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Report to Secretary, Department of Defense; by H. L. Krieger, Director, Federal Personnel and Compensation Div.

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Congressional Relevance: House Committee on Armed Services; Senate Committee on Armed Services.

The Navy could improve the manning of its ships at sea and make better use of skilled sailors if it would selectively reduce ships' crews kept aboard ships undergoing lengthy overhauls. Findings/Conclusions: A major contributor to the lack of combat readiness of the fleet is the shortage of trained and experienced crewmen. The Navy could improve combat readiness by reassigning crewmen with critical shortage skills from ships undergoing lengthy overhauls to operational ships or other billets where shortages exist and rely more on the shipyard to accomplish required work on those ships. The use of such highly trained personnel as radar operators, communications technicians, navigators, and weapons personnel to do industrial tasks and administrative and support functions represents a waste of training and experience that is needed on operational ships and elsewhere in the Navy. Recommendations: The Secretary of Defense should direct the Navy to reduce ships' crews to the minimum number essential for maintaining safety of the ship and equipment during lengthy overhaul periods; reassign trained and experienced sailors to the fleet to meet critical skill manpower requirements; establish the necessary managerial policies and procedures to use civilians in shipyards to do work now being done by ships' crews; and request the Congress for the necessary operations and maintenance funds to accommodate the recommended changes. (Author/SC)

00670



*UNITED STATES
GENERAL ACCOUNTING OFFICE*

**Changes In Navy Ship
Overhaul Practices Could
Improve Fleet Capability
And Crew Effectiveness**

Department of Defense
Department of the Navy

The Navy could improve the manning of its ships at sea and make better use of skilled sailors if it would selectively reduce ships' crews kept aboard ships undergoing lengthy overhauls. This change would (1) also permit improved use of shipyards, (2) decrease the cost associated with homeport changes, and (3) comply better with the Department of Defense policy of using civilians in jobs not requiring uniformed personnel.

FPCD-77-76

APRIL 8, 1977



UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

**FEDERAL PERSONNEL AND
COMPENSATION DIVISION**

B-133170

The Honorable
The Secretary of Defense

Dear Mr. Secretary:

This report recommends a change in the management of ships' crews while the ships are in lengthy overhaul. We believe that such crews could be reduced to the minimum number necessary to maintain the safety of the ship and equipment with the remainder reassigned to the fleet and ashore where there are critical shortages of trained and experienced personnel. In our judgment, this could result in additional benefits, such as improving fleet readiness, better use of skilled personnel, and reduction of costs.

We have discussed this report with Department of the Navy officials and received written comments. The Navy does not agree with our conclusions and recommendations. Their disagreement seems to be based mainly on the belief that we are advocating total removal of crews from ships during overhauls rather than the selective process described in the report.

Our recommendations to you are set forth on pages 23 and 24. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Copies of this report are being sent to the Director, Office of Management and Budget; the Chairmen, House and

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Senate Committees on Appropriations and Armed Services; the Chairman, House Committee on Government Operations; the Chairman, Senate Committee on Governmental Affairs; the Secretary of the Navy; and the Assistant Secretary of Defense (Comptroller).

Sincerely yours,



H. L. Krieger
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE
SECRETARY OF DEFENSE

CHANGES IN NAVY SHIP OVERHAUL
PRACTICES COULD IMPROVE FLEET
CAPABILITY AND CREW EFFECTIVE-
NESS

Department of Defense
Department of the Navy

D I G E S T

There is continuing concern in the Congress and the Navy over the need to improve the combat readiness of the fleet. A major contributor to the lack of readiness is the shortage of trained and experienced crewmen.

The Navy could improve combat readiness by reassigning crewmen with critical shortage skills from ships undergoing lengthy (6 or more months) overhauls to operational ships or other billets where shortages exist and rely more on the shipyard to accomplish required work on those ships.

This could improve manning levels and result in better use of highly trained crewmen without compromising the required overhaul of the ship. (See p. 4.)

According to GAO, the Navy's longstanding practice of retaining crew members on board ships during lengthy overhaul periods results in inefficient use of highly trained and skilled personnel, many of whom are critically needed on operational ships. While the ship is in overhaul, the sailors do industrial work, and normal administrative and support functions that are usually carried on to maintain Navy life aboard the ship as if it were at sea. (See p. 8.)

Having ships in overhaul reduces the need for many of the skilled personnel required on ships at sea, (see p. 9) such as

- radar operators,
- communications technicians,
- navigators,

- air maintenance technicians, and
- weapons personnel.

GAO believes that the use of these highly trained personnel to do industrial tasks, administrative, and support functions represents a waste of training and experience that is needed on operational ships and elsewhere in the Navy. (See pp. 5 and 11.)

GAO notes that an advantageous alternative would be to use civilians in shipyards to accomplish needed industrial work now handled by crews remaining with ships during overhaul. (See p. 18.) This would

- make highly trained crewmen available to improve the manning levels of operational ships and elsewhere in the Navy,
- more effectively use skilled and experienced sailors,
- improve the morale and retention rate of such crew members,
- permit the Navy to make sure that overhaul work requirements are better balanced among the shipyards,
- avoid military personnel relocation cost due to temporary homeport changes,
- reduce the amount of crew support costs associated with the overhaul, and
- more fully comply with Department of Defense policy which encourages the use of civilians.

