

August 1994

# RESEARCH FLEET MODERNIZATION

## NOAA Needs to Consider Alternatives to the Acquisition of New Vessels



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United States  
General Accounting Office  
Washington, D.C. 20548

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

B-256820

August 3, 1994

The Honorable Gerry E. Studds  
Chairman, Committee on Merchant Marine  
and Fisheries  
House of Representatives

The Honorable Ernest F. Hollings  
Chairman, Committee on Commerce, Science  
and Transportation  
United States Senate

The Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) operates a fleet of 18 ships that support NOAA's programs in fisheries research, oceanographic research, and hydrographic charting and mapping. However, because the fleet is old and technologically obsolete, NOAA has concluded that fleet replacement and modernization are critical to supporting its mission requirements. To this end, NOAA has developed a fleet modernization plan that calls for acquiring 24 new or refurbished vessels over a 15-year period at an estimated cost of \$1.9 billion (in fiscal year 1995 dollars).

Section 608 of the National Oceanic and Atmospheric Administration Authorization Act of 1992 (P.L. 102-567) required the General Accounting Office to report on the cost-efficiency, accounting, and operating practices of NOAA's vessels compared with other federal and private research vessels. Pursuant to subsequent discussions with the House Committee on Merchant Marine and Fisheries, which was responsible for the language in the act requiring our report, we agreed to review the extent to which NOAA has considered alternatives to the acquisition of vessels in developing its fleet modernization plan. Specifically, we (1) examined past reports and studies that addressed NOAA's fleet operations and modernization needs, (2) determined the extent to which NOAA's current fleet modernization plan had evaluated alternatives to acquiring new vessels, and (3) considered what additional actions, if any, NOAA needed to take to ensure that all viable and cost-effective options for meeting future mission requirements were fully considered. In October 1993, we testified before the Subcommittee on Oceanography, Gulf of Mexico and the Outer Continental Shelf, House Committee on Merchant Marine and Fisheries, on the preliminary results of our review.<sup>1</sup> This report presents the final results of our work.

<sup>1</sup>Ocean Research Vessels: NOAA Fleet Modernization Plan (GAO/T-RCED-94-52, Oct. 21, 1993).

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## Results in Brief

A number of past studies that examined NOAA's fleet operations and fleet modernization needs have suggested that NOAA experiment with contracting and chartering the services of private sector vessels as potentially cost-effective alternatives to acquiring new vessels for meeting its future program missions.

NOAA has generally agreed with these previous studies, and an earlier effort to plan for modernizing its fleet recognized the potential of contracting for vessel charters. NOAA's current fleet modernization plan, however, focuses on the acquisition of new vessels and does not fully consider the role that contracted and chartered services could play as alternatives to acquiring new vessels.

Because NOAA does not have the financial and operational data it needs to adequately assess whether chartered and contracted vessel services can cost-effectively meet the needs of NOAA's programs, NOAA has no assurance that its fleet modernization plan represents the most cost-effective means of meeting future program requirements. One way for NOAA to obtain the data it needs is to experiment with contracting for the products and services required by NOAA's programs. To this end, NOAA is working to award a contract for hydrographic charting and mapping services. Ultimately, the results of such vessel contracting and chartering options, if integrated into NOAA's efforts to plan for fleet modernization, would provide NOAA with a basis for identifying the most cost-effective options for meeting its future program needs.

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## Background

The Office of NOAA Corps Operations funds, operates, and maintains NOAA's fleet. Operating at an annual cost of around \$60 million, the fleet of 18 vessels currently provides about 3,400 days at sea annually of vessel support to NOAA's program offices. NOAA's fleet capability, however, has been deteriorating for a number of years. In comparison, in 1980 NOAA had 25 active vessels providing about 5,000 days at sea of vessel support. Most of NOAA's ships are approaching or have exceeded 30 years of service, and NOAA projects that, without modernization, its fleet will no longer be able to operate by the turn of the century.

In October 1992, the Congress enacted the National Oceanic and Atmospheric Administration Authorization Act of 1992, which authorized NOAA to implement a 15-year fleet replacement and modernization program. NOAA currently estimates the cost of its fleet modernization plan at \$1.9 billion, in addition to the cost of current fleet operations. Table 1

shows that \$163.3 million has been appropriated (or requested) for the fleet modernization program over its first 4 fiscal years.

