. Medical and Dental. The medical and dental spaces are fairly comprehensive. Medical had an emergency room, several examining rooms, pharmacy and lab. Dental had two treatment rooms, a records room and an X-RAY lab.

6. Offices and Classrooms. For the most part, all offices were retained on board CONSTELLATION. The exceptions were Personnel, Chaplains, Substance Abuse Coordinator, Special Services, Training, Career Counselors, Legal, Command Master Chief, and Food Services, which were moved to GAFFEY. In addition to messing and berthing, a Gedunk and Ship's Store, Postal sales and mailing, message distribution, library and crew's lounge were on board GAFFEY. The auditorium on the second deck was designated Classroom One which was used for training during the day and for movies for the crew in the evening. The Chapel

was also Classroom Two. It was used for I Division which ran continuously throughout overhaul. The Chaplain's fitted their schedule around the I Division schedule. Classroom Three on the third deck was used for training only. Training programs conducted in these spaces included Underway Officer of the Deck, Surface Warfare Officer, Enlisted Surface Warfare Specialist, 3M, Damage Control, Division Officer, GMT, E-3 and Military Leadership examinations, etc. If additional offices on GAFFEY are considered necessary, conversion of staterooms is the recommended solution.

7. Bunks. All designated berthing spaces are available. Open bays have been converted to Northhampton style bunks. Staterooms have a mix of standard stateroom bunks and old CPO-style pipe frame bunks. All heads are operable.

8. GAFFEY Staff

a. The GAFFEY Staff included:

(1) OIC - CDR

(2) AOIC - LT

(3) LCPO - AGC relieved by BMC

(4) LPO - BM1

(5) Maintenance Detail Petty Officers - AE2, TMT2, ABF2 and IS2

(6) Maintenance Men - 22 total SN/AN/FN

(7) Yeomen - YN1 and DP3

(8) Repair Detail - HT2, MM2 (AC&R Tech), EM3, IC3 and 3-FN

b. Each duty section had an officer assigned as GAFFEY Duty Officer and the duty Rescue and Assistance Detail provided Inport Fire Party services. The Duty Officer should remain constant for each section with one alternate to cover leave, school, etc. He berthes on board GAFFEY and responds to all emergencies. During the work week, he was available for Quarterdeck watches during normal working hours. Outside working hours and on weekends he was not. Although the Shipyard owns GAFFEY and is responsible for fire fighting, etc., the R & A Detail provided on board response to all emergencies. Drills by the Duty Officer were conducted daily.

SECTION XIII

MEDICAL

1. General. The Medical Department was augmented during the transit to PSNS by four hospital corpsmen, two Nurse Corps personnel and two Medical Corps officers from Naval Hospital, Balboa. Immediately upon arrival, liaison with PSNS Clinic established procedures for handling civilian shipyard medical emergencies. Policy agreed to and followed throughout the overhaul cycle was for the ship's Medical Response Team to administer on scene emergency treatment until the Shipyard Medical Response Team arrived. On 21 December, the Medical Department shifted operation to the EX-USNS GAFFEY. Aboard CONSTELLATION, a corpsman remained on duty 24 hours a day in the medical administration spaces to handle phone calls, provide initial medical response (after calling MRT aboard Gaffey), monitor security and provide access to medical spaces upon request from shipyard personnel. MRT packs and equipment were placed in locked lockers on the Quarterdeck to reduce the response time of the team arriving from the Gaffey. This eliminated the requirement to pickup the MRT packs in the Medical spaces prior to reporting to the scene of the incident. After hours, the Duty Medical Officer stood phone watches due to the availability of emergency treatment at Bremerton Navy Hospital. Upon request Navy Hospital, Bremerton provided a family practice doctor, surgeon, 2 pediatritions, orthopedic surgeon, 2 nurses and a psychologist to augment the ship's medical team for the return transit to San Diego. A nurse-anesthetist was provided by Naval Hospital, Bremerton.

2. Shipyard Support

a. PSNS Branch Clinic provided many support services to the command. Services included:

(1) X-RAYS - limited to basic views but more detailed views were available through Navy Hospital, Bremerton.

(2) Audiograms were provided through an audio trailer staffed with an audio technician within the CIA compound.

(3) PFT's.

(4) Ambulance service.

(5) Industrial Hyigene Coordination for Medical Officers.

b. The Industrial and Occupational Health Service provided technical assistance and industrial hygiene equipment, (i.e. WB6T meters, sound level meters, etc.). They also provided bacteriological testing to certify that ship's potable water was safe. Calibration of this equipment was readily available through the meteorlogy lab aboard PSNS.

c. Pesticide spraying was accomplished 2 months prior to crew move aboard by Public Works Pest Control. Public Works also overhauled the ship's hand sprayers upon request.

d. An 8-12 passenger van obtained from GSA Seattle proved most beneficial

in providing transportation to personnel having appointments at Madigan Army Hospital and Navy Hospital, Bremerton..