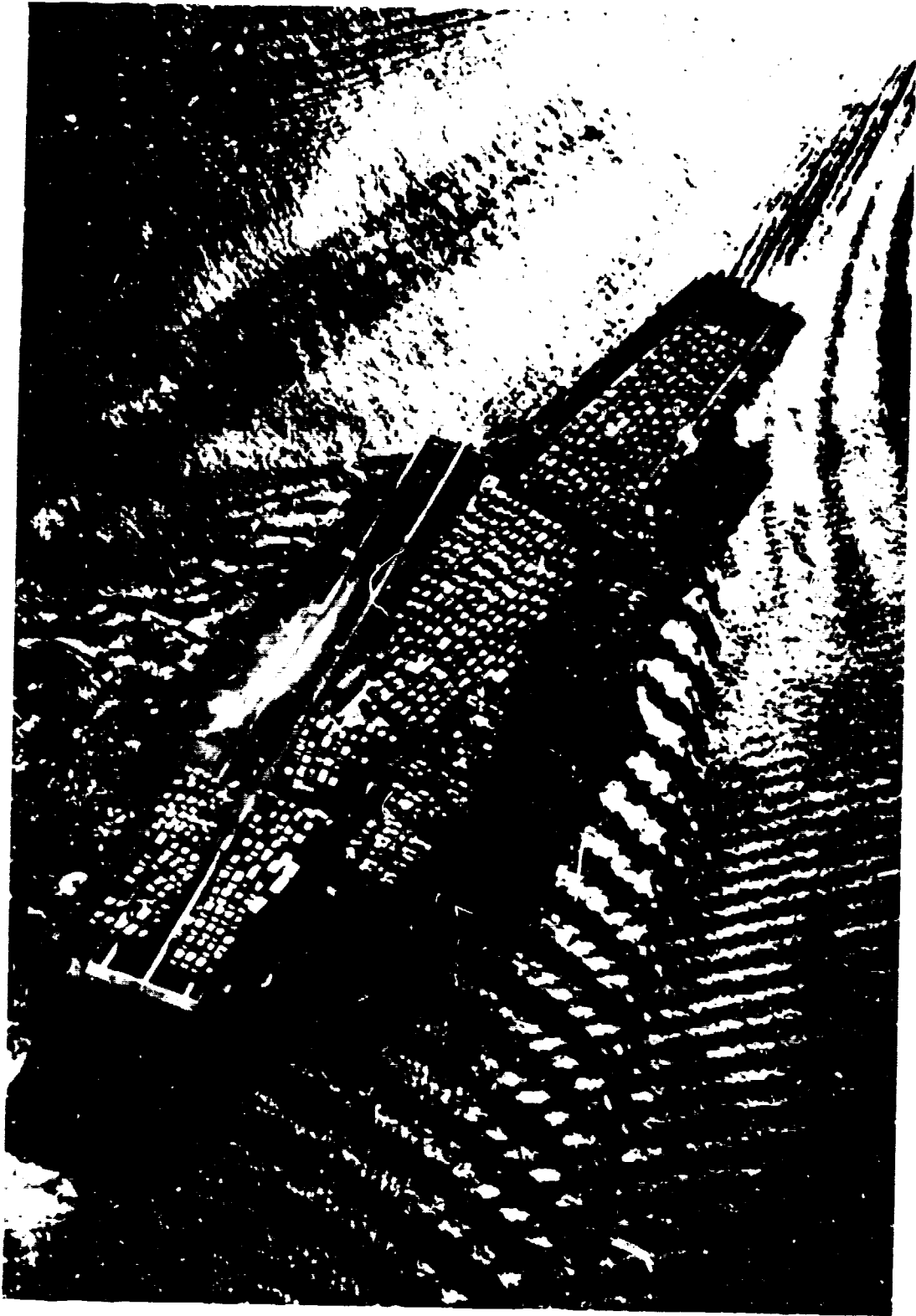
GAO believes that their position is reinforced by a Navy study which indicated that the preventive and shipboard maintenance programs during the operating cycle of the ship would be improved if operational ships were better manned, thereby resulting in less industrial effort needed during overhaul. (See p. 6.)

The Navy stated that retaining continuity of ships' crews during overhaul enables ships

to obtain peak readiness sooner after completion of the overhaul. However, GAO found that there was considerable turnover among ships' crews (from 32 to 64 percent) resulting in continual changes in crews' composition and experience. (See p. 13.)

GAO recommends that the Secretary of Defense direct the Navy to

- reduce ships' crews to the minimum number essential for maintaining safety of the ship and equipment during lengthy overhaul periods,
- reassign trained and experienced sailors to the fleet to meet critical skill manpower requirements,
- establish the necessary managerial policies and procedures to use civilians in shipyards to do work now being done by ships' crews, and
- request the Congress for the necessary operations and maintenance funds to accommodate the recommended changes.



U.S.S. RANGER COVERED WITH CREW MEMBERS' CARS, HEADING INTO THE PUGET SOUND NAVAL SHIPYARD FOR A YEAR-LONG OVERHAUL IN DRYDOCK.

AP/WWP

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ABBREVIATIONS

GAO	General Accounting Office
DOD	Department of Defense
NATO	North Atlantic Treaty Organization
CNO	Chief of Naval Operations
PCS	permanent change of station
IMA	intermediate maintenance activity

CHAPTER 1

INTRODUCTION

Ships are overhauled in accordance with a set timeframe. Certain type ships are overhauled as frequently as every 3 years, while others may operate up to 5 years between overhauls. From July 1972 to September 1975, the Navy overhauled 82 surface ships with the crew assigned, which took 6 to 17 months to complete. On September 30, 1975, there were approximately 17,000 seamen aboard 44 surface ships undergoing overhaul scheduled to take 6 or more months to complete. The size of the crews retained on board these ships ranged from 41 on a fleet ocean tug to 2,658 on an aircraft carrier.

Before the beginning of an overhaul, actions are taken in accordance with a prescribed schedule of events to

- select a yard,
- identify the required work,
- determine labor and material requirements, and
- designate specifically the work to be accomplished by shipyard personnel and the work to be done by ships' crews.

The finalized work package results from the combined efforts of ships' commanding officers; representatives of the funding Navy commands; and Navy overhaul and repair specialists. In general:

- Most of the alterations and major repair items are accomplished by shipyard personnel.
- Ships' crews are used for minor industrial repairs, chipping, painting, fire control, refurbishing crew quarters and work areas, and supporting themselves.