**Table 1: Funds Appropriated for Fleet Modernization**

Dollars in Millions	
Fiscal year	Funds appropriated
1992	\$ 33.2
1993	30.0
1994	77.1
1995 (requested)	23.0
<b>Total</b>	<b>\$163.3</b>

Source: NOAA.

## Previous Studies Recommend Experimenting With Vessel Contracting and Chartering

Over the past several years, several studies have examined NOAA's fleet operations and fleet modernization needs and have suggested that NOAA experiment with greater use of contracts with private sector vessels for charter services as potentially cost-effective alternatives to continued reliance on NOAA's vessels. For example, in 1986 we reported to the House Committee on Merchant Marine and Fisheries<sup>2</sup> that NOAA needed to develop more definitive information on private vessels' availability, capability, and cost before taking any action to deactivate NOAA's vessels. In a 1988 report, the Marine Board of the National Research Council found that other governmental and private sector organizations have used chartering successfully and recommended that NOAA, in order to gain chartering experience, prepare a Request for Proposal for chartering ships to service one or more mission areas.

In 1991, NOAA completed its fleet replacement and modernization plan, and Commerce's Oceanic and Atmospheric Management Advisory Committee<sup>3</sup> subsequently evaluated NOAA's plan in 1992. The Committee concluded that many of NOAA's mission requirements could be accomplished cost-effectively without requiring that NOAA build its own special-purpose ships and that contracting options offered the flexibility to respond to future changes in either program funding or technical mission requirements. In May 1992 testimony before the Subcommittee on Oceanography, Gulf of Mexico and the Outer Continental Shelf, House

<sup>2</sup>Deactivating Research Vessels: National Oceanic and Atmospheric Administration's Use of Private Ships (GAO/RCED-86-133, June 11, 1986).

<sup>3</sup>The Committee was established in 1990 by the Secretary of Commerce and serves as the Secretary's principal outside advisory council on NOAA matters.

Committee on Merchant Marine and Fisheries, the Advisory Committee's vice chairman stated that NOAA should make greater use of commonly available contracting options to augment its core fleet's capability and that it needed to determine the best mix of NOAA-owned vessels and contracted vessels to meet its mission requirements.

Reports last year from Vice President Gore's National Performance Review<sup>4</sup> and the Department of Commerce's Office of Inspector General<sup>5</sup> have also echoed the need for NOAA to consider contracting as a viable option to purchasing new ships. In September 1993, the National Performance Review recommended that NOAA experiment with public and private sector competition to help fulfill its vessel-days-at-sea requirements. Also last September, the Inspector General recommended that alternative methods of meeting mission requirements, such as contracting, chartering, and leasing ships or services, be aggressively pursued.

Most recently, the Marine Board again evaluated NOAA's fleet modernization plan and, in an April 1994 advance copy of its final report, concluded that the plan does not adequately consider alternatives to a large in-house fleet and that NOAA would reduce ship costs and have more operational flexibility if it chartered vessels as a regular part of its marine operations.

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## NOAA's Fleet Modernization Plan Does Not Fully Consider Vessel Chartering Alternatives

NOAA has generally agreed with previous studies and reports recommending that it experiment with greater use of contracting for charter services to perform its missions. Furthermore, some of NOAA's earlier fleet modernization plans and studies discussed the potential cost-effectiveness of chartering vessels to meet some mission requirements and included specific estimates of the extent to which chartering might be used. NOAA's current fleet modernization plan, however, focuses primarily on acquiring new vessels, through purchase or lease, while recognizing that some limited chartering will occur to provide services when NOAA's vessels are out of service.

NOAA has developed an economic model as part of its current modernization plan to compare the cost-effectiveness of purchasing versus

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<sup>4</sup>Creating a Government That Works Better & Costs Less, Report of the National Performance Review (Sept. 1993).

<sup>5</sup>Semiannual Review of Fleet Replacement and Modernization Program, National Oceanic and Atmospheric Administration (EAD-5656-3-0001, Sept. 1993).

leasing vessels. With its focus on vessel acquisition and operational costs, however, the model does not consider the option of NOAA's relying on contractor-or charter-provided oceanographic services as an alternative to acquiring a vessel.

