

UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS Council Meeting
July 13, 14, 1989
University of Maryland, Horn Point
Cambridge, Maryland

UNOLS Council members, representatives from MMS, ONR, NSF, and NOAA, staff from the University of Maryland's Center for Environmental and Estuarine Studies, Horn Point Laboratory and Solomon Island Laboratory and UNOLS Office staff met in Cambridge, Maryland at the CEES. The meeting was called by George Keller, Chair, at 8:45 a.m. Items on the Agenda (Appendix I) were addressed in the order reported herein.

Attendees:

UNOLS Council:

George Keller, Chair
Tom Johnson, Vice Chair
Larry Atkinson
Gary Brass
Bob Dinsmore
Jeff Fox
Bob Knox
Tom Malone
Art Maxwell
Worth Nowlin
George Shor, Jr.
Jim Williams

UNOLS Office:

Bill Barbee
Barbara Funke

Observers:

Pat Dennis, JOI
Dolly Dieter, NSF
Grant Gross, NSF
Don Heinrichs, NSF
Keith Kaulum, ONR
Lisa Lynch, NSF
Bruce Malfait, NSF
Sheri Pappas, TAMU
Steve Ramberg, ONR
Mike Roman, Horn Point Lab.
Hawley Thomas, MMS
Dick West, NSF
Elizabeth White, NOAA
Austin Yeager, NOAA
Stewart Nelson, OON



Minutes for the February 27, 28, 1989 UNOLS Council meeting were accepted.

ISSUES BEFORE THE COUNCIL:

Many of the issues before the Council dealt with Fleet Management.

Bob Knox summarized his and UNOLS' efforts to summarize interest in and requirements for Laboratory-Grade Facilities at Sea, Deep Sea Observatories and a FLIP II. The initial charge to UNOLS had been from ONR and had dealt only with Laboratory-Grade Facilities at Sea (LGAS). It soon became clear that at last three different but related facilities, LGAS, DSO and FLIP II, had some support within the oceanographic community, and that NSF as well as ONR had been approached for support. The UNOLS Council, at their February, 1989 meeting, recommended that the community's interests in and needs for any such facility should be determined. UNOLS then agreed to make such an assessment through a mail and E-mail solicitation of interest. The UNOLS Chair letter (Appendix II), an invitation to express interest, was broadly distributed throughout the academic ocean community (over 900 explicit addressees and OCEANS, UNOLS bulletin boards). Twenty-two responses, not all substantive, were received. Bob Knox's report to the Council noted that, although there is community interest in and support for long-term time series, there is little demand for fancy facilities. A modern successor to FLIP has an active group of advocates; their requirements seem focused on a FLIP II. Advocacy for a DSO is real but less than for FLIP II. Further, ideas on function and form are rather diffuse. Responses did not indicate a significant scientific demand for LGAS. The Knox report and the UNOLS Chair's letter of response to ONR (prepared after the mailing) are also in Appendix II.

Keith Kaulum reported on the status of AGOR-23 construction. (An article in UNOLS News, V. 6, n. 1 also provided a report.) At the end of the first year in the original 30-month contract, Halter Marine, Inc. was well along in hull construction, purchase orders had been issued for most major equipment, and for most planned subcontracting. Machinery installation was scheduled to begin in July, 1989. Several major change orders had been issued: to provide a Krupp Atlas swath mapping system, to substitute for originally specified trawl winches and install them below decks, to rearrange spaces forward on the main deck, and to install a marine sanitation device. The ship will be lengthened six feet to 274 feet L.O.A. at no extra cost.

Keith Kaulum reported that NavSea will use all of the money allocated for the ship; ONR anticipates a fully founded ship

on delivery. Apparently the operating institution (UW) has a reasonably effective voice in construction/oversight decisions, but the process is frustrating and painful. Among disappointments: the electrical system will not be fully integrated as had been expected and the engine room is not fully automated. The ultimate effect of these disappointments on ship operation (and manning) hasn't yet been determined.

Bob Dinsmore reported that shipyard progress on the KNORR had been satisfactory. KNORR had been cut apart, bow and stern sections separated and work had begun on the insert section and the new bow form. The schedule was that KNORR would be turned back to W.H.O.I. on March 15, 1990.

The MELVILLE was to be delivered to the shipyard on September 14, 1989 and would be out about the end of August, 1990.

Budget information was presented matching available funds identified versus requirements to meet the costs of shipyard and machinery costs, desirable shipyard options and desired science upgrading. **An additional \$3.6 million would be required to achieve all of the most desirable options and upgrades.**

The KNORR had experienced a problem with asbestos removal, which will also affect the MELVILLE. The KNORR's experience was that even the removal of materials (partitions, ceiling tiles, wireways, etc.) expected to be asbestos-free, usually resulted in traces of asbestos and thus, imposition of procedures for asbestos materials. Ultimately, it was decided to remove asbestos and asbestos-contaminated material throughout the ship. MELVILLE will take the same approach.

George Shor briefed the Council on Scripps efforts to provide for swath mapping system hydrophone installation during MELVILLE's shipyard construction phase. One special reason is that because of the nature of Scripp's marine facility, a MELVILLE hydrophone installation is required wherein hydrophones are recessed at less than maximum ship's draft. The Council agreed that installation of swath mapping would be desirable on both the MELVILLE and KNORR, and installation of hull-mounted components would be most efficient during shipyard renovation. The Council urged that letters be written recommending that swath mapping or other state-of-the-art sounding systems be considered standard equipment on large, new UNOLS ships.

Bob Dinsmore reported that the BERNIER was at Fall River, Massachusetts. Columbia had begun cross-decking process and had engaged naval architects to prepare a bid package (for the conversion to general purpose R/V) which was to be sent out in August. Plans were that the ship would go to the

yard in late September or early October, and be ready for operations in late January, 1990. The National Oversight Committee (of which Dinsmore is a member) and others doubt that the converted ship will be available as early as L-DGO plans indicate.

NSF representatives reported BERNIER acquisition and conversion costs:

Purchase	\$ 6.5 million
Conversion	\$ 3.5 million
Interest (7 yrs.)	<u>\$ 1.4 million</u>
	\$11.4 million

Bob Dinsmore, WHOI, reported on the activities of the BERNIER National Oversight Committee which had been formed to provide community oversight for the conversion to general purpose use, and had met once. The Council recommended that a letter be written to NSF and to L-DGO, urging that the Oversight Committee be fully involved (Appendix III).

Bill Barbee reported that USC continues work toward converting the OSPREY. NSF has funded up to 30 days work in 1989, and about 50 days are projected for 1990. Additional conversion work is scheduled for near the end of 1989. Worth Nowlin noted that the Fleet Improvement Committee has trouble classifying the OSPREY. Although length and displacement would classify the ship among UNOLS' large ships, in many other respects the ship fits better in the intermediate class. The Council deferred further consideration until such time as the OSPREY became operational and USC asked for UNOLS vessel designation.

Don Heinrichs, NSF, advised the Council that the Federal Oceanographic Fleet Coordination Council (FOFCC) would develop a 1989 update to their 1984 report on the federal oceanographic fleet (see Appendix IV). NSF currently chairs the FOFCC Coordination Board, and is responsible to lead in providing the revised report by October 15, 1989. Don Heinrichs noted that the Coordination Board intended to use UNOLS reports as source documents, especially UNOLS Ship Use Statistics, the 1989 Report on UNOLS Fleet Improvement and the Submersible Science Study for the 1990s. The Council discussed the reports, noted that they would not be final in time to meet the FOFCC schedule. It was agreed that well-developed drafts would be available, however, and that such drafts would be adequate to support the FOFCC report.

Keith Kaulum was queried on the status of AGOR-24. He reported that AGOR-24 was still in the Navy's budget plan for FY-1992 as a part of the fleet supporting academic oceanography (i.e., the UNOLS fleet). If it is to stay, however, it must be supported by a justification based on firm requirements. (Statements from the Office of the

Oceanographer in late 1988 indicated "AGOR-24 might go to the Navy.") Currently there were two ships in the Navy's FY-1992 budget plan: AGOR-24 and a TAGS-Ocean multi-purpose ship. (See Appendix V.)

Worth Nowlin, FIC Chair, noted that the Fleet Improvement Committee had consistently based the Fleet Improvement Plan on the need for ships (especially the large ships) with the advanced capability to support Global Geosciences. If NSF and ONR have success in their budget processes relative to needs for global ocean research (a vital element), the UNOLS fleet will soon be faced with new requirements for ocean-basin-scale projects that could only be met by AGOR-23, the renovated KNORR and MELVILLE and perhaps the BERNIER among ships assured to the fleet. Justification for AGOR-24 could follow a number of options: a replacement submersible science support ship or as replacement for less capable general-purpose ships (e.g., the WASHINGTON; later, the MOANA WAVE).

The FIC also urges that ONR strongly consider the Glosten-design large, general-purpose research vessel as a candidate for AGOR-24. The preliminary design shows great promise of flexible, capable support to general purpose oceanography.

Don Heinrichs noted that NSF supports the need to replace older large UNOLS vessels with more capable modern ships. Their 1987 Long-Range Plan for the Division of Ocean Sciences of the National Science Foundation called for engineering designs leading to construction of two large ships plus a smaller ice-strengthened ship by the mid 1990's. Acquisition of the BERNIER has obviated the need for one of the two large ships. The combination of NSF acquisition plans and Navy/ONR plans (including AGOR-24) would meet the projected requirements of academic oceanography in the Global Geosciences era.

The Council deferred recommendations pending the scheduled presentation from the Office of the Oceanographer, but agreed that every effort should be made to secure AGOR-24 in the UNOLS fleet.

MARINE OPERATIONS ISSUES:

George Grice, WHOI, had written to bring the issue of plastics and their disposal before the Council (Appendix VI). New international conventions and U.S. laws together have essentially prohibited the disposal of plastics at sea. Some vendors still use plastics for packing, insulation, etc. Dr. Grice's suggestion was that UNOLS write to selected vendors urging them to find alternatives to plastic packaging. The Council recognized the problem and agreed that for selected vendors, UNOLS letters might be effective. (For example, vendors for expendable instruments widely used

on research vessels might be persuaded to find non-plastic containers.) The Council asked that RVOC compile a list of vendors currently employing plastic packaging to whom a UNOLS letter might be effective. A letter from UNOLS should then be prepared to urge those vendors to employ alternative packaging. It was agreed that UNOLS letters to general suppliers and ship chandlers would have little effect.

The U.S. Coast Guard had announced proposed rules on ship admeasurement and on life-saving equipment. A consultant had been employed to assess those rules vis-a-vis ships in the UNOLS fleet and to advise on their potential impact on UNOLS ships. This assessment was delivered to all UNOLS operators. Briefly, the new admeasurement rules would have little impact on the UNOLS fleet, since most ships would be grandfathered. The proposed rules on life-saving equipment will impose changes on many ships. Compliance will have significant costs.

UNOLS MEMBERSHIP AND VESSEL DESIGNATION:

Art Maxwell, Chair, with Gary Brass, Jim Kennett and Tom Malone, had made preliminary review of UNOLS membership and vessel designation in accordance with the Charter adopted in October, 1988. The review considered all institutions that had been either Members or Associate Members under terms of the earlier Charter.

The review group's recommendations were that all institutions with either Member or Associate Member status in October, 1988, prior to adoption of the new UNOLS Charter, should be approved as UNOLS Members. (The lists of those Members and Associate Members are in Appendix VII.)

The Council considered the review group's recommendations and raised several points, dealing largely with the Associate Member list. Were all of those institutions interested in continuing participation in UNOLS? Do they all satisfy the criteria for UNOLS membership by operating or using sea-going facilities, maintaining an academic program and making substantial contribution to the national oceanographic program? Should institutions who participate in UNOLS as elements in consortia continue to maintain individual institution memberships? The Council recognized that their concerns did not apply evenly to all institutions on the Associate list. Nevertheless, they agreed that all of those institutions should be contacted and asked to provide information on their interest in UNOLS participation and the scope and character of their ocean research programs.

The UNOLS Council recommended that all institutions on the October, 1988 list of UNOLS Members continue as Member Institutions and that all institutions on the Associate list be provisionally accepted as UNOLS Members. These latter

institutions will be evaluated further on the basis of their responses to the Council's survey.

The designation of ships as UNOLS vessels also connotes classification of the operating institution as a Member, Operator. The study group's basis was the October, 1988 list of UNOLS vessels together with applications for designation from University of Texas (LONGHORN) and from Harbor Branch Oceanographic Institution (SEWARD JOHNSON and EDWIN LINK).