ISSUES AND APPROACH

This review examines the Navy's practice of retaining ships' crews during lengthy overhauls. The issues in this review cover

- the need for trained personnel to fill manpower shortages at sea and elsewhere,

--whether the principal of retaining crews during lengthy overhauls is a necessary practice,

--the impact of the practice on crew members assigned to ships during overhaul, and

--whether civilians are available and could do the industrial work being done by ships' crews.

To deal with the above questions and issues, we conducted our review at

--Bureau of Naval Personnel;

--Office of the Chief of Naval Operations;

--Naval Sea Systems Command;

--Commander in Chief, U.S. Atlantic Fleet;

--Supervisor of Shipbuilding, Bath, Maine; and

--Supreme Allied Commander (Atlantic), NATO.

We also obtained data from five ships that were undergoing overhaul at three shipyards as follows:

Ships

U.S.S. AMERICA (CV-66)
U.S.S. JOHN KING (DDG-3)
U.S.S. CONSTELLATION (CV-64)
U.S.S. BAINBRIDGE (CGN-25)
U.S.S. BIDDLE (DLG-34)

Shipyards

Norfolk Naval Shipyard; Portsmouth, Virginia
Puget Sound Naval Shipyard; Bremerton, Washington
Bath Iron Works; Bath, Maine

In addition, a questionnaire was developed to obtain attitudes and opinions of the crews concerning their job assignment and use during the overhaul. We administered the questionnaire to 1,070 randomly selected enlisted personnel of the approximately 6,000 that were assigned to the five ships noted above. The questionnaire consisted of questions dealing with the individuals' use, military training, reenlistment intention, job satisfaction, duty preferences, morale, and assignments during the overhaul.

Finally, we obtained information from officers and supervisors, as well as our own observations, on the work being done by crew members and its relationship to their skills and experience.

CHAPTER 2

THE NAVY NEEDS TRAINED PERSONNEL FOR

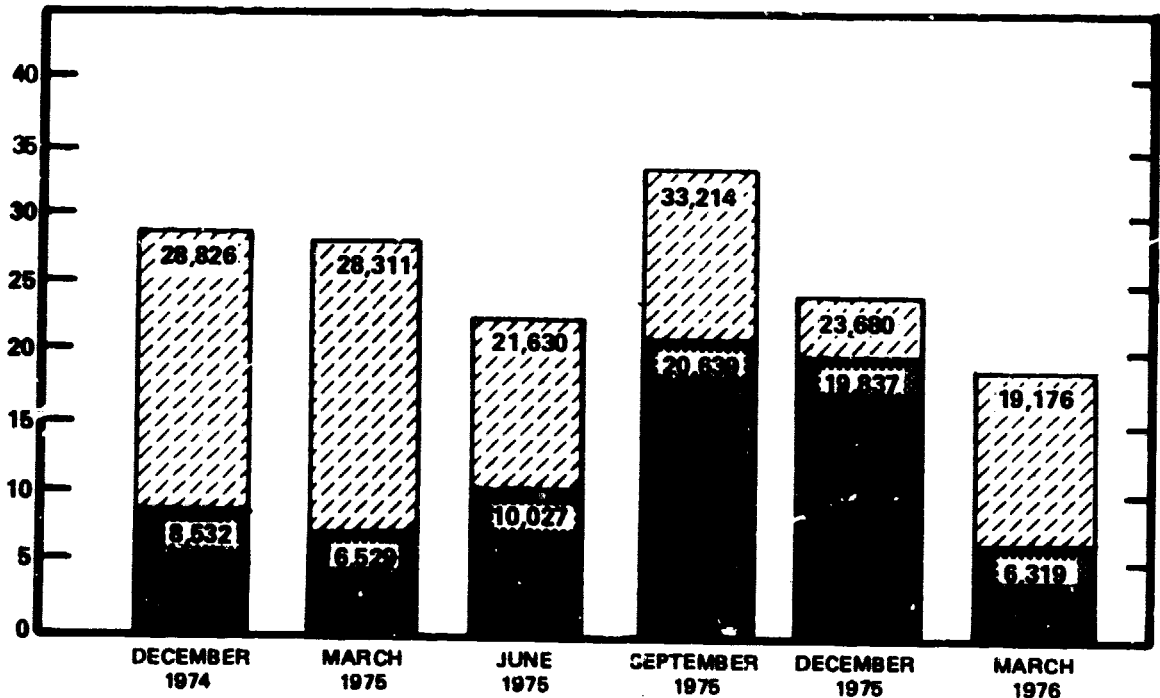
SHIPS AT SEA

TRAINED PERSONNEL SHORTAGES

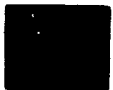
"From an overall fleet standpoint some 35 percent of our ships * * * are considered marginally ready or unready in terms of personnel deficiencies, to carry out their assigned operational missions." 1/

During the 16-month period ending March 31, 1976, there were personnel shortages as follows:

THOUSANDS



TOTAL SHORTAGE IN NAVY RATINGS.



NET SHORTAGES AT SEA - THESE FIGURES ARE COMPOSED OF SHORTAGES IN SOME RATINGS AND EXCESSES IN OTHERS.

1/Testimony before the Subcommittee on Seapower and Strategic Critical Materials of the House Armed Services Committee on Fleet Readiness in January 1976, by Vice Adm. James D. Watkins, Chief of Naval Personnel and Deputy Chief of Naval Operations for Manpower.

