

June 1986

DEACTIVATING
RESEARCH VESSELS

National Oceanic and
Atmospheric
Administration's Use
of Private Ships



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United States
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**Resources, Community, and
Economic Development Division**

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The Chairman and Ranking
Minority Member
Committee on Merchant
Marine and Fisheries
House of Representatives

Chairpersons and Ranking
Minority Members
Selected Subcommittees
Committee on Merchant
Marine and Fisheries
House of Representatives

In response to your April 19, 1985, request, this report provides information on the National Oceanic and Atmospheric Administration's (NOAA's) proposal to deactivate a substantial portion of its oceanographic and marine resource-related vessels and increase the use of private sector vessels. In summary, we found that NOAA officials have mixed views on using private sector vessels, private operators indicated interest in chartering vessels to NOAA, and the cost information available on NOAA and private vessels is not directly comparable. In this regard, we believe NOAA needs to develop more definitive information in support of its proposal before a substantial portion of its fleet is deactivated.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 5 days from its publication date. At that time, we will send copies to appropriate congressional committees and executive agencies. Copies will also be sent to members of the Federal Oceanographic Fleet Coordination Council and to other parties upon request.

J. Dexter Peach
Director

Executive Summary

Purpose

The National Oceanic and Atmospheric Administration (NOAA) operates a fleet of vessels to carry out its marine-related programs. Vessels from the private sector supplement NOAA's fleet. Over the last 3 fiscal years, NOAA's budget had proposed that half of its fleet be deactivated and that vessels from the private sector be utilized more. These proposals have not been accepted by the Congress.

Because of concern about the programs and economic impacts of these proposals, the Chairman and Ranking Minority Member of the House Committee on Merchant Marine and Fisheries, along with four of the Committee's Subcommittee Chairpersons and Ranking Minority Members, asked GAO to obtain (1) views of NOAA officials on private vessel support, (2) information from the private sector on their interest and the availability of vessels to assist NOAA, and (3) available information on NOAA and private vessel costs.

Background

In fiscal year 1985, NOAA operated 22 ocean-going research vessels used to support fisheries, oceanographic, and hydrographic programs and projects. Ten vessels are dedicated to hydrography or nautical charting and related survey work, 8 are dedicated to fisheries research and resource assessment, and 3 are dedicated to oceanographic research and study involving an array of environmental and ocean resource assessment. One vessel is dedicated to both fisheries and oceanographic work.

NOAA's programs and projects have averaged 4,872 days-at-sea annually over the last 3 fiscal years. Of this total, NOAA vessels provided an average of 4,107 days-at-sea and private sector vessels provided 765 days-at-sea (about 16 percent of all of NOAA's vessel support). Private vessel support was obtained to either meet ship time requirements beyond the budgeted capacity or capability of the NOAA fleet or to meet program office preferences to use some private vessels.

NOAA's budget proposals for fiscal years 1984 through 1987 have requested deactivation of half of its fleet and have estimated annual savings of between \$10 million and \$11 million. Annual costs to operate and support the fleet have averaged \$61 million since fiscal year 1983. (See ch. 1.)

Results in Brief

GAO's interviews with NOAA officials revealed mixed views on using private sector vessels to a greater degree. Those officials that favored private vessels cited such advantages as private vessel availability, more

modern vessels, quality crews, and low cost. However, those officials who generally favored NOAA vessels cited similar reasons for their positions on the issue. They cited NOAA vessel safety, quality crew support, NOAA vessel flexibility, and reasonable cost.

GAO's inquiries of private vessel operators indicated there may be considerable interest in chartering vessels to NOAA. Most of the interested companies said they were familiar with NOAA projects and owned or had access to vessels that could support them.

The available cost data GAO assembled provided a general profile of NOAA vessel estimated daily costs and daily costs of a selection of private vessels NOAA had used. However, because of major differences in the sizes and capabilities of NOAA vessels relative to the private vessels that have been used by NOAA, direct comparisons of the available data to show cost differences between NOAA and private vessels would not be valid. Actual cost advantages between NOAA and private vessels would be determined through procurement actions that developed structured cost comparisons.

Given the above information, GAO believes that, before action is taken to deactivate a large number of NOAA vessels, NOAA needs to develop more definitive information on regional private vessel availability, capability, and cost. (See ch. 4.)

Principal Findings

NOAA Officials' Views on Private Vessels

NOAA's three major vessel-using components are the National Marine Fisheries Service, the Office of Oceanic and Atmospheric Research, and the National Ocean Service. Officials at these components provided GAO with various views on whether it was advantageous for NOAA to charter private sector vessels to support its research and survey missions instead of using its own vessels.

Headquarters officials at the Fisheries Service, NOAA's largest charter vessel user, stated that private vessel support can be a viable supplement to a dedicated NOAA fleet. Officials at its Northwest and Alaska Fisheries Center were the strongest advocates of chartering, believing that private ships are more modern, more readily available, and less

costly than comparable NOAA vessels and that they are staffed by more experienced crews.

In contrast, officials at the Fisheries Service's three other centers prefer NOAA vessels for a variety of reasons, including NOAA vessel and crew availabilities, capabilities, and vessel safety. Office of Oceanic and Atmospheric Research officials likewise favor NOAA ships, stating that NOAA's crews are better qualified and its ships better designed for their research needs. Ocean Service officials expressed mixed views on chartering but generally favored NOAA ships and crews because of concerns about commercial ship availability, work quality, and safety. (See ch. 2.)

Industry Interest in Supplying Vessels

GAO contacted 116 companies that were in the business of vessel support or marine services. Representatives of 105 companies expressed interest in supporting NOAA programs. Of these, GAO found that

- 76 had provided vessels or related support to the federal government and
- 97 expressed interest in supporting hydrographic and oceanographic projects, while 71 were interested in supporting fisheries projects.

GAO's interview results also show that approximately one-half of the 105 interested companies expressed the combination of familiarity with NOAA's projects, claimed vessel access, and prior government contracting experience in reference to NOAA's hydrographic and oceanographic projects.

GAO's interviews of company officials did not determine the companies' level of technical expertise or the actual availability to the companies of vessels that could meet NOAA's program needs. NOAA needs to develop better information on the actual interest and qualifications of private sector companies. (See ch. 3.)

Vessel Cost Data

GAO's assembly of available cost data shows NOAA vessels' daily costs ranging from \$1,000 to over \$22,000 per day. A sample of private vessels chartered by NOAA shows daily costs ranging from \$465 to \$4,955 per day. This comparison is misleading, however, because most of NOAA's chartering has been for fisheries vessel support for the Northwest and Alaska Fisheries Center. The charter experience of the Northwest Center may not be reflective of what other fisheries centers or other components of NOAA could experience. Moreover, the cost of NOAA

vessels tends to be higher because it owns larger more expensive multi-purpose vessels, and most charter vessels have been smaller and generally less expensive single-purpose vessels. As a result, it would not be appropriate to use this cost information to determine whether NOAA or the private sector has an overall cost advantage. In this regard, NOAA needs to develop more complete cost data for different regions and different uses for private and NOAA vessels. (See app. II.)

Recommendations

GAO recommends that the Administrator, NOAA, before deactivating a significant portion of NOAA's fleet, develop more definitive information on the merits of such an action. Although a number of options may be available, one option is for NOAA to gradually increase the use of private vessels so that it can obtain the additional experience and data needed to justify the deactivation proposal.

Agency Comments

GAO did not request NOAA to review and comment officially on a draft of this report. However, the views of directly responsible officials were obtained during the course of our work and are incorporated in the report as appropriate

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Abbreviations

BLM	Bureau of Land Management
DOE	Department of Energy
EPA	Environmental Protection Agency
EEZ	Exclusive Economic Zone
FY	fiscal year
GAO	General Accounting Office
GOCO	government-owned, contractor-operated
IG	Inspector General
MSC	Military Sealift Command
NAVOCEANO	Naval Oceanographic Office
NMFS	National Marine Fisheries Center
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NSF	National Science Foundation
OAR	Office of Oceanic and Atmospheric Research
USGS	United States Geological Survey

Introduction

On April 19, 1985, the Chairman, House Committee on Merchant Marine and Fisheries, along with Chairpersons and Ranking Minority Members of four Subcommittees within the Committee requested that we investigate the feasibility of the National Oceanic and Atmospheric Administration's (NOAA's) budgetary proposals to achieve budget savings by using more private sector vessel support for NOAA programs instead of using NOAA's own vessels.

On the basis of the request and subsequent discussions with the Committee's office, it was agreed that we focus our attention on

- surveying NOAA's fisheries, oceanographic, and hydrographic program officials and managers on their experience and views on the potential impacts (benefits and shortcomings) from greater use of private sector vessel support and
- surveying private sector companies on their experience in providing vessel support for ocean and marine-related programs and their potential interest in providing such support for NOAA's programs and projects.

We also agreed to obtain readily available cost data on the NOAA fleet and its operations and on the costs of private vessel support that have been obtained by NOAA. (See app. II.) We further agreed to identify and review recent studies that addressed the issue of vessel support for federal marine-related programs and obtain information on the vessel support used by other federal agencies involved in similar marine-related programs. Appendixes III, IV, and V provide this information.

Background

The National Oceanic and Atmospheric Administration (NOAA) was established in 1970 to consolidate various natural resource and weather-related activities. In this regard, NOAA conducts a wide range of programs and services including (1) forecasting the weather and issuing warnings about destructive weather conditions, (2) managing and studying our oceans and marine-related natural resources, and (3) performing a wide array of various oceanic and atmospheric surveys and research, as well as charting our oceans, waterways, and air space.

To accomplish a considerable portion of its ocean-related activities, NOAA operates and maintains a fleet of research and survey vessels. The fleet in fiscal year 1985 was composed of 22 vessels, ranging in length from 86 to 303 feet. This fleet supported NOAA's fisheries, oceanographic, and hydrographic programs and projects.

NOAA fisheries programs involve the management and conservation of our nation's fisheries resources within 200 miles of the U.S. coast. Fisheries work requiring vessel support is largely done by surveying the various fish and marine species in our waters and determining their populations and life cycles. NOAA's oceanographic programs requiring vessel support involve various types of research and study including ocean pollution, interaction between the ocean and atmosphere, and surveying the oceans' natural resources and environment. NOAA's hydrographic activities requiring vessel support are associated with the nautical charting of our nation's coastal waterways and oceans for safe vessel navigation.

Of NOAA's 22 vessels, 8 are dedicated to fisheries research and resource assessment, 3 are dedicated to oceanographic work, 1 supports both fisheries and oceanographic work, and 10 are dedicated to hydrography and other related ocean survey work. These vessels are primarily operated out of NOAA's two marine centers—the Atlantic Marine Center in Norfolk, Virginia, and the Pacific Marine Center in Seattle, Washington.