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### Previous Modernization Planning Efforts Recognized Potential of Contracting for Charters

In January 1990, NOAA began to assess its ocean mission requirements and the fleet needed to support its current and projected programs. NOAA organized working groups of scientists, engineers, and program managers from within and outside of NOAA to identify mission and ship requirements, develop vessel hull and instrumentation characteristics to meet these requirements, and ultimately develop a long-term strategy for implementing fleet modernization. NOAA's resulting October 1990 fleet modernization study presented three planning levels for meeting NOAA's current, near-term, and longer-term program needs, ranging from 6,100 to 10,215 days at sea of vessel support and requiring from 22 to 43 vessels. The study, in considering new ways of increasing the fleet's flexibility and efficiency, found vessel chartering to be a potentially attractive alternative in certain circumstances; it estimated that overall fleet costs would be lower if 10 percent to 20 percent of mission days at sea were met through vessel charters.

After conducting the fleet modernization study, NOAA further refined the minimum level of vessel support necessary to support its currently funded programs and arrived at 6,686 days at sea per year, provided by a fleet of 28 vessels. At this level of vessel support, NOAA continued to see the need for chartering, envisioning that 4 of the 28 vessels—14 percent—would be chartered.

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### Current Fleet Modernization Plan Significantly Limits Vessel Chartering

In its subsequent 1991 fleet replacement and modernization plan, NOAA reduced its fleet modernization goal to 5,000 days at sea of vessel support after taking into account overall departmental budgetary constraints. In the process of revising its fleet modernization goals downward, however, NOAA also largely eliminated the consideration of chartered vessels as a means to accomplish its 5,000 days at sea. In its plan, NOAA set out a strategy and chronology for constructing a fleet of 20 new vessels over a 15-year period, but it envisioned chartering vessels for only 200 (4 percent) of the 5,000 planned days at sea.<sup>6</sup> In explaining the rationale for largely excluding charters from the plan, the director of the fleet modernization

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<sup>6</sup>For fleet planning purposes, NOAA calculates that one ship will normally operate at sea for 240 days during 1 year.

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office said that Commerce had decided that NOAA's limited resources should be spent to the greatest extent possible on modernizing and upgrading NOAA's fleet.

Last summer, NOAA further modified its fleet modernization goals when it released an agencywide strategic plan, which discussed the need for additional days at sea to support NOAA's programs. To this end, NOAA's latest fleet modernization plan, released in November 1993, provides for 5,760 days at sea of vessel support; however, no days are specifically set aside for charters. NOAA received approval for this plan from the Office of Management and Budget and formally transmitted the plan to the Congress in December 1993. To meet this level of vessel support, the plan envisions the need for 24 vessels, including the acquisition and conversion of 6 surplus U.S. Navy vessels to supplement the acquisition of 18 new vessels through construction, lease, or charter. NOAA estimates that the program will cost \$1.9 billion. NOAA plans to update the plan annually.

While NOAA's plan does not contain any specific estimates for contracting for chartered vessels, it does state that some chartering will occur using vessels from the commercial sector to provide services when NOAA's vessels are out of service. NOAA will also use cooperative arrangements with vessels from the University-National Oceanographic Laboratory System (UNOLS).<sup>7</sup> NOAA has occasionally used UNOLS' vessels in the past for some of its oceanographic research work, and concerns have been raised about how efficiently NOAA's vessels operate when compared with UNOLS' vessels. As a result, NOAA analyzed the operating costs of its vessels in comparison with one new UNOLS vessel. The analysis found that operating costs for NOAA's vessels are higher, primarily because of greater crew requirements and maintenance costs brought about by the age and design of NOAA's older ships. The analysis concluded that the modernization of NOAA's fleet should provide more efficient vessels requiring smaller crews and make NOAA's and UNOLS' future vessel costs per day at sea nearly equal. (See app. I for a discussion of NOAA's analysis.)

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<sup>7</sup>UNOLS, an association of universities and ocean science research institutions, has a fleet of 26 oceanographic research vessels. These ships, some of which are federally owned, perform research funded mainly by federal agencies, including the National Science Foundation, the U.S. Navy, and NOAA.



## NOAA Developed an Economic Model to Compare the Purchase/Lease of Vessels

In response to recommendations contained in the 1992 evaluation of NOAA's fleet modernization plan by Commerce's Oceanic and Atmospheric Management Advisory Committee, NOAA developed for the plan an economic model to assess the cost-effectiveness of acquiring vessels through either purchase or lease. Before NOAA acquires a new vessel as part of its modernization plan, it plans to first develop specifications for the type of vessel needed to perform the desired program mission and then apply its economic model to evaluate whether it is more cost-effective for NOAA to own and operate or to lease the vessel. The model will be used to estimate the cost of the vessel under four scenarios comparing government ownership and operation with contracting.