3. Clinical Support. Early close liaison with Navy Hospital, Bremerton and Madigan Army Medical Center expedited medical consultation, clinic visits and patient affairs. The Ship's Senior Medical Officer's attendance at Navy Hospital, Bremerton weekly Chief of Department Meetings greatly enhanced the services provided. In addition to routine neuro-psyhchiatric services, the following were made available:

a. A psychologist scheduled consultations one day a week aboard Gaffey for personnel being processed for personality disorders and administrative discharges.

b. Anger and stress control counseling through Navy Hospital, Bremerton.

c. Family abuse counseling through the Family Advocacy Department at Navy Hospital, Bremerton.

4. Overhaul

a. It is unrealistic for Medical Department to undertake a large ship's force work package due to the requirements to maintain medical services without increasing available manpower. By appointing a strong CPO as the SFOMS Coordinator, the department enjoyed an excellent relationship with shipyard personnel. This liaison was very beneficial in determining the schedule and impact of shipyard work on medical spaces. The SFOMS Coordinator also established a medical rehab team composed of 5-6 corpsmen assigned to rehab medical spaces and storerooms. Members received initial training through Overhaul Department and were rotated periodically to maintain rate proficiency.

b. The overhaul provided an excellent opportunity to inventory and restock First Aid Boxes (FAB) and Battle Dressing Stations (BDS). All ship's departments removed their FAB's, litters and stretchers and turned them over to Medical for storage. Medical retained custody of the BDS's. Medical then established a "Tiger Team" which reviewed, restocked, certified and began reissue of FAB's and BDS's prior to the end of COH.

c. Sufficient secure space was provided on board Gaffey for the overhaul of all medical gear and supplies. These Gaffey spaces were far superior to any available on board CONSTELLATION due to continuous industrial work.

d. Due to the long lead time required for purchasing many of the items on the Authorized Medical Allowance List (AMAL), medical training aids and medical support equipment, major OPTAR obligations were made at the beginning of the overhaul cycle. Detailed review of on board AMAL/supply stocks permitted trade or turnover to Navy Hospital, Bremerton of many items that were found to have an expiration date prior to the end of COH.

e. During overhaul, the efficiency of administering immunizations, audiograms, physicals, etc. was significantly increased by extending "I"

Division classes one day for medical review. This extra day minimized disruption of each division's work package and minimized the difficult task of tracking personnel who were TAD to other departments, training, working shifts or in various off-ship work centers.

SECTION XIV

NAVIGATION

1. Bridge. The Navigation portion of overhaul consisted of a large ship's force and shipyard work package. The primary impact was to the bridge which was affected by numerous shipyard jobs within the island structure. The following recommendations are made based on CONSTELLATION's experience:

a. Complete rehab of Secondary Conn prior to arrival in the shipyard. This will allow for secure stowage space for all charts and pubs on board during overhaul. Maintain charts and pubs in a ready for sea posture throughout the overhaul.

b. Photograph the entire bridge prior to arrival in the shipyard. It will be much easier to put back together.

c. Establish a bridge completion date with the shipyard early in the planning process. It should be one month prior to Phase I Crew Certification to allow for training. Make it a milestone/key event to give it the visibility it needs to ensure completion. Recommend Crew Certification, Dock Trials, Crew Certification II and Fast Cruise be formally established as major milestones/key events.

d. Designate a bridge watch team and start in-house and cross-deck training for officers and enlisted one month after arrival in the shipyard. Dedicated training periods become more difficult to schedule toward the end of overhaul. The SACRAMENTO and CAMDEN, (homeported in Bremerton) were very helpful in providing underway training.

e. Three bridge windows were broken during overhaul. Recommend extra windows be ordered on arrival and tracked closely. This will reduce the cost and delivery times considerably. Leave the windows covered until after sand blasting has been completed.

f. Establish a close liaison with shipyard design personnel for bridge layout.

g. The best secure stowage for optical equipment was available in the supply center vault. Arrangements were made through the ship's Supply Department. Off-load these items on arrival.

SECTION XV

OPERATIONS

1. Equipment

a. New Major Systems Installed

(1) SLQ-17 Threat Reactive Countermeasures Sets

(2) Two NATO SEASPARROW Missile Systems

(3) Three VULCAN PHALANX Close-In Weapons Systems (CWIS)

(4) SPS-48 Radar

(5) CATCC DAIR System (including 15G21 Training Device)

(6) Single Audio System (SAS)

(7) Tactical Flag Command Center (TFCC)

(8) CCTV - Closed Circuit Television Briefing Circuit

(9) SMQ-10 Satellite Receiving System

b. Nonessential items should be removed and shipped to repair facilities (NAVELEX, SIMA, NARF) upon arrival. However, coordination with the shipyard is essential. Undocumented removal of equipment and cutting of cables will delay reinstallation. Maintain an equipment removal log to include names, dates and shops. This log was invaluable when spaces were rebuilt. Indepth verification of design plans by ship's force should be accomplished prior to arrival in PSNS. Plans should be analyzed for 3 dimensional positioning of operability/maintainability (i.e. ensure control panels/cabinets are accessible, display boards visible and communication junction boxes available). Monitor the daily progress in each space to ensure that new or replacement gear is installed in the correct or most convenient location. This is mandatory before foundations are welded in place or equipment is installed. This will help eliminate any subsequent ripout and reinstallation. Ensure work centers clarify what equipment and material the shipyard will be providing during reinstallation, i.e. floor matting, paint, lighting fixtures, etc. Obvious things can be easily overlooked. If it is not specifically detailed in KEYOPS, it will not be accomplished by the shipyard.