Before considering the designation of individual ships, the Council discussed criteria for UNOLS designation. They agreed that the implications of UNOLS designation have changed. While many institutions have looked to UNOLS designation as a means of garnering federal support for ship operations, the designation provides almost no assurance of such funding. A designation should, however, provide assurance that the vessel does operate in support of academic ocean research and has significant federal support, that it is available to support funded investigators and operates in a safe and effective manner. These criteria should be demonstrated by undergoing regular, recognized ship inspections, adhering to UNOLS safety standards, and following other uniform UNOLS practices. **Council consensus was that criteria for vessel designation should be formalized.**

Several members of the Council, as well as some of the funding agency representatives, questioned the concept of a UNOLS fleet with open-ended membership. If there is no limit to the number and nature of ships included, then the concept of a more or less uniform fleet and management of the fleet becomes difficult or meaningless. Problems were cited relative to control of ship operations funding, obligation to maintain shoreside installations and planning for fleet improvement. These points were rebutted by other Council members who urged as open a policy as manageable with a free-market philosophy to control fleet capacity and individual ship employment. **The Council did not reach a formal position on the issue. They did, however, reach informal consensus that the UNOLS fleet should be maintained at a size roughly in balance with requirements from funded science, that a more formal set of criteria should be developed based on safety and effectiveness of operation, operational funding costs, and availability for scheduling, and that criteria should be rigidly applied in considering UNOLS vessel designation.**

The two requests for UNOLS vessel designation were considered based on the points discussed. **The Council designated the University of Texas' LONGHORN a UNOLS vessel after noting that the ship had been inspected under the NSF/MARAD program and had fulfilled other criteria. The Council provisionally designated Harbor Branch's SEWARD**

JOHNSON and EDWIN LINK UNOLS vessels on condition that the vessels be operated in accordance with UNOLS tenants including standing for inspection under the NSF/MARAD program. The designation will be reviewed after one year.

The Council designated 27 ships UNOLS vessels:

MOANA WAVE	SEWARD JOHNSON
ALPHA HELIX	EDWIN LINK
THOMAS G. THOMPSON (AGOR-23)*	ISELIN
C. A. BARNES	CALANUS
WECOMA	BLUE FIN
POINT SUR	CAPE HATTERAS
MELVILLE	RIDGLEY WARFIELD
THOMAS WASHINGTON	CAPE HENLOPEN
NEW HORIZON	BERNIER**
ROBERT G. SPROUL	ENDEAVOR
LAURENTIAN	KNORR
GYRE	ATLANTIS II
LONGHORN	OCEANUS
PELICAN	

* Will become operational 1991

** Will become operational 1990

The Council noted that neither THOMAS G. THOMPSON nor BERNIER were currently operational but that there was assurance that when they did in 1991 and 1990, they would operate as UNOLS vessels.

The Council agreed to defer consideration of the OSPREY until it became operational and of the WEATHERBIRD until it was converted, became operational and an application was received.

An application for membership from Maine Maritime Academy was before the Council. The Council recognized that Maine Maritime was a part of the ARGO Maine Consortium, and operates the ARGO MAINE (formerly CAYUSE). The Council asked if it might not be more appropriate for Maine Maritime to participate in UNOLS as a part of the consortium and then tabled the application pending an answer.

RVOC UNOLS RESEARCH VESSEL SAFETY STANDARDS:

An RVOC Safety Committee had redrafted UNOLS Research Vessel Safety Standards and the redraft had been approved by RVOC (including all UNOLS Operator Institutions). The standards were presented to the Council for approval.

Meantime the Council working group on the use of radioisotopes aboard UNOLS vessels had completed its work and

report. The report was being adapted as Chapter 11 for inclusion in the Safety Standards.

The UNOLS Council approved the Research Vessel Safety Standards and adopted them for use by UNOLS operators. They deferred consideration on the Chapter 11, Radioactive Materials until a draft could be circulated within RVOC and recommended by them.

ALVIN REVIEW COMMITTEE:

Bill Barbee reported for Feenan Jennings, ARC Chair, that the ARC had held their annual review of dive requests in June, 1989. Twenty-five dive requests were received for a total of 363 dives. Requests were for 4 projects in the north Atlantic, 8 on the northern EPR, 4 on the southern EPR, 10 on Gorda-Juan de Fuca, 10 in California borderlands and 2 in Guaymas Basin. The ARC recommended thirteen projects for a total of 180 dives (beginning in the Atlantic, mostly in the Pacific.) The ALVIN/AII schedule for 1990 appears very strong.

Jim Williams, RVOC Chair, described effects of Coast Guard rules for drug and alcohol testing, and of Customs and Coast Guard Zero Tolerance Policies.

For UNOLS operators with the largest crew pools (Scripps and WHOI), pre-employment drug testing was mandated to begin in July, 1989 and random testing of employees by December. Scripps had already initiated pre-employment testing, some training and indoctrination. The program is costly; \$100 to \$500 per drug test, up to \$2,000 per training/indoctrination session, etc. Both implementation and maintenance of an appropriate program requires significant effort, but are tractable. All operators will be required to have programs in effect by the end of the year.

The history and status of U.S. Customs' constructive seizure of the THOMAS WASHINGTON was reviewed. The ship had been inspected by U.S. Customs agents upon re-entry into the United States at Honolulu, Hawaii. Upon discovery of a small amount of marijuana in a crew stateroom, the crewperson was taken into custody and the ship seized. The crewperson was not, finally, convicted. The ship, however, was confiscated, and Scripps began to seek release of the ship. The THOMAS WASHINGTON was allowed to sail on scheduled projects but under the constructive seizure control of Customs. Scripps submitted petitions for release of the ship, but as of July, 1989, it was still operating under the constructive seizure.

Both Scripps and WHOI, whose ATLANTIS II had been seized earlier, have conferred at length with local and Washington, D.C. Customs officials. There are possibilities of executing agreements, but advantages to an operator are difficult to see. Effectively, they buy no more good will than would any conscientious program toward a drug-free workplace. **RVOC is monitoring developments and advising UNOLS operators.**

George Shor, Scripps, introduced a related issue, liquor policy on UNOLS ships. Coast Guard rules issued in 1988 have prompted many UNOLS operators to re-examine their policies concerning liquor on board their vessels. Generally, policies have become more strict. Recently there have been some incidents, usually involving scientists from one UNOLS institution embarked on a ship from another. Among the policy problems, is the perception that rules for the use and possession of alcohol aboard ships vary widely from institution to institution. Further is the perception that the rules are not meant to be enforced. Additionally, the means for enforcing one institution's alcohol policy on scientists from another institution (i.e., what recourse is there if a clear violation occurs?) have not been developed.

It was noted in Council discussion that preliminary information suggested that there was reasonable uniformity among various institution policies, despite perceptions to the contrary. The Council recognized, however, that their information was not complete. **The Council agreed (but took no formal action) that each UNOLS operator should establish a written policy on the possession and use of alcohol aboard ships.** These rules should be in accordance with Coast Guard rules in force; and, in reference to Coast Guard regulations, should include explicit notification and acknowledgment for both embarking crew and scientists.

It was suggested that UNOLS should gather statements of the liquor policies from all UNOLS operators, compile them and distribute them. It is important to communicate these rules broadly throughout the ocean research community, to forestall further incidents. It is also important that whatever policies are in place be carefully enforced.

George Shor had canvassed UNOLS operators to determine their plans for refits. (This was done to provide information that might help in implementing the lay-up policy earlier devised through RVOC.)

Desired Schedule of Re-fits:

Year:	Ship:
1989	KNORR
1989/1990	MELVILLE
1990/1991	LAURENTIAN, GYRE
1991/1992	OCEANUS
1992/1993	WECOMA, PELICAN
1993/1994	ENDEAVOR
1994/1995	NEW HORIZON
1995/1996	CAPE HATTERAS
1996/1997	POINT SUR
1997/1998	SPROUL
1998/1999	BERNIER

Several ships have had re-fits (and are perhaps beyond midlife): ALPHA HELIX, BARNES, ISELIN, LONGHORN and WASHINGTON.

There were no responses for BLUE FIN, CALANUS, and OSPREY.

ICE-CAPABLE R/V FOR ARCTIC PROGRAM:

Over the past several months, planning for ships to support U.S. ocean research in polar regions had been very active. The Coast Guard plans to acquire one or more new icebreakers, each with capability to support ocean research; they are refitting the two existing Polar-class icebreakers, providing enhanced research capability. NSF/DPP is acquiring a research vessel with ice-breaking capability for use in the Antarctic. UNOLS/FIC has initiated the concept/design process for an ice-capable R/V for use in the western Arctic. The Office of the Oceanographer had recently announced their plans to acquire an ice-capable R/V for use in the eastern Arctic. The UNOLS Chair had invited representatives from the Office of the Oceanographer to brief the Council on the Navy's oceanographic ship acquisition plan, especially on the ship for Arctic programs. Stewart Nelson, OON and Pat Dennis, JOI, provided the briefing:

The decision to acquire an ice-strengthened research vessel is based largely on Navy research-support requirements in the East Greenland Sea-Baffin Bay (eastern Arctic Basin) area. Although use requirements have not been developed in sufficient detail to devise an allocation schedule, the intent is that the ship would be available to the academic research community for several months each year. **A more definitive statement on how the ship would be scheduled should be available in 3-4 months.** OON anticipates the need for a scheduling forum (which could be a part of UNOLS) and expects a ship day-charge to user programs.

Tentative Operational Requirements (TOR) are for an ice-strengthened AGOR-23 type hull, and were developed on the basis of a Circular of Requirements (COR). (See Appendix VIII.) Operational requirements parallel those for UNOLS large, general purpose research vessels, with the added capability of operating in ice. The vessel will not be an icebreaker, but will have capability to operate in fair concentrations of floating ice. Tentatively, ice classification would be ABS A1.

SHIP SCHEDULING:

George Shor, Ship Scheduling Committee Chair, reported on the scheduling meeting held July 12, 1989. The scheduling process for 1990 seems well on track, and cost estimates were more closely aligned with anticipated funding than usual. The total of days tentatively scheduled was about 22% greater than for 1989. (Note that the 1989 total use was the lowest in the 1980's.) NSF days were up 23%, ONR up 7% and other sponsors up 32%.

An extraordinarily large portion of the cruises scheduled were for science projects not yet funded. Because of the large number of pending science funding decisions, only five ships meet the RVOC criteria for **satisfactory schedules: MOANA WAVE, ISELIN, NEW HORIZON, POINT SUR and THOMAS WASHINGTON.** Three ships would satisfy criteria adjusted to **part-year operational status: BERNIER, KNORR and MELVILLE.** Nine ships do not satisfy criteria, but nevertheless project **significant use for 1990: ALPHA HELIX, ATLANTIS II, BARNES, CALANUS, CAPE HATTERAS, ENDEAVOR, OCEANUS, WARFIELD and WECOMA.** The remaining eight ships are far below RVOC criteria or provided insufficient information: **BLUE FIN (insufficient info.), CAPE HENLOPEN, GYRE, LAURENTIAN, PELICAN, ROBERT SPROUL, OSPREY and the new WEATHERBIRD (insufficient info.).**

Worth Nowlin, FIC Chair, reported on Fleet Improvement Committee activities.

UNOLS Scientific Mission Requirements had been revised and augmented to include **Scientific Mission Requirements for an Intermediate Ice-Capable Vessel** and for a **FLIP II.** A **Concept Design for a General Purpose SWATH Oceanographic Research Ship (intermediate)** had been published in 1988. This tandem strut design displayed problems with larger-than-desired on-station accelerations. The vendor for the earlier concept (SEACO) is modifying the concept; a report should be ready by fall. Design for a small SWATH (produced by SWATH Ocean) has been promised. This design has been paid for and is provided by MBARI. The University of Alaska has been asked to provide their concept design for an intermediate ice-capable, general-purpose research vessel for use in the western Arctic.

The **Preliminary Design for a Large, Medium-endurance, General-purpose Oceanographic Research Ship** produced by Glosten Associates shows great promise.

Workshops were held on **Mid-life Refits and Improvements of Intermediate-size Ships** and on **Improvements to the Cape-class Research Vessels**. Partly as a follow-on to the intermediate workshop, WHOI, URI and OSU have developed proposals for a series of mid-life remedials and improvements. Because Duke/UNC and MLML operate their Cape-class vessels in different modes, there is no consensus on follow-on to that workshop.

The 1989 **UNOLS Fleet Improvement Plan** will be issued sometime in November. The overall plan is, again, for a fleet of 20 ships of length 100 feet or more: six large, seven intermediate and seven small ships. The plan would note NSF/DPP's RVIB for southern oceans, but not include it within the fleet.

The point was made again that planning for fleet improvement based on the acquisition of new ships with federal funding support is not compatible with open-ended admission to the fleet.

It was agreed that under the terms of the new Charter, the **Fleet Improvement Plan will be reviewed by the UNOLS Council and released by the UNOLS Chair**.

The Council commended the **FIC Chair and members for their hard work and effective results over the past three years**. The UNOLS Chair noted that terms for several FIC members were nearly expired and asked for Council advice in the selection of new members for this important Committee.

The UNOLS Chair had been queried on the poor record of research vessels in the academic fleet in providing realtime oceanographic and meteorological data. (See correspondence in Appendix IX.)

The Council discussed the issue, specifically the year-long, low-intensity discussions between NOAA and the UNOLS Office to improve IGOSS forms and their submission from UNOLS ships. The abortive effort to install NOAA-supplied SEAS units on NOAA ships was also discussed. **It became clear that NOAA-UNOLS institution interfaces would need to be improved if the submission of IGOSS records and data is to be improved.** Dolly Dieter, NSF/OCFS and Beth White, NOAA/OMO agreed to explore possible contacts on the problem.

