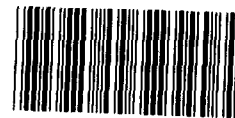


GAO

Testimony



139785

For Release on
Delivery
Expected at
10:00 a.m.
Thursday
April 27, 1989

STATUS OF THE RESEARCH FLEET OF THE NATIONAL
OCEANIC AND ATMOSPHERIC ADMINISTRATION
DEPARTMENT OF COMMERCE

STATEMENT OF
JOHN M. OLS, JR., DIRECTOR, HOUSING AND COMMUNITY
DEVELOPMENT ISSUES
RESOURCES, COMMUNITY AND ECONOMIC DEVELOPMENT
DIVISION

BEFORE THE
SUBCOMMITTEE ON OCEANOGRAPHY AND GREAT LAKES
COMMITTEE ON MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES



046778/139785

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today at your request to discuss our current work on the National Oceanic and Atmospheric Administration's (NOAA's) research fleet as it relates to H.R. 897 which authorizes NOAA to modernize its fleet and to use multiyear chartering to obtain ship support.

At the request of the former Chairman of this Subcommittee, we reviewed NOAA's fleet ability to meet current and future mission requirements. The NOAA fleet consists of 23 major vessels. These vessels, ranging in length from 86 to 303 feet, support NOAA's programs in mapping and charting, fisheries research and oceanographic and atmospheric research. To accomplish the former Chairman's request, we conducted an opinion survey of NOAA fleet users who are responsible for directing research projects of the major NOAA organizations that use the fleet to carry out their mission objectives. We obtained their views on the adequacy of NOAA's fleet support to meet current and future mission requirements.

Our work showed, among other things, that

--although increasing research responsibilities have been assigned to NOAA, its fleet support of research has

decreased over the past several years primarily because of budget restraints,

--NOAA users, for the most part, are not satisfied with the allocated ship time to conduct research or the existing ships' capabilities in carrying out their research,

--most users believe that upgrades of existing ships and equipment, as well as, additional ships are needed to carry out future research, and

--NOAA has not adopted a strategy to meet future fleet support needs.

We believe, Mr. Chairman, that NOAA needs to develop a strategy for meeting future research needs for ship support. Accordingly, we support the objectives of H.R. 897 and its requirement that NOAA develop a detailed fleet modernization plan. We also support the bill's authorization for NOAA to enter into multiyear chartering which will provide NOAA with the flexibility needed to experiment with this alternative as a way to obtain ship support to meet future research needs.

I would now like to briefly discuss the fleet users' views on the adequacy of fleet support and the effect such support has on

NOAA's mission objectives, the need to upgrade the vessels, and the effect that new technology might have on future fleet requirements.

GAO SURVEY OF FLEET USERS

In conducting our survey, we identified over 100 fleet users who conducted research or led hydrographic surveys on NOAA's ships in fiscal year 1987 (the most recent fiscal year for which information was available when we started our work). These fleet users included NOAA scientists from the National Marine Fisheries Service, the Office of Oceanic and Atmospheric Research, and the National Ocean Service. We selected 41 scientists from these major program organizations that rely on ship support to carry out their research.

ADEQUACY OF FLEET SUPPORT AND ITS EFFECT ON RESEARCH

We asked these scientists to rate the adequacy of fleet support that they received during fiscal years 1986 through 1988. Twenty-eight of the 41 scientists said NOAA's fleet support was less than adequate for one or more of their research programs. Their research activities included collecting biological and environmental data on living marine resources of commercial, recreational or ecological importance; studying the general circulation of the global ocean to predict the ocean's response to

long-term changes in the atmosphere; and conducting hydrographic surveys to produce nautical charts. These 28 scientists cited two main areas where fleet support did not meet their needs: (1) not enough ship time to carry out their research and (2) problems with the vessels' equipment and their capabilities.

Although the majority of the 28 scientists said they were generally able to meet their research objectives, they told us that the level of ship support decreases their effectiveness because they do not collect information either in the amount or quality they need.

Availability of Ship Time

Eighteen of the 28 scientists who were dissatisfied with the level of fleet support said they did not receive a sufficient number of days-at-sea to conduct their research. Individual estimates of the additional days-at-sea needed ranged from 5 to 90 days. According to some fishery program scientists, as a group, they received only about 50 percent of the days-at-sea needed to do their work in fiscal year 1988.

The 18 scientists said that they did not receive enough fleet support for various reasons including the availability of NOAA research funding, NOAA's mission priority for their research activities, the availability of NOAA's ships with required

capabilities, and the availability of operational funding to repair and maintain NOAA's ships.

Problems with Ship Capabilities and Ship Equipment

Twenty-six scientists of the 28 said one or more characteristics of the vessels or the equipment hindered their research. They cited such things as (1) problems with the ship winches, (2) the inability of some vessels to remain at sea for extended periods of time, (3) inadequate deck working areas, and (4) inadequate vessel laboratories. Twenty scientists said that winches, which are used to deploy and recover oceanographic scientific equipment, hindered their research. One scientist said he lost about \$75,000 worth of equipment because a winch malfunctioned and his equipment was lost at sea.