c. Push to have complete equipment/system overhauls conducted by the shipyard. If ship's force is responsible for part of a system and the shipyard is responsible for another, problems can occur in determining whether shipyard or ship's force has responsibility for overall operation. The shipyard should be tasked with final system integration, operability and test.

d. Although some leeway is designed into the overhaul schedule, slippage of major Key Event completion dates will impact the latter portions of overhaul, particularly in the areas of ship's force work schedules and time

available for actual hands on equipment training. This area requires close monitoring. With early emphasis on undocking and LOE's, the time available for CONSTELLATION's combat systems work package was compressed considerably.

e. Combat systems work in the shipyard includes the following systems: 60/400 HZ power, Navigation equipment, SINS, NTDS, CATCC/DAIR, Communications, Radar/IFF, Electronic Warfare, Alarm and Warning Systems, ASW Equipment, and Weapons Systems. At a minimum, two officers should be assigned the task of tracking shipyard work and coordinating ship's force work for combat systems. This is a full time job and should be given to individuals who will not be sent TAD for long periods and who will be available for the entire overhaul. Weekly ship's force combat systems meetings were conducted in order to identify hard spots.

f. Ships entering overhaul should prepare spaces and equipment for the shipyard environment. Cover and seal all equipment remaining in the spaces. CVIC S&R equipment was sealed in plastic wrap and double wrapped in paper. AIMD constructed heavy covers for the WANG hardware in STOPS. PSNS provided wooden cases to cover fragile equipment. Dirt, dust and sandblasting grit are omnipresent during COH. Many microcomputers suffered when they went uncovered and uncleaned. Cover any horizontally mounted MC's. Tape up file drawers/safe doors when the space is due to be refurbished.

2. Personnel/Training

a. A training plan must be built early and account for:

(1) Normal personnel turnover

(2) New equipment to be supported

(3) 30-70 percent of division personnel TAD to support Overhaul (Overhaul Department, MAA, Shore Patrol, etc.)

b. Each division should retain a cadre of knowledgeable personnel who will remain on board through completion of overhaul. The continuity is essential for both monitoring overhaul progress and organizing training.

c. As much training as possible should be scheduled and accomplished during the first ten months of overhaul due to increased manpower requirements in the latter portions of work package completion.

(1) Provide inputs to AIRPAC as soon as possible each quarter for the quarterly training conference. Ships in overhaul are typically left out or get what is left.

(2) Two hours of training per day is recommended for personnel not assigned TAD. This requires good planning and command support.

(3) Recommend TAD personnel receive at a minimum, two hours of training per week. Training schedules should be rotated to ensure at least four hours of in-rate training per month.

(4) Utilize ship riding opportunities as much as possible.

(5) Excellent RADNAV trainers are available at Bangor Sub Base. CV characteristics can be programmed.

(6) Utilize team trainers at the end of overhaul for an excellent refresher of communication procedures and team coordination.

d. Addition of new systems prompts a need for qualified individuals on board early in the overhaul to provide knowledgeable insight into system integration/installation. Detailers should provide full manning three to four months prior to the end of overhaul. CONSTELLATION's manning problems involved TFCC, NSSMS, and CIWS. NEC changes must be initiated early. Detailers can't send you the right NEC until they have the authorization in hand. The middle of the overhaul is too late.

3. Spaces. Rehab of spaces requires a well thought out plan. Spaces that are relatively free of heavy foot traffic and able to be secured should be completed as soon as possible. STOPS, for instance, was completed within the first three months of COH. Heavily trafficked areas, such as passageways, should be stripped, primed and decks covered. However, final paint and tile should be delayed until after most industrial work has been completed.

4. Pubs/Security. COH is the time to completely inventory, update and order publications. Exclusion areas/limited access areas are virtually nonexistent during COH. All classified materials must be locked up. Security must receive a high priority during overhaul. Purge files and establish procedures to ensure publications are maintained in a current status throughout the overhaul cycle.

5. CVIC. During COH, CVIC was tasked to give current intelligence briefings. The CVIC library remained operational and personnel were assigned to update pubs. Clearances were passed to Sub Base Bangor OPCON Center as they had the only KY Secure phone on Kitsap Peninsula. The draftsmen should not be given TAD assignments as there are constant demands for this talent. Significant OPTAR funds are required for supplies. A log of requests and costs assisted in justifying OPTAR obligations.

6. SSES

a. Most projects submitted for COH were cut from the work package at the WDC. With the assistance of the EMO and Communications Department, many of the requested jobs were accomplished.

b. SCI remained on board throughout the overhaul. Maintaining security integrity (i.e., two man concept and sanitization for yardworker access) proved most difficult. Recommend PSNS provide an SCI facility for cryptologically equipped ships undergoing overhaul or access be provided to Sub Base Bangor's facilities. SI Comms support was maintained through Fort Lewis. This support required TAD assignment of two men at Fort Lewis and at least one four hour courier run weekly. Recommend relocating SI service to Sub Base Bangor.