In addition to the fleet, private sector vessels have been obtained by NOAA's various organizational components to either meet requirements for vessel support beyond the budgeted capacity or capability of the NOAA fleet, or to accommodate program office preferences to make greater use of private vessel support. While the NOAA fleet is available to NOAA program offices to the extent the fleet budget provides operating time, the program offices are provided latitude to seek private vessel support and use available program funds to pay for this support. Such support has been obtained by the respective NOAA organizational components through direct competitive procurements.

Total obligations incurred for NOAA ship operations and support services have averaged \$61 million each year since fiscal year 1983. Based on estimates by NOAA's National Ocean Service, Office of Marine Operations, the replacement cost of the fleet is about \$242.3 million, excluding the various specialized equipment that has been placed on the vessels. The estimated value of this equipment is \$49.7 million. Table 1.1 provides a general profile of the NOAA fleet in fiscal year 1985.

Chapter 1
Introduction

Table 1.1: NOAA Fleet, Fiscal Year 1985

Dollars in millions

Vessel	Class and length	Year built	Original Vessel cost ^a	Estimated Cost To replace ^b	Marine center ^c	Primary mission
Discoverer	I /303	1966	\$ 8 80	\$ 29 70	PMC	Oceanography
Surveyor ^d	I /292	1960	7 21	26 20	PMC	Hydrography
Researcher	I /278	1970	9 29	26.40	AMC	Oceanography
Fairweather	II /231	1968	4 98	15 60	PMC	Hydrography
Rainier	II /231	1968	4 99	15 60	PMC	Hydrography
Mt Mitchell	II /231	1967	5 42	17 00	AMC	Hydrography
Miller Freeman	II /215	1967	3 39	11 00	PMC	Fisheries/ Oceanography
Albatross IV ^d	III/187	1962	3 90	14 00	AMC	Fisheries
McArthur	III/175	1966	2 91	9 80	PMC	Oceanography
Davidson	III/175	1967	3 13	10 20	PMC	Hydrography
Oregon II ^d	III/170	1967	3 05	9 90	AMC	Fisheries
Peirce	III/163	1963	2 32	8 20	AMC	Hydrography
Whiting	III/163	1963	2 40	8 50	AMC	Hydrography
David Starr Jordan ^d	IV /171	1965	3 06	10 50	PMC	Fisheries
Townsend Cromwell ^d	IV /164	1963	1 31	4 70	PMC	Fisheries
Delaware II ^d	IV /156	1968	2 23	7 00	AMC	Fisheries
Ferrel ^d	IV /133	1968	95	3 00	AMC	Circulatory surveys
Chapman ^d	IV /127	1980	3 14	4 20	AMC	Fisheries
John N. Cobb ^d	V / 93	1950	24	2 00	PMC	Fisheries
Rude	V / 90	1966	1 18	4 00	AMC	Hydrography
Heck	V / 90	1966	1 17	4 00	AMC	Hydrography
Murre II ^d	VI / 86	1943	13	80	PMC	Fisheries
Total			\$75.20	\$242.30		

^aOriginal vessel cost does not include equipment

^bNOAA's estimate of current replacement cost

^cAMC=Atlantic Marine Center PMC=Pacific Marine Center

^dThese vessels were identified for deactivation in NOAA's fiscal year 1984 and 1985 budget requests. In NOAA's fiscal year 1986 budget request, the Surveyor was not identified for deactivation, however, the McArthur and Whiting were added to the vessels proposed for deactivation

Source: Table assembled by GAO from several NOAA documents

Total vessel support for NOAA's programs and projects including NOAA and private vessels has averaged 4,872 days-at-sea annually over the last 3 fiscal years. Of this total, NOAA vessels provided an average of 4,107 day-at-sea, and private sector vessels provided 765 day-at-sea, or about 16 percent of all of NOAA's vessel support.

Tables 1.2 and 1.3 show information, for fiscal years 1983 through 1985, on vessel support provided by both the NOAA fleet and private vessels for NOAA's three program areas that require vessel support. As shown in table 1.2, the level and direction of vessel support from the NOAA fleet has been changing over the past 3 fiscal years. In the National Ocean Service, vessel support has been declining, the greatest reduction (37 percent) being in nautical charting since fiscal year 1983, while Exclusive Economic Zone (EEZ)¹ ocean surveys have seen a notable increase. The National Marine Fisheries Service has also had a decline in vessel support (13 percent) for fisheries research and stock assessment since fiscal year 1984. The Office of Oceanic and Atmospheric Research vessel support for ocean resources has increased 33 percent over the last 3 fiscal years.

Table 1.2: Support Provided by NOAA Vessels for Fiscal Years 1983 Through 1985

Program Area	Days-at-sea		
	FY 1983	FY 1984	FY 1985
NOS:			
Nautical charting	1,417	1,363	893
EEZ ocean surveys	0	50	319
Estuary and coastal assessments	699	461	443
Total	2,116	1,874	1,655
NMFS:			
Research & stock assessment	1,882	1,914	1,661
OAR:			
Climate and Air Quality	232	300	252
Ocean and great lakes prediction research	54	48	35
Marine resources	52	60	163
Total	338	408	450
Other ^a	0	0	23
Total	4,336	4,196	3,789

^aNOAA's National Environmental Satellite, Data, and Information Service received 23 days-at-sea in FY 1985

Source: Office of Marine Operations, National Ocean Service, NOAA

¹In 1983 the United States established the EEZ and proclaimed sovereign rights for the purpose of exploring, conserving, and managing all natural resources, both living and non-living of the seabed and subsoil of this area. This area was formerly established by the Fisheries Management and Conservation Act of 1976, which extended the U.S. territorial jurisdiction to 200 nautical miles off the coast and called it the fishery conservation zone.

Table 1.3: Private Sector/Charter Vessel Support for Fiscal Years 1983 Through 1985

	NMFS ^a				Subtotal	OAR	NOS	Other	Total
	NWAFc	SWFC	NEFC	SEFC					
FY 1985									
Charter cost ^b	\$1,934	\$20	\$0	\$28	\$1,982	\$993	\$0	\$24	\$2,999
Percent	64	1	0	1	66	33	0	1	100
Days-at-sea	564	43	0	14	621	110	0	24	755
Percent	75	6	0	2	82	15	0	3	100
FY 1984									
Charter cost ^b	\$1,378	\$27	\$0	\$56	\$1,461	\$780	\$112	\$8	\$2,361
Percent	58	1	0	2	61	33	5	1	100
Days-at-sea	427	24	0	69	520	147	29	10	706
Percent	60	3	0	10	74	21	4	1	100
FY 1983									
Charter cost ^b	\$1,368	\$36	\$0	\$194	\$1,598	\$876	\$90	\$38	\$2,602
Percent	53	1	0	7	61	34	3	1	100
Days-at-sea	408	18	0	161	587	128	24	96	835
Percent	49	2	0	19	70	16	3	11	100

^aNMFS has four regional Fisheries Centers (Northwest and Alaska Fisheries Center, Southwest Fisheries Center, Northeast Fisheries Center, and Southeast Fisheries Center)

^bDollars in thousands

Source: All information presented in this table was assembled by GAO from records maintained by NOAA's Office of Marine Operations. Percentages may not add because of rounding.

Table 1.3 depicts the extent of private sector vessel support among NOAA's vessel user groups by funds expended, days-at-sea obtained, the percentages of funds expended, and support provided by program group. NOAA program components spent about \$2.6 million each year to obtain an average of 765 days-at-sea from the private sector. The table also shows that the majority of private sector support over this 3-year period has been obtained by NMFS. The Northwest and Alaska Fisheries Center averaged 59 percent of all funds spent on private vessel support and 61 percent of all the days-at-sea provided by private vessels.

Budget Requests Propose Smaller NOAA Fleet

For the past several years, NOAA's budget requests have been proposing a number of cost-cutting measures regarding operations and support of the NOAA fleet. NOAA's fiscal year 1984 budget proposed to deactivate 10 of its vessels, nearly half the fleet—including 8 fisheries vessels—and estimated the operating savings to be about \$7.9 million. The associated ship support savings amounted to an additional \$3 million. The budget

proposal stated that required ship time could be obtained through private sector charters. NOAA's fiscal year 1985 and 1986 budgets contained nearly identical proposals, amounting to an estimated budget savings of about \$11 million each year. For each of these years, fiscal years 1983 through 1986, the Congress added the proposed budget savings back to NOAA's budget. The budget request for fiscal year 1987 proposes deactivation of 11 vessels and estimates a budget savings of about \$10 million.

Table 1.4 shows NOAA's budget requests, budget appropriation, and obligations incurred for fiscal years 1983 through 1985.

Table 1.4: Summary of Budget Information on NOAA Fleet Operation and Support Services for Fiscal Years 1983 Through 1986

Dollars in millions						
	Budget request	Budget appropriation	Obligations			
			NOAA overhead	NOAA Corps	NOS	Total
FY 1983:						
Ship operations	\$30.8	\$35.5	\$3.1	\$3.4	\$29.0	\$35.5
Support services	21.4	23.3	1.0	1.8	20.5	23.3
Total	52.2	58.8	4.1	5.2	49.5	58.8
FY 1984:						
Ship operations	25.0	36.2	1.5	4.3	30.4	36.2
Support services	21.5	25.6	5	2.7	22.4	25.6
Total	46.5	61.8	2.0	7.0	52.8	61.8
FY 1985:						
Ship operations	26.5	37.7	1.9	4.3	31.5	37.7
Support services	21.4	25.6	5	2.7	22.4	25.6
Total	47.9	63.3	2.4	7.0	53.9	63.3
FY 1986:						
Ship operations	25.0	36.5				
Support services	22.8	22.3				
Total	47.8	58.8				

Source: Management and Budget Staff, National Ocean Service, NOAA

Objectives, Scope, and Methodology

The objective of our review was to investigate the feasibility of NOAA's budgetary proposals to achieve budgetary savings through greater use of private vessels in lieu of using NOAA vessels. Specifically, we were requested to investigate

- the availability of private vessels, seasonally and regionally, to perform services presently performed by NOAA's fleet;
- cost comparisons of chartering vessels with NOAA's present method of providing ship support;

- the potential effects of the chartering alternative on the scientific and technical validity of NOAA's vessel-dependent research; and
- the validity and reliability of NOAA's existing studies, if any, to support its proposal to charter vessel services.