About one-third of the scientists who expressed concern about fleet support said that inadequate onboard computer systems and scientific instruments hindered their research. Scientists also identified problems with the ships' acoustic systems, navigation, positioning, and communication systems. They told us that they needed additional, as well as, more modern computers to process and integrate their data with other environmental data while aboard ship, improved satellite communications to transmit data, and better positioning systems to improve the precision of their research.

Effect of fleet support on research

Sixteen of the 28 scientists, who said fleet support was inadequate for their research added, however, that they were able to meet most or all of their research objectives. Because scientists may design their research objectives considering limitations in fleet support, we asked them whether these limitations decreased their research effectiveness.

All 28 of the users who expressed concern about fleet support said their effectiveness in conducting research decreased because, in general, they do not collect information either in the amount or quality they need. For example, one scientist said a shortfall in research funds and the limited availability of a NOAA ship with specialized gear forced his group to conduct clam surveys every 2 years instead of annually. He said clam surveys compete with many other users for limited ship time. He said that clams are an important commercial resource and the Mid-Atlantic Fisheries Management Council, as its first priority, requested NOAA to conduct clam surveys in 1989 to ensure that the Council had the information it needed to manage the resource.

Another scientist said the National Ocean Service is not doing the number of surveys that it did previously because of the decreasing number of days-at-sea NOAA is dedicating to in-shore hydrographic surveys in support of nautical charts. We noted that

as NOAA has had to respond to increasing demands for ship time from different program activities, while also facing restrained budget support for the fleet, it has decreased the number of sea days it spends on surveys for nautical charts from about 1,400 days in 1983 to about 820 days in 1988.

Beneficiaries of Research Adversely Affected

All but 1 of the 28 scientists who told us fleet support was not adequate also said that public and private entities who use NOAA's research are adversely affected by NOAA's inability to provide adequate fleet support. They said beneficiaries such as federal and state fishery managers, commercial fishermen, seafood consumers, commercial shipping operators and recreational boaters, and federal and state environmental regulatory agencies were adversely affected. One oceanography scientist said he was unable to collect enough environmental samples for NOAA's analysis of water pollutants because of problems with the ship's winches. He added that the Environmental Protection Agency and the Washington State Department of Ecology are not receiving sufficient data to monitor water quality for pollution control purposes. According to one local official, in the past, NOAA has helped to identify sources of pollution entering Puget Sound. The official is concerned because NOAA has discontinued this work.

IMPROVEMENTS ARE NEEDED IN NOAA'S FLEET SUPPORT

NOAA's fleet users, including those who are generally satisfied with the current level of fleet support, said improvements are needed in ship instrumentation and the ships' capabilities to support future research. Thirty-seven of the 41 scientists called for upgrading of NOAA's vessels. The most frequently reported ship-board needs were winches, scientific instrumentation, laboratories, depth-sounding systems, computers and storage areas for scientific equipment and samples.

Twenty-five scientists said NOAA should build more ships to support future research. Most believed that the new ships should be multipurpose, but they varied widely in their opinions as to the number of new ships needed (ranging from 1 to 7) and the size and capabilities of the ships (ranging from Class I type ships to Class V type ships).¹

NEW TECHNOLOGIES AND THE NEED FOR NOAA SHIPS

Although most scientists (40 of 41) said new computers, satellite systems, or other new technologies would most certainly help their future research, very few believe such technologies would reduce the need for ship time. According to thirty-two fleet

¹Classes of ships are determined by a combination of each ship's gross tonnage and rated horsepower.

users, new technology improvements would not reduce their need for ship time.

Some fleet users thought their need for ship time would not be affected by new technology because improvements in processing and transmitting data, for example, would not reduce the time needed to collect the data. Others said that improved efficiencies in collecting and processing data would allow them to collect and process more data than they do now and this would increase the accuracy and the reliability of their research.

IMPACT OF SHORTFALL IN FLEET SUPPORT ON FUTURE RESEARCH

Fleet users generally agreed that a shortage in fleet support would affect NOAA's ability to meet future program responsibilities in fisheries, mapping and charting, and ocean research.

Fishery Program Responsibilities

NOAA is responsible for providing scientific information used by fishery managers. To provide such information, NOAA scientists conduct stock assessments and biological and environmental studies. NOAA ships provide more than two-thirds of the ship time used for these studies while charter vessels provide the remainder.

For example, some fishery scientists said if NOAA could not meet their future fleet needs then either the scope or the quality of their stock assessments and complimentary studies, such as studies of fishery habitats, would be affected. They said regulatory agencies responsible for managing fish stocks would not have information to manage the stocks. Some scientists said that inadequate information could have an adverse economic consequence on the fishing industry. One scientist, in demonstrating the economic importance of the stock assessments, said when an accurate assessment of the sable fish population was provided to the Regional Fishery Management Council, it permitted the Council to increase the fishing quotas which, in turn, increased profits for the fishing industry.