7. Photo Lab. Due to space rehab and installation of new equipment, film processing could not be accomplished on board. Before leaving San Diego, arrangements were made to use the photo facilities at Sand Point in Seattle. Two Photomates were sent TAD to Sand Point during COH. Supplies and equipment were stored in PSNS building 513.

8. EMO

a. All the key players, EMO, Radio Officer, SSES, EWO and FOX Division Officer must formulate lists of items the shipyard must overhaul, items ship's force must overhaul, and items that can be shipped to repair facilities. These lists and the POT & I can be used to request repair funds from TYCOM.

b. Order repair parts early. Most importantly, track them closely through supply. The volume of parts involved will invariably result in lost orders. Close tracking will identify those and enable reordering in time.

c. Keep close watch on equipment sent to NAVELEX, NARF, Seal Beach, etc. Call frequently for status and hold the facilities to an established deadline. The Type Desk and TYCOM will assist if needed.

9. STOPS. Although STOPS is one of the first functions to stand down prior to COH, as the long range planner, it is also the first to come back on line. In actuality, STOPS duties started increasing at completion minus five months. By completion minus three months, ASTOPS was back working full time in the Operations Department preparing the CNAP turnaround training brief, arranging for ISE services, planning for REFTRA, providing timely quarterly scheduling conference inputs and ensuring OPORDERS and instructions were up to date and usable.

10. Berthing. Operations Department personnel were berthed ashore in UEPH 433 until the ship was declared habitable. Departmental assets were used to provide security and maintenance. EMO installed TV cameras in the passageways which allowed the PPO to monitor the common areas from his office. Pay phones and additional washers and dryers were installed under contract from a Seattle firm.

11. Shipyard Interface. Operations Department received tremendous support and cooperation from shipyard personnel. Early liaison during the pre-WDC ship check with the planning and estimators was critical in defining the scope and design of alterations. Large scale changes were readily accepted at this stage. Only minor modifications were permitted after the final SARP was issued. The "Lead Shop" concept of designating a single shop to track/direct all aspects of an alteration allowed shipyard/ship's force to focus liaison to a single point of contact rather than having to interface with all shops.

SECTION XVI

SAFETY

1. Briefings

a. To aquaint ship's force personnel with shipyard procedures and ensure a smooth, safe transition from shipboard operations to the industrial environment, safety briefings on a variety of topics prior to arriving in the shipyard are required. Shop 303 sent a representative to San Diego to provide face-to-face briefings for all divisions on the following topics prior to the ship's arrival at PSNS:

(1) Fire prevention.

(2) Asbestos safety.

(3) Ventilation requirements.

(4) Cleanliness.

(5) Flammable material stowage/removal.

(6) Mercury exclusion.

(7) Drydock safety.

(8) Tag-out procedures.

(9) Void safety.

b. In addition, separate lectures were provided to all firewatch personnel on firewatch procedures. In the future, Code 303 will also provide a video tape of these lectures for use during the transit.

c. Additional lectures were provided by the Safety Officer covering personal protective equipment (requirements for use of various respirators, ear and eye protection, hard hats and safety shoes) and motor vehicle safety.

d. The "Shipyard Safety HAWK" (produced by the Naval Safety Center) was used throughout the COH for indoctrination lectures given to newly reporting personnel.

2. Flammable Materials

a. As much flammable material as possible should be left in San Diego. Storage space is limited at PSNS and flammable material cannot be stored aboard ship. Mattresses, paper goods (hamburger wrappers, cups, napkins, etc.) paints, solvents, etc. must be off the ship shortly after arrival. Some spaces, such as the Print Shop, necessarily maintain a stock of combustible materials. In those cases, the combustibles must be moved at least one foot from all bulkheads and preferably be placed on pallets to remove them from the deck. Outer bulkheads must be prominently marked. "NO BURNING OR WELDING. FLAMMABLES STORED ON OTHER SIDE OF BULKHEAD."

b. All paint must be removed from the ship daily prior to secure. Paint cans (even empty ones) must be and were accounted for by Deck Department. Special paint chits were required for a division to keep paint overnight for use after normal working hours. If control of paint is lost, the potential for fire will be increased due to paint cans being hidden in fan rooms, voids and offices.

3. Shipyard Safety Personnel. To smoothly interface with the shipyard safety programs and to ensure a safe, healthful environment for the crew and the shipyard workers, it is essential, early on, to establish good working relationships and understanding of safe operating procedures with shipyard safety counterparts, Codes 106 and 303. Safety discrepancies which require resolution by the shipyard will normally be handled by one or both of these shops.

4. Asbestos. Although all ships are required to maintain asbestos removal teams for emergency removal at sea, NSTM specifically prohibits the removal of asbestos by ship's force personnel while in the shipyard. To avoid work delays, it is recommended that all lagging removal be identified and tested before arriving in the shipyard, and a plan be established for timely removal. All areas to be rehabilitated by ship's force must be screened.

5. Respirator Safety. A strong respirator program was established before arrival in the shipyard. Many of the crew were involved in evolutions requiring respiratory protection. The requirements for various types of respirators (OPNAVINST 5100.19A) should be reviewed with all personnel, and personal fittings should be accomplished to the maximum extent possible prior to arrival in the shipyard.