On the basis of the request and subsequent discussions with the Committee's and Subcommittees' staffs, we agreed to narrow the scope and depth of the review. In this regard we (1) surveyed NOAA fisheries, oceanographic, and hydrographic program officials and managers on their views and experience with private vessel support, (2) surveyed private sector companies on their interest in providing vessel and related support for NOAA programs, and (3) gathered available cost data on the NOAA fleet and private sector vessel support. In addition, we assembled information from several recent studies on the issue of vessel support and we also gathered information on vessel support at several other federal agencies.

To obtain information on the effects of using private sector vessel support, we conducted 41 interviews with officials and program managers from NOAA's major organizational components that require vessel support and which have, to varying degrees, used private vessels to provide that support. To be assured that the correct officials and managers were interviewed, NOAA headquarters officials identified responsible headquarters and field personnel that could address the topic. Because of time constraints, our approach to interviewing program officials and managers was to solicit their views and opinions on vessel support. We did not verify the accuracy or objectivity of the information provided, and did not attempt to prioritize their views and statements in order of significance. Our primary objective was to let these officials and managers express their views and concerns on this topic. Both headquarters and field personnel were interviewed to obtain a full range of views and experiences with the issues and concerns about private sector vessel support. (See ch. 2.) These officials and managers represented the headquarters offices of the National Marine Fisheries Service (NMFS), the National Ocean Service (NOS), and the Office of Oceanic and Atmospheric Research (OAR), and their respective field installations as follows:

NMFS

- Northwest and Alaska Fisheries Center, Seattle, Wash.
- Southwest Fisheries Center, LaJolla, Calif.
- Northeast Fisheries Center, Woods Hole, Mass.
- Southeast Fisheries Center, Miami, Fla.
- Galveston Fisheries Laboratory, Galveston, Tex.

NOS

- Atlantic Marine Center, Norfolk, Va.
- Pacific Marine Center, Seattle, Wash.

OAR

- Atlantic Oceanographic and Meteorological Laboratories, Miami, Fla.
- Pacific Marine Environmental Laboratory, Seattle, Wash.

To obtain information from the private sector on vessel availability and the interest of vessel operators to provide support for NOAA's vessel-dependent programs, we initially identified over 200 candidate companies and organizations believed to be vessel operators or in marine-related service industries. We identified company names through several sources including vessel and marine service directories, private associations, and listings compiled by NOAA of companies in the general field of vessel operations and marine services. A number of these companies and organizations were not involved in activities that could support ocean research programs. As a result, we completed interviews with representatives of 116 companies that provided vessel support or marine services. Thirty-seven interviews were direct (person-to-person), and 79 were telephone interviews.

We focused our interviews to obtain information on companies' primary operations and/or services; their contract experience with federal ocean and marine-related programs requiring vessel support; their familiarity with NOAA fisheries, oceanographic, and hydrographic programs and projects; and their interest in providing vessel and related support for this work. As we are unaware of the total number of companies that may be in the vessel operation and marine service industry, our inquiries of these 116 companies can only be represented as a rough gauge of private sector vessel availability and interest to support NOAA programs. Furthermore, in this regard, we were not in a position to verify the accuracy of information provided by these representatives. (See ch. 3.)

To assemble cost information on the NOAA fleet, we obtained and reviewed fiscal year 1984 NOAA cost reports on annual fleet operations, maintenance, support, and overhead. Cost reports for fiscal year 1985 had not been completed at the time of our review. To assemble cost information on private vessel support, we reviewed charter records maintained by NOAA's Office of Marine Operations, which has responsibility for reviewing all requests for private sector vessel support. These records contained information on costs, purpose and duration of the charter support, and the NOAA component using the service. (See app. II.)

To provide the Committee with some additional information on the issue of vessel support, we identified 20 reports that addressed, in whole or in part, the subject matter and summarized 4 in this report, which we believe provided information most applicable to the Committee's concerns. (App. III provides a listing of the 20 studies identified. App. IV provides brief summaries of 4 reports.) Also, through interviews with federal agency officials and review of selected documents, we assembled information on the vessel support used by several federal agencies that are also involved in oceanographic and marine-related survey and research work to provide information on the type of vessel support these agencies use. (See app. V.)

Our review work was done between August and December 1985 and was performed in accordance with generally accepted government auditing standards. Views of directly responsible officials were sought during the course of our work and are incorporated where appropriate. At your request, we did not ask NOAA to review and comment officially on a draft of this report.

Experience and Views of NOAA's Vessel User Groups on Private Vessel Support

NMFS, OAR, and NOS are NOAA's three major vessel-using components. Officials within these components provided their views on whether it was advantageous to NOAA to charter private sector vessels to support its research and survey missions versus using its own vessels. Headquarters officials at NMFS, NOAA's largest charter vessel user, believe that private vessel support can be a viable supplement to a dedicated NOAA fleet. Officials at NMFS' Northwest and Alaska Fisheries Center were the strongest advocates of chartering, believing that private vessels they have chartered are more modern, are more readily available, are staffed by more experienced crews, and cost less than comparable NOAA vessels. In contrast, officials at NMFS' three other fisheries centers prefer NOAA vessels for a variety of reasons, including NOAA vessel and crew availabilities and capabilities, and vessel safety. OAR officials likewise favor NOAA ships, believing that NOAA's crews are better qualified and its ships better designed for their research needs. NOS officials expressed mixed views on chartering private vessels but generally favored NOAA ships and crews because of concerns about commercial ship availability, work quality, and safety.

The following are the views and opinions we received from NOAA officials and managers responsible for programs requiring vessel support. We did not verify the accuracy of statements made by these officials nor did we attempt to compare or contrast the differing views presented.

NMFS

NMFS has been the largest NOAA user of private sector vessels. In fiscal year 1985, 82 percent of all NOAA chartered days-at-sea were obtained by NMFS. Most of NMFS' charter support was for its Northwest and Alaska Fisheries Center in Seattle, Washington. Two of NMFS' three other fisheries centers have used private vessel support but only to a limited extent. Officials at the Northwest Center strongly support the use of private vessels—a position not fully shared by the three other NMFS fisheries centers. For the most part, program officials at the other fisheries centers prefer NOAA vessels for a variety of reasons. They cited NOAA vessel and crew capability, availability, and vessel safety as some of the reasons for preferring NOAA vessels.

Charter Experience and Views

NMFS' Deputy Administrator for Science and Technology and senior staff assistant told us they have been observing the issue of private vessel support versus the NOAA fleet for nearly 10 years. They said they believe that private vessel support, while not an alternative, can be a viable

supplement to a dedicated NOAA fleet of fisheries research vessels. In their view, private vessel charter assistance is appropriate when

- the NOAA fleet cannot provide the level of ship support required;
- fisheries of a region are depressed and provide surplus ship capability at reduced charter prices;
- a more expensive NOAA ship could be diverted to a NOAA program that cannot use charter ships;
- a ship having very specific capabilities can be used on a one-time, medium- to short-duration project;
- resource information is made more credible when collected by experienced fishermen;
- circumstances require a ship sooner than a NOAA vessel can respond; and
- a short-term, low-level project requires a ship but deployment of a NOAA ship would not be cost-effective.

In addition, these officials also said that NMFS has not experienced many problems with using private ships and, for the most part, these vessels have easily supported program work. They said this is primarily due to the fact that the Northwest Center, which uses more private ships than the rest of NOAA combined, is very familiar with the regional fishing industry and chooses ships it knows can perform the work.

Reasons Why the Northwest Center Prefers Private Vessel Support

The Northwest Center has made extensive use of private vessel support in conducting its fisheries research and stock assessment surveys. Of the 621 days-at-sea of private vessel support obtained by NMFS in fiscal year 1985, 564 days (91 percent) were obtained by the Northwest Center. The remaining 57 days-at-sea (9 percent) were obtained by NMFS' Southwest Fisheries Center and its Southeast Fisheries Center. Its Northeast Center did not obtain any private vessel assistance during the fiscal year.

According to NMFS' Deputy Administrator and senior staff, the Northwest Center is more favorably disposed toward chartering than the other three centers for the following reasons:

- More private vessels are available and costs are lower in the Northwest because the fishing industry is in a recessionary period.
- The Northwest Center's operating philosophy is different from the philosophy of other fisheries centers. Historically, the Northwest Center has used commercial vessels to perform fisheries population surveys and exploratory fishing and gear research.

- The Northwest Center serves a greater geographic area than the other centers. More ships are needed to serve the larger area and private vessels meet this need

The Northwest Center's use of private vessel support is long-standing. It predates the creation of NOAA in 1970, when the Northwest Center was a part of the Bureau of Commercial Fisheries in the Department of the Interior. The Fisheries Bureau owned its own ships, operated them with civilian crews, and often used private ships and crews. With the creation of NOAA, the Fisheries Bureau was transferred to NOS, which provides ship support, including ship scheduling, maintenance and repair services, plus a uniformed corps of ships' officers and civilian crews. The Northwest Center continues to use these ships as well as private vessels.

The Deputy Director of the Northwest Center and Deputy Director of the Resource Assessment and Conservation Division at the Center told us that, with the exception of NOAA's versatile fisheries ship, the Miller Freeman, the Center generally prefers private ships and crews to support its missions because it believes

- charter ships cost less—usually one-half of the cost or less of a comparable NOAA ship,
- charter ships provide more experienced crews than does NOAA,
- charter ships are more modern and efficient than NOAA ships,
- charter ships increase the credibility of the Northwest Center fisheries population estimates with the fishing industry,
- charter ships are more readily available when needed than NOAA ships, and
- charter ships are as safe as NOAA ships.

Private Ships Cost Less Than NOAA Ships

The Deputy Director of the Northwest Center advised us that private ships have cost the Center approximately one-half of the cost of a comparable NOAA vessel for each day-at-sea. He cited a 1980 cost comparison of the NOAA research vessel Chapman that estimated the annual costs of owning and operating the ship. When these costs were divided by the standard 240 operating days per year, the cost was about \$7,300 per sea-day. However, the Deputy Director believed that 180 operating days is more realistic for the Chapman, which would raise its cost per sea-day substantially. In comparison, the average cost per sea-day was \$3,186 for the five comparable private ships used by the Northwest Center in 1980. According to this official, the Center's average sea-day cost for

the seven private vessels it chartered in fiscal year 1985 was \$3,915, still well below NOAA's 1980 Chapman cost estimate.

Private Ships Provide Superior Crews

The Deputy Director of the Northwest Center expressed the view that crews of private ships provide superior ship support to that provided by NOAA's Pacific Marine Center, and cite three major reasons:

1. The private vessels are crewed by experienced fishermen.
2. NOAA Corps officers will typically spend 2 years at sea, then 3 or more years on shore before their next sea assignment.
3. NOAA ships' officers have limited training, few have masters licenses, and none are experienced fishermen.