Another facet of the problem concerned sensors and logging equipment. Worth Nowlin noted that WOCE was interested in data to support long-term estimates of air-sea exchanges.

Several studies have indicated that the meteorological and surface-layer sensor suites on R/V's in the UNOLS fleet are not good enough to support such estimates. **Worth Nowlin agreed to provide, through FIC, performance specifications and recommended sensor suites for blue-water UNOLS ships.** He warned that properly outfitting even a segment of the fleet would not be cheap.

Although the NSF policy for In Situ Ocean Data (see Appendix IX) addresses the responsibility of principal investigators, much of the Council's discussion centered on the ship operator and crew. According to many Council members, improvements in realtime data collection and reporting of air-sea exchange data on a routine basis must be the responsibility of ship operators and crew.

REPORTS FROM FEDERAL FUNDING AGENCIES:

Bruce Malfait, NSF/OCFS reported that NSF was supporting BERNIER acquisition/conversion at \$2.4 million in 1989 and an additional \$2.4 million in 1990.

He next expanded on earlier remarks concerning OCE's Long-Range Plan and an ice-capable research vessel for the Arctic. The Directorate for GeoSciences and OCE strongly support **Global Geosciences Initiatives.** Those initiatives include plans to double the budget in the period 1991-1995. **Within the facilities portion of those plans is included an ice-capable Arctic research vessel, with design funds in 1993, construction in 1994-1995.**

Don Heinrich discussed NSF/OCE and ship operations budgets, noting that there was little new information beyond that reported in UNOLS News of June, 1989. He further continued that Congressional action on the 1990 budget was not far enough along to provide strong assurance that the requested levels would be realized. Current guidance was that for ocean sciences and facilities, "expect funding level with that for 1989."

Appendix X includes several illustrations of OCE's long-range planning. They project capital equipment, core programs and global geosciences through 1995. They illustrate program balance between core programs and global geosciences, and show 1990-1995 time phases of the main global geosciences elements: **WOCE/TOGA/GOFS, RIDGE/ARCSS and Ecosystems/Earth History.** The final illustration is of the special emphasis on facilities/operations. For Ocean Sciences these emphases are:

- Ships -- BERNIER and ice-capable R/V**
- Mid-life refits and major upgrades for existing R/V's**
- Advance Technology Development for in situ measurement**
- COSOC-Priority Technologies for Ocean Drilling Program**

Don Heinrich noted that the first significant effect of Global Geosciences on ship operations would be WOCE ship use in winter, 1990-1991.

Several Committee members suggested that because of transition problems in ramping up Global Initiative programs during 1988/1989 when NSF's budget success was less than had been expected, the proposal success rate had fallen. The response was that NSF/OCE's latest analysis show no significant decrease in success ratios.

Keith Kaulum, ONR, reported that, as in recent years, the Ocean Sciences Directorate expected level funding for 1990. The \$5.5 million to support ship operations is being maintained. The latest indications (from the July 12 Ship Scheduling meeting) were that ONR would support about \$4.9 million in 1989 and \$6.2 million in 1990. Committee members asked if, since ONR is not markedly increasing its funding of UNOLS ship operations while applying its 55%-45% operations-science funding ratio for ship time, could not that formula be adjusted? In response, Keith reported that the Ocean Sciences Directorate had examined the question, concluded that the current formula would provide the strongest support for ship operations and agreed to maintain the current ratio at least for the time being.

It was noted that the AGOR-09 (nee THOMAS G. THOMPSON) had been moved to More Island, California for disposition.

Austin Yeager, NOAA, reported that 1989 was a bad year with respect to funding for marine operations. In accordance with their appropriation, six ships of the 26 NOAA ships had been deactivated. Later, two ships had been reactivated against funds from Prince William Sound trust accounts, and were working on the EXXON VALDEZ oil spill project.

The President's budget for 1990 would deactivate three additional NOAA ships, although some indications are that Congress may restore them. The most optimistic note was the Jones Bill which would authorize mid-life refits for 19 NOAA ships, replace 4 and add a few new ones. Indications were that the Jones Bill would pass, thus providing adequate authorization, if not appropriation.

NOAA's Global Climate Change Initiative is being received favorably.

Hawley Thomas reported that MMS sees a bleak outlook because of questions raised by a moratorium on offshore oil and gas leasing. He briefly discussed plans for outfitting ships engaged in MMS environmental assessment projects and noted

provisions in recent MMS bid solicitations specifying that vessels used must meet UNOLS Safety Standards. The solicitations did not refer to standards of operation or tables of equipment, etc., because UNOLS has not published any such systematic standards.

Bob Dinsmore gave a partial report on Cruise Assessments for 1988. Of 408 cruises on 24 UNOLS ships, reports were received for 256 or 63%. Of the 256 cruises reported, 80% were fully successful, 39% were partially successful, 7% marginally, and 5% unsuccessful. **Weather problems, ship-board problems (equipment, operations and personnel) and science party equipment problems impacted cruises and project success about equally.**

The Council discussed the report and agreed that the report or some summary of Cruise Assessments should be published in UNOLS News.

The Council agreed that their first meeting in 1990 should be on February 8, 9. It was tentatively set for Austin, Texas; but later shifted to Monterey, California.

UNOLS OFFICE:

Bill Barbee, Executive Secretary, informed the Council that the current NSF grant supporting the UNOLS Office would expire in about May, 1991, and that he intended to retire at that time. The process and timing for open competition for a new host institution and executive secretary were discussed. The Executive Secretary was directed to prepare a preliminary announcement of the open competition for delivery at the September, 1989 UNOLS meeting and to devise a schedule to begin in late 1989-early 1990 and leading to decision in Fall, 1990.

The meeting was adjourned at 12:30 p.m. on July 14.

AGENDA

**UNOLS Council Meeting
July 13-14, 1989, 8:30 am
University of Maryland, Horn Point
Cambridge, MD**

Call the Meeting: George Keller, Chair

Accept Minutes of Feb. 27-28, 1989 UNOLS Council Meeting. These minutes were distributed to the Council in May, 1989.

Issues before the Council:

FLEET MANAGEMENT

UNOLS Survey for LGAS, DSO and FLIP II; Suggestions and Input: The UNOLS Chair distributed Bob Knox's request to the ocean community for input/interest concerning Laboratory-Grade Facilities at Sea, Deep Sea Observatories and/or FLIP II. Responses were provided to Box who will summarize and discuss results of the poll and a report to ONR/NSF.

Ship Acquisitions/Renovations: Reports, as available on AGOR-23 construction (Kaulum, Barbee), KNORR (Dinsmore) renovation/modernization, MELVILLE plans (Shor, Williams), BERNIER conversion (NSF reps), OSPREY (Barbee).

FOFCC Report on Federal Ocean Fleet: FOFCC has decided to update their 1984 Report of Federal Oceanographic Fleet Study, 1984. They intend to use UNOLS reports and plans from FIC and from the Submersible Science Committee to help define academic community R/V and submersible needs. (See attached correspondence, Don Heinrichs to George Keller.) Tasks include determining Federal agency requirements for ships and platforms including submersibles, and determining current fleet capabilities for meeting those requirements; determining Federal agency plans for fleet replacement and upgrade. There are UNOLS analogs to each of those tasks. UNOLS Council-agency representative discussion to determine effective UNOLS response to and interaction with FOFCC's Coordination Board (especially NSF and ONR representatives).

AGOR-24: AGOR-24 (a second R/V for use in the UNOLS fleet) has been deferred. ONR is concerned that need for such a vessel has not been established. Discussion among agency reps and Council on the status of action to acquire the second R/V and on justification based on community requirements.

Ice-Capable R/V for Arctic Programs: Stewart Nelson, Office of the Oceanographer, will brief the Council on the Navy's oceanographic ship acquisition plan, especially for an ice-strengthened ship available for use in Arctic programs. Ships for the university fleet versus T-AGS Ocean ships. (Re ice-strengthened: Does this close out a UNOLS Arctic R/V? One vessel for both Western Basin and Greenland Sea-Baffin Bay? Availability for academic community?. Note: This item will be taken up Thursday pm or Friday am; Stew won't be there Thursday morning.)

Marine Operations Issues: Two issues, the use and disposal of plastics aboard oceanographic ships and new Coast Guard rules in Admeasurement are noted (see correspondence). Council discussion and course of action.

UNOLS Member List, Operators and Vessel Designation: Art Maxwell, with Gary Brass, Jim Kennett and Tom Malone have reviewed UNOLS membership and designated vessels. Report to the Council. The Working Group on membership will also lead a discussion on UNOLS policy concerning new members, vessel designation, etc.

An application for membership has been received from **Maine Maritime Academy** (they operate the R/V ARGO Maine for the ARGO Maine research consortium), and request that R/V LONGHORN be designated a UNOLS vessel has been received from the **University of Texas**. Council consideration.

COMMITTEE REPORTS

RVOC: Jim Williams will present a draft revision of the UNOLS Research Vessel Safety Standards to the Council for approval. Status of programs on Drug and Alcohol testing and related UNOLS shipboard policies. The issue of zero tolerance/vessel seizures and potential for UNOLS policy and negotiated agreement. Follow-up to the RVOC lay-up letter (George Shor).

ALVIN Review Committee: Bill Barbee will report on June 21-23 Review Meeting, status of 1989 operations and 1990 schedule recommendations. Final draft of the Executive Summary and recommendations of **Submersible Science Study-1990's** will be available for review.

Ship Scheduling: George Shor will report on the July 12 scheduling meeting, status of 1989 operations and 1990 outlook.

Fleet Improvement Committee: Worth Nowlin will report on July 11, 12 FIC meeting, FIC activities and revision of the Fleet Improvement Plan.

Radioisotopes aboard UNOLS Vessels: Tom Malone and his working committee submitted their report and recommendations in February (Appendix VII, UNOLS Council Meeting, February 27-28, 1989). He also recommended inclusion of some material in UNOLS Safety Standards. Status.

Realtime Reporting of Oceanographic Data: National and international interest in realtime reporting of oceanographic data is noted in attached correspondence. UNOLS ships have not participated fully in organized reporting programs. Council discussion. (There may also be presentations by NOAA, Lou Brown, etc.)

Remarks from Federal Funding Agencies: Information from Federal funding agencies (NSF, ONR, NOAA and DOE, MMS and USGS) on science and operational support for 1989, 1990; other items as pertinent. (Don Heinrichs, Dolly Dieter, Dick West, NSF; Keith Kaulum, ONR; Austin Yeager, Elizabeth White, NOAA).

UNOLS NEWS: Vol 6, No. 1 was distributed in June. Contents for next issue.

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of institutions
for the coordination and support
of university oceanographic facilities

UNOLS Office, WB-15
School of Oceanography
University of Washington
Seattle, Washington 98195
(206) 543-2203

March 30, 1989

Dear Colleague:


UNOLS has accepted a charge from the Office of Naval Research "to examine the needs and requirements for a laboratory grade facility at sea". **The attached Call for Suggestions and Input - Laboratory-grade, At-Sea Research Facilities and Deep Sea Observatories is one step in our assessment process.**

As Chair of the UNOLS Council, I had asked Bob Knox, Council member, to determine the best way of profiling ocean community interest in and ideas about laboratory grade facilities at sea. As you will see in his call for input, Bob has carefully set our inquiry in a context of related, even overlapping, efforts toward such novel at-sea facilities as FLIP II and Deep Sea Observatories.

I hope that many of you will respond, expressing your interest and ideas either for or against FLIP/LGAS/DSO. Our next step will be to synthesize your responses and forward the results to ONR. Based on those results the UNOLS Council will recommend to ONR on further steps indicated, or perhaps that there is not sufficient interest to pursue the idea.

Again, I hope that many of you will respond.

Sincerely,



George H. Keller
Chair, UNOLS

GHK:la

Attachment

1. The studies requiring an LGAS Facility should have a real need for an at-sea presence. Those studies which can proceed with samples collected by ordinary techniques from ordinary ships for subsequent analysis in elaborate shore laboratories should do so.

2. Studies requiring a stable in-situ platform, but only modest amounts of space, might well be accommodated on FLIP-II, particularly if they are articulated early in the design of FLIP-II. Studies not sensitive to motion might well be accommodated on a conventional ship. It would seem that only those studies which incorporate two or more of these features:

Large lab space needs

Stable platform requirement

Complex laboratory equipment setup incompatible with periodic loading and offloading of a conventional ship, and therefore to be operated for a long period of time without being dismantled

would necessitate an LGAS Facility distinct from conventional ships or FLIP-II.

Depending on the particular investigation, there might or might not be a need to move the LGAS Facility from place to place in the ocean.