To date, NOAA has applied its model in one instance—evaluating a replacement vessel for its 44-year-old wooden fishing trawler, John N. Cobb, which has been used for fisheries research. The results showed that a NOAA-owned and -operated vessel would be more cost-effective than a contractor-owned or -operated vessel. However, this type of evaluation is limited in that NOAA is specifying the type of ship needed to perform the mission—in this instance a new, 154-foot fisheries research vessel costing an estimated \$33.2 million.<sup>8</sup> By specifying the type of vessel, NOAA is limiting its options and failing to consider the possibility that contractors may be able to successfully provide the needed fisheries research services to NOAA more cost-effectively on a chartered vessel of their own choosing.

## NOAA Has Yet to Obtain Needed Financial and Operational Data to Adequately Assess Chartering Alternatives

NOAA has taken limited action to date to experiment with contracting for charter services. Furthermore, most of the charter activity that NOAA has conducted is not the type that could potentially replace the use of NOAA's own vessels. As we testified in October 1993, if NOAA experiments with contracting options as part of its modernization planning effort, it could use the experience to better assess the role that charters can play in NOAA's fleet modernization effort. NOAA is beginning to take some additional actions to experiment with chartering alternatives, in particular for hydrographic charting and mapping services—one NOAA program mission for which chartering shows promise as an alternative to purchasing or leasing new vessels.

## NOAA's Past Vessel Chartering

Table 2, which shows NOAA's overall vessel days at sea for fiscal years 1992 and 1993, indicates that 2,581 days at sea—27 percent of NOAA's 9,434 total vessel days at sea during that period—were provided by chartered vessels.

<sup>8</sup>In fiscal year 1993 dollars.

**Table 2: NOAA's Total Vessel Days at Sea, Fiscal Years 1992-93**

Type of vessel	Vessel days at sea allocated to NOAA's program offices					Total
	NMFS <sup>a</sup>	OAR/OGP <sup>b</sup>	NURP <sup>c</sup>	NOS <sup>d</sup>	Other	
NOAA vessel	3,570	945	0	2,105	233	6,853
Chartered vessel	1,215	326	960	58	22	2,581
<b>Total days at sea</b>	<b>4,785</b>	<b>1,271</b>	<b>960</b>	<b>2,163</b>	<b>255</b>	<b>9,434</b>

<sup>a</sup>National Marine Fisheries Service.

<sup>b</sup>Office of Oceanic and Atmospheric Research/Office of Global Programs.

<sup>c</sup>National Undersea Research Program.

<sup>d</sup>National Ocean Service.

Source: NOAA.

Most of NOAA's charters have been associated with activities for which, or were conducted in locations where, NOAA either lacked the necessary vessel capability or had traditionally used chartered vessels. For example, 960 days at sea of vessel time, 37 percent of NOAA's total chartered days at sea, were for vessels associated with NOAA's National Undersea Research Program (NURP). NURP sponsors oceanographic research using submersible research vessels, and NOAA must charter these vessels because it does not operate any submersibles or submersible support vessels. Furthermore, 925 of the 1,215 days at sea shown in the table that were chartered by the National Marine Fisheries Service (NMFS) represented chartering activity by the NMFS Alaska Region, which has historically chartered local fishing vessels for assistance in its fisheries research work rather than relying on NOAA's fleet vessels. Overall, NURP's vessel charters and NMFS' Alaska charters accounted for 73 percent of NOAA's total chartered vessel activity during fiscal years 1992 and 1993. The remaining charter activity was accounted for by NOAA's Office of Oceanic and Atmospheric Research (OAR), Office of Global Programs (OGP), and National Ocean Service (NOS).

### Some Limited Chartering Planned for Fiscal Years 1994 and 1995—Additional Experiments Uncertain

In our October 1993 testimony, we discussed NOAA's need to (1) experiment with contracting for desired end products and mission outputs and (2) give contractors flexibility in how they perform the work. Also testifying at the same hearing, NOAA's Deputy Under Secretary for Oceans and Atmosphere stated that NOAA would conduct experiments in competition between the public and private sectors for ship services. The Deputy Under Secretary stated that "actual performance experience and

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data from this competition will help NOAA in its decisions on how best to meet its missions and what the proper mix of government and private sector ships should be.”