Mapping and Charting Responsibilities

NOAA is also responsible for conducting hydrographic surveys to produce nautical maps and charts used for navigation of the nation's coastal areas. It is also responsible for mapping the U.S. Exclusive Economic Zone.²

Some NOAA users engaged in hydrographic surveys of the coastal areas expressed concerns about decreases in NOAA's fleet

²The U.S. Exclusive Economic Zone was established by presidential proclamation in 1983 which asserted jurisdiction over all resources in and below the oceans along U.S. coasts and out to the 200-nautical-mile limit previously established for fisheries.

support. For example, one user said that NOAA has sharply reduced its survey work of coastal areas because of competing priorities, and said hazardous navigation conditions often exist in the coastal areas. For example, we noted that the number of days-at-sea NOAA spent on surveying the coastal areas decreased as it used more of its hydrographic survey resources to map the economic zone. Fleet users engaged in hydrographic surveys said without adequate fleet support to produce accurate nautical charts, the lives and property of commercial shippers, fishermen, and recreational boaters are at risk.

For example, the Chief of the National Ocean Service's Hydrographic Surveys Branch estimated that NOAA has not surveyed about 60 percent of the Alaskan coasts with modern methods. One scientist told us that, NOAA has not charted areas of Bristol Bay and the Aleutian Islands, and fishermen working these areas have requested NOAA surveys. The Chief of the Hydrographic Surveys Branch told us that NOAA has only been able to complete about 40 percent of the work it wanted to do in Bristol Bay because it does not have the ship time it needs.

According to one scientist if NOAA does not get the ship resources to carry out its responsibilities to map the Exclusive Economic Zone, the United States would ultimately be limited in its ability to capitalize on exploring mineral resources in the zone, and private industry's cost of developing these resources would

increase. NOAA and the U.S. Geological Survey are preparing a 10-year plan to map and research the economic zone's sea floor. NOAA is projecting that it will need sharp increases in the number of days-at-sea to survey the zone.

Ocean Assessments Program Responsibilities

NOAA has a major role in researching environmental systems to support national policy and decision-making on environmental issues. Oceanography scientists were generally concerned that inadequate future fleet support for their research would diminish their ability to provide environmental managers with essential information. For example, one oceanography scientist engaged in research to improve the ability to predict tsunamis (giant tidal waves) told us that his research requires three cruises a year to recover, refurbish, and redeploy measurement instrumentation at five different stations in the Pacific Ocean. His research may lead to better prediction of tsunamis; however, if fleet support is not available in the future, he will not be able to maintain the survey stations nor satisfactorily carry out his research.

NOAA MANAGERS FIND A NEED TO MODERNIZE THE FLEET

NOAA's fleet managers have evaluated the condition of the

fleet and NOAA's future mission requirements and have found a need to upgrade and modernize the fleet. Specifically,

- a 1988 assessment of the fleet's condition by Advanced Technology, under contract with NOAA, concluded that, although the ships are in generally good condition for their age, NOAA needs to embark upon a major upgrade program to extend the useful life of its ships,
- fleet instrumentation managers are concerned about the aging condition of shipboard instrumentation and data processing equipment and in 1988 identified ship instrumentation upgrade needs including data processing, navigation, positioning and communication systems,
- program managers expect increases in their need for fleet support over the next 20 years to respond to changing and/or increasing responsibilities in protecting and understanding the environment, providing information to manage and develop the ocean's resources, and charting the ocean sea floor,
- the National Research Council's Marine Board, in a 1988 study conducted at the request of the former Administrator of NOAA, concluded that, overall, it appears that the nation's ocean needs are expanding, while capital expenditures for the fleet by NOAA are not keeping step with

present or future requirements. The Marine Board recommended, among other things, that NOAA take the steps to experiment with long-term charters in order to determine their desirability for providing ship support for certain NOAA missions.

LONG RANGE PLANS NOT ADOPTED

NOAA has not adopted a strategy for modernizing the fleet and has not yet proposed to the Congress a program to effectively implement a needed modernization program. The need for a modernization strategy is important because NOAA needs to determine how it will continue to provide fleet support to its missions in the future. The average age of NOAA's ships is approaching 25 years and the majority of the ships will become obsolete in the 1990's according to useful life criteria for such ships cited by the Marine Board. According to the Marine Board, because of the time needed to plan and build a ship, ship replacement planning needs to be conducted now for ships to be completed by the 1990's.

In March 1989 we discussed the fleet users' views on the adequacy of fleet support and the need for a fleet modernization plan with the Under Secretary for Oceans and Atmosphere. He told us that the problems with fleet support have been caused primarily by the reduced budgets NOAA has had for the fleet in the past. He

said that NOAA needs to prepare a comprehensive plan to upgrade and modernize the fleet and is evaluating its needs.

- - - -

Mr. Chairman, this concludes my testimony. I will be pleased to respond to any questions that you or members of your Subcommittee may have.