C. Deep Sea Observatory (DSO). This idea is driven by the need to collect long time series of physical, chemical and biological measurements that are sampled at high frequency, so that the variability and covariability of these quantities can be studied in a way not now possible with fragmentary existing records. Platform stability is a key requirement, so that rapid sampling can proceed through storms, etc. The basic time-series measurements are not novel as regards instrumentation; most of the necessary techniques are standard. The new departure is their consistent application repetitively and in parallel - a multiple time series. The laboratory space demands are significant, because several of the techniques require human operators and laboratory space, but the key requirement is platform stability and continuous operation. This has driven thinking in the direction of a semisubmersible platform of the kind used in offshore exploration (Wiebe, Miller, McGowan and Knox, 1987, EOS 68(44): 1178-1190; Wiebe, P. H., 1988, EOS 69, 1140). If such a platform were indeed to be used, there would be more than enough space for the basic time-series activities. The incorporation of other kinds of programs, some of which are noted in sections II-A and II-B above, would be easy, sensible, advantageous to both kinds of research, and conducive to a deeper interpretation of all the observations gathered by all the projects. The DSO would not be strictly a single-point observing station but rather the center of a regional network. Moorings, drifters, a small workboat, and remote sensing techniques (acoustics, radar) can extend the

"reach" of the DSO to sample the regional mesoscale variability of many key parameters.

The essential feature of the DSO is that it must remain at one site for a long time if the analysis of the multiple time series is to have any hope of sorting out the frequency structure of the observations, for the lower frequencies will dominate many of the records. A deployment of a few years is envisioned, so that at least seasonal variability can be assessed. Obviously this requirement would run counter to the needs of programs requiring a FLIP-II or a LGAS Facility to change location at intervals of a few months or less.

II. CURRENT ACTIVITIES

There are some relevant planning activities in progress at this time:

A. FLIP-II. Planning is going forward. The UNOLS Fleet Improvement Committee has encouraged a concept design, and a naval architect (Glosten Associates) will work with the interested scientific community. UNOLS will continue to foster this planning.

B. DSO. A proposal for planning funds has been submitted to NSF. If funded, two workshops would be supported. The first would refine the scientific rationale and the specification of the core time series observations. The second would study the pros and cons of various platforms to be the physical base of the DSO.

A recent development outside the oceanographic community is that two of the candidate semisubmersible platforms, units that had been repossessed by the Maritime Administration as a consequence of bankruptcies in the oil industry, are about to be mobilized in 1989 or early 1990 as part of a picket fence of surveillance stations across the Gulf of Mexico to thwart drug smuggling. On the one hand, this removes to other federal uses two of the platforms that might have been obtained cheaply for federally-supported oceanographic research. On the other hand, there is every expectation that research activities will be welcomed on a "piggy-back" basis, so that experience in using these platforms can be acquired without any significant facility setup costs to the research budgets.

C. LGAS Facility. As noted above, there is no clear definition of a physical facility, pending clarification of scientific needs and requirements. Advising ONR about the extent of these needs and requirements was the task given to UNOLS.

IV. RESPONSE TO UNOLS AND THENCE TO ONR

At its February 1989 meeting the UNOLS Council, with ONR approval, decided to proceed as follows:

1. Distribute this message broadly as an invitation for any and all interested scientists to communicate their responses to the key question:

What scientific needs or opportunities do you see in an LGAS Facility as described above?

Related comments on the degree of compatibility of LGAS efforts and DSO efforts on a single physical platform are also welcome, as are comments on specific platform requirements and features. Indications of how much use individual respondents might make of on LGAS, DSO or FLIP II will also be of aid to our assessment. Address replies to:

UNOLS Office, WB-15
School of Oceanography
University of Washington
Seattle, WA 98195

Telemail UNOLS.Office

not later than May 15, 1989.

2. Depending on the nature and extent of the replies received, UNOLS will advise ONR to pursue planning of an LGAS Facility as a separate issue, to pursue it as a joint project with the DSO community of interest, or to drop the subject.

PROPOSED UNOLS RESPONSE TO ONR REGARDING SCIENTIFIC NEEDS

FOR A LABORATORY-GRADE AT-SEA (LGAS) FACILITY

R. A. Knox
June 28, 1989

At the most recent UNOLS Council meeting I agreed to sound the community on the question of scientific demand for a LGAS facility. A broadly-circulated telemail and paper mail call for comments was issued on March 17. It noted that three novel facilities are in the talking stage (FLIP successor, a Deep-Sea Observatory (DSO), and the LGAS facility), and asked for expressions of interest, comments, etc.

Replies were received from 22 individuals. Copies can be provided to Council members by the UNOLS Office. My summary after reviewing these replies is:

1. The small number of replies does not bespeak a great demand for an LGAS facility. I have had comments to the effect that a number of people favor the LGAS facility but did not reply, for one reason or another. This may be; I have no way to calibrate. The fact remains that the volume of actual responses is small. It is worth noting that the (paper) mail call for input was large; Bill Barbee informed me that it went to several hundred individuals.
2. Within the group of replies it is clear that the FLIP successor has an active group of advocates, and so does the DSO, to a lesser degree. There are still some residual misapprehensions about the physical form and functioning of a DSO (one response seems to envision a fixed platform in shallow water, which is not what DSO backers have in mind), but the scientific goal of long time series does gather some support. The replies also contain alternative platform suggestions (barges, surplus ship hulls) that are worth considering.
3. An LGAS facility does not appear to capture any significant degree of backing within the group of replies.

Based on these results and on ONR's stated desire for an evaluation of the interest in an LGAS facility specifically, I believe that we should advise ONR as follows:

- A. There is not now a significant scientific demand for an LGAS facility, or at least this method of solicitation has not elicited that demand.
- B. FLIP successor and DSO do have significant followings; whether ONR would like further UNOLS advice on these topics is a separate, and new, question.

Action?

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of Institutions
for the coordination and support
of university oceanographic facilities

Research, Graduate Studies,
and International Programs
Oregon State University
Administrative Services A312
Corvallis, OR 97331-2140
(503) 737-3437

July 19, 1989

RECEIVED

JUL 24 1989

UNOLS OFFICE

Dr. Eric Hartwig, Director
Ocean Sciences Directorate
Office of Naval Research
800 N Quincy St.
Arlington, VA 22217-5000

Dear Eric:

This letter is to transmit from UNOLS our completed action on the matter of community needs for "Laboratory Grade Facilities At Sea," on which subject you asked for UNOLS advice. As you know, Bob Knox undertook to sound out the community on this question. You have seen his Telemail call for input, which was followed by a mailing to over 900 individuals from the UNOLS office. An assessment of the results of this canvassing is given in Bob's report to UNOLS (attachment 1), which the UNOLS Council endorsed. The collected responses are given in attachment 2.

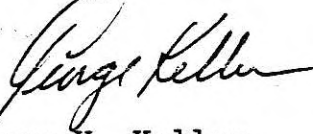
The summary is that we perceive no great groundswell of interest on the part of our colleagues in special platforms for the purpose of carrying "laboratory-grade facilities." But there is significant interest in other uses of special platforms, notably (a) as a Deep-Sea Observatory (DSO) for long time series, and (b) as a successor vehicle to FLIP.

In attachment 2, you will find a set of comments urging the construction of a new FLIP and spelling out the kinds of important research that could be done with such a platform. Since the Navy is giving some thought to the possibility of funding such a construction, I thought it important to draw your attention to this result of Knox's survey. Clearly there is a community of scientists who have done and are doing important work from FLIP on upper ocean, atmospheric boundary layer,

Dr. Eric Hartwig
July 19, 1989
Page 2

and air-sea interaction processes, and they are concerned that a successor to this aging vehicle be built. This speaks well of the past utility of FLIP and says that a new platform for similar purposes is a genuine need of our community.

Sincerely,

A handwritten signature in cursive script that reads "George H. Keller". The signature is written in dark ink and is positioned above the typed name.

George H. Keller
Chairman

GHK:mg
Enc.
cc: W. Barbee
R. Knox
T. Johnson

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of Institutions
for the coordination and support
of university oceanographic facilities

Research, Graduate Studies,
and International Programs
Oregon State University
Administrative Services A312
Corvallis, OR 97331-2140
(503) 737-3437

RECEIVED

AUG 28 1989

July 19, 1989

UNOLS OFFICE

Dr. Donald R. Heinrichs, Director
Division of Ocean Sciences
National Science Foundation
1800 G Street NW
Washington, D.C. 20550

Dear Don:

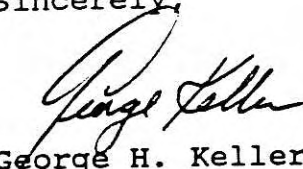
The UNOLS Fleet Improvement Committee, during its July 10-11, 1989 meeting, heard an information report from Capt. Robertson Dinsmore concerning the BERNIER National Oversight Committee appointed in connection with conversion of the BERNIER for use as a general purpose oceanographic research vessel. Captain Dinsmore noted that the committee had reviewed preliminary plans for the conversion and made a report to LDGO. (The report was generally favorable with respect to those preliminary plans.)

UNOLS believes that the academic oceanographic community has a strong interest in the efficacy of LDGO's conversion of the BERNIER, and suggests that one of the purposes for forming the National Oversight Committee was to provide a degree of assistance for planning and execution of the BERNIER conversion along with providing community input. UNOLS suggests that to provide effective oversight and input, the Oversight Committee should have the opportunity to review and comment on specification priorities and the bid package for the conversion, as well as participate in the review of bids. That an inspection of the BERNIER should be scheduled under the NSF/MARAD program during the first year of operation.

Dr. Donald R. Heinrichs
July 19, 1989
Page 2

Given the importance of the acquisition and conversion of the BERNIER, we believe that UNOLS and the oceanographic community might best be served by being kept aware of plans and status of the BERNIER'S conversion through the National Oversight Committee. Captain Dinsmore, a member of both the FIC and the Oversight Committee, would seem a logical choice for such liaison.

Sincerely,



George H. Keller
Chairman

GHK:mg

cc: W. Barbee
B. Raleigh
W. Nowlin
R. West

NATIONAL SCIENCE FOUNDATION
1800 G STREET, N.W.
WASHINGTON, D.C. 20550

DIVISION OF OCEAN SCIENCES

30 May 1989

RECEIVED

JUN 05 1989

Dr. George H. Keller
Chairman, UNOLS Council
Research Office
Oregon State University
Corvallis, OR 97331

RESEARCH
OFFICE

Dear George:

The Federal Oceanographic Fleet Coordination Council (FOFCC) has decided to update the 1984 FOFCC report on the Federal Oceanographic Fleet. The FOFCC Coordination Board has been tasked to provide this assessment by October 15, 1989, for consideration by FOFCC itself. A copy of the Terms of Reference and proposed schedule is enclosed.

The Board plans to use the UNOLS reports/plans from the Fleet Improvement Committee and Submersible Science Committee as major source documents for academic research ship and submersible requirements. I am aware that both studies are still "underway" and final reports have not been reviewed or approved by the UNOLS Council yet. The timing of the FOFCC assessment will require NSF and ONR, as major supporters of the academic fleets, to develop our assessments by late summer for interagency review.

I believe a "working session" and/or formal discussion of FOFCC Coordination Board/UNOLS interactions for the study at the July UNOLS Council meeting is needed. I would appreciate your thoughts and input on the most appropriate mechanisms to use the UNOLS studies.

In closing, I should note that I am the Acting Chairman of the FOFCC Coordination Board. The chair will be transferred to Ms. Dolly Dieter as soon as she has a chance to get settled here at NSF. Ms. Lisa Lynch is the alternate NSF member. ONR has designated Mr. Keith Kaulum as their member with Dr. Steve Ramberg as alternate.

Sincerely,

Lisa Lynch for
Donald F. Heinfichs
Acting Chairman, FOFCC
Coordination Board

Enclosure

cc: L. Lynch (NSF)
K. Kaulum (ONR)

TERMS OF REFERENCE

ASSESSMENT OF THE FEDERAL OCEANOGRAPHIC FLEET

This assessment will update the 1984 Federal Oceanographic Fleet Coordination Council's (FOFCC) Report of the Federal Oceanographic Fleet Study, which examined the requirements of Federal agencies for oceanographic ships and assessed the capabilities of the Federal fleet to meet those requirements. The following background statement and specific tasks are provided to the FOFCC Board:

1. General Objectives.

- a. Determine the requirements for Federal oceanographic ships and platforms (including submersibles and unique facilities).
- b. Examine the current ship and platform capabilities in terms of meeting projected needs.
- c. Assess the means for achieving cost-effective ship and platform utilization.

2. Background. The present Federal oceanographic fleet, which is the composite of the assets of the individual agencies, has been subject to numerous changes and pressures since the 1984 FOFCC study. For example, while some agencies are aggressively pursuing ship modernization programs, other agencies are laying-up ships because of funding constraints. Also, the increasing needs for oceanographic data to support national and international program requirements have placed greater demands for at-sea operations. Recognizing budget realities, the federal agencies must seek to minimize capital investment and overhead costs while ensuring the capability and means to meet oceanographic requirements.

3. Specific Tasks:

- a. What are the Federal agency requirements for ships and platforms, including submersibles and special facilities?
- b. What are the current and projected capabilities of the Federal fleet to meet these requirements?
- c. What are the Federal agency plans for ship and platform replacement and upgrade?
- d. What alternative acquisition arrangements can be used for supplementing the Federal fleet?
- e. What methods can be employed to take advantage of the cross-agency ship and platform opportunities?