To this end, NOAA has planned charters for this fiscal year and next year. NOAA plans to make \$2 million available during fiscal year 1994 to contract for the acquisition, processing, and delivery of nautical charting and mapping data involving an area off the northeast coast of the United States. (NOAA had planned to do this during fiscal year 1993 but canceled its plans because of funding limitations.) For fiscal year 1995, a NOAA fleet modernization official stated that NOAA’s budget request includes \$1.6 million for a chartered replacement vessel to conduct fisheries research while the NOAA vessel Delaware II is undergoing a major overhaul and \$2 million to conduct additional nautical charting and mapping work.

NOAA expects that these charters will be responsive to our suggestion and to the recommendation of the National Performance Review on experimenting with competition between the public and private sectors. NOAA believes that the contracts will help provide needed operational and financial data with which to better evaluate the capabilities of private sector vessels. The director of the fleet modernization office also informed us that his office is starting to develop an evaluation methodology for use in assessing the results of the planned chartering efforts. He explained that the evaluation’s objective is to ensure that future fleet modernization decisions are made after having systematically considered both vessel acquisition and chartering options. In commenting on a draft of this report, the Commerce’s Assistant Secretary for Administration stated that the evaluation methodology for NOAA’s charting and mapping contract will be completed by December 1994.

Some uncertainty exists, however, about the extent to which funds will be made available for future chartering experiments. While NOAA’s fleet modernization program is funding the \$5.6 million to experiment with charters for fiscal years 1994 and 1995,<sup>9</sup> NOAA has stated that it is curtailing fleet modernization-funded chartering activity. NOAA’s 1993 strategic plan states that additional charter time to meet short-term needs will have to be funded through the individual NOAA program offices in fiscal year 1995 and beyond. (Fleet modernization funds may still be used to charter vessels when NOAA’s vessels are out of service while being modernized.) However, a NOAA fleet modernization official informed us that the NOAA program

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<sup>9</sup>During fiscal years 1992 and 1993, 252 days at sea of NOAA’s total vessel charter activity were funded through NOAA’s fleet modernization budget, at a total cost of \$2.7 million.

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office's requests for additional charter funds did not survive review at the departmental and Office of Management and Budget level and consequently were not included in NOAA's fiscal year 1995 budget request to the Congress.

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### Opportunities Exist to Perform Additional Chartering for Charting and Mapping

Hydrographic charting and mapping is a specific program that merits further assessment as to whether the private sector can cost-effectively contribute to meeting NOAA's mission requirements. The National Performance Review highlighted NOAA's charting and mapping mission as one in which NOAA should experiment with public/private competition, and NOAA currently is working to contract out some of its charting and mapping work. In November 1993, NOAA published a notice in the Commerce Business Daily announcing its intent to solicit industry proposals for the acquisition of nautical sounding data covering Western Long Island Sound, Vineyard Sound, and Nantucket Sound. In February 1994, NOAA issued its formal solicitation, and an agency official stated that NOAA hopes to award the contract this summer.

The results of the planned contracting activity could have substantial ramifications for NOAA's future vessel needs. Specifically, NOAA's modernization plan currently envisions continued use of NOAA's vessels for charting and mapping work at a cost of \$335 million for overhauling two ships, converting four surplus Navy ships, and purchasing three new ships. The current plan calls for these vessels ultimately to operate for about 1,700 days at sea annually. In comparison, during fiscal year 1993 NOAA's existing five charting and mapping vessels provided about 900 days at sea of mapping and charting effort.

NOAA has made little use of contractors for charting and mapping because of concerns about the quality of their work. NOAA is liable for the accuracy of the nautical charts that are produced. When NOAA contracted for some hydrographic survey work in 1984 in Lake Superior, it experienced problems with the survey data provided by the contractor.

Currently, however, representatives of several private sector charting and mapping interests have said that they have the capability to perform some of NOAA's charting and mapping missions. As evidence, the contractors have cited similar charting and mapping work performed for the U.S. Army Corps of Engineers in rivers and harbors. A Corps official said that the Corps has been successfully contracting for charting and mapping work for a number of years, and he estimated that about 35 percent of the

Corps' work is performed under contract. The National Performance Review pointed to potential savings that may result from contracting, and to this end, private sector interests stated that their charting and mapping work could be performed using smaller or less expensive vessels than NOAA uses.