This official also stated that because the private ships and crews are from the commercial fishing fleet, the crews are more experienced and considerably more skilled in executing the exacting work required on Northwest Center project missions, especially bottom and mid-water trawling required in species sampling. In contrast, he believed NOAA crews often have comparatively little at-sea experience. According to this official, NOAA crew members are often hired at the Pacific Marine Center with little or no experience, and turnover is high because the NOAA wage scale is too low to attract and retain good commercial fishermen.

Charter Ships Are More Modern and Efficient Than NOAA Ships

The Northwest Center's Deputy Director stated that the ships the Center charters are newer and perform most of the work required better than NOAA ships. The NOAA ships used by the Northwest Center were built in the 1950's and 1960's while most charter vessels were built in the late 1970's or early 1980's. According to the Deputy Director, the charter ships provide the Northwest Center with state-of-the-art fish detection and electronic equipment compared with the older NOAA equipment.

Charter Ships Increase the Credibility of Northwest Center Assessments

The Director and Deputy of the Northwest Center said the credibility of the Northwest Center's fish resource assessments is enhanced when the Center involves chartered fishing boats and crews in sampling projects. The species samples taken by Northwest Center-chartered fishing boats are used to estimate the populations of commercially fished species. These estimates then become the primary evidence used by the North

Pacific and the Pacific Fishery Management Councils to establish annual catch limits for the various commercial species. This is done to protect the species and sustain fish harvests in future years.

These officials also believe that because the chartered fishing vessels and crews are involved with Northwest Center scientific parties in species sampling, the credibility of the population estimates is heightened within the fishing industry. According to these officials, although some unpopular decisions may be made when the catch limits are set low, the fishing industry is more likely to concur with the decisions that members of the industry helped to create.

Charter Ships Are More Available Than NOAA Ships

The Deputy Director of the Northwest Center stated that NOAA ship availability is constrained by the ship time demands of other NOAA programs and their individual missions. According to these officials, the Northwest Center, like all other components of NOAA is allocated a given amount of days-at-sea for a given year on the basis of funding for the NOAA fleet. These officials also pointed out that the Northwest Center can obtain private vessel support with less lead time than for NOAA vessel support.

As pointed out by the Director and Deputy Director of the Northwest Center, the NOAA ship Miller Freeman was designed and built as a versatile fisheries vessel, but it is available to the Northwest Center only about 40 percent of the days-at-sea budgeted for the vessel because it is shared with two other NOAA programs doing oceanographic work. In contrast, charter ships are readily available. Northwest Center officials said they have had no problems in obtaining quality charter vessels at reasonable rates.

Charter Ships Are as Safe as NOAA Ships

These Northwest Center officials also believe the private ships they charter are as safe as NOAA's ships for several reasons. First, their charter contracts include a Coast Guard safety inspection that must be passed before the ship leaves port. Second, the private crews are more experienced seamen. Third, Northwest Center chartered ships are newer than the middle-aged NOAA ships. Lastly, these officials said they select extremely seaworthy private ships to charter.

Reasons Why the Southwest, Northeast, and Southeast Centers Prefer NOAA Ships

In fiscal year 1985, the Southwest Center chartered 43 sea-days and the Southeast Center chartered 14 sea-days, for a total of 57 days, compared with 564 by the Northwest Center. As previously noted, the Northeast Center did not charter private vessels for its projects. Officials of these three NOAA fisheries centers expressed various reasons for their preference for NOAA ships over charters. The following reasons were provided by program officials at these three fisheries centers.

Ship Availability

Several fisheries officials told us that NOAA ships are more readily available to meet the Centers' planned fisheries projects, while commercial firms may not choose to bid on a particular project. For example, the Director of Research, Planning and Coordination at the Northeast Center told us that during an excellent fishing season, commercial vessels may be either unavailable or very costly. In addition, officials at the Southeast and Southwest Centers said that they have had difficulty finding charter ships at a reasonable cost in their area, while NOAA vessels are available to accomplish their planned program requirements.

Vessel Capability and Versatility

The Director of the Northeast Center and Deputy Director of the Southeast Center stated that they believe NOAA vessels are more capable than private vessels in performing fisheries projects because they have the size to operate in rough weather, the endurance to do sampling projects in prescribed time frames, the right equipment, and the ability to cruise at low speeds for trawling operations. These officials also stated that NOAA vessels have multipurpose capability, which allows them to perform a variety of different projects and tasks on individual cruises.

Crew Quality

The Deputy Director of the Southeast Center and several Northeast Center officials said they believe commercial crew assistance for NOAA scientists would not be as effective or efficient as the current scientist and crew partnership on NOAA vessels. Furthermore, these officials also said that commercial crews are not as flexible as NOAA crews in that NOAA crews are used to complying with the unique work requests from NOAA scientists. For example, the Chief of the Northeast Center's Fishery Biology Branch said that a commercial vessel captain and crew may not be willing to spend the extra effort needed to ensure that towing lines are properly set at an exact angle or the nets kept at an exact depth. In addition, the Deputy Director of the Southeast Center stated that commercial crews are not always familiar with NOAA fishing

gear, which is sometimes substantially larger, more expensive, or otherwise different from commercial fishing gear.

Northeast Center officials also said that contractors who bid on fisheries projects are usually the poorer quality fishermen who are not making profits because of their poor fishing expertise. The higher quality fishermen make the largest fishing profits and are therefore not interested or would only be interested if the contract price was very high.

The Director of the Southwest Center had a different view, pointing out that the David Starr Jordan, which they use, has an all civilian crew. This civilian crew has provided experience and crew continuity which, according to the Center Director, cannot always be found in the NOAA Corps because the officers are rotated to shore duty or different locations every 2 to 3 years. The Center Director also stated that the Jordan's civilian crew is about half the size of NOAA's crews on its similarly sized vessels.

Ship Safety and Maintenance

Northeast Center officials pointed out that commercial fishing vessels are not subject to Coast Guard inspections. These officials also said that NOAA's own vessel safety equipment is well maintained and that NOAA crews undergo periodic fire, man-overboard, and other safety-related drills. In addition, they said that NOAA vessels and equipment are well maintained, which reduces the number of lost productive sea days due to vessel and equipment problems.

Data Consistency and Quality

Northeast Center fishery biologists stated that some fisheries projects involve fish population estimates based on prescribed sampling procedures developed over many years. They stated that the use of the same vessel and gear is therefore important for sampling consistency. Northeast Center fisheries biologists believe that consistent use of a NOAA vessel results in reliable species sampling. They said the use of a commercial trawler would involve costly trawl comparisons of about 100 trawls in order to determine the vessel's catch rate. These costly trawl comparisons would be encountered each time a different commercial vessel was used in a project.

According to the Chief of the Northeast Center's Fishery Biology Branch and his staff, having defensible sampling data reduces the risk of costly court litigation with the private sector over fishing restrictions. Furthermore, once a vessel's catch rate is determined, the contractor knows that

he is in a preferred position for subsequent bids and may increase his price accordingly

Advantages of Using Chartered Ships Cited by the Southwest, Northeast, and Southeast Centers

Although officials at the Southwest, Northeast, and Southeast Centers generally prefer to use NOAA vessels, they cited certain advantages to chartering commercial fishing vessels. The following advantages were provided:

- The use of commercial vessels can improve the credibility of the research results with industry
- Because small specialized projects cannot always be coordinated on NOAA multi-mission cruises, they are well-suited for charter work. Projects such as gear development tests, fish tagging, and fish resource development are suitable efforts for chartering

OAR

OAR has chartered between 15 and 21 percent of all NOAA chartered days-at-sea during the past 3 years. The majority of OAR's charter activity was to support OAR's Undersea Research Program. Some vessels were also chartered to perform missions too remote for a large NOAA vessel. OAR officials expressed a preference for using NOAA's ships and crews instead of chartering and expressed a number of reasons for this preference.

Charter Experience and Views

OAR's Undersea Research Program leases submersible support vessels from private companies because NOAA does not have this capability in-house. OAR's Pacific Marine Environmental Laboratory is the other OAR component that has chartered private vessels to support its programs, while its Atlantic Oceanographic and Meteorological Laboratories have done no chartering.

Generally, OAR officials said NOAA's vessels are better designed for their research and that NOAA crews are better qualified than are private vessels and crews. Additionally, the vessels are believed to be safer and are believed to provide more flexible service.

Better Qualified Ships and Crews

The Director and Deputy Director of the Pacific Marine Environmental Laboratory believe that NOAA ships and crews provide superior assistance to the NOAA scientific parties and that the resulting scientific data are, in general, superior to the data gathered aboard chartered ships. In

their opinion, the NOAA officer corps has an impressive array of professional credentials, training, and experience, and exhibits a high degree of pride and professionalism in its work at sea

These officials also said they believe that NOAA officers and crews are insulated from the cost-cutting profit motive of charters and therefore are more willing and capable to do quality work at sea. In addition, according to AOML's Director, NOAA crews typically work well with the scientists and assist them by doing tasks such as operating winches and handling scientific equipment.

The Executive Director, OAR, and the Directors of the Atlantic and Pacific Laboratories told us that NOAA oceanographic vessels are special purpose vessels designed and built to perform NOAA's oceanographic projects and that these vessels are dedicated and available to support OAR's oceanographic projects.

Furthermore, with the exception of certain large and expensive research ships, such as those used for oil exploration, the OAR officials were unaware of any charter vessels available with the same capabilities as NOAA's oceanographic vessels. According to the Atlantic Laboratories' Director, the NOAA research ship used by the Atlantic Laboratories has the freezer, laboratory, and berth space to accommodate as many as 25 scientists and their project equipment.

Flexibility

The Director of the Atlantic Laboratories stated that NOAA scientists need flexibility in vessel operations and crews in order to perform their research projects. He also believes that even if private vessels and crews were available and capable of supporting OAR projects, contract terms would be difficult to arrange and probably costly for the requisite flexibility. This official stated that flexibility is needed as unplanned changes may be required to accomplish certain tasks, and this may result in changes in cruise length.

Safety

The Pacific Laboratory's Director and Deputy Director stated that they believe NOAA ships are safer than chartered ships. They cite the sinking of a ship chartered by NOAA in 1978 with all hands lost, including NOAA scientists. The ship was later determined to have been unseaworthy. These officials also cited the frequent loss of fishing vessels in Alaskan waters. They said they believe private vessel operators are more willing to take risks at sea because they are motivated by the need to make a

profit NOAA ships' officers, by contrast, were said to be more conservative in their seamanship and are trained in safety measures.