In September 1975, at a time when the Navy was experiencing a deficit at sea of over 20,000 personnel, there were approximately 17,000 crew members assigned to 44 surface ships in overhaul scheduled to require 6 or more months. The Navy's practice has been to retain the crew on board when a ship enters a yard to undergo overhaul. While in overhaul, the sailors do industrial work, and normal administrative support functions that are usually carried on to maintain Navy life aboard the ship as if it were at sea. The following table shows examples of crewmen assigned to these 44 ships with ratings identified by the Navy as being in demand at sea.

<u>Rating</u>	<u>Shortages (note a)</u>		<u>Number assigned to ships undergoing overhaul</u>
	<u>Navy-wide</u>	<u>At sea</u>	
RM- Radioman	1,842	1,300	593
AM- Aviation Structural Mechanic	2,040	1,751	45
GM- Gunners Mate	2,323	1,791	420
OS- Operations Specialist	1,500	1,161	659
FT- Fire Control Technician	1,409	1,098	578
AT- Aviation Electronic Technician	1,119	525	34
AO- Aviation Ordnanceman	1,145	813	101
AE- Aviation Electrician's Mate	881	496	30
YN- Yeoman	401	614	211
<u>Other shortages</u>			
ST- Sonar Technician	810	627	309
BM- Boatswain's Mate	1,164	1,195	415
AB- Aviation Boatswain's Mate	288	378	444
AN- Airman	1,887	2,159	571
AQ- Aviation Fire Control Technician	113	76	38
AS- Aviation Support Equipment Technician	168	98	58
AX- Aviation ASW Technician	208	229	18
AZ- Aviation Maintenance Administrationman	288	296	24
EW- Electronic Warfare Tech- nician	699	594	134
FN- Fireman	1,940	2,083	1,024
SH- Ship's Serviceman	573	588	335
SM- Signalman	577	543	332
SN- Seaman	5,943	7,712	2,603

a/Skill shortages are not unique to the Navy. In a February 1976 report entitled "Improvements Needed in Determining Skill Training Requirements (FPCD-76-28), we identified a similar situation in the Army. The Navy should identify the reasons for the shortages since skill training programs and actual training do not appear to be in line with skill requirements.

The Navy could have satisfied about one-third of the above shortage at sea from the ships in overhaul. This could have represented an important improvement in the combat readiness of those ships.

ADDITIONAL BENEFIT OF BETTER MANNING SHIPS AT SEA

In addition to the critical need for certain ratings to bring ships at sea up to a more acceptable level of readiness, there is evidence that increased manning levels on operational ships can reduce the time and industrial effort needed during overhaul.

The Center for Naval Analyses conducted a study (October 1974) that analyzed the relationship between manning levels on ships at sea and industrial effort during overhauls. The study indicates that increased manning levels aboard the ships between overhauls results in decreased repair man-days of overhaul effort as described below.

--For the DDG-2 class with a manning level of 69 percent, about 31,000 repair man-days are required. However, with a manning level of 95 percent, repair man-days are reduced 13,000 or about 58 percent. An analysis of the DDG 15-24 and 31 classes show about the same reduction in man-days with a similar increase in manning levels.

--For the DLG-9 class, with a manning level of 70 percent, about 32,000 repair man-days are required. However, with a manning level of 97 percent, repair man-days would be reduced to about 25,000.

NAVY ACTIONS TO IMPROVE FLEET MANNING

Given the seriousness of the readiness situation, the Navy in September 1975 increased prescribed sea tours and shortened shore tours with the goal of assigning a larger share of personnel to sea duty. This shift in personnel, initiated at the expense of the shore establishment, resulted in reducing the total sea manning deficit from about 20,000 in September 1975 to a shortage of about 4,800 in September 1976. This shift did not completely satisfy shortages in the critical skill areas at sea. However the shift increased the shore manning deficit from about 3,000 to over 11,000 personnel. To fill those shore billets which are now vacant, the Navy programed increased manpower for fiscal year 1977 and requested further increases for fiscal year 1978.

NAVY CONSIDERATIONS FOR REDUCING
CREWS ON SHIPS IN OVERHAUL

In September 1974 the Chief of Naval Operations (CNO) expressed concern about the material readiness of many ships. The Ships Material Condition Steering Group was assigned the task of evaluating the feasibility of reducing ships' companies by about two-thirds during extended overhauls as a means of increasing the manning levels in the operational units. For the Steering Group's evaluation CNO requested comments from various commands in the Atlantic and Pacific Fleets and European Forces. The comments received from these commands were generally negative and stated the following reasons, among others, for retaining full crews on the ships in overhaul:

- Crew retained to augment shipyard due to shortage of overhaul funds.
- Personnel retention enables the ship to attain peak readiness sooner at the end of an overhaul.
- Retaining crew provides valuable training and experience available only during overhaul.
- Crew morale is adversely affected if not retained.
- Reassigning crews would upset the personnel distribution system.

Our review of the responses showed that very little supporting data was given for the above reasons upon which unalterable conclusions could be based or other alternatives considered such as critical skill reassignment. However as a result of the responses given by the various commands, the proposal to reduce the number of crew members was abandoned by CNO.

CHAPTER 3

MANAGEMENT OF CREWS DURING OVERHAUL

USE OF CREW TIME

The work assigned to the crew during overhaul involves industrial work and direct industrial support. Industrial work includes chipping paint, painting, overhauling equipment, assembling and installing equipment, refurbishing living quarters, and cleaning vents and voids. ^{1/} The direct industrial support work includes such duties as standing fire watch and material control supervision.

To support the military presence during the overhaul, crew effort is also required for security watches, housekeeping, supply, food service, medical services, laundry, inspections, and other activities associated with daily shipboard life.