Enclosure (1)

PLANS OF ACTION AND MILESTONES
FEDERAL OCEANOGRAPHIC FLEET COORDINATION COUNCIL
FEDERAL OCEANOGRAPHIC FLEET STUDY

- o 28 March 1989 Prepare/Distribute Draft Terms of Reference
- o 5 May 1989 Final Terms of Reference Provided to FOFCC Coordination Board
- o 16 May 1989 First FOFCC Coordination Board Planning Meeting
- o 27 June 1989 Board Completes Study Outline and Briefs FOFCC
- o August 1989 Board Promulgates Draft Study for Review and Command
- o 15 October 1989 Board Submits Final study to FOFCC
- o Oct/Nov. 1989 Chairman, FOFCC Briefs Study to OPG, CES, and FCCSET
- o November 1989 FOFCC Distributes Study

OCEANOGRAPHIC SHIP ACQUISITION and REPLACEMENT PLAN

FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96
------	------	------	------	------	------	------	------	------	------

T-AGS OCEAN SHIPS

LYNCH (T-AGOR 7)									
						<i>FY 90 T-AGS OCEAN</i>			
DE STEIGUER (T-AGOR 12)									
						<i>FY 90 T-AGS OCEAN</i>			
BARTLETT (T-AGOR 13)									
						<i>FY 91 T-AGS OCEAN</i>			
BENT (T-AGS 26)									
							FY92 T-AGS OCEAN		
KANE (T-AGS 27)									
								FY93 T-AGS OCEAN	
WILKES (T-AGS 33)									

T-AGS DEEP OCEAN SHIPS

BOWDITCH (T-AGS 21)									
						MAURY (T-AGS 39)			
DUTTON (T-AGS 22)									
						TANNER (T-AGS 40)			
WYMAN (T-AGS 34)									
HESS (T-AGS 38)									

T-AGS COASTAL SHIPS

CHAUYENET (T-AGS 29)									
HARKNESS (T-AGS 32)									
						MC DONNELL (T-AGS 51)			
						LITTLEHALES (T-AGS 52)			

- Notes:
1. New ships are in bold print.
 2. President's Budget ships are in bold print and italicized.
 3. New ship starts are displayed in year of delivery to Navy

FY94 COASTAL

FY 94 COASTAL

OCEANOGRAPHIC SHIP ACQUISITION and REPLACEMENT PLAN

FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96
------	------	------	------	------	------	------	------	------	------

AGOR University Ships

CONRAD (R/V AGOR 3) (replaced by non-Navy ship)

THOMPSON (R/V AGOR 9)

FY 87 AGOR 23

WASHINGTON (R/V AGOR 10)

FY 92 AGOR

MELVILLE (R/V AGOR 14) (upgrade 1989)

KNORR (R/V AGOR 15) (upgrade 1990)

GYRE (R/V AGOR 21)

MOANA WAVE (R/V AGOR 22)



1 June 1989

RECEIVED

JUN 05 1989

UNOLS OFFICE

Mr. William Barbee
Executive Secretary
UNOLS Office
WB-15, School of Oceanography
University of Washington,
Seattle, WA 98195

Dear Bill:

Joe Coburn has brought to my attention a problem we and I am sure others ship operators have encountered with the disposal of plastics. Since WHOI ships do not have incinerators (KNORR will when she comes from the yard), plastics like styrofoam containers (such as for XBT's) are difficult to deal with. They, of course, cannot be discharged over the side, it is often difficult to dispose of them in foreign ports, they present a storage problem if kept aboard and if compacted they spring back to near their original size.

The near term, and even the long term answer is for vendors to pack with non-plastic materials and I suppose each institution could urge their vendors to do just that. If the problem is widespread in the UNOLS fleet, perhaps a letter to marine vendors requesting them to avoid plastics would be helpful. What do you think?

See you in a couple of weeks.

Sincerely,

A handwritten signature in cursive script that reads "George".

George Grice

GDG/bjh

**UNOLS Members and Associate Members
October 1, 1988**

UNOLS MEMBERS

University of Alaska
University of Delaware
Duke/University of North Carolina
University of Hawaii
The Johns Hopkins University
Columbia University, Lamont-Doherty Geological Observatory
Louisiana Universities Marine Consortium
University of Miami, Rosenteil School of Marine and Atmospheric
Sciences
University of Michigan, Great Lakes and Marine Waters Center
Moss Landing Marine Laboratories
Oregon State University
University of Rhode Island
University of California, San Diego - Scripps Institution of
Oceanography
University System of Georgia, Skidaway Institute of Oceanography
University of Southern California
University of Texas
Texas A&M University
University of Washington
Woods Hole Oceanographic Institution

ASSOCIATE MEMBERS

University of Alabama
Bermuda Biological Station
Bigelow Laboratory for Ocean Sciences
Brookhaven National Laboratory
University of California, Santa Barbara
Cape Fear Technical Institute
University of Connecticut
Florida Institute for Oceanography
Florida Institute of Technology
Florida State University
University of South Florida
Harbor Branch Oceanographic Institution
Harvard University
Hobart and William Smith College
Lehigh University
University of Maine
Marine Science Consortium
University of Maryland
Massachusetts Institute of Technology
Monterey Bay Aquarium Research Institute
Naval Postgraduate School
University of New Hampshire
New York State University College at Buffalo
State University of New York at Stony Brook

ASSOCIATE MEMBERS (continued):

North Carolina State University
University of North Carolina at Wilmington
Nova University
Occidental College
Old Dominion University
University of Puerto Rico
San Diego State University
Sea Education Association
University of South Carolina
Virginia Institute of Marine Science
Walla Walla College
University of Wisconsin at Madison
University of Wisconsin at Milwaukee
University of Wisconsin at Superior

The list that follows is the proposed new listing of UNOLS members, along with those to be designated as operator (o), if appropriate.

UNOLS MEMBERS (proposed to be effective September, 1989)

University of Alabama
University of Alaska (o)
Bermuda Biological Station
Bigelow Laboratory for Ocean Sciences
Brookhaven National Laboratory
University of California, Santa Barbara
University of California, San Diego - Scripps Institution of Oceanography (o)
University of Southern California
Cape Fear Technical Institute
Columbia University, Lamont-Doherty Geological Observatory (o)*
University of Connecticut
University of Delaware (o)
Duke University/University of North Carolina (o)
Florida Institute for Oceanography
Florida Institute of Technology
Florida State University
University of South Florida
University System of Georgia, Skidaway Institute of Oceanography (o)
Harbor Branch Oceanographic Institution (o)*
Harvard University
University of Hawaii (o)
Hobart and William Smith Colleges
The Johns Hopkins University (o)*
Lehigh University
Louisiana Universities Marine Consortium (o)
University of Maine
Marine Science Consortium

UNOLS MEMBERS (continued):

University of Maryland
Massachusetts Institute of Technology
University of Miami, Rosenteil School of Marine and Atmospheric
Science (o)
University of Michigan, Great Lakes and Marine Waters Center (o)
Monterey Bay Aquarium Research Institute
Moss Landing Marine Laboratories (o)
Naval Postgraduate School
University of New Hampshire
New York State University College at Buffalo
New York State University at Stony Brook
North Carolina State University
University of North Carolina at Wilmington
Nova University
Occidental College
Old Dominion University
Oregon State University (o)
University of Puerto Rico
University of Rhode Island (o)
San Diego State University
Sea Education Association
University of South Carolina
University of Texas (o)*
Texas A&M University (o)
Virginia Institute of Marine Science
Walla Walla College
University of Washington (o)*
University of Wisconsin at Madison
University of Wisconsin at Milwaukee
University of Wisconsin at Superior
Woods Hole Oceanographic Institution (o)

* indicates change in ship operations imminent

LIST OF DESIGNATED UNOLS VESSELS AND OPERATORS

University of Alaska
ALPHA HELIX

Bermuda Biological Station
WEATHERBIRD* (requested to be named UNOLS vessel;
replacement vessel under conversion)

University of California, Scripps Institution of Oceanography
MELVILLE
THOMAS WASHINGTON
NEW HORIZON
ROBERT SPROUL

University of Southern California
OSPREY* (not yet operational; not UNOLS designated)

Columbia University, Lamont-Doherty Geological Observatory
CONRAD* (to be replaced by BERNIER; BERNIER under
conversion)

University of Delaware
CAPE HENLOPEN

Duke/University of North Carolina
CAPE HATTERAS

University System of Georgia, Skidaway Institute of Oceanography
BLUE FIN

Harbor Branch Oceanographic Institution
SEWARD JOHNSON* (designated UNOLS vessel 6/13/89)
EDWIN LINK* (designated UNOLS vessel 6/13/89)

University of Hawaii
MOANA WAVE

The Johns Hopkins University
RIDGELY WARFIELD* (may be laid up or transferred; Council
consideration at that time)

Louisiana Universities Marine Consortium
PELICAN

**University of Miami, Rosentel School Marine and Atmospheric
Science**
ISELIN
CALANUS

University of Michigan, Great Lakes and Marine Waters Center
LAURENTIAN

LIST OF DESIGNATED UNOLS VESSELS AND OPERATORS (continued):

Moss Landing Marine Laboratories
POINT SUR

Oregon State University
WECOMA

University of Rhode Island
ENDEAVOR

University of Texas
FRED H. MOORE* (sold, no longer UNOLS vessel)
LONGHORN* (designated UNOLS vessel 6/13/89)

Texas A&M University
GYRE

University of Washington
AGOR 23* (anticipated to enter fleet in 1991 as
Thomas G. Thompson)
C. A. BARNES

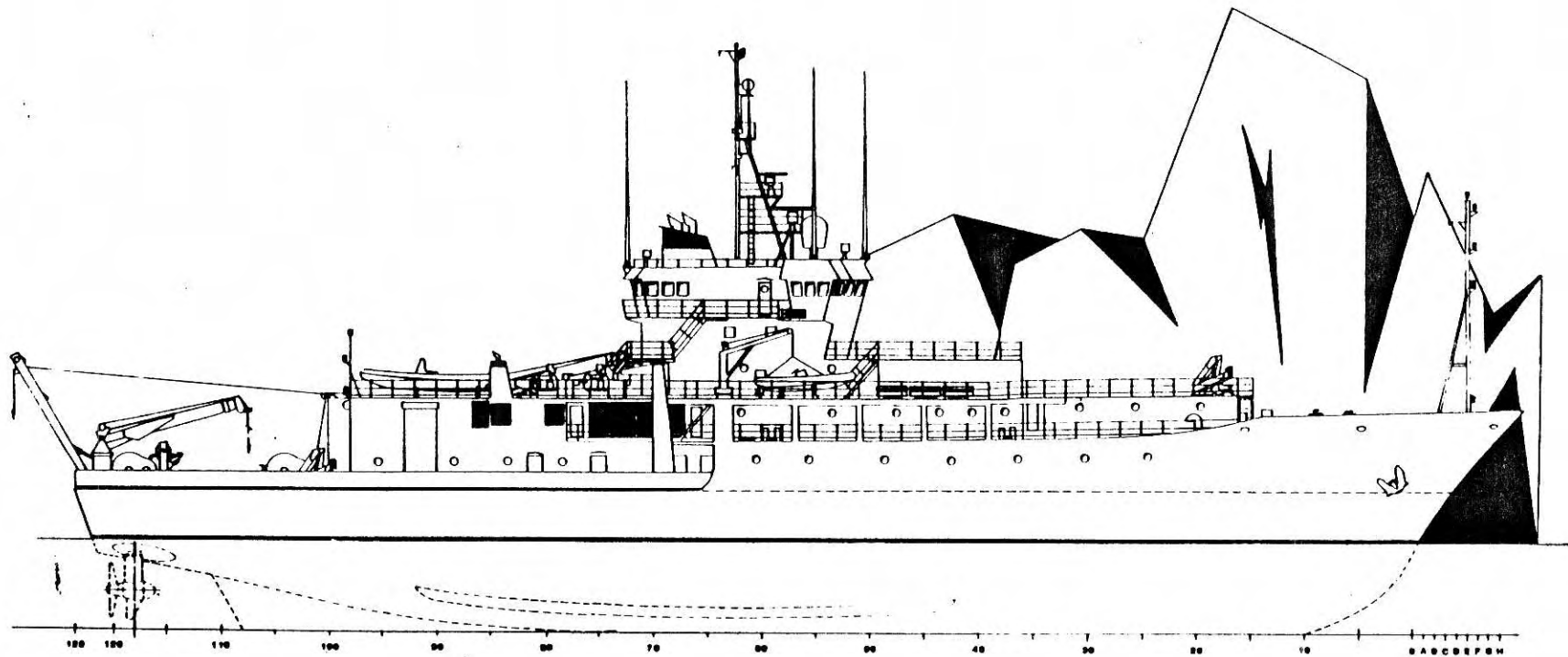
Woods Hole Oceanographic Institution
KNORR
ATLANTIS II
OCEANUS

*indicates change in ship operation imminent.