Advantage of Chartered Ships

The only advantage of contracting out cited by the Director of the Atlantic Laboratories concerned the ability to contract for only the exact number of sea-days required. Conversely, a NOAA ship represents an investment that continues regardless of the number of sea-days the ship is used

NOS

NOS charters the least of NOAA's three major operating units. From 1980 through 1984, NOS chartering averaged less than 5 percent of all of NOAA's chartered days-at-sea. During fiscal year 1985, NOS did not do any chartering. The views of NOS headquarters officials as well as those expressed by officials from the Atlantic Marine Center and the Pacific Marine Center were mixed on the chartering issue but generally favored the use of NOAA vessels and personnel because of concerns about commercial ship availability, work quality, and safety.

NOS Charter Experience and Views

NOS has chartered vessels for its hydrographic and water quality programs. The water quality program has used both private and University-National Oceanographic Laboratory System (UNOLS)¹ ships to perform these projects. In 1984, NOAA awarded a "turnkey" contract² for \$321,000 to do hydrographic surveying in Lake Superior. The Chief of NOS' Hydrographic Surveys Branch advised us that NOAA experienced some problems with the hydrographic survey data provided by the contractor. He stated that although most of the survey results were useful, several data collection problems occurred. For example, he stated that the contractor did not take certain soundings and did not provide certain data in the proper scale called for under the contract. At the conclusion of our review, all data deficiencies had not been corrected, and NOS was withholding final payment to the contractor.

NOS officials had mixed views on the feasibility of chartering vessels in lieu of using NOAA ships and personnel. NOS officials at both the Atlantic

¹UNOLS vessels are funded and/or provided by the National Science Foundation and the Office of Naval Research, Department of the Navy. The UNOLS vessels are operated by various universities and other academic institutions.

²Under the subject contract, the contractor provided the vessel, operating crew, and survey team and provided NOAA with the hydrographic survey data in the prescribed form.

and Pacific Marine Centers preferred to use NOAA ships and crews because of concerns about the quality of commercial work, as well as ship availability, versatility, and safety. These officials also believed that contracting would not result in significant savings, if any at all. Conversely, a few NOS officials stated that they believed the private sector either has the expertise to do quality work or could develop the needed expertise through long-term contracts

Quality Incentive and Expertise

A principal objective of hydrographic surveys is to obtain data for nautical charts, with emphasis on features that may affect safe navigation. In this regard, the Director of the Atlantic Marine Center told us that the quality of hydrographic survey work is important because the government is liable for the nautical charts that are subsequently produced from the survey work.

The Atlantic Marine Center Director said he prefers NOAA vessels and crews because NOAA officers are hydrographic experts with a professional reputation to protect and they recognize the importance of the liability aspects of nautical charting. The Director expressed the view that private firms' profit motive provides an incentive to cut corners to reduce costs and thereby improve profits. In support of this viewpoint, he cited the quality problems experienced with the 1984 turnkey contract for hydrographic survey work on Lake Superior.

The Director and the Deputy Director of the Pacific Marine Center said they believe that NOAA Corps officers are superior in education, training, and experience to charter officers for accomplishing NOAA's mission. Similarly, the Atlantic Center Director stated that he believes the private sector either does not have sufficient hydrographic expertise or could not provide such expertise economically. On the other hand, this official also expressed the view that private contractors could start out doing small, easy projects and develop additional expertise from experience gained through long-term contracts. The headquarters Chief of NOS' Hydrographic Surveys Branch stated that he believed that the private sector has, during recent years, developed hydrographic expertise, and stated that NOAA will probably contract out more hydrographic work in the future. In this regard, the Chief of the Atlantic Center's Hydrographic Surveys Branch told us that NOAA's hydrography is not so unique or technologically complex that the private sector could not do a quality job.

Availability and
Multipurpose Capability

Although the Atlantic Center's Deputy Director told us that almost any vessel could be used to do hydrographic surveys, other NOS officials had differing views. For example, the Directors of both the Atlantic and Pacific Marine Centers preferred NOAA ships because they are available and reduce the risk of not being able to perform a particular survey because of the lack of a ship. The Director of the Atlantic Center stated that commercial ships may not be available when the oil, mineral, fishing, and related industries make a turnaround and become very profitable. Furthermore, this official stated that NOAA hydrographic ships are not only capable of performing hydrographic surveys but can also perform other kinds of ocean surveys as well. For example, an assistant to the Atlantic Center Director told us that the NOAA ship Pierce, which normally performs hydrographic surveys, can also perform ocean current and water quality surveys. The Atlantic Center's Director also believes this multipurpose capability would be unavailable or costly to develop in the private sector.

Safety of NOAA Vessels

The Directors of both the Atlantic and Pacific Centers stated that NOAA ships and crews provide a greater safety level than commercial ships and crews. NOAA officers and crews are trained and drilled in fire, man-overboard, and other safety measures.

In addition, NOAA ships are large, reliable, and specifically designed for NOAA's mission. Commercial vessels do not have to meet the same safety standards as NOAA ships, and the Directors consider commercial vessels to be less seaworthy than NOAA ships. The Pacific Center Director noted the frequent loss of commercial fishing vessels of the size used by NOAA in Alaskan waters each year.

Cost

The Pacific Marine Center Director, as well as the Chief of its Nautical Charting Branch, believe that over the long term, NOAA ship costs are comparable to or less than the costs for similarly configured chartered ships. The Directors of the Atlantic and Pacific Centers stated that while charter vessels may periodically be available at attractive rates, their availability and costs are not predictable. These officials stated that they believe current charters may be available and the prices are low because the oil, mineral, fishing, and other industries are depressed.

The Director and Deputy Director of the Atlantic Marine Center and members of their staff provided the following additional reasons for

their belief that chartering would not result in significant savings, if any.

1. Dual function personnel. NOAA officers and technicians perform a dual function of ship operation and hydrography. Conversely, the use of a commercial firm could require the addition of a hydrographic party to the ship complement (officers and crew), depending upon the type of contract arrangement.

2. Team efficiency. The NOAA officers and crew have developed effective and efficient work relationships and are accustomed to the ships and equipment. Changing commercial firms, ships, and crews each year would therefore reduce efficiency.

3. Contract administration and monitoring Contract administration and monitoring would involve additional NOAA costs. Contractor monitoring is crucial, not only from the standpoint of getting the job done but also in obtaining a quality effort

4. Equipment installation. It would be time-consuming and costly to install electronic and computer equipment each time a new contract is awarded.

Private Sector Interest in Providing Vessel Support for NOAA Programs

The number of companies in the private sector that may have the capability and interest to provide vessel and related support for NOAA's ocean and marine-related programs is not clearly known, aside from those companies that have or are currently providing such support to NOAA. Our interviews with representatives of 116 companies involved in vessel operations and related marine services tended to indicate that a considerable number of companies in the private sector may have the potential capability and interest to assist NOAA in its various programs that require vessel and related support. However, we also believe the procurement process' technical review and cost competition would provide a more definitive answer to this issue.

The following material provides a general profile of the responses we received during 37 direct (person-to-person) and 79 telephone interviews with representatives of these 116 companies. Our interviews primarily focused on the companies' experience in supporting federal programs requiring vessel support, their familiarity with NOAA and interest in supporting its programs, and their capabilities to support such programs. Although the representatives of these 116 companies told us if they owned or had access to vessels that could support NOAA's programs, we did not verify the actual availability to these companies of vessels that could meet NOAA's program needs at economical rates. A determination of company technical capabilities to meet NOAA's program needs and costs could be made during the procurement process.

Interview Results

The results of our interviews indicate that a considerable number of companies in the private sector may be interested in providing vessel and related support for NOAA's ocean and marine-related programs and projects. The majority of the representatives we interviewed stated that their companies would be interested in providing vessel and/or related support for NOAA, if opportunities were made available.

Of the 116 companies we contacted, 105 were interested in supporting NOAA's programs. The following material provides a general profile of these companies' experience in contracting with the government and their indicated capabilities and interest in supporting NOAA's survey work.

Eighty-seven of these 105 interested companies said they were vessel operators, and most of them indicated they owned or had access to vessels that could support hydrographic, oceanographic, or fisheries research projects. Others performed a variety of operations, including

other types of marine-related surveys or research, vessel construction, and vessel maintenance and repair. In addition, several companies were vessel brokers, claiming capability to assemble whatever package a NOAA vessel support contract would require.

Prior Government Support Experience

Seventy-six of the 105 companies that expressed interest in supporting NOAA's projects said that they had provided vessel or other marine-related support to the federal government during the last 3 years. The Navy was cited as the largest recipient of private sector assistance from our respondents; 36 of the 76 companies provided vessel support to the Navy. NOAA was the second largest recipient, having received assistance from 28 of the companies. Other agencies receiving private sector vessel support included the U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Geological Survey (USGS), Department of Energy (DOE), and the Environmental Protection Agency (EPA). The bulk of the assistance provided was a vessel and operating crew combination, with 50 companies providing that type of support. In addition, six companies said they provided vessels only, and nine firms said they provided turnkey services (vessel and crew, scientific equipment, and the scientific party). Others provided a variety of support, including operating a federal vessel, technical equipment, scientific personnel, and technical assistance and training.

Company Familiarity With and Interest in Supporting NOAA Projects

Ninety-one of the 105 firms said they were familiar with NOAA's activities. Table 3.1 shows the number of companies we interviewed that said they were familiar with and interested in NOAA's hydrographic, oceanographic, and fisheries projects.

Table 3.1: Companies Claiming Familiarity and Interest in Supporting NOAA Projects

Type of project	Companies claiming familiarity with NOAA projects	Companies claiming an interest in supporting NOAA projects
Hydrographic projects	78	97
Oceanographic projects	76	97
Fisheries projects	65	71

Providing vessel and crew support was the preferred form of support of companies that expressed interest in NOAA projects. Ninety of the 105 interested companies preferred this option. Forty-five, or about 43 percent, of these companies were interested in a full service contract

including the vessel, its operating crew, and the personnel to conduct the surveys or research on the vessel, and over 40 percent would also be interested in operating a NOAA vessel. In addition, several firms also expressed interest in providing survey or research equipment and/or the technical party.

Company Ownership or Access to Vessels

Most of the 105 companies that expressed an interest in supporting NOAA's activities believed they either owned or had access to vessels that could support NOAA's hydrographic, oceanographic, or fisheries projects. Table 3.2 shows the number of companies that claimed vessel availability by type of project area.