Echoing the statements made by private sector charting and mapping interests, NOAA's Deputy Director of the Coast and Geodetic Survey stated that contractors currently are capable of performing the type of charting and mapping work that NOAA performs. Furthermore, the Deputy Assistant Administrator of the National Ocean Service (NOS) believes that the private sector can be used to augment the charting and mapping activity conducted by NOAA's vessels and that he hopes that the current contracting initiative can lead to more private sector efforts. He pointed out that NOS has identified a backlog of 46,000 square miles of critical survey areas needing to be charted and mapped and that, given the condition of NOAA's fleet and the time needed to build new ships, a cost-effective and timely way to start reducing the backlog is to rely on the private sector.

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## Conclusion

NOAA has stated that it intends to consider vessel chartering alternatives as part of its fleet modernization plan. In particular, NOAA has planned three charters to test their cost-effectiveness and operational feasibility and is developing an evaluation methodology to assess the results of these charters in the context of fleet modernization needs.

Nonetheless, NOAA's fleet modernization plan, as written, continues to focus primarily on vessel acquisition for meeting NOAA's future mission needs and does not adequately address the role that chartered and contracted vessel services can play as alternatives to acquiring vessels. Until NOAA has taken advantage of opportunities to evaluate the feasibility of charters and has developed a means to measure their results, NOAA will not have assurance that its \$1.9 billion modernization plan represents the most cost-effective means to meet future program needs.

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## Recommendations to the Administrator, NOAA

In order to ensure that all viable and cost-effective options for accomplishing NOAA's program missions are considered in making decisions on future fleet modernization, we recommend that the Administrator, NOAA,

- ensure that sufficient funding is made available to carry out needed efforts to assess the operational feasibility and cost-effectiveness of using private sector contracting and charter services for vessels to support such mission requirements as hydrographic charting and mapping,
- continue to develop a methodology to assess the results of these efforts, and
- reevaluate the level of vessel chartering in the fleet modernization plan in light of the results of these assessments.

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## Agency Comments

In written comments on a draft of this report, the Secretary of Commerce concurred with the report's recommendations and indicated the steps the Department plans to take to implement them (see app. II). In addition, Office of NOAA Corps Operations officials provided comments clarifying some technical points, which we incorporated in the report where appropriate.

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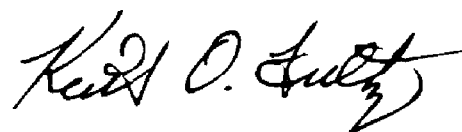
## Scope and Methodology

We conducted our review between January 1993 and June 1994, in accordance with generally accepted government auditing standards. In conducting our work, we reviewed NOAA's fleet modernization study as well as previous studies on NOAA's fleet needs, interviewed program and fleet officials, and obtained information from other sources on both private and public sector oceanographic research activities.

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Unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days from the date of this letter. At that time, we will make copies available to the Secretary of Commerce and other interested parties. We will also make copies available to others on request.

This work was performed under the direction of James Duffus III, Director, Natural Resources Management Issues, who can be reached at (202) 512-7756. Other major contributors to this report are listed in appendix II.



Keith O. Fultz  
Assistant Comptroller General



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## Abbreviations

GAO	General Accounting Office
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NURP	National Undersea Research Program
OAR	Office of Oceanic and Atmospheric Research
OGP	Office of Global Programs
UNOLS	University-National Oceanographic Laboratory System





# Operating Costs of NOAA's Versus UNOLS' Vessels

In 1991, at the direction of the Administrator, National Oceanic and Atmospheric Administration (NOAA), a committee was formed to compare NOAA's vessel operating costs with the University-National Oceanographic Laboratory System's (UNOLS) vessel costs. This effort was undertaken to address perceptions that NOAA's vessels were much more costly to operate than UNOLS' vessels. Overall, the committee found that operating costs for NOAA's vessels were about 25 percent higher per day at sea than UNOLS' vessels. However, after making adjustments for equivalent days at sea of vessel operation between NOAA and UNOLS, the cost differential was reduced to about 10 to 15 percent. The committee concluded that most of the cost differences were due to the greater crew requirements necessitated by the age and design of the older NOAA ships. NOAA also concluded that the future modernization of its fleet should lead to more efficient vessel operations, thus reducing crew requirements and making NOAA's and UNOLS' vessel costs per day at sea nearly equal.