TENTATIVE OPERATIONAL REQUIREMENTS (TOR)

FOR FY92

ICE CAPABLE OCEAN SURVEY SHIP (T-AGS OCEAN)



GENERAL DESCRIPTION OF OPERATIONAL REQUIREMENTS

- ICE CAPABLE
- MULTI-MISSION CAPABILITY
- OPERATE IN ARCTIC M-I-Z
 - - OPEN PACK ICE (4/10 - 6/10)
 - - FIRST - YR THIN / MEDIUM LEVEL ICE
- OPERATE IN WINTER AIR TEMEPERATURE OF -20 DEGREES F
- COLLECT HYDROGRAPHIC DATA IN DEPTHS FROM 10 - 8,000 METERS

CAPABILITIES DESIRED

OPERATING CHARACTERISTICS

1. ENDURANCE

- **12,000 NM @ 12KTS
PLUS 30 DAYS ON STATION**

2. STATIONKEEPING TRACKLINE

- **MAINTAIN MANEUVERABILITY
WITHIN 300FT WITH WINDS OF
27 KTS, CURRENT UP TO 2 KTS,
AND 11FT SIGNIFICANT WAVE**

CAPABILITIES DESIRED

FACILITIES

1. ACCOMMODATIONS - 55 PERSONNEL
2. LABORATORIES - 4,000 SQ FT
3. VANS - FOUR STANDARD
8 X 8 X 20 FT
4. SCIENTIFIC STORAGE - 15,000 CU FT

4-1-1

CAPABILITIES DESIRED

FACILITIES

5. ACOUSTIC CHARACTERISTICS

- HULL SHALL MINIMIZE INTERFERENCE OF SURVEY SONAR SYSTEMS AT 12KTS WITH SIGNIFICANT WAVE HEIGHT OF 9FT

6. DECK EQUIPMENT

- OVER-THE-SIDE-HANDLING UP TO 10,000 POUNDS AND UP TO SIZE 20 X 5 X 5

CAPABILITIES DESIRED

FACILITIES

- 7. SHIPBOARD SONAR SURVEY SYSTEMS** - **WIDE BEAM AND MULTI-BEAM DEEP WATER AND SHALLOW WATER, AND ACOUSTIC DOPPLER CURRENT PROFILER**

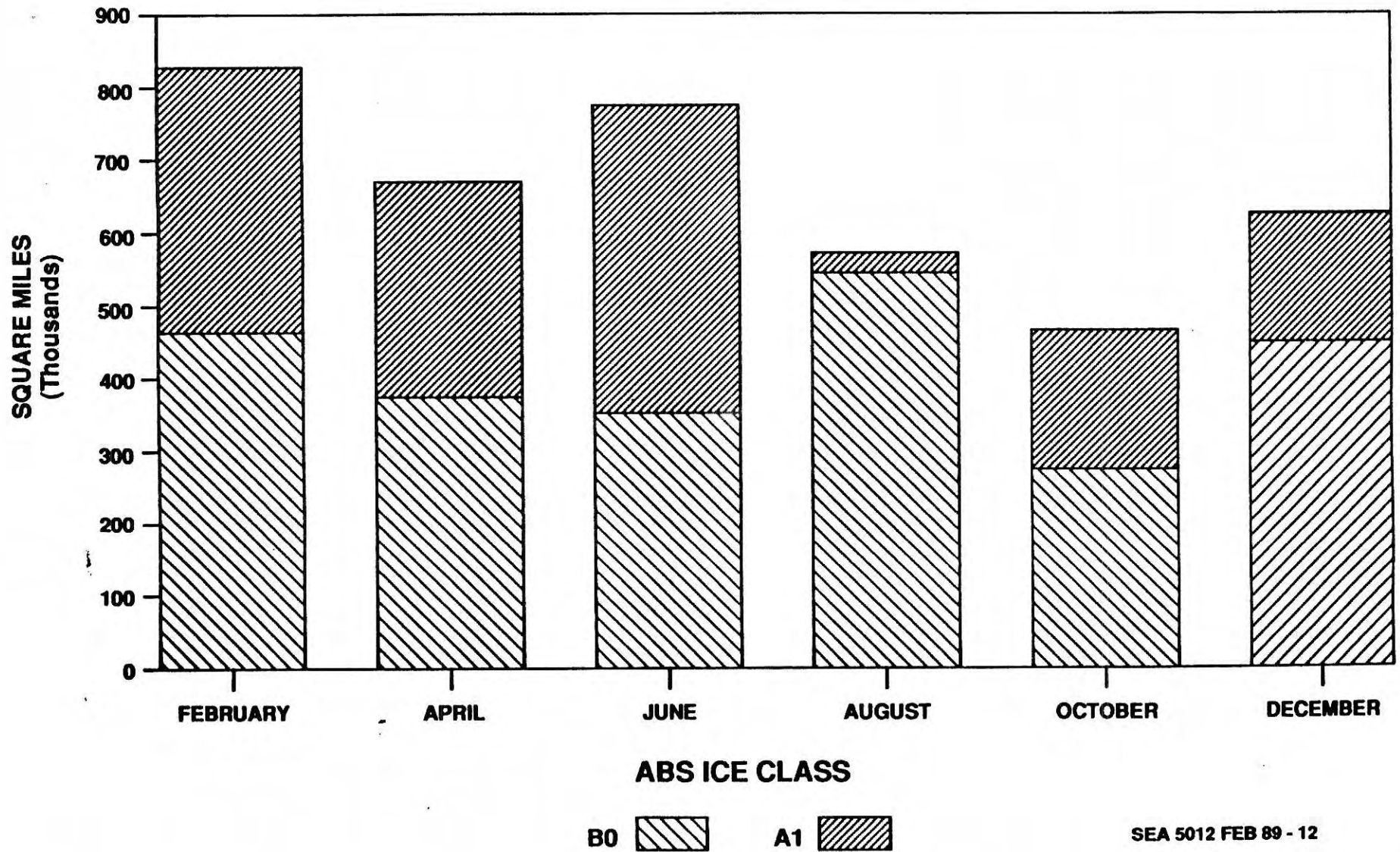
- 8. DECK WORKING AREA** - **3,500 SQ FT**

- 9. HELO CAPABILITY** - **DAY-ONLY, HOVER-ONLY FACILITIES FOR COMMERCIAL HELICOPTER**

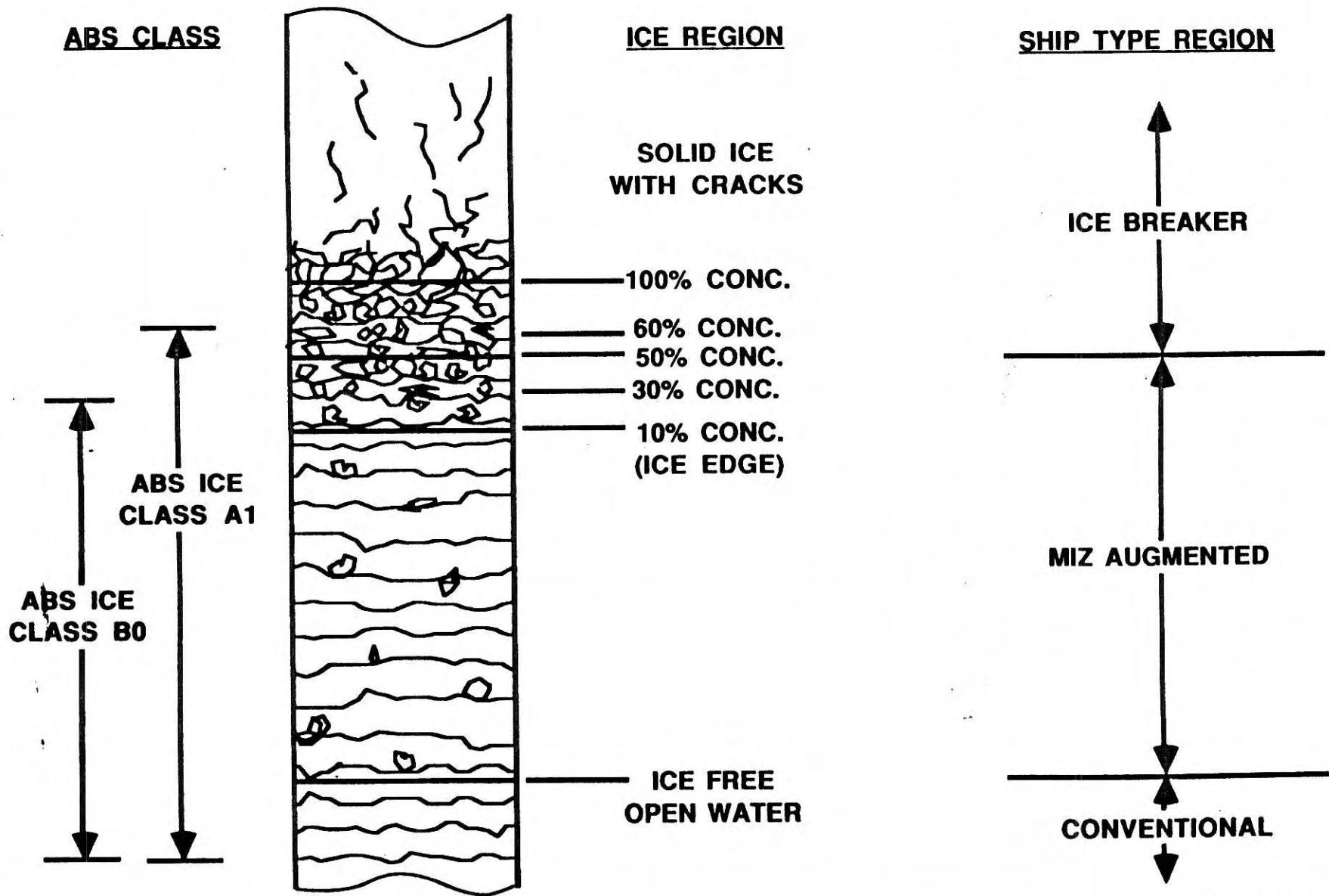
CERTIFICATION

- **ABS (EITHER BO OR A1)**
- **USCG 46 CFR SUBCHAPTER U**

FY 92 T-AGS(O) ICE CAPABLE INCREASED RANGE WITH ICE STRENGTHENING



SCHEMATIC REPRESENTATION OF ICE REGIONS AND SHIP TYPE REGIONS BASED ON FLOATING ICE CONDITIONS



SCHEDULE

TOR FOR T-AGS OCEAN (ICE)	JUNE 7, 1989
MODIFY AGOR 23 TO SUIT TAGS (0) ICE DESIGN MISSION REQUIREMENTS	JULY 30, 1989
POINT DESIGN (BO)	SEPT 30, 1989
POINT DESIGN (A1)	SEPT 30, 1989
DEVELOPMENT OPTIONS PAPER	OCT. 31, 1989

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of Institutions
for the coordination and support
of university oceanographic facilities

Oregon State University
Research, Graduate Studies
and International Programs
Administrative Services A312
Corvallis, OR 97331-2140
(503) 754-3437

May 26, 1989

RECEIVED

MAY 30 1989

UNOLS OFFICE

Dr. Louis B. Brown
Division of Ocean Sciences
National Science Foundation
Washington, DC 20550

Dear Lou:

Thank you for your 18 May letter and for bringing up the issue of real-time reporting of certain types of oceanographic data. We (UNOLS) started a dialogue with NESDIS a little over a year ago because of some concerns they had about the issue you have raised, but we never really got into it.

UNOLS will be pleased to look into this matter, and we will have it on the July agenda for the UNOLS Council. I will ask Bill Barbee to invite Greg Withee and yourself, if you are interested, to the meeting which will be in Maryland.

I am heading out of the country tomorrow, so I am asking Bill Barbee to follow up on this.

Regards,



George H. Keller
Chairman

GHK:ms

xc: W. Barbee
D. Heinrichs

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550
DIVISION OF OCEAN SCIENCES

RECEIVED

MAY 25 1989

RESEARCH
OFFICE

18 May 1989

Dr. George H. Keller
Chairman
University-National Oceanographic
Laboratory System
Oregon State University
Corvallis, Oregon 97331

Dear George,

Over the past few years, the National Oceanic and Atmospheric Administration has been making a strong effort to improve submission of real-time oceanographic data to both NOAA and the joint WMO/IOC Integrated Global Ocean Services System (IGOSS). Real-time submission of such data provides input to analyses which result in U.S. national products of increasing utility and applicability, not only within the government but within the research community and private industry as well (see the attached letter from Warren White). Internationally, the data is also one of the most substantive inputs to preparation of IGOSS products for international use.

The National Science Foundation and other Federal agencies actively encourage submission of certain kinds of oceanographic data in real time, especially surface and mixed-layer temperature and salinity data. The NSF policy in this respect is summarized briefly in the NSF Policy for In Situ Ocean Data (copy attached). This policy was developed by the Division of Ocean Sciences and is likely to be adopted by other NSF Divisions which sponsor oceanographic research within their programs.