Table 3.2: Companies Claiming Ownership or Access to Vessels That Could Support NOAA Projects

Type of project	Companies claiming ownership or access to vessels
Hydrographic projects	97
Oceanographic projects	87
Fisheries projects	71

Although private vessels may not always be configured to support NOAA projects, six company representatives expressed the view that the lack of properly configured vessels available for immediate NOAA use is not a significant problem. These company officials stated that if meeting NOAA's needs for vessel support required significant vessel modifications, they could make the needed modifications, provided they could negotiate multiyear contracts that would allow them to amortize required capital investment costs. However, the situation with regard to fisheries vessels may be different. Considering the large number of commercial fishing vessels available in the private sector, several company officials felt that NOAA is likely to find, on short notice, the type of vessel it may need for fisheries surveys and research work.

Preferred Contract Terms

With respect to contract terms, 58 of the 105 companies interested in supporting NOAA projects said they would prefer negotiating long-term contracts, while only 7 companies would prefer short-term contracts of less than a 1-year duration. Forty of the firms expressed no clear preference.

Additional Comments

Seven company representatives claimed they could provide such vessel support at less cost than could NOAA, but did not provide any cost data to support their claims. One representative who was familiar with NOAA's costs to operate its fisheries vessels from its Northwest Center said that he could operate one of his fishing vessels at about one-half the cost that NOAA pays to operate one of its own comparable vessels (the Chapman). Three company officials claimed that private industry support could result in significant savings to NOAA in the area of crew costs. For example, one official said that his company had done work for the Navy that resulted in reducing vessel crew costs by one-third.

Summary of Responses

From the 105 firms that were interested in supporting NOAA's programs, we identified the total number of firms that (1) expressed a combination of interest in and familiarity with specific program areas, (2) claimed access to vessels that could support that area, and (3) stated they had previously provided vessel support for the federal government. Table 3.3 shows the results of our tabulation.

Table 3.3: Companies Claiming Interest and Familiarity With NOAA Projects, Access to Vessels, and Prior Government Service

Program area	Interested in area	Familiar with area	Vessel access	Prior gov't service	All factors
Hydrographic	97	77	86	70	54
Oceanographic	97	75	82	70	55
Fisheries	71	56	64	54	40

These results show that approximately one-half (54 and 55 firms, respectively) of the 105 interested companies expressed the combination of familiarity, claimed vessel access, and prior government contracting experience to support NOAA's hydrographic and oceanographic projects. A smaller number (40) expressed the same combination of factors for NOAA's fisheries projects.

We believe the responses to each of these four factors tend to indicate that there may be notable interest and capability in the private sector to assist NOAA in its three major program areas requiring vessel support. We also believe the procurement process can determine actual interest and qualifications of private sector companies that respond to solicitations for assistance.

Conclusions and Recommendations

For the past several years, NOAA's budgets have proposed the deactivation of a substantial portion of its fleet. The fiscal year 1987 budget proposal calls for deactivating 11 of NOAA's 22 ocean vessels and increasing the use of private vessels. In examining aspects of this issue, we found that NOAA program officials have mixed views on the merits of expanding the use of private vessels, that private company officials expressed an interest in chartering vessels to NOAA, that available cost information was not comparable, and that existing studies and experience of other federal agencies provided mixed information and views on the issue. In light of these results, we believe that NOAA should not deactivate a substantial portion of its fleet until it develops more definitive information to resolve the issues raised regarding the availability, cost, and capabilities of chartering private vessels.

Conclusions

Our interviews with NOAA program officials and managers revealed mixed views on making greater use of private vessels to support their programs. The strongest advocates of private vessel support were officials and managers at NMFS' Northwest Center, which has been the greatest user of private vessels to date. These officials believe that private vessels are available, are more modern than NOAA vessels, can be obtained at reasonable rates, have quality crews that can work well with NOAA survey teams, and are as safe as NOAA vessels. Most of the other officials from other fisheries centers as well as officials from NOS and OAR generally favored NOAA vessels. These officials cited reasons similar to those cited by the Northwest Center officials who favored using private vessels. For example, some officials said that private vessels were not as available, were less safe, were not staffed as well, and were more costly than NOAA vessels. These types of views indicate the subjective nature of the comments offered and suggest that NOAA needs to further investigate the merits of using private or NOAA vessels.

Our interviews with representatives of companies involved in vessel operations or marine-related services indicated that there may be considerable interest in the private sector to assist NOAA, if opportunities were made available. Many of the representatives that expressed interest in supporting NOAA programs also claimed they owned or had access to vessels, were familiar with the work NOAA performs that requires vessel support, and had prior experience providing vessel support to federal programs. While many companies told us they would be interested, it is likely that the actual private sector response to a NOAA solicitation would vary considerably depending on such factors as the type of vessel needed, contract terms, location, time of the year, and

market conditions. In this regard, further information is needed to show that the activities of the vessels to be deactivated can effectively be performed by other vessels

We also obtained available cost information (app. II), reviewed existing studies (app. III and IV), and obtained information on the experience of other federal agencies in using federal or private vessels (app. V). We found that available cost information on using NOAA and private vessels was not directly comparable and that the studies and agency experiences provided mixed information and views on the positive and negative aspects of using private vessels. In supporting its budget proposal, NOAA should develop more definitive information on the costs and benefits of deactivating a significant portion of its fleet.

To develop information to better support its proposal for using private vessels, NOAA could gradually increase the use of private vessels in the various NOAA regions and for a variety of vessel activities. Such an effort could allow the program offices to increase their experience in using private vessels and develop a sounder basis for determining the extent that private vessels can cost-effectively replace a significant part of NOAA's fleet. In doing this, NOAA may want to develop information on a vessel-by-vessel basis. This would provide NOAA the opportunity to analyze the activities to be performed by each vessel proposed for deactivation and make a determination that its activities could or could not be effectively performed by available private vessels at less cost.

**Recommendation to the
Administrator of the
National Oceanic and
Atmospheric
Administration**

We recommend that the Administrator, NOAA, before deactivating a significant portion of NOAA's fleet, develop more definitive information on the merits of such an action. Although a number of options may be available, one option is for NOAA to gradually increase the use of private vessels so it can obtain the additional experience and data needed to justify the deactivation proposal.

Request Letter From the House Committee on Merchant Marine and Fisheries

NINETY-FOURTH CONGRESS

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CHIEF COUNSEL
EDWARD B. WELCH
MINORITY STAFF DIRECTOR
GEORGE B. FINCE

U.S. House of Representatives
Committee on
Merchant Marine and Fisheries
 Room 1334, Longworth House Office Building
 Washington, DC 20515

April 19, 1985

Honorable Charles A. Bowsher
 Comptroller
 General Accounting Office
 441 G Street, N.W.
 Washington, D.C. 20548

Dear Mr. Comptroller:

We are writing to request that the General Accounting Office (GAO) investigate the feasibility of proposals by the National Oceanic and Atmospheric Administration (NOAA) to alter substantially its traditional method of providing ship support for its fisheries and oceanographic missions. NOAA presently owns and operates a fleet of 23 vessels, ranging in length from 86 to 303 feet, that conduct operations to support NOAA programs in nautical charting, fisheries research and assessments, marine environmental assessments, and other oceanographic matters. The fleet is divided into six classes: class I and II vessels have the necessary size and endurance to conduct surveys and investigations in the deep ocean on and beyond the continental shelf or in remote areas; the smaller class III, IV, V and VI vessels are designed for continental shelf and near-shore operations.

For the third consecutive year, the Administration's budget request proposes to retire NOAA's fisheries fleet and a significant number of its other vessels. The justification for these proposals asserts that NOAA may obtain comparable services at increased savings by chartering vessels on an as-needed basis. However, NOAA has provided no evidence to support its claim that

**Appendix I
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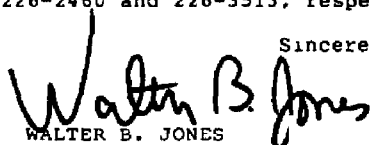
chartering vessels will result in increased savings to the Government.

Because of the substantial funds at stake (approximately \$60 million per year) and the importance of the proposal to NOAA's mapping, scientific and regulatory missions, we request that GAO investigate NOAA's proposed chartering alternative. Specifically, we request that GAO investigate the following matters:

1. the availability of vessels for charter, seasonally and regionally, to perform services presently performed by NOAA's fleet;
2. cost comparisons of the chartering of vessels with NOAA's present method of providing ship support to obtain comparable data;
3. the potential effects of the chartering alternative on the scientific and technical validity of NOAA's vessel-dependent research;
4. the validity and reliability of NOAA's existing studies, if any, to support its proposal to charter vessel services.

The Committee intends to postpone any action on the Administration's proposal until such time as GAO can examine these matters. We therefore look forward to GAO's assistance, and request that GAO provide us with its findings by November, 1985. Should you have any questions on this request, please do not hesitate to contact Mr. William Stelle or Ms. Donna Johnson at 226-2460 and 226-3513, respectively.

Sincerely,

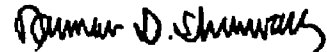

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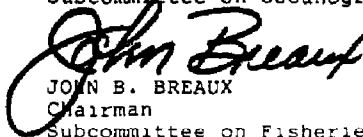
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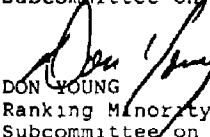
BARBARA A. MIKULSKI
Chairwoman
Subcommittee on Oceanography



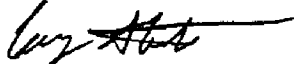
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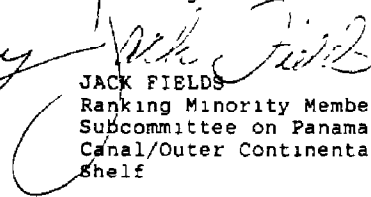
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Subcommittee on Panama
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Shelf

Daily Costs of NOAA and Private Sector Vessel Support

As part of our review, we assembled available cost data on vessels of the NOAA fleet and on a selection of private sector vessels that NOAA organizational components chartered during fiscal years 1984 and 1985. The purpose in assembling these cost data was to provide a daily cost profile of NOAA vessels and private vessel support. These data were not intended to be used as a basis to make direct comparisons between NOAA and private vessels to show whether NOAA or the private sector has a cost advantage over the other. According to NOAA's Office of Marine Operations, direct comparisons are not appropriate largely because of the different sizes and capabilities of NOAA research and survey vessels and the associated costs due to these features.

Most NOAA vessels are larger multipurpose vessels that were acquired or specially designed to accommodate a wide range of either fisheries, oceanographic, or hydrographic projects required by NOAA programs. The types of vessels that have been chartered, while some may be capable of performing different types of projects, were selected for use because of their capability to support a specific project for a designated period of time.