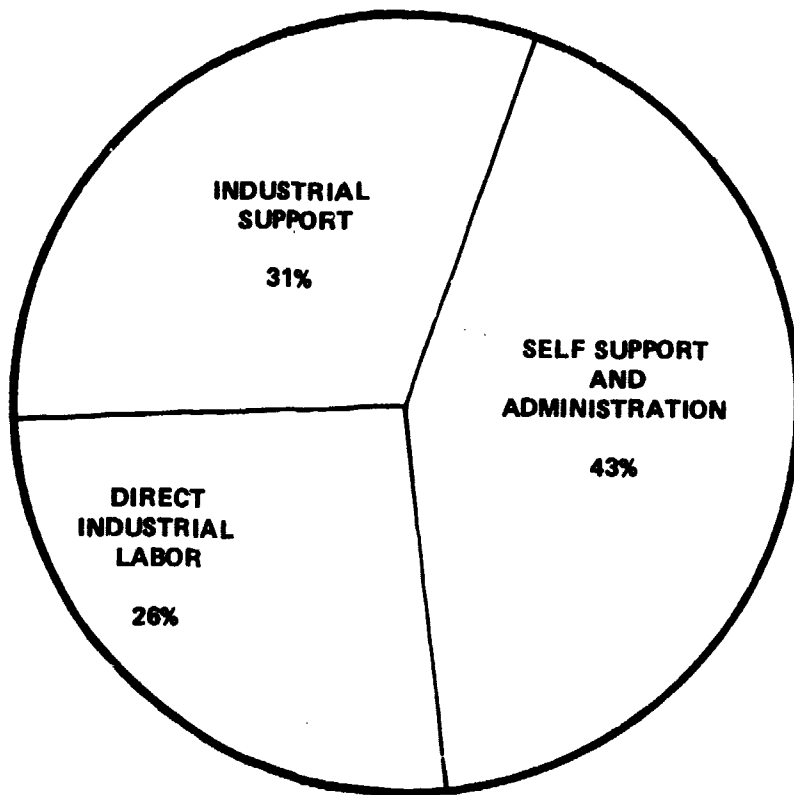
For the five ships included in our review, we found that about 7.5 million military personnel man-hours would be expended as follows:

<u>Ship</u>	<u>Man-hours</u>			
	<u>Industrial direct</u>	<u>Industrial support</u>	<u>Self-support and ship administration</u>	<u>Total (note a)</u>
U.S.S. AMERICA	669,660	818,946	1,184,330	2,672,936
U.S.S. BAINBRIDGE	190,240	596,960	410,000	1,197,200
U.S.S. BIDDLE	103,246	30,930	136,464	270,700
U.S.S. CONSTELLATION	940,989	838,507	1,346,701	3,126,197
U.S.S. JOHN KING	<u>53,442</u>	<u>25,202</u>	<u>112,404</u>	<u>191,048</u>
Total	<u>1,957,577</u>	<u>2,310,605</u>	<u>3,189,899</u>	<u>7,458,081</u>

^{a/}Does not include about 2,330,000 man-hours for leave, training, and other absences.

^{1/}Void - unusable space on a ship normally accessible only during overhauls or non-operational periods.

The following chart shows the distribution of the total effort to the various work categories:



As indicated above, to provide an industrial work force from the military crew for ships in overhaul, more than 40 percent of the total effort is expended to support the military presence.

Assignment of skilled crew members

The work done by the crew while the ships are in overhaul often requires different skills than while the ship is at sea. The need for many of the skilled personnel, such as radar operators, communication technicians, navigators, air maintenance technicians, and weapons personnel are eliminated due to the non-operational character of the ship and the removal of certain equipment which is repaired off the ship. During overhauls, many trained sailors are shifted from their normal departments to a special overhaul department which is created to monitor and assist in the industrial effort, or are organized into special work teams to participate in the industrial work. In other instances, sailors remain with their departments and participate in the industrial work.

On both the U.S.S. CONSTELLATION and the U.S.S. AMERICA, over 300 sailors were shifted from their respective departments into the special overhaul department. Sailors remaining with their shipboard department were also involved in industrial repair activities or related support work. For example, on both carriers, most of the men in the navigation department were chipping and painting, compartment cleaning, inspecting and preserving vents, and standing fire watch. During sea-going operations, these men work with navigation equipment, take radar bearings, make water depth soundings, plot courses, and obtain and record data for ships' logs. One navigation officer said that trained quartermasters and signalmen were doing physical labor which, in his opinion, should be accomplished by shipyard personnel.

In the operations department on one of the carriers, the department officer explained that few of the approximately 275 men in his department worked in their rating during the first half of the overhaul because most of the department's equipment had been removed from the ship for repairs. He further explained that most of his men were involved in refurbishing working spaces during this period.

On the U.S.S. JOHN KING, a smaller ship, seven special teams were established to assist in the overhaul. These teams were responsible for cleaning vents and bilges, painting, laying floor tile, refurbishing lockers and berths, and standing fire watch. Crew members remaining with their normal departments also assisted in the overhaul. About half of the crew were working outside of their technical skill areas.

To further understand how the ships' crews were being assigned and used, we administered a questionnaire to a random selection of 1,070 crewmen of the approximately 6,000 assigned to the five ships covered by our review.

Responses to the questionnaire revealed that only 33 percent of an individual's time during the overhaul period was spent working in his Navy skill. On the average, the remaining time had been spent in the following areas.

--cleaning ventilating ducts and unusable spaces	2 percent
--housekeeping	20 percent
--industrial	23 percent

--fire watch 7 percent
 --other 1/ 15 percent

In addition to the questionnaire, we conducted surveys aboard the five ships, including about 4,900 of the approximate 6,000 assigned crewmen, to identify specific duties being done. We found:

--Depending on the individual ship, 22 to 62 percent of the ships' crews were working outside their trained area as follows:

	<u>Percent working outside skilled area</u>
U.S.S. BAINBRIDGE	22
U.S.S. AMERICA	38
U.S.S. CONSTELLATION	47
U.S.S. JOHN KING	48
U.S.S. BIDDLE	62

--Many crewmen working totally within their trained areas were doing functions necessary to support those who were doing industrial work. These included medical, dental, food services, and other personnel supporting responsibilities.