6. Smoking Policy. Violation of ship's smoking policies by shipyard employees can quickly become a problem. Prior to arrival, the Safety Department placed NO SMOKING signs in all ladder wells, passageways and throughout the hangar deck. Enforcement of no smoking policies is an "all hands" project.

7. Mercury. Mercury recieves special attention in the shipyard due to the inherent health hazards and its radiation hazards in a nuclear environment. Ensure the crew is aware of mercury sources (flourescent bulbs, thermometers, etc.) and correct procedures for disposal. The Safety Department obtained a supply of red polyethylene bags from the shipyard and issued them as needed to appropriate divisions.

8. Miscellaneous

a. Acetylene bottles may not be placed in any enclosed spaces on the ship or taken below the hangar deck. Established safety regulations required all acetylene bottles to be placed in storage. Shipyard MAP gas is required to be used for all welding operations.

b. For any contractors hired directly by the ship, ship's force is responsible for ensuring that the workers are properly briefed and that they adhere to all shipyard safety regulations and OSHA standards. If the contract is negotiated through the shipyard type desk, these requirements then become the responsibility of the shipyard.

c. Ladder chains, stanchions and safety nets were removed daily by both shipyard and ship's force personnel to facilitate removal and replacement of equipment. However, they were seldom replaced. Liaison with shop foremen, attention by department heads and a roving patrol by Safety Department personnel was required to alleviate the problem.

9. Vehicle Safety. With all the problems and hazards previously discussed, the number one cause of injury to the crew involved motor vehicle mishaps. The number one cause of motor vehicle mishaps was driving while intoxicated. The number one cause of injury in an automobile accident was failure to use seat/shoulder restraints. A strong motor vehicle accident prevention program and alcohol abuse program was necessary throughout COH. CONSTELLATION invited the Bremerton Police and Washington State Patrol to send a team to ride the ship to Bremerton. They provided excellent presentations and one-on-one discussions on safe driving topics. The shipyard does not have a motorcycle safety course, nor do they follow the OPNAV directive requiring proof of successful completion of an approved course prior to issuing permits for motorcycles. It is strongly recommended that riders be required to attend the course at North Island before COH commences. Having three or four riders attend an approved instructor's course and becoming certified will provide a cadre for continuing the classes in Bremerton. By requesting the Motorcycle Instructors Kit from the Safety Center, a strong motorcycle safety training program can be maintained in-house.

SECTION XVII

SUPPLY

1. Control Division (S-1)

a. Open Purchase

(1) Locating the ship's primary buyer within NSCPS Code 200 proved to be advantageous due to telephone access and ready availability of contracting personnel expertise.

(2) NSCPS Procurement Action Lead Time (PALT) cannot match that of the carrier. The number of open purchase transactions increased dramatically during overhaul. The Purchase Branch staffing was increased by one to assist in the increased work load. All transactions less than 10K were handled internally.

(3) The Contracting Officer, Purchase Branch LPO and the buyer placed at NSCPS attended a "Defense Small Purchase" course which proved to be extremely beneficial.

(4) PSNS provided vehicles upon arrival. Additional vehicles were obtained through GSA Seattle.

b. Integrated Logistics Overhaul Team (ILO) - "SOAP Team"

(1) Competent personnel from following ratings were required for ILO: MM (3), SK (5), BT (3), IC (2), ET (3), ABE (1), BM (1), DS (1), EN (1), EW (1), FT (1), GM (1), HT (1).

(2) Recommend early off-load of all excess material to eliminate the requirement for time consuming inventories of material which will have to be off-loaded at a later date.

2. Food Service Division (S-2/5/10)

a. Open purchase contracts were submitted a minimum of 90 days early to ensure NSCPS had sufficient time to process and award contracts.

b. Due to frequent breakdown of the GAFFEY food storage reefers, minimal stock levels were maintained. Weekly replenishments provided sufficient stock reserves. Three portable chill reefers provided by PSNS were utilized for fast moving items (i.e., fruits, vegetables and dairy products).

c. The portable conveyors provided by PSNS for loading all subsistance items proved to be invaluable in reducing the manpower required to move stores.

3. Sales Division (S-3)

a. In preparation for entering an overhaul cycle, ships should off-load as much merchandise as possible prior to arrival as space security becomes difficult. Alarms can be inadvertently disconnected by work unrelated to the

storerooms. A roving patrol with random schedules was established to maintain space integrity. Entry into accountable spaces by shipyard personnel required 24 hour notice. Ships in the Bremerton/Seattle area are reluctant to accept transfer of merchandise since many already have excess inventories aboard.

b. Shipboard laundry service was terminated upon the ship's arrival since ship's laundry equipment was initially scheduled to be removed in preparation for installation of new machinery during Post-COH availabilities. Laundry services were maintained by contracting linen, officer and CPO service. A free crew laudromat was established through PSNS on board GAFFEY. After the crew moved back aboard CONSTELLATION, the laundromat was transferred to the flight deck.

c. Sandwiches and other snack foods were made available to the crew through the ship's gedunk stores. Sodas were made available through vending machines placed on the hangar bay and 2nd deck. The sale of sandwiches was authorized by NAVRESSO. The constant availability of these items was well received by the crew but required extra cleanup efforts to remove wrappers and empty cans discarded throughout the ship.