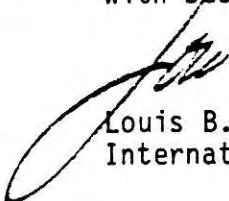
However, NOAA representatives have reported to the last two U.S. IGSS-IODE Joint Coordination Meetings (in 1988 and 1989) that the U.S. academic research fleet does not have a good record for submission of real-time data through IGSS. The data summaries which these representatives presented supported these contentions. Submission of real-time data from oceanographic research vessels is especially important because these vessels often conduct research in remote regions of the oceans from which other data is not normally available.

Would it be possible for UNOLS to consider this issue in order to verify whether the above concerns are well-founded and, if so, to determine ways in which the academic fleet could participate more fully in the overall U.S. effort to improve submission of real-time data through IGSS? One long-term issue that may be important to address is the relative responsibilities of scientific parties and ships' officers and crews in this process.

At present, responsibility for submission of real-time data rests with the scientists whom NSF supports with research grants. Obviously, officers and crews of research vessels become involved as well. In future, we expect that more, if not all, research vessels will be equipped with systems for automatic collection and transmission of standard oceanographic data. The responsibility for proper operation and maintenance of these systems may most appropriately be assigned to ships' officers and crews. ?

I realize that the agenda for the upcoming UNOLS meeting has already been developed. However, perhaps the "real-time data" issue could at least be introduced at this meeting and followed through over the next year, possibly through an ad hoc intersessional working group. NOAA has indicated they would be prepared to work with UNOLS on this issue and, if UNOLS does elect to discuss this issue at its upcoming meeting, I will urge NOAA to arrange for one of their IGOSSE experts to attend, to make a brief presentation (if desired), and to participate in discussions on this issue.

With best regards,



Louis B. Brown
International Science Associate

Enclosure

cc: Dr. Larry Clark, NSF/OCE/OCFS
Mr. Rick Podgorny, NOAA/NOS
Mr. Greg Withee, NOAA/NESDIS



LA JOLLA, CALIFORNIA 92093

SCRIPPS INSTITUTION OF OCEANOGRAPHY
OCEAN RESEARCH DIVISION, A-030

May 5, 1989

Dr. Terrence Joyce
Woods Hole Oceanographic Institution
Woods Hole, MA 02543

Dear Terry:

Yves Tourre, Thomas Royer, Dean Roemmich, Bob Molinari, and myself are interested in a WOCE/GLOBAL CHANGE project that attempts to produce near-real time temperature/salinity analyses on a seasonal basis over the global ocean. These products have two uses; one is scientific (i.e., updating historical T/S curves), and the other is organizational (i.e., tracking all temperature/salinity data taken globally). This requires near-real time submission of temperature and salinity information as a function of depth over the globe. Currently, the Soviets and the Japanese are the only countries submitting this data within 30 - 60 days of collection. We would like to have the U.S. research fleet join this effort. Already, NOAA and the U.S. Navy has been contacted about this and NOAA, at least, has responded positively. Since the WOCE Hydrographic Program is a major temperature/salinity data collection effort, we are requesting that, during the WOCE hydrographic cruises, the BathyTEASAC message be submitted to the GTS.

I know that in the past you have stated categorically that you know of no scientists interested in the hydrographic data in near-real time. We would like to say that we are interested in these data but for purposes very different from the use intended by yourself and your colleagues. In this sense, the concept of multi-utilization of data comes into play. Our purposes revolve around the need to update historical temperature/salinity data relations so that XBT temperature/depth data can be used to tell us something of the density (i.e., salinity) field. Because this effort is principally an upper ocean program (i.e., upper 750 m), the BathyTEASAC does not require WOCE hydrographic accuracy; rather .1°C in temperature and .01% parts per thousand in salinity is adequate. This request is consistent with NSF data submission policy but apart from this, much of the objective of the WOCE VOS program simply cannot be met unless we have your cooperation, together with that of many other institutions in the United States.

Sincerely,

A handwritten signature in cursive script that reads "Warren B. White".
Warren B. White

WBW:np

cc: Louis Brown ✓
Eric Lindstrom
Worth Nowlin
Tom Spence
Greg Withee
Bill Woodward

DIVISION OF OCEAN SCIENCES

11 November 1988

Dear Colleague:

A copy of the new Ocean Data Policy of the Division of Ocean Sciences is attached for your information and use. This revised NSF/OCE Policy is effective starting in FY1989 based on the overall Federal ocean data policy recommended by an ad hoc interagency drafting group in this area. We expect that key provisions of this Policy will become a standard for ocean data management across the Federal government (a number of other Federal agencies have adopted similar policies).

To implement this Policy, the Division of Ocean Sciences will regularly review our awards and grants and will identify those which are likely to generate large data sets of wide interest to other users. We will refer the list of such awards to the National Environmental Satellite, Data and Information Service (NESDIS) of NOAA which will arrange for the appropriate national data center to contact the principal investigator(s) and inform them of the required data submission procedures.

We believe most principal investigators already recognize their responsibilities for submission of data to national centers, fulfill these responsibilities as a matter of course, and provide for such submission in their proposals, staffing plans, and budgets. If an investigator has procedural questions, he/she should contact the appropriate program manager at the Division of Ocean Sciences to determine the support mechanism for data submission.

If you have any questions regarding specific provisions of the Policy, please contact Lou Brown of the Division staff (telemail: L.Brown; telephone: 202.357.9809).

Sincerely,

Donald F. Heinrichs
Donald F. Heinrichs
Division Director

NATIONAL SCIENCE FOUNDATION
DIVISION OF OCEAN SCIENCES

Policy for In Situ Ocean Data

Purpose

This statement establishes a policy and guidelines to assure timely submission of appropriate real-time and archival quality in situ oceanographic data to national centers, while recognizing needs of principal investigators to protect their intellectual investment and encouraging their continued efforts to collect useful oceanographic data.

Policy

Ocean data collected under Federal sponsorship are to be made available for these secondary purposes in a reasonable time as described below.

Implementation

Data sets likely to be of high utility for other purposes are to be submitted to and archived by designated national centers. These data sets should be accompanied by a brief description of the methods and techniques used for their collection and processing. Data needed for forecasting are to be submitted in real time through the WMO/IOC Integrated Global Ocean Services System (IGOSS).

National centers receiving data sets will assure that: inventories of data received are distributed to funding agencies; archived data and related information are accessible and available to other users in a timely and efficient manner, either on the basis of exchange or in accordance with applicable cost recovery policies; and these data are preserved and properly managed to assure their quality.

Funding agencies are responsible for assuring that data and related information likely to be of high utility for secondary use are archived in designated national centers. These agencies, with assistance from NOAA's National Environmental Satellite, Data, and Information Service (NESDIS), will identify such data and related information and will require their principal investigators to submit these data and related information to the designated center.

Guidelines

Ocean data which are needed for real-time and/or archival purposes are to be submitted in accordance with the guidelines listed below.

Real-time and Delayed Real-time Data

Surface and mixed-layer temperature and salinity data are to be submitted in real time along with standard surface meteorological observations. These data should be transmitted at regular intervals in accordance with procedures specified by IGOSS. Marine weather observations are requested in the SHIP code within one hour of the observation as prescribed by the WMO, whereas BATHY and TESAC messages may be accumulated up to 48 hours after the time of observation before transmission to national centers. NOAA will make all relevant instructions and forms available to research vessel operators and will provide updates and changes as they are promulgated by the responsible international bodies.

Submission of data through IGOSS does not substitute for later submission of archival-quality data.

Navigational and related information, such as soundings of previously uncharted shoals, are to be reported in accordance with the "Guide to Marine Observing and Reporting, Publication 606 of the Defense Mapping Agency Hydrographic/Topographic Center", a copy of which should be available aboard every research vessel.

Archival Data

The following centers have been designated to receive data for archival: the National Oceanographic Data Center (NODC); the National Climate Data Center (NCDC); the National Geophysical Data Center (NGDC); and the National Snow & Ice Data Center (NSIDC).

Types of data which are to be archived are:

Ocean physical data - temperature, salinity, light transmission or attenuation, currents, waves, pressure, sea level; sound speed (NODC);

Federal agencies which engage in and/or fund data collection will promote quality control of ocean data which they and their contractors and grantees collect.

Each national center will:

- upon archival of a submitted data set, send to the principal investigator a copy of the data set as archived;
- monitor submitted data to assure that they are submitted in accordance with these guidelines and in appropriate formats; and
- report regularly to principal investigators and Federal agencies on the rates of data submission, archiving and usage.

Effective: 1 October 1988

Ocean Sciences Budget

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>Change 86-90</u>
OSRS	56.9	66.5	67.2	71.2	74.7	31.3%
OCFS	33.7	37.2	37.2	43.6	45.3	34.4%
ODP	<u>28.8</u>	<u>30.0</u>	<u>30.6</u>	<u>31.4</u>	<u>32.9</u>	<u>14.2%</u>
	119.4	133.7	135.0	146.2	152.9	28.1%

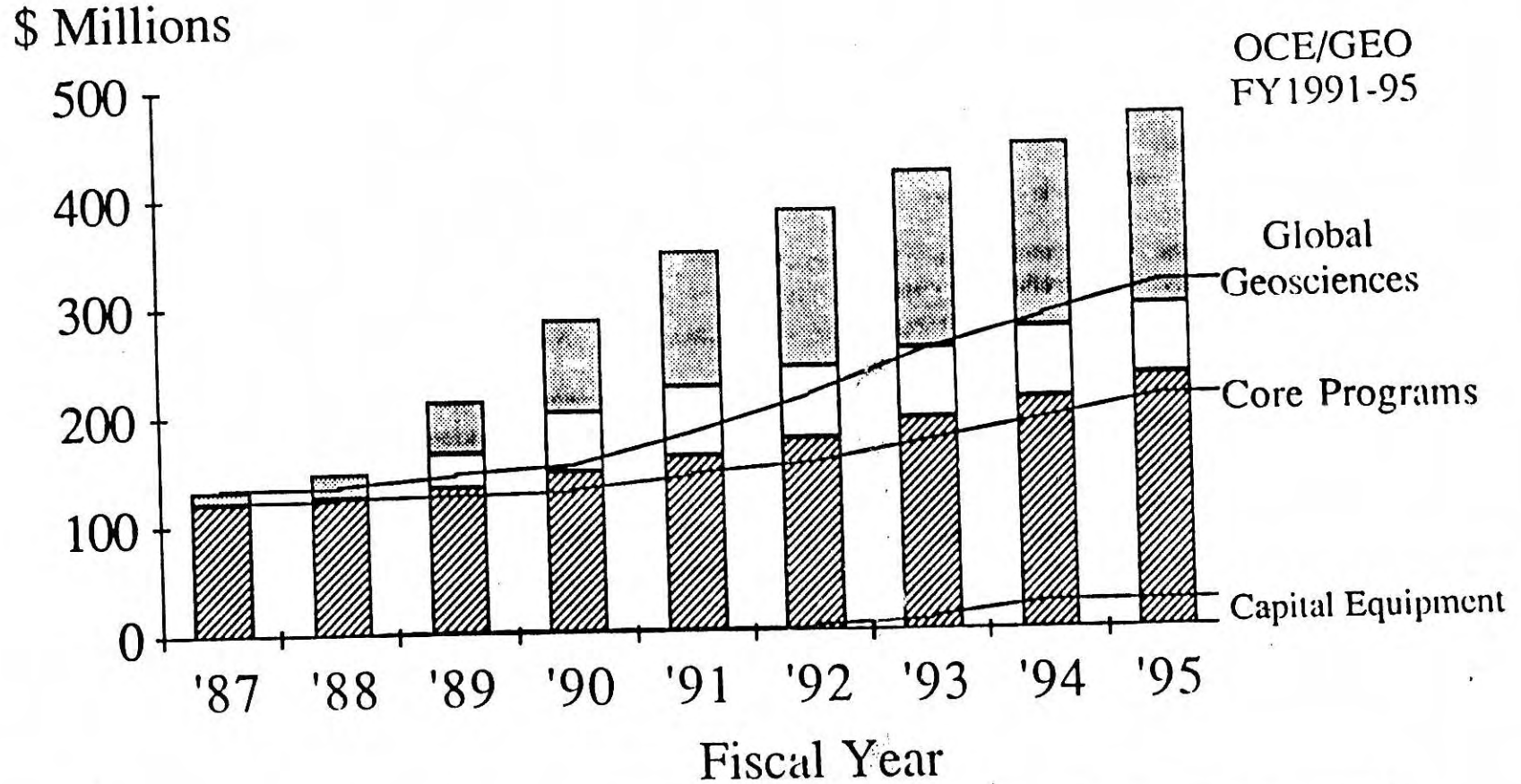
FY 1990 Budget Increment

- Global Geosciences \$4.0 M
- Disciplinary Base Adj. \$1.2 M
- Ocean Drilling Program \$1.5 M

FY 1990 Budget Profile

<u>Science</u>	<u>\$88.3 M</u>
• Disciplinary Science	73.8
• Global Geosciences	14.5
• Education & Human Resources	(2.5)
<u>Facilities</u>	<u>\$64.6 M</u>
• Disciplinary Science	56.9
• Global Geosciences	7.7
• Capital Equipment	(4.2)