In addition, direct comparisons would not be appropriate because private vessel availability would be a major factor determining charter costs. As most private vessel support has been for fisheries support for the NMFS Northwest and Alaska Fisheries Center, the availability and costs of these charters would not necessarily reflect what other fisheries centers or other components of NOAA could obtain in the way of private vessel support for their respective programs and projects in other regions of the country. Vessel availability and cost are regional issues.

While direct cost comparisons are not appropriate, the cost differences that exist between NOAA vessels and private vessel support does, however, raise a fundamental question regarding the types and sizes of vessels; i.e., can larger multipurpose vessels or smaller single- or limited-purpose vessels best serve the specific vessel support needs of NOAA's three major program areas?

Table II.1 provides a daily cost estimate for each vessel of the fiscal year 1985 NOAA fleet and also identifies a daily depreciation and capital carrying cost for those vessels not fully depreciated, on the basis of a normal 20-year useful life. The vessels are organized by the program area they were designed to support. The table shows that vessels of the NOAA fleet have estimated daily costs ranging from about \$1,000 to over

**Appendix II
Daily Costs of NOAA and Private Sector
Vessel Support**

\$22,000, depending upon the cost factors considered. The most expensive are the large oceanographic research vessels; the least expensive are the smallest and oldest fisheries vessels.

Appendix II
Daily Costs of NOAA and Private Sector
Vessel Support

Table II.1: Daily Cost Estimates for NOAA Vessels

NOAA vessel	Length in feet	Primary program area	Daily cost estimates ^a	Daily depreciation and capital carrying cost ^b
Miller Freeman	215	Fisheries/ Oceanography	\$ 8,660	801
Albatross IV	187	Fisheries	6,131	•
David Starr Jordan	171	Fisheries	5,908	•
Oregon II	170	Fisheries	4,828	699
Townsend Cromwell	164	Fisheries	4,590	•
Delaware II	156	Fisheries	4,752	514
Chapman	127	Fisheries	5,097	2,283
John N Cobb	93	Fisheries	3,793	•
Murre II	86	Fisheries	2,546	•
Discoverer	303	Oceanography	19,751	2,620
Researcher	278	Oceanography	16,757	3,249
McArthur	175	Oceanography	8,105	819
Surveyor	292	Hydrography	19,386	•
Fairweather	231	Hydrography	15,140	1,642
Rainier	231	Hydrography	10,679	1,258
Mt Mitchell	231	Hydrography	14,967	1,442
Davidson	175	Hydrography	11,227	1,133
Whiting	163	Hydrography	8,535	•
Peirce	163	Hydrography	8,277	•
Ferrel	133	Hydrography	3,661	235
Rude ^c	90	Hydrography	1,012	270
Heck ^c	90	Hydrography	1,012	270

^aThe daily operating costs of NOAA ships were estimated by dividing each ship's operations, maintenance, and share of overhead by the number of days it spent at sea and loading and unloading days associated with each voyage. Personnel expenses were reduced by 7 percent below 1984 levels as a result of lower staffing levels on NOAA vessels in fiscal year 1985 resulting from management efficiency studies conducted at the Atlantic and Pacific Marine Centers. An additional 1.7-percent reduction was made to recognize certain ancillary tasks (e.g., weather and marine mammal observations) performed on NOAA vessels that would not be performed on a private vessel.

^bFor those vessels not fully depreciated (less than 20 years old), we calculated an annual depreciation cost and a capital carrying cost to the government for 1985. We used the straight-line method, assuming no salvage value to calculate each vessel's depreciation cost. According to NOAA, the vessels are worth little at the end of their useful lives and are often sold for scrap. To calculate the 1985 capital carrying cost, we applied the January 1985 U.S. Treasury 30-year bond rate of 11.45 percent to the 1985 book value for each vessel as determined by the straight-line method. These costs were divided by the applicable vessels' days-at-sea plus loading days for 1985 to determine the daily cost component for each vessel.

^cThe Rude and the Heck are "sister" ships and operate together in wire-drag operations to detect obstructions under the water that vessels could hit.

Source: Developed from NOAA obligations documents and other data.

Appendix II
Daily Costs of NOAA and Private Sector
Vessel Support

Table II.2 presents daily costs of 17 examples of private vessel support obtained by NOAA components. The table shows the fiscal year the vessel was used, the vessel's name and length, the type of program/project supported, and the actual daily cost NOAA paid for using the vessel. As previously noted, most of NOAA's private vessel support has been obtained by NMFS' Northwest and Alaska Fisheries Centers, and most of this has involved vessels smaller than NOAA's vessels. In this regard, 15 of the 17 examples of private vessel support were obtained by NMFS. These examples are presented in order of vessel length from the longest to the shortest vessels obtained. The daily costs of these examples of private vessel support range from \$465 to \$4,955.

Table II.2: Daily Costs for a Selection of Private Vessels Used by NOAA^a

Fiscal year	Private vessel	Length in feet	Program/project supported	Actual daily cost^b
Private Vessel Support for NMFS				
1984	U S Dominator	125	Groundfish assessment	\$2,820 ^c
1985	Morning Star	124	Pollock survey	4,955
1984	Morning Star	124	Groundfish assessment	4,650
1985	Aleution No 1	123	King crab tagging	2,426
1984	Starlite	110	Crab-groundfish assessment	2,650
1985	Alaska	100	Crab-groundfish survey	2,975
1984	Alaska	100	Crab-groundfish survey	3,310
1984	Half Moon Bay	100	Bottom trawl	3,484
1985	Polar Sea	97	Sea lions study	3,000
1985	Marathon	87	Rockfish assessment	3,000
1984	Ocean Spray	85	Groundfish assessment	3,600
1985	Longhorn	80	Shrimp tagging	2,000
1984	Gus-D	65	Red crab development	1,400
1985	Steel Fin II	60	Albacore resources	465
1984	Steel Fin II	60	Albacore resources	1,111
Private Vessel Support for NOS and OAR				
1984	Cape Henlopen	120	Water Column Monitoring	4,300
1984	Virginia Key	65	Climate Studies	1,400

^aNOAA's charter records indicate that during fiscal year 1984 and 1985, NOAA chartered private sector vessels on 59 occasions. Thirty-five of these charters were for NMFS projects, 9 were for OAR and NOS projects, and 15 were for National Weather Service data buoy tending.

^bPrivate vessel daily costs were calculated by dividing the contract cost by the days the vessel was available to NOAA.

^cNOAA charter records show that the U S Dominator was used in FY 82 at a daily cost of \$4,829.

Source: Data developed from NOAA charter records.

Listing of Recent Reports, Studies, and Articles That Addressed the Topic of Vessel Support for Federal Oceanographic or Marine-Related Programs

Substantial Savings Possible Through Improved Management of Hydrographic Survey Work, (draft report) Office of Inspector General, U.S. Department of Commerce, Aug. 28, 1985.

Third Annual Report on the Federal Fleet for 1984, Federal Oceanographic Fleet Coordination Council, Apr. 1985.

Lake Superior Hydrographic Surveys, In-House Cost Estimates for Performance Either by a Class III Hydrographic Survey Ship or a Hydrographic Field Party, Charting and Geodetic Services, National Ocean Service, NOAA, Mar. 27, 1985

Report of Federal Oceanographic Fleet Study, 1984, Federal Oceanographic Fleet Coordination Council, 1984.

NOAA Vessel Chartering: Policies, Practices and Issues for the Future, (draft report) Office of Policy and Planning, NOAA, July 1984.

Hydro '84, Hands on to High Tech, Proceedings of National Ocean Service Hydrographic Conference, The Hydrographic Society and the National Ocean Service, NOAA, Apr. 25-27, 1984.

Opportunity to Conduct Hydrographic Surveys More Economically, Office of Inspector General, U.S. Department of Commerce, Apr. 1984.

Report on the Federal Fleet for 1982, Federal Oceanographic Fleet Coordination Council, May 1983.

Academic Research Vessels, 1985-1990, Commission on Physical Sciences, Mathematics, and Resources, National Research Council, 1982.

Ships of the NOAA Fleet, National Ocean Survey, NOAA, Mar. 1982.

“Ocean Science and Ships” and “The University Fleet”, Oceanus, Woods Hole Oceanographic Institution, spring 1982.

Civilian Contract Operation of Government Ships, for Joint Maritime Congress, Booz, Allen and Hamilton, Inc., Dec. 1981.

NOAA Fleet Requirements Study (Phase II), National Ocean Survey, NOAA, Sept. 1981.

**Appendix III
Listing of Recent Reports, Studies, and
Articles That Addressed the Topic of Vessel
Support for Federal Oceanographic or
Marine-Related Programs**

Technology and Oceanography, Office of Technology Assessment, June 1981.

FY 1983 Issue Paper, NOAA Fleet, Coastal Research Vessel Construction and Increased Fleet Utilization, National Ocean Survey, NOAA, Mar. 1981.

NOAA Fleet Requirements Study, NOAA Study Team, Office of the Administrator, NOAA, Feb. 1981.

NOAA Fleet Requirements Study, NOAA Study Team, Office of the Administrator, NOAA, Jan. 1981.

Ocean Services for the Nation, National Ocean Goals and Objectives for the 1980's, National Advisory Committee on Oceans and Atmosphere, Jan. 1981.

Cost Comparison Study of the Operation of the RV Chapman, National Ocean Survey, NOAA, Dec. 1980.

FY 1982 Issue Paper, Bowers Replacement, National Ocean Survey, NOAA, May 1980.

Issue Paper, NOAA Fleet and Ship Support, FY 1982, Office of Marine Operations, NOAA, Jan. 1980.

NOAA Fleet Mix Study, FY 81, FY 84, and FY 88, Office of Fleet Operations, NOAA, Jan. 1980.

FY 1981 Issue Paper, Midlife Rehabilitation and Upgrade of NOAA Ships, National Ocean Survey, May 1979.

Summaries of Selected Reports and Studies on Vessel Support for Federal Oceanographic and Marine-Related Programs

We identified over 20 reports, studies, issue papers, or articles prepared during the past 6 years that addressed in whole or in part the topic of vessel support for federal oceanographic or marine-related programs. Much of this material contained information on federal oceanographic vessel requirements and future needs, economics of private versus federal ship support, experience with private vessel support, and positive and negative aspects of private support. The following are brief summaries of four reports that we believe contained information most applicable to concerns of the Committee.