To further specifically identify how skilled personnel were being used, we conducted a series of interviews. Among other assignments, we found:

--Two communications technician operators (E-3 and E-4), whose usual duties consisted of operating the ship's communication equipment in the security group, spent 80 and 95 percent, respectively, painting, chipping, grinding, and housekeeping.

--A senior chief quartermaster (E-8), whose usual duty involved navigating the ship and supervising other quartermasters, spent 100 percent of his time instructing and supervising men who were chipping tile and bulkheads; sanding and painting.

--A radioman first class (E-6), whose trained duties consisted of transmitting, receiving, routing, and logging radio messages, spent his time in the habitability department supervising the installation of flooring.

1/Leave, school, sick call, etc.

- A senior chief aviation ordnanceman (E-8), whose regular duties consisted of inspecting, maintaining, and repairing aircraft systems and handling munitions, spent his time during overhaul in the safety department supervising fire watches and fire parties.
- An electronic warfare technician (E-6), whose trained duty consisted of receiving, transmitting, and intercepting radio messages, and doing other confidential duties, spent 95 percent of his time in fire watch and master-at-arms.
- A mess specialist (E-4) spent about 50 percent of his time chipping and painting. Additional duties consisted of driving a truck and keeping commissary store records. When the ship was operational, he took charge of the provisions storeroom, refrigeration, and commissary records.
- An electronics warfare technician (E-6) was responsible for the enlisted barracks during overhaul. This responsibility consisted of assigning rooms to bachelor enlisted men, and insuring that the rooms were clean. When at sea, he operated specialized electronics warfare equipment.
- An aerographer (E-5) assigned to the special overhaul department did routine typing, filing, and phone watch. His skilled area consisted of the collecting, recording, and analyzing of weather data.
- An (E-5) with extensive training in aviation electronics, including 2 years of training before joining the Navy, spent 60 percent of his time chipping paint, grinding, and painting; and 30 percent in housekeeping duties.

USE OF CREWS DURING OVERHAULS IN OTHER COUNTRIES

Some North Atlantic Treaty Organization (NATO) countries have also faced the problem of personnel use during an overhaul period. To determine what their practice was, we contacted NATO representatives of two countries.

In the case of one NATO country we were told that:

- Older ships are overhauled with the ships' crews retained and used in much the same manner as Navy crews.
- On more modern ships with extensive electronic equipment, crews are reduced by 80 percent, with

the remainder generally responsible for maintenance, standing watches, and security during the overhaul.

In the near future, this country plans to reduce crews on all ships during overhauls. For example, on a destroyer the 50-man crew will be reduced to about 60 during the overhaul.

We were told that the other NATO country has been routinely reducing its crews during overhaul for a number of years. The limited number of crew members remaining with the ship during overhaul have maintenance, security, watches, and supply functions.

We were also told that for crews of both countries, morale was found to be higher when the crew had been reassigned to operational ships rather than retained to work in an industrial environment.

CREW TURNOVER

According to the Navy, retaining continuity of ships' crews during overhaul enables ships to obtain peak readiness sooner after completion of the overhaul because of

--familiarity with the ships and

--sailors working together as a team by the time the ships leave overhaul.

These reasons could be valid if crew integrity is maintained. However, we found that there is considerable turnover among ships' crews resulting in continual changes in crew composition and levels of experience. 1/

During overhaul periods, crew assignments and rotations continue, as with operational ships, except that ships undergoing overhaul have a lower priority for manning. Even with the lower manning priority, substantial numbers of

1/One of the responses to CNO's previously discussed request to evaluate the feasibility of reducing ships' crews during overhaul stated that:

"The key is personnel turnover, when it is clear that very high turnover will take place, one may as well reduce the crew at the outset to provide personnel for use in other areas where critical shortages exist."

personnel assignment actions occur. For example, the U.S.S. CONSTELLATION began its overhaul with 2,599 enlisted men assigned. During the ensuing 8 months, 930 crew members left the ship and 663 replacement personnel were assigned, a turnover of 36 percent.

The following table shows that at the time of our review, 32 to 64 percent of the original crews aboard the five ships at the start of their respective overhauls had terminated their assignments.

<u>Ship</u>	<u>Number of personnel onboard at beginning of overhaul</u>	<u>Percent of overhaul complete</u>	<u>Percent of crew reassigned</u>
U.S.S. BAINBRIDGE	363	79	64
U.S.S. BIDDLE	333	64	34
U.S.S. JOHN KING	285	50	32
U.S.S. CONSTELLATION	2,599	57	36
U.S.S. AMERICA	2,670	100	44

Considering the high personnel turnover rate of crews and the time specifically allotted after overhaul to prepare ships for sea, we believe that retention of ships' crews during overhaul is not a disciplined management process.

We were told by Naval officials that, depending upon the type and class of ship, from 3 to 9 months are allowed specifically to enable the ship to join the operational fleet after the industrial period ends.

According to the commanding officer of one ship, his class of ship is allowed 170 days after overhaul to reach the acceptable level of readiness. He said that, even if a new crew was assigned to his ship at the end of the overhaul, he could still have the ship ready for active duty in less than the 170 days allotted.

According to the executive officer of a carrier, the ships go through a series of training exercises before being deployed on an extended cruise. He said that under normal conditions with the number of new crew members aboard it will take 5 to 6 months to reach an acceptable level of readiness, and that in an emergency situation they could be operationally ready in 2 to 4 months.

Most of the crew members we questioned believed that they would be ready to do their individual duties within 60 days of the overhaul completion, even if they had not

been assigned to that particular ship during the overhaul period.