OCE Long-Range Plans



ACOS
FY1988-96



Global
Geosciences

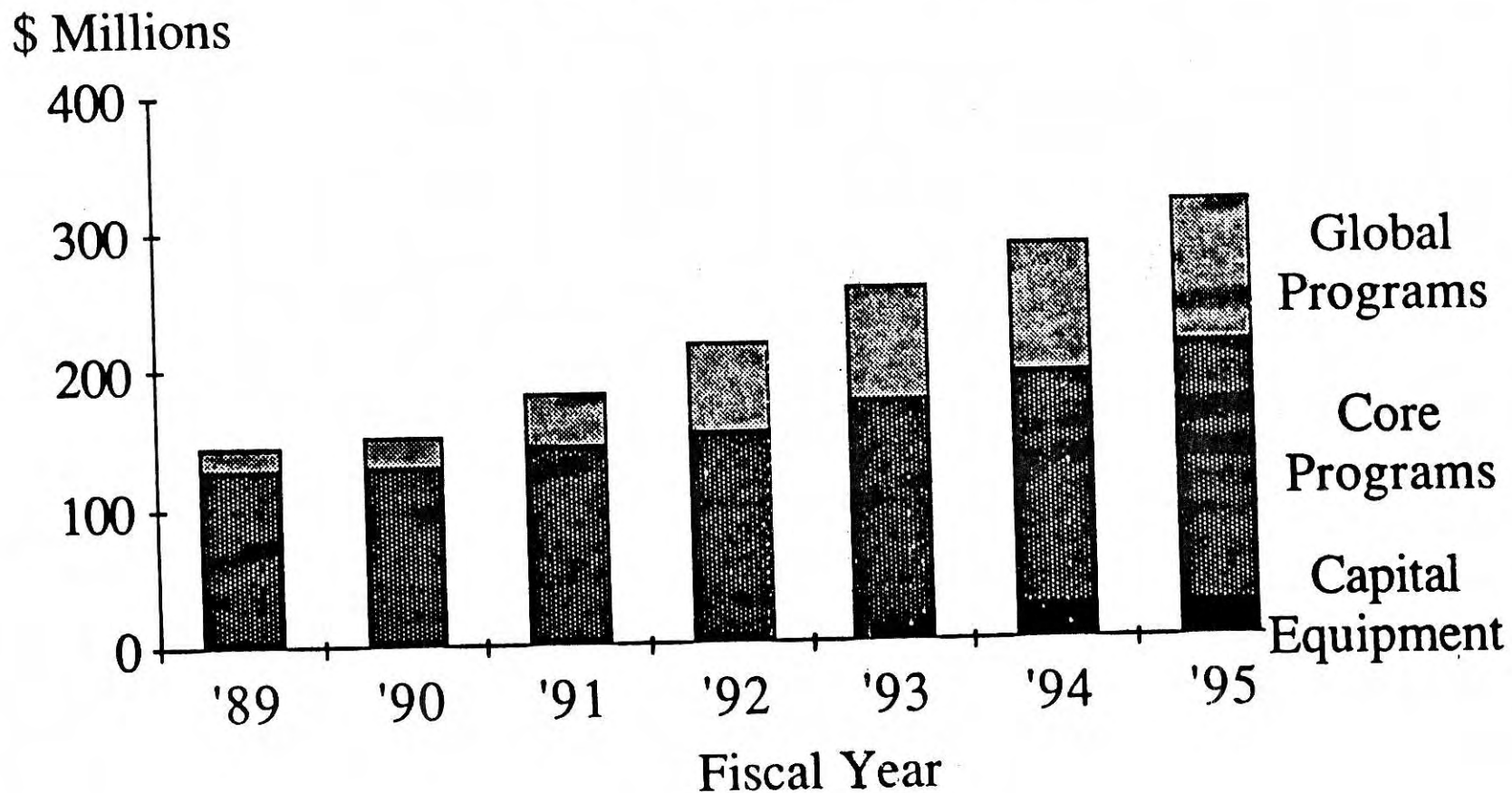


Critical Needs



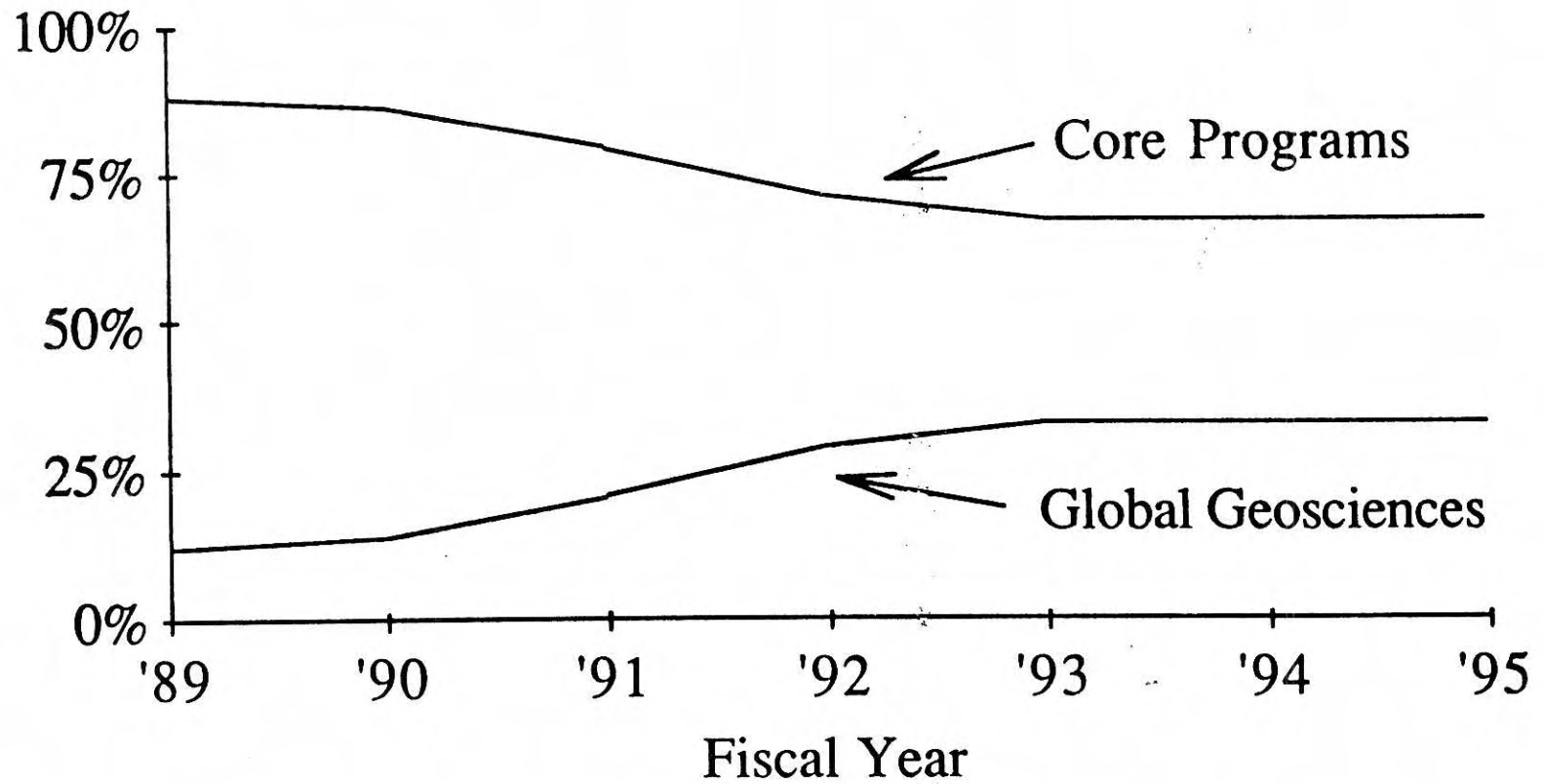
Core Programs

OCE Projections 1990-95

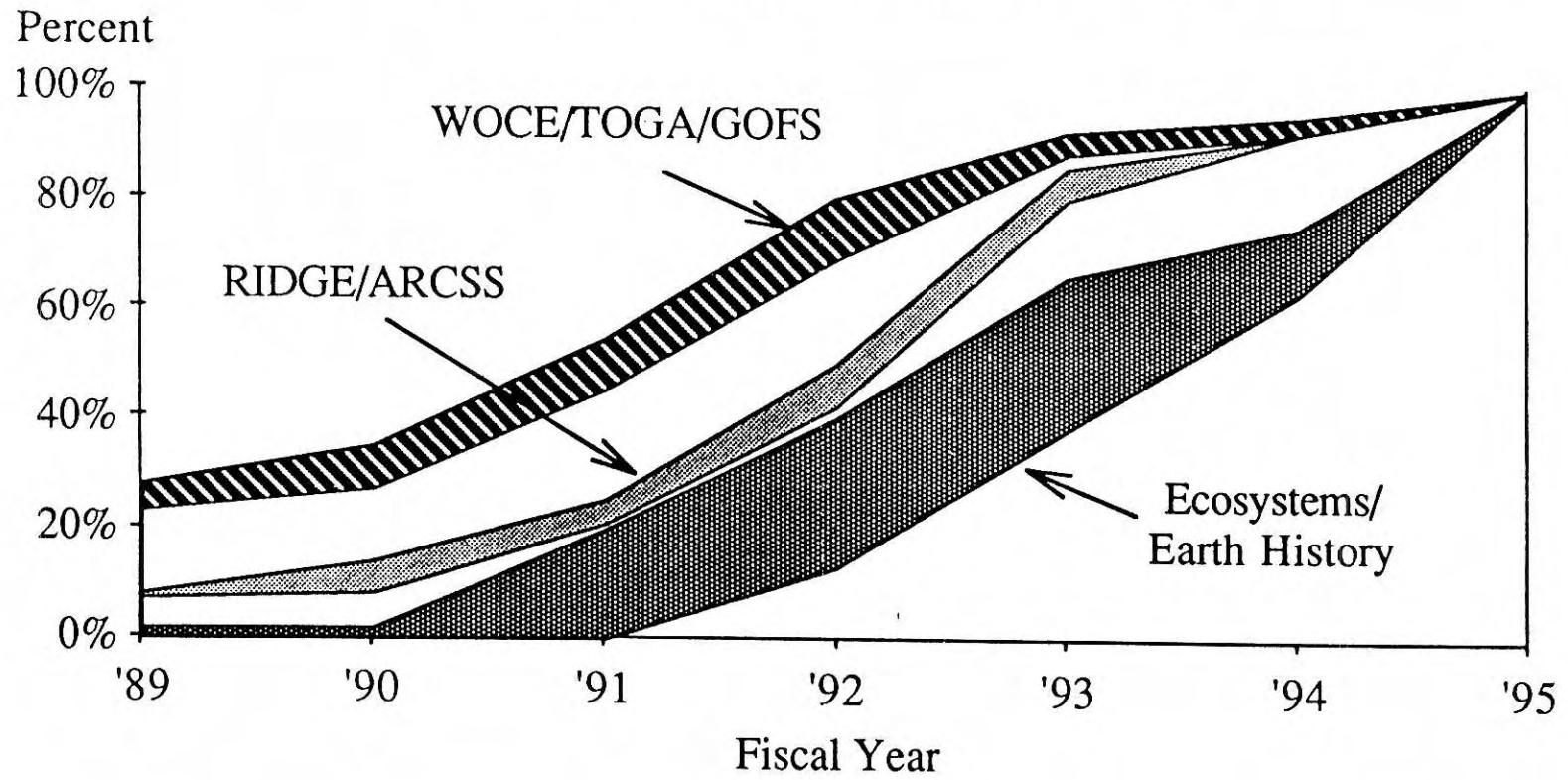


Program Balance

Percent



Global Geosciences Time Phasing



NATIONAL SCIENCE FOUNDATION

Directorate for Geosciences

SPECIAL EMPHASIS OF FACILITIES/OPERATIONS

○ ATMOSPHERIC SCIENCES

- ELDORA - Doppler Radar
- Mid-Sized Jet - High Altitude Capable
- Extremely High Latitude Radar - North Pole Region
- NCAR Computer and Database System
- NCAR Building

○ EARTH SCIENCES

- Instrumentation and Specialized Facilities to Support Core Priorities
- Regional Facilities for High Pressure Research Synchrotron Radiation Beams
- Super-Sensitive Mass Spectrometry - AMS

○ OCEAN SCIENCES

- Ships - BERNIER, Ice-Capable R/V,
- Ships - Mid-Life Refits and Major Upgrades of Existing Vessels
- Advance Technology Development for In Situ Measurement
- COSOD Priority Technologies for ODP - High Temp. Drilling, Logging, Etc.

○ POLAR PROGRAMS

- R/V With Ice-Breaking Capability
- New Science Building at McMurdo
- Enhanced Air-Borne Science Capabilities
- Enhanced Cross_Continent Traverses Capabilities
- Special Emphasis on Safety, Environment, and Health



PRIORITIES