4. Disbursing (S-4)

a. Arrangements for providing ship's funds were made through a local Bremerton Bank. Due to the nonavailability of the Marine Detachment, armed security escorts were provided by PSNS Security Personnel. A 24 hour DK watch was established in Disbursing to provide constant service and maintain space integrity due to the around-the-clock work schedule and wide availability of tools which could facilitate a forced entry. Increased MAA presence around disbursing further enhanced security.

b. With a vigorous training program, the number of travel claims processed increased significantly. To facilitate their liquidation, the Disbursing Annex was moved to the GAFFEY. One additional DK was assigned to the office, and procedures were established with Training Department to identify personnel having outstanding claims.

c. The command must clearly state and enforce the regulations for authorization of COMRATS.

5. Data Processing (S-7)

a. The U-1500 was operated on board during the entire overhaul yard period. Significant downtime was experienced during the initial phases of COH due to the accumulation of dust during sandblasting and the frequent interuption of power. Recommend the DCA/SHIPSUPS be made aware of the power and chill water requirements to support U-1500 operation. This system was removed in December 1983 with the installation of SNAP I.

b. During the 30 day transition to SNAP I, U-1500 support was made available at NARDAC San Diego. Tapes and documents were forwarded by mail to CONSTELLATION personnel assigned TAD to run the programs.

6. Material Division (S-8)

a. The off-load of COSAL material required two weeks while the MDS cabinets and consumables took 8 working days. On/off-load were best accomplished at night due to the availability of cranes, elevator and support equipment. Close coordination with Shop 72 foremen identified periods when services could be dedicated to on/off-load. Coordination is essential as Shop 72 controls all riggers, cranes and movement of materials on/off the ship.

b. The ship's assigned forklifts were left in San Diego to undergo overhaul with the GSE detachment. Upon arrival, 7 forklifts were rented from commercial sources. A stake truck was obtained from PSNS for use during the entire overhaul.

c. It is imperative that laydown areas for the ship's in/outbound material be established on the hangar bay. It should not be located among PSNS laydown areas.

d. The limited storage space available to carriers undergoing overhaul has been addressed and action taken by both NAVAIRPAC and the Shipyard. Consolidation and utilization of secure storage will significantly reduce loss of material and expedite delivery to ships undergoing overhaul.

e. Storerooms remaining aboard ship will be subject to breakin and pilferage. Removal and consolidation of storeroom material should be high priority upon entering the shipyard.

9. Logistic Support Center (S-9). CONSTELLATION was the second PACFLT carrier to establish an LSC. To accomplish this, spaces were assigned and alterations made to support the LSC charter. Primary alterations were the installation of lighting, A/C units and provisions for 8 SNAP I remote terminals which are to be installed in April 1984. The LSC began operating on 19 December 1983.

SECTION XVIII

TRAINING

1. SCHOOLS

a. All departments must, via the COH Training Plan, identify specialized courses of instruction required during the overhaul period and well into the subsequent year. In addition, an early effort must be made to ensure personnel are qualified in basic programs (3M, Firefighting, Damage Control) prior to completion of COH if possible. Planning must include provisions for personnel remaining as well as for those reporting during COH. The COH Training Plan should incorporate all aspects of post-COH requirements when formulating basic school needs. A long (six month) lead time is required for many school quotas. Quotas should not be given to personnel whose EAOS/PRD occurs during or soon after COH..

b. Due to the volume of training required and large turnover in personnel during COH, qualified departmental Training Officers were the key to a successful training program.

2. Transportation

a. Most basic and specialized schools scheduled during COH were located in the San Diego area or at Treasure Island. Transportation was generally coordinated through NALCO (via the ship's ATO) but the flights were normally available on weekends only. Schools that convened midweek required personnel to remain longer than the school length or funding for transportation had to be obtained.

b. Close liaison with the Ground Transporation Officer, Training Office and ATO was required to ensure transportation was available at both ends (e.g., busses from Alameda to Treasure Island). A senior man in each group coordinated return transportation with the Training Office and ATO. NALCO schedules were available only three days in advance.

3. General

a. Berthing in the San Diego area was critical and difficult to obtain. Reservations were made as far in advance as possible.

b. The Training Office requires full time phone/autovon access to conduct business while in overhaul.

c. Shipboard firefighting qualifications were difficult to maintain with the 40% personnel turnover experienced during COH. Efforts to qualify personnel were initiated early in the overhaul cycle.

d. Shipyard Technical Training (STT) was available on a limited basis through PSNS. Quotas were difficult to obtain but occasionally appeared on short notice. Instruction was excellent and beneficial to the overhaul effort. CNAP provided funding upon request.

SECTION XIX

WEAPONS

1. Ship's Force Overhaul. Weapons Department expended 44,385 man-hours in the completion of department level work package. Work completed in departmental spaces included:

a. Installation of 600 new fluorescent light fixtures which replaced incadescent lights.

b. Complete rehabilitation of 39 magazines including the installation of a 4 foot high stainless steel border around the perimeters of the forward and aft bomb assembly areas. This border provides protection to bulkhead lagging during movement of palletized ordnance.

c. Complete overhaul of all magazine sprinkler systems.

d. Complete overhaul of 12 weapon elevators. One weapon elevator (dumb-waiter) was deactivated because it served spaces that had been converted to berthing/head facilities.

e. Construction of 6 new ordnance jettison ramps.

f. Installation of new communication console in Aviation Weapons Movement Control Center and installation of 46MC and 30MC communication systems, power amplifiers, incoming E-call visual display and new ammunition status boards.

g. Installation of new monorail hoists in SASS magazines.

h. Complete overhaul of more than 2,000 pieces of Weapons Handling Equipment.