In initiating its review, the committee had to deal with some fundamental differences between NOAA and UNOLS in (1) their methods for tracking vessel operating costs, (2) the types of missions each organization's vessels support, and (3) their approach to determining the crew size for operating their vessels. Because of such differences, vessel operating costs as calculated separately by NOAA and UNOLS are not directly comparable. For example, NOAA's vessel operating costs include some or all of the mission personnel as part of the ship's crew, while the institutions that make up UNOLS maintain pools of technician separate from the ship's crew. Conversely, UNOLS' vessel operating costs include a proportionate share of shore support facilities and staff, while NOAA does not include the cost of its marine centers in calculating the operating costs of its vessels.

In performing this study, the committee decided to adopt UNOLS' vessel cost categories and then adjust NOAA's vessel costs accordingly to put them on a comparable footing. For its analysis, the committee selected three NOAA vessels of comparable size and function—the Malcolm Baldrige, the Discoverer, and the Surveyor—and compared the operating costs of these vessels with those of the new UNOLS vessel Thomas G. Thompson.

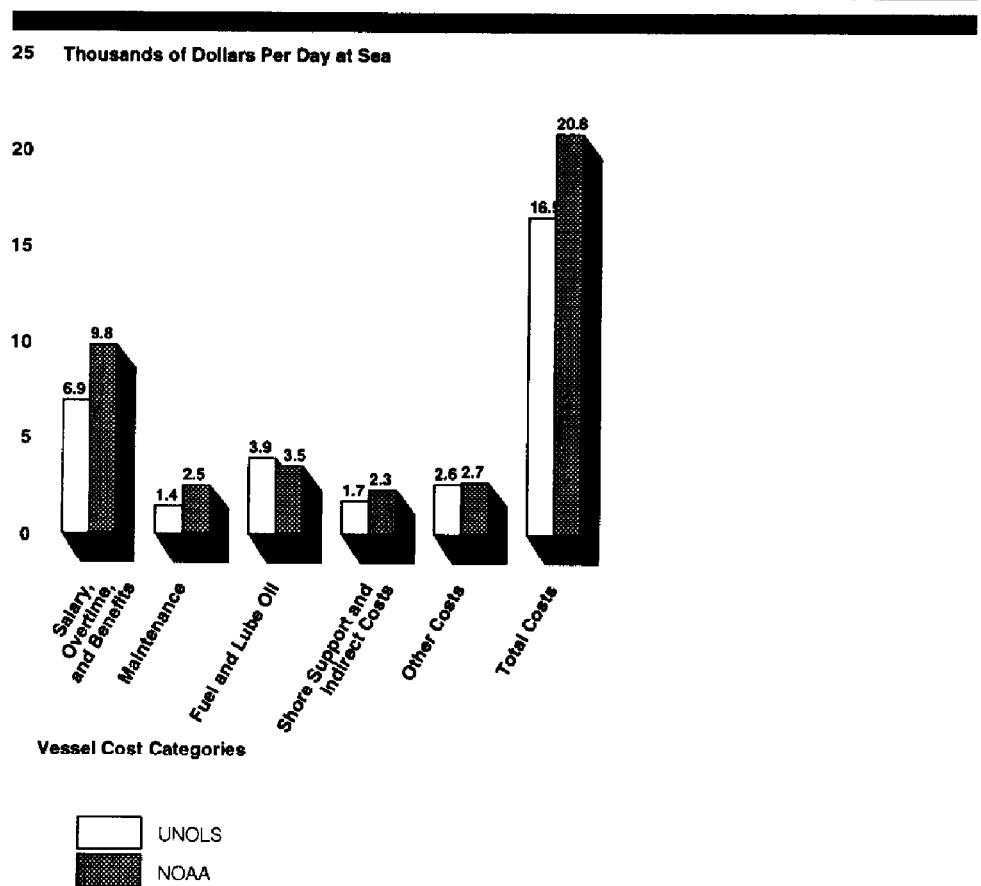
Major vessel cost elements considered by the committee included vessel personnel costs and benefits as well as other operating expenses, such as fuel and supplies; annual vessel maintenance; and shoreside support, such as NOAA's marine centers and UNOLS' marine operations staff. Excluded from the committee's analysis were major ship conversion or rehabilitation costs, scientific and electronic equipment and support, and

**Appendix I  
Operating Costs of NOAA's Versus UNOLS'  
Vessels**

mission support personnel mentioned previously. Also excluded from the committee's calculations was vessel depreciation, since neither NOAA nor UNOLS includes depreciation in its calculations of vessel operating costs.