CREW MORALE AND ATTITUDES

By means of a questionnaire, we asked 1,070 randomly selected crew members of the five ships to assess the state of the crew's morale and their own while the ship was undergoing overhaul. The results showed that:

--57 percent rated crew morale as low or very low and

--42 percent rated their own morale as low or very low.

The following reasons were given by 543 crewmen for the state of their morale.

<u>Reason</u>	<u>Number</u>	<u>Percent</u>
Poor working conditions	172	32
Long working hours	149	27
Improper utilization	87	16
Poor living conditions	40	7
Unhappy with job	36	7
Monotonous work	28	5
Inadequate manning	12	2
Training not allowed	10	2
Constant changes in job priority	<u>9</u>	<u>2</u>
Total	<u>543</u>	<u>100</u>

We asked the following additional questions to gain further insight into crews' attitudes. Those responding to the questions answered as follows.

<u>Job satisfaction</u>	<u>Number</u>	<u>Percent</u>
--How satisfied are you with the way your current job uses your military skills and training?		
Very satisfied	225	21
A little satisfied	281	26
A little dissatisfied	244	23
Very dissatisfied	319	30

Skills and qualifications Number Percent

--Do you feel that your assignment to this ship during the overhaul has affected your skills and qualifications?

Better qualified	219	20
Same	521	49
Less qualified	330	31

Assignment preference

--Based on your experience, would you prefer to be assigned

At sea	694	67
To this overhaul	336	33

Our questionnaire also included questions concerning reenlistment intentions and if the overhaul has affected these intentions. Questions asked concerning this subject are as follows.

--Do you plan to reenlist?

	<u>Number</u>	<u>Percent</u>
Yes	146	14
Probably will	177	16
Probably will not	230	22
No	514	48

Of the 744 who answered that they will not or probably will not reenlist, 409 were in pay grades E-4 through E-9.

--How has your assignment on board during this overhaul affected your reenlistment decision?

More likely to reenlist	53	5
Less likely to reenlist	503	47
No effect	512	48

Of the 503 crewmen who stated that they were less likely to reenlist due to the overhaul assignment, 279 were also in pay grades E-4 through E-9.

The above data shows that significant numbers of crewmen assigned to ships during overhaul

--appear to be dissatisfied with the use of their military skills and training,

--would prefer to be at sea, and

--are less likely to reenlist.

All of the above are matters of serious concern to the Navy.

CHAPTER 4

COST AND EFFICIENCY CONSIDERATIONS

THE HOMEPORT PROCESS

The Navy selects a shipyard for the required overhaul at or near the ship's officially designated homeport. Where available yard capacity does not permit overhaul, an effort is made to place the ship in the nearest yard with the required capability. According to the Navy, this procedure is used to maintain high morale of the crew. Thus, through its homeport procedures, the Navy may overhaul a ship in a yard without giving first consideration to capacity and cost advantages elsewhere.

When overhaul requires at least 6 months, and the selected shipyard is located so that the crew is unable to commute daily to and from the homeport area, Navy's practice is to officially change the homeport to the overhaul location. By changing the homeport, officers and enlisted men, except those available for transfer within 6 months, are authorized to move their dependents and household goods to the new homeport at Government expense.

Some costs of changing homeports

During the period July 1972 to September 1975, the Navy officially changed the homeport of 23 of the 82 surface ships overhauled requiring 6 months or more. All of the 23 ships were involved in two homeport changes, one before and one after the overhaul.

Three of the five ships included in our review had homeport changes before the overhaul and are scheduled to return to the original homeport area after the overhaul. These three ships are expected to incur approximately \$1 million to move the men and dependents to and from the temporary homeport.

In January 1975, the U.S.S. CONSTELLATION's homeport was changed from San Diego, California, to Bremerton, Washington, to undergo a 13-month overhaul. Upon completion of the overhaul, the ship is scheduled to be homeported back to San Diego. Identifiable costs to move men and dependents from San Diego to Bremerton amounted to \$314,000. A similar amount is expected to be incurred for the return trip.

In June 1974, the official homeport of the U.S.S. BAINBRIDGE was changed from Long Beach, California, to Bremerton, Washington, to undergo an 18-month conversion.

Based on the available records and discussions with Navy officials, permanent change of station (PCS) costs to Bremerton were estimated to be \$97,000. When the conversion is completed, the U.S.S. BAINBRIDGE is scheduled to be homeported in San Diego, California. The return costs to San Diego are expected to exceed the Long Beach to Bremerton costs because the ship is scheduled to have more personnel assigned. Return costs are estimated at \$140,000 for total PCS costs of \$237,000.

The U.S.S. BIDDLE homeport change involved a move from Norfolk, Virginia, to Bath, Maine, in March 1975. According to the Navy project manager for the U.S.S. BIDDLE, the overhaul was originally scheduled to take place at the Norfolk Naval Shipyard in Portsmouth, Virginia; however, because of the heavy workload, this yard could not do the work. When the overhaul is completed, the U.S.S. BIDDLE will sail to Baltimore, Maryland, where it will drydock for underwater repairs and alterations and have its hull sandblasted and painted. The capacity to do this work is not available at Bath, Maine. At the completion of the overhaul, the U.S.S. BIDDLE is scheduled to return to Norfolk and is expected to incur about \$140,000 for the round trip homeport move of personnel and dependents.

Other costs which we were not able to obtain will also be incurred due to the large turnover rate of personnel during the overhaul.

IMPROVED EFFICIENCY AND REDUCED OVERHAUL COSTS MAY BE POSSIBLE

Shipyard officials agreed that they could accomplish the industrial work and related support effort now being handled by ships' crews. The officials also generally believed that they could do the work more efficiently due to their experience and more modern overhaul techniques. We were unable to identify all the costs that would be incurred for the shipyard to do the industrial work now done by ships' crews. However, we were able to identify certain factors which may reduce costs.