2. Manning. Departmental manning levels dropped to critical levels due to requirements to man Overhaul Department to desired level. Sufficient personnel to man 4 duty sections (approximately 44 men) remained. Personnel manning was a continuous problem throughout overhaul and constant juggling of food serviceman and those TAD to Overhaul department occurred. Personnel transfers/separations reduced department manning even further as replacements were not available.

3. Training

a. During the last three months of overhaul, GMT's were returned to the department to conduct specialized training in preparation for post-COH NWAI. Regular training during COH for GMT's was difficult at best. Nevertheless, refresher training was accomplished but only through the cooperation and sacrifice of other divisions within Weapons Department.

b. A ten day training exercise conducted by COMAIRRESWING 30 afforded the opportunity to conduct actual hands-on training for 10 personnel. Once again, it was not accomplished without sacrifice by other department personnel.

c. Miscellaneous school quotas were utilized as follows; Shipboard Firefighting, Aircraft Firefighting, LMET, Air Launched Weapons, Cargo Elevator School, 3M Admin and Ops, 3M Inspector, Career Counselor and Substance Abuse Counselor.

4. Shipyard Interface

a. All weapons elevators were turned over to the shipyard upon arrival and placed in an Inactive Equipment Maintenance (IEM) status. This relieved the requirement for PMS and allowed personnel to work on ship's force projects.

b. Valuable technical training was obtained from shipyard personnel by assigning senior division personnel to monitor progress of the weapons elevators, particularly during the weight and operational test phases.

SECTION XX

LISTING OF "K" SHIPALTS

SHIPALT NO.	SHIPALT TITLE	DEPARTMENT
2914	CAT STM ACCUM FILL SYS MODS	ENGINEERING
3251	PROV AVIA INTERMED MAINT FAC	AIMD
3359	REPL CHILL WTR PUMPS-#10 A/C P	ENGINEERING
3860	WASHDOWN F/F SYSTEM MODS	ENGINEERING
3982	L.S. WPN ELEV #3 CONTROL MODS	WEAPONS
4233	INCR AIR COND CAPACITY	ENGINEERING
4299	INSTALL THREE CIWS WPNS SYS	OPERATIONS
4363	INST TSEC/KY-75 HF SYSTEM	OPERATIONS
4489	OILY WAST HOLDING TANKS	ENGINEERING
4605	HALON F/F SYS IN MMR NO. 1	ENGINEERING
4621	AN/SMQ-10 METRL DATA RCVR-RCDR	OPERATIONS
4623	INST 2 NSSMS REM BP/GUN/TER SY	OPERATIONS
4659	AFT CHT PIPING SYSTEM	ENGINEERING
4768	FLAMMABLE GEN STORES PROTECT	SUPPLY
4859	LSO HEADS UP DISPLAY CONSOLE	AIR
4861	LSO WIND SCREEN	AIR
4869	AN/SLQ-17 ECM SYSTEM INSTL	OPERATIONS
4875	CATCC DAIR/INTERCOM INSTL	OPERATIONS
4901	HALON F/F SYS IN MMR NO. 2	ENGINEERING
4902	HALON F/F SYS IN MMR NO. 3	ENGINEERING
4903	HALON F/F SYS IN MMR NO. 4	ENGINEERING
4904	HALON F/F SYS IN AMR NO. 1	ENGINEERING
4905	HALON F/F SYS IN AMR NO. 2	ENGINEERING
4931	ADD GAS/MOD LIQ O2N2 CAPACITY	ENGINEERING
4966	INCR BOW CATAPULT LNCH CAP	AIR
4987	INCR WAIST CATAPULT LNCH CAP	AIR
5065	INSTL THIRD MK7 JET BLAST DEF	AIR
5080	INSTL TSEC/KY-58 VHF/UHF SYS	COMMUNICATIONS
5126	MOD HP O2N3 PLANTS-MODEL 80/30	ENGINEERING
5128	INSTALL RECEPTACLE FOR F14	AIMD
5134	INSTALL AFFF BILGE SPRINKLING	ENGINEERING
5180	COMPLETION OF CHT SYSTEM	ENGINEERING

LISTING OF "K" SHIPALTS (CONT'D)