As shown in figure 1, average operating costs per day at sea for the three NOAA vessels examined were \$20,800, compared with \$16,500 for the UNOLS vessel.

**Figure I.1: Comparison of NOAA's and UNOLS' Vessel Operating Costs, Fiscal Year 1992**



Source: NOAA.

Most of the \$4,300 per day difference was the result of NOAA's higher expenses for crew salary, benefits, and overtime, as well as higher vessel

maintenance costs. In this connection, the committee noted that NOAA's ships carry additional maintenance personnel in deck and engine departments and carry additional personnel in the steward's department and that the average age of the three NOAA ships—26 years—necessitates greater maintenance. Looking to the future, the committee envisioned reductions in these expenses as the NOAA fleet is modernized. Specifically, the committee stated that future NOAA vessels would need fewer engine department personnel because of automated engine rooms, fewer maintenance personnel because of new equipment, and fewer steward's department personnel because of modern galley and mess areas. New NOAA vessels should also be able to spend more days at sea. When combined, all of these factors should result in lower operating costs per day at sea.

In discussing NOAA's analysis, the Executive Secretary of UNOLS expressed concern about the UNOLS vessels that were selected for comparison. Initially, the NOAA committee had selected two UNOLS vessels, the Knorr and Thomas G. Thompson. The Executive Secretary stated that the Knorr was not a good example to use since it was undergoing a major conversion—30 feet were being added to its length. The NOAA committee deleted the Knorr from its final analysis. The Executive Secretary also expressed concern about using the Thomas G. Thompson, since it was a brand new vessel. The NOAA committee dealt with this problem by estimating operating costs for the Thomas G. Thompson for the year 1992 and comparing them with actual operating costs of the NOAA vessels for 1990, inflated to estimated 1992 levels.

The NOAA committee also reviewed the operating costs for three U.S. Navy oceanographic research ships. While not examining the costs in depth, the committee concluded that operating costs for comparable items for these three vessels were between \$20,000 and \$30,000 per day at sea.

# Comments From the Department of Commerce



THE SECRETARY OF COMMERCE  
Washington, D.C. 20230

JUN 2 1994

Mr. James Duffus III  
Director, Natural Resources Management Issues  
Resources, Community, and Economic  
Development Division  
United States General Accounting Office  
Washington, D.C. 20548

Dear Mr. Duffus:

Enclosed is a copy of the Department of Commerce's reply to the General Accounting Office draft report: Research Fleet Modernization: The National Oceanic and Atmospheric Administration Needs to Consider Alternatives to the Acquisition of New Vessels. These comments are prepared in accordance with the Office of Management Budget circular A-50.

Sincerely,

A handwritten signature in black ink, appearing to read "Ronald H. Brown".

Ronald H. Brown

Enclosure

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**Appendix II  
Comments From the Department of  
Commerce**

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**U.S. DEPARTMENT OF COMMERCE  
COMMENTS ON DRAFT/ GAO REPORT ENTITLED**

**"RESEARCH FLEET MODERNIZATION: NOAA Needs to Consider  
Alternatives to the Acquisition of New Vessels"**

**GAO/RCED-94-170  
Draft Report**

Appendix II  
Comments From the Department of  
Commerce

**RECOMMENDATION:** Ensure that sufficient funding is made available to carry out needed efforts to assess the operational feasibility and cost-effectiveness of using private sector vessel contracting and charter services to support such mission requirements as hydrographic charting and mapping.

**RESPONSE:** The Department concurs with this recommendation.

NOAA has solicited proposals for a contract for charting services. Fiscal year 1994 funds have been set aside to award this contract. The target date for award of the contract is July 1994.

NOAA's FY 1995 Congressional budget submission includes a request for funds for additional charting contract services and for a fisheries research charter.

**RECOMMENDATION:** Continue to develop a methodology to assess the results of these efforts.

**RESPONSE:** The Department concurs with this recommendation.

NOAA is developing a methodology to assess the results of the chartering efforts. The methodology for the charting contract will be completed by December 1994.

**RECOMMENDATION:** Reevaluate the level of vessel chartering in the fleet modernization plan in light of the results of these assessments.

**RESPONSE:** The Department concurs with this recommendation.

NOAA will reevaluate the level of vessel chartering annually during the update of the fleet modernization plan.

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# Major Contributors to This Report

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