At all of the shipyards visited, we discussed their methods of accomplishing industrial work versus those of crews. We found that crews in some cases have to do the work with less productive equipment. In one instance, the commercial yard used paint remover and wire brushes in preparation for painting, while the ship's crew used hand scrapers and some power tools. The commercial yard used a chemical solution to clean circuit boards, while the crew did each one individually with a pencil eraser.

In another instance, the helicopter deck on one ship had to be repainted by the ship's crew due to improper application on the first attempt.

The shipyards we visited were unable to estimate the cost that would be incurred by the Navy had they done the industrial work accomplished by the crew. They were unable to provide the estimates because of the time required to prepare the estimates and their lack of knowledge of the scope of work done by the crew.

An example

One yard, however, agreed to prepare an estimate of the man-hours that would have been required to do six jobs which had been accomplished by the ship's crew. We compared the actual man-hours expended by the crew with the shipyard estimates which resulted in the following differences.

<u>Job description</u>	<u>Man-hours</u>		
	<u>Expended ship's crew</u>	<u>Commercial yard estimate</u>	<u>Difference</u>
Chip, prepare, and paint helicopter deck	1,146	183	963
Chip, prepare, and paint portside of hangar	490	88	402
Refurbish living space	1,338	356	982
Disassemble, inspect, and replace turbine thrust bearings	76	18	58
Remove, clean, and install circuit boards	280	144	136
Drain, clean, and refill main engine sump	<u>176</u>	<u>80</u>	<u>87</u>
Total	<u>3,506</u>	<u>878</u>	<u>2,628</u>

Even if the man-hours to do the above work had been precisely the same for both the shipyard and ship's crew, actual costs to the Navy probably would have been greater because of the costs of (1) supporting military personnel and (2) costs related to homeport changes and the movement of crew, dependents, and household goods to and from the over-haul location.

Presently we are evaluating the cost of doing work at the intermediate maintenance level (IMA) by military personnel versus a shipyard. In this study we found that the average cost per hour of a shore IMA is \$21.15 and the average cost of a shipyard is \$23.51. The study further shows that when consideration is given to available hours 1/ for maintenance done by the servicemen at the shore IMA the cost is \$32.98, while the mobile IMA cost (tender) is as high as \$61.19.

We are aware that the ship in overhaul is not considered an IMA, however, the comparison above seems to be a reasonable relationship when considering the large portion of available time during overhaul which is spent in military personnel self-support.

Funding Problems

An advantage cited by the Navy for having large crews assigned to the ship during overhaul is the shortage of Operations and Maintenance, Navy funds. They said that by having the crews assigned, many jobs can be done that do not have a high priority and would not be done with overhaul funds.

By having the crew do a portion of the overhaul, overhaul funds are in effect supplemented with large personnel funds which cause the true overhaul costs necessary to maintain Navy ships to be distorted.

DOD POLICY ENCOURAGES USE OF CIVILIANS WHERE POSSIBLE

The Department of Defense (DOD) encourages the use of civilians where possible instead of uniformed personnel. This has been a policy since 1954. The original directive 1100.4 stated that the services must optimize personnel use and noted that

"Civilian personnel will be used in positions which do not require military incumbents for reasons of law, training, security, discipline, rotation, or combat readiness, which do not require a military background for successful performance

1/Available hours are those that remain after deducting time for non-repair department personnel, repair departments' overhead, training, leave, military watches, housekeeping, etc., as well as, self-maintained support.

of the duties involved, and which do not entail unusual hours not normally associated or compatible with civilian employment."

The policy has been reemphasized a number of times. We have also pointed out advantages in recent reports entitled:

Opportunity to Reduce Costs and Improve Efficiency by Employing Civilians Instead of Marines (B-146890), June 19, 1974, and

Maintaining a Military Presence in an Industrial Environment - Issues and Costs (B-160813), April 12, 1976.

We believe that, by using the shipyards to do the industrial work required, the Navy could

- better balance workload among shipyards without having first to consider the ships homeport,
- improve efficiency and possibly reduce overhaul costs,
- greatly reduce the relocation costs due to homeport changes, and
- further accomplish DOD policy that encourages the use of civilians where possible instead of uniformed personnel.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The Navy has a critical need for skilled sailors on ships at sea. The need has been recognized and certain actions have been taken to improve the situation. However, we believe that additional steps are necessary to bring the ships up to acceptable manning levels.

To achieve an acceptable level of manning aboard operational ships and to improve the use of highly trained sailors, the Navy could discontinue its current practice of retaining crews on board ships while in lengthy overhauls, giving greater priority to critical skill needs elsewhere in the Navy.

We believe the advantages of placing a greater priority on meeting critical skill shortages outweigh the disadvantages. In addition to improving the combat readiness of the operating ships, the Navy could better use the extensive training received by the crewmen, improve morale by assigning sailors to positions where their skills can be used to greater advantage, and increase the retention rate. By reassigning the crew to achieve improved manning levels on operational ships, the Navy may also reduce the industrial effort required during overhaul.

We believe the reduction in crew size during the overhaul would reduce costs associated with crew relocation and the costs incurred to support the crew that are involved in the industrial work.

The change in current overhaul practices would not appear to adversely affect the overhaul. The reduction in crew would also permit greater adherence to the policy of using civilians in positions that do not require uniformed personnel.

RECOMMENDATIONS

We recommend that the Secretary of Defense direct the Navy to:

- Reduce and maintain ships' crews during overhauls at the minimum essential level necessary for assuring safety of the ship and equipment.

--Reassign other crew members to positions where their skills are needed to fill high priority vacancies that exist in the operational fleet and elsewhere and where their skills and training can be used to greater advantage.

--Take full advantage of the industrial capabilities of the shipyards including the potential for overhaul cost reductions.

--Request the necessary adjustments in the Operations and Maintenance, Navy, funds that will permit the necessary industrial work to be done without supplementing these funds with Navy personnel funds.