Cost Comparison Study of the Operation of the Rv Chapman, December 1980

This is a NOAA A-76 cost comparison study comparing the private sector operation of a federal vessel with its operation by federal personnel. The comparison showed that it would be less expensive for the government to operate the fisheries vessel Chapman, with an annual cost savings of about \$688,000. The contractor, who was party to the cost comparison, appealed the decision and filed a bid protest with us. As a result, some adjustments were made to the cost comparison, which lowered the cost difference to \$498,000, but the decision to retain in-house operation of the Chapman was upheld.

Report by the Federal Oceanographic Fleet Coordination Council on the Federal Oceanographic Fleet Study, 1984

The Federal Oceanographic Fleet Coordination Council was established by the interagency Committee on Atmosphere and Oceans to increase the overall efficiency and effectiveness of the federal oceanographic fleet. This fleet consists of vessels operated by NOAA, the Navy, the National Science Foundation (NSF), the U.S. Coast Guard, USGS, and EPA, and federally supported oceanographic research vessels operated by the University-National Oceanographic Laboratory System. The Fleet Coordination Council report evaluated vessel requirements and capabilities of federal agencies involved in ocean-related survey or research programs. It indicated that agencies' vessel requirements are projected to increase between 1984 and 1989, but that ship availability would decrease. The largest part of the vessel shortfall was attributed to NOAA.

The report also related member agencies' chartering efforts to help alleviate shortfalls in federal fleet capacity. Advantages and disadvantages of chartering were discussed, and the report concluded that (1) the advantages outweighed the disadvantages of private sector vessel support and recommended improved communications with the private sector and (2) an association of charter vessel operators be established to develop standardized procedures for charter usage and planning.

According to a Council spokesperson, no action has been taken on the recommendations.

**NOAA Vessel
Chartering: Policies,
Practices and Issues for
the Future, Office of
Policy and Planning,
NOAA (Internal Draft
Report, July 1984)**

The draft report provided an informational overview of issues and considerations relevant to federal agencies chartering private sector vessels. The report concluded that there is a continuing need for a NOAA research fleet but that charter vessels should be used to augment the fleet when projects would result in less than optimal use of a NOAA vessel. The report conveyed, among other information,

- NOAA's chartering experience, including the major obstacles to chartering such as lack of multiyear chartering authority (authority to enter into chartering contracts of more than 1-year's duration) and the block-funding of NOAA's own fleet (the fleet-funding process by which program users do not pay for NOAA fleet ship time out of their program funds);
- other agencies' chartering experience and noted that current practices were largely unplanned and evolved on an ad hoc basis; and
- the private sector's views that the government should not compete with it.

The draft report was not published in final form, according to a NOAA official, because other internal priorities deemphasized the need for a final report.

**Lake Superior
Hydrographic Surveys:
In-House Cost
Estimates for
Performance by a Class
III Hydrographic
Survey Ship or a
Hydrographic Field
Party (Internal Report,
Mar. 27, 1985)**

This was a NOAA staff study to determine whether it would have been more economical for NOAA to conduct selected hydrographic survey work on Lake Superior that it had already contracted out to the private sector as a direct procurement. The contract had not been let on the basis of an Office of Management and Budget A-76 cost comparison.¹ Because the subject contract was NOAA's first use of private sector support for hydrographic survey work, and essentially recognized by NOAA management as a test, NOAA believed that a direct procurement was more appropriate than an A-76 cost comparison, which could have reduced in-house hydrographic survey resources.

Four in-house alternative approaches to accomplishing the survey work were compared, involving ship operation or field party operation. In three of the four alternatives, private sector operation was shown to be more expensive than performing the survey work in-house.

¹An A-76 cost comparison study compares the cost of government performance of a particular function with the most technically qualified private sector low bidder. If the private sector bidder wins the competition, the federal in-house resources are reduced and personnel are transferred to other jobs or released from federal service.

Vessel Support Used by Other Federal Agencies

As part of our survey, we obtained information on several other federal agencies involved in ocean and marine work that require vessel support for their programs. The information we obtained reflects that other agencies have generally received a mix of vessel as well as crew support to accomplish their ocean and marine-related programs. For example, the Department of the Navy uses its own fleet of oceanographic vessels, as well as vessels of the University-National Oceanographic Laboratory System and private sector vessel support. Several of the agencies including the Military Sealift Command, USGS, and EPA have or are moving toward contract operation of federally owned vessels. The following are brief descriptions of vessel support used by federal agencies on which we obtained information.

Department of the Navy

The Navy owns 13 ships that it uses for hydrographic and oceanographic research. Twelve of these ships, referred to by the Military Sealift Command as the "white fleet" because of their white color scheme, are operated for other Navy units. The ships are currently staffed with civilian employees; however, the Command is in the process of contracting out its operation for 3 years on the basis of an A-76 cost comparison study. The low contract bid was about 22 percent less than the government's cost to operate the ships during the contract period. However, a maritime union brought litigation against the Navy to set aside the tentative contract award as being in violation of the Service Contract Act with respect to the labor wages to be paid by the contractor. As a result, the Command modified and reissued the request for proposal for the project, with bids to be based on a requirement that the Service Contract Act provisions will apply to work conducted within U.S. ports and territorial waters. According to a Command contract official, two companies, including the previous low bidder, are submitting new bids in response to the amended request for proposal.

Several Navy program offices conduct ocean related research or surveys and require ocean-going vessel support. In performing this work, these offices use ships from (1) the Navy's 12 vessel white fleet, operated by civilian crews, (2) regular Naval vessels, operated by military crews, (3) the University-National Oceanographic Laboratory System fleet (most of its 25 vessels are owned by the Navy and NSF), and (4) the private sector. For example, the Naval Oceanographic Office (NAVOCEANO) uses 6 of the 12 white fleet ships full-time for hydrographic surveys. According to the Deputy Oceanographer in the Office of the Oceanographer of the Navy, the demand for NAVOCEANO's survey work far exceeds its available ship time. To help meet survey requirements,

NAVOCEANO has used private sector support over the past 5 years for the less complicated hydrographic survey projects. According to a NAVOCEANO official, contractors have provided quality products.

The Office of Naval Research conducts about \$50 million of contract oceanographic studies annually. Most of this work is done by UNOLS ships because they are designed and equipped for these types of research projects. Less than 5 percent of the Office of Naval Research project ship days are on chartered private sector vessels. The Office's experience is that oil industry ships are the best equipped to do specialized seismic surveys, but are very expensive—about \$30,000 per day.

The Naval Research Laboratory does research in acoustics and geophysical and oceanographic areas. It primarily uses white fleet vessels, but has "chartered" one UNOLS ship. The Naval Research Laboratory believes that UNOLS ships are less expensive than private sector ships and that there is a preference to first use one of its ships before chartering private sector vessels because the Laboratory is familiar with the capabilities and equipment on the UNOLS vessels.

The Naval Oceanographic Research and Development Activity (NORDA) uses three white fleet vessels in conducting research for other Navy units. NORDA also uses UNOLS ships and charter vessels. For example, during 1984-85, it had four charters totalling 97 ship days at a cost of about \$89,000. In addition, six of the nine Naval Laboratories use ships in their research work. These laboratories generally use regular Naval vessels operated by military crews. One of the laboratories chartered a private vessel in 1984 and 1985.

Army Corps of Engineers

The Army Corps of Engineers has increasingly contracted its field data acquisition (e.g., hydrography and boundary surveys) and mapping and charting operations since the 1970's. Reduced personnel ceilings provided the primary impetus for this increased contracting effort. Currently, about 33 percent of the Corps' hydrographic survey work is contracted. It is the Corps' policy to do enough in-house work to maintain sufficient in-house expertise to provide adequate monitoring and to assure timely completion of its surveying and mapping programs. According to the Corps' Engineer Inspector General, Chief of Engineers Office, the quality of contractors' survey data has depended upon the quality of the initial contractor selection process and, in some cases, the amount of training and monitoring provided by the Corps.

NSF

NSF has three programs that use oceanographic research vessels—the Oceanographic Facilities Support Program, the Ocean Drilling Program, and the Polar Program. The Oceanographic Facilities Support Program funds either fully or in part the operations of the University-National Oceanographic Laboratory System vessels, about half of which are owned or were built by NSF. Some charter vessels are used; however, their use amounts to less than 1 percent of the program's budget. According to the Acting Director for Marine Geology and Geophysics in the Division of Ocean Sciences, program users have been pleased with their charter experience; charter vessels are generally not as capable as Oceanographic Laboratory System vessels for the program's broad research needs; and their use has been limited to specific requirements. Another NSF official told us that Oceanographic Laboratory System vessels were found to be less expensive than private sector vessels because there is no amortization of construction costs for the Oceanographic Laboratory System ships. NSF's Ocean Drilling Program has entered into a long-term lease (a 5-year lease with options for NSF to extend the lease up to 10 additional years) for one ship. The lease is on a yearly funding basis, contingent upon availability of funds for succeeding years. The Polar Program charters an ice breaker for Antarctic work.

USGS

USGS uses primarily its own vessels and some Oceanographic Laboratory System vessels. On occasion, USGS has also received vessel support from the Navy, Coast Guard, and chartered private sector vessels. An informal comparison by USGS management showed that Oceanographic Laboratory System vessels were more costly than its in-house vessels, and that private sector vessels were even more expensive. On the other hand, a 1983 USGS informal vessel-manning cost comparison showed that private sector crewing of its vessels would be less expensive than crewing with USGS personnel.

EPA

EPA has conducted its ocean research activities either on its own two vessels (which are contractor operated) or through private charters. Through an A-76 cost comparison study, EPA found it less costly to contract the operation of its ships. According to EPA's representative to the Federal Oceanographic Fleet Coordination Council, EPA has found it less expensive to charter on the West Coast if the survey is less than 100 days duration than to move its large (165 foot) ship from the Atlantic. This official also stated that EPA has also used NOAA ships, but has found them to be about twice as expensive as its larger vessel (\$8,000-10,000 per day vs. \$4,500 per day).

**Appendix V
Vessel Support Used by Other
Federal Agencies**

DOE

DOE conducts its ocean research through its Sandia National Laboratory. According to the Division Manager of DOE's Seabed Programs at Sandia, the laboratory compared Oceanographic Laboratory System and NOAA vessels and found the Oceanographic Laboratory System vessels were both less costly and more capable for the types of research its programs required

**Bureau of Land
Management (BLM)**

BLM receives its vessel support through a contract broker who handles all chartering. Private sector vessels are most frequently used under this arrangement, although Oceanographic Laboratory System vessels are used from time to time. Although BLM has never conducted a study comparing the costs of operating privately contracted and federally owned research vessels, it believes it is receiving the highest quality service at a reasonable price

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