SHIPALT NO.	SHIPALT TITLE	DEPARTMENT
5194	INST COMM SECURITY SYS (CSS)	COMMUNICATIONS
5196	INST SINGLE AUDIO SYSTEM (SAS)	COMMUNICATIONS
5198	UHF GROWTH RADIO	COMMUNCIATIONS
5312	AN/SPS-49(V) AIR SEARCH RADAR	OPERATIONS
5390	VAST STWG FACILITIES FOR F-14	AIMD
5392	VAST STWG FACILITIES FOR S-3	AIMD
5394	VAST STWG FACILITIES FOR E-2C	AIMD
5465	INTERPHONE CKT 2CK EXPANSION	ENGINEERING
5498	ENCLOSURE 02 LEVEL FANTAIL AREA	SUPPLY
5545	ASMD NTDS INTERFACE	OPERATIONS
5551	WIDEN BOMB JETTISONING RAMPS	WEAPONS
5586	MK XII DECODER UPDATE	OPERATIONS
5609	TIRE STOW FIRE PROT MODS	AIMD
5613	VAST HALON F/F SYS MODS	AIMD
5665	BILGE GRAVITY DRAIN SYSTEM	ENGINEERING
5742	AIR COND AVN ALKALINE BAT SHOP	AIMD
5812	REPL BI-RAIL W/MONO-RAIL HOIST	WEAPONS
5851	INCR FIREMAIN CAP	ENGINEERING
5880	CONSOLIDATED MISSION POD STWG	AIMD
5925	CATCC TRAINER 15G21 STGS	OPERATIONS
5947	NAV SET TEST STA (AN/ASM-608)	AIMD
5975	TFCC INCREMENT ONE	OPERATIONS
6019	WPN ELEV LOCKBAR REMOVAL	WEAPONS
6029	INCREASE CREWS BERTHING	SUPPLY
6054	INSTALL AN/USM-458 NEWTS	AIMD
6099	INSTALL MK2 FDNGL SYSTEM	AIR
6107	IMPROVEMENTS TO AFFF SYSTEM	ENGINEERING
6117	TFCC INCREMENT II	OPERATIONS
6123	RDR COMM TEST SET (AN/USM-467)	OPERATIONS
6127	F/A-18 SIWDR ARM/DE-ARM PLAT	WEAPONS
6129	F/A-18 MAINT SPRT FACILITIES	AIMD
6131	PRIMARY FLIGHT CONT STA MODS	AIR
6231	REPL MACH SP FIXED FP-180 PROP	ENGINEERING

LISTING OF "K" SHIPALTS (CONT'D)

SHIPALT NO.	SHIPALT TITLE	DEPARTMENT
6237	COMP MATL REPAIR FACILITY	AIMD
6348	INSTL ADDL FLT DK AFFF HOSES	ENGINEERING
6504	INSTL AFF XFR SYS	ENGINEERING
6515	EMERG LTING CATWALK HOSE STA	AIR

LISTING OF "D" SHIPALTS

SHIPALT NO.	SHIPALT TITLE	DEPARTMENT
4630	HP AIR DEHYDRATOR CROSS CONN	ENGINEERING
4851	INSTL DRAIN CONN IN DRY FIREMN	ENGINEERING
4921	MOD CABLE & CKT BREAKER SIZES	ENGINEERING
4929	WPNS ELEVATOR BRAKE REPL	WEAPONS
5033	DEHYDRATOR MOD KITS	ENGINEERING
5176	CORROSION PROTECTION FOR LPAC	ENGINEERING
5190	INCREASE CAPACITY OF BUS TIES	ENGINEERING
5373	MOD SSTG LUBE OIL DRAIN SYSTEM	ENGINEERING
5456	EXTEND AOB CAPACITY	ENGINEERING
5480	A/C SPEED INCR OIL SUMP MOD	ENGINEERING
5514	REPL FLEXIBLE GUAGE CONNECTS	ENGINEERING
5573	MODIFICATION OF CIRCUIT 46MC	ENGINEERING
5963	MOD JET ENG TESTING FACILITY	AIMD
5698	REPL MFP FLEX COUPLING	ENGINEERING
5793	WPNS ELEV EMERG STOP SW	WEAPONS
5794	WPNS ELEV PLATF SAFETY RAILS	WEAPONS
5809	REPL 1MC-3MC AND 5MC AMPL	ENGINEERING
5904	REPLACE SUCT SEA CHEST GASKETS	ENGINEERING
5920	CONV TLI'S TO CONSTANT READOUT	ENGINEERING
5987	ACC/FWC/FPC SYS MOD	ENGINEERING
6005	MOD COMM SYS COOLING WTR LOOP	ENGINEERING
6024	INSTALL AN/SSQ-69 SEARCHLIGHTS	COMMUNICATIONS
6027	REPLACE M/D FIRE PUMPS	ENGINEERING
6037	INCREASE OFFICERS BERTHING	SUPPLY
6087	AWMCS COMMUNICATION IMPROV	ENGINEERING

LISTING OF "D" SHIPALTS (CONT'D)

SHIPALT NO.	SHIPALT TITLE	DEPARTMENT
6113	AS-1735A/SRC ANTENNA (LINK 4A)	COMMUNICATIONS
6139	REPLACE T/D FIRE PUMPS	ENGINEERING
6146	AN/SLA-10B BLANKER/VIDEO MIXER	OPERATIONS
6277	LOW PRESS AIR SYS IMPROVEMENT	ENGINEERING
6317	INSTL LPAC AUX LO PMP ABT	ENGINEERING
6325	REMOTE OPR STAS FOR VHF XCVR	OPERATIONS
6343	JBD COOLING WATER STRAINER MOD	AIR
6536	VP ATOMIZER MOD II	ENGINEERING