

# UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS Council Meeting  
February 27, 28, 1989  
University of South Florida  
St. Petersburg, Florida

UNOLS Council members, representatives from NOAA, NSF and ONR, and observers from the University of South Florida, USGS and the Office of Marine Science and Polar Affairs, DOS, met in St. Petersburg at the University of South Florida. This first meeting of the UNOLS Council was called by George Keller, Chair, at 8:30 a.m. Items on the Agenda (Appendix I) were addressed in the order reported herein.

## Attendees:

### UNOLS Council Observer

George Keller, Chair  
Larry Atkinson  
Gary Brass  
Feenan Jennings  
Jeff Fox  
Bob Knox  
Tom Malone  
Art Maxwell  
George Shor  
Jim Williams

### Agency Representations,

J. Austin Yeager, NOAA  
Elizabeth White, NOAA  
Bruce Malfait, NSF  
Dick West, NSF  
Keith Kaulum, ONR  
Steve Ramberg, ONR  
Tom Cocke, DOS  
Bob Halley, USGS

UNOLS OFFICE  
William Barbee



Minutes for the Advisory Council meeting of October 26, 1988 had been distributed to the UNOLS Council for review.

The Council agreed that the minutes' report of ONR remarks on renovation of AGOR-14 and -15 was misleading. The minutes should have read (third paragraph, page 7).

No additional money was lost to the renovation program in 1989. The minutes as corrected, were accepted by the UNOLS Council.

**Laboratory-grade at-sea research facility.** In late summer, 1988, Eric Hartwig, ONR, had requested UNOLS to assess the long-term science needs for at-sea quality laboratory facilities and to assemble the requirements for such a facility (Minutes, Advisory Council meeting, October 26, Appendix IV). The Advisory Council had agreed to the change and had suggested that the oceanographic community be canvassed through workshops, etc. In later correspondence ONR had countered by suggesting that an adequate ocean community posture could be described by mail (or at least without expensive workshops).

**Bob Knox provided the Council with a proposed response to ONR (see Appendix II).** The response noted that at least three different, but perhaps overlapping, non-ship, at-sea research facilities were being discussed:

1. A FLIP-II replacement for the aging FLIP to be used for meteorological, physical and air-sea exchange investigations,
2. A laboratory-grade, at sea (LGAS) facility whose form and function are not yet well defined, and
3. A Deep Sea Observatory (DSO) driven by desire for continuous, long-term physical, chemical and biological time series.

Currently, planning is proceeding for a FLIP-II. A proposal for planning funds for a DSO has been submitted to NSF. Further, it is probable that two or more large semi-submersible platforms will be established in the Gulf of Mexico, and that time for oceanographic investigations might be available on one or both. Definition of the need for and mission requirements appropriate to an LGAS installation is still to be developed.

The report concluded with two recommendations:

1. That NSF and ONR coordinate their support for assessment/evaluation of ocean community need for or interest in novel, at-sea, laboratory grade facilities, by supporting a workshop that would first assess the full range of research interest in using such facilities and then define how research needs could best be accommodated by some combination of FLIP-II, DSO and LGAS.

2. If ONR (or NSF) declines, then UNOLS should offer to conduct such an assessment by canvas, mail-in, review and report (to be organized and conducted through the UNOLS Council).

In the Council discussion it was noted that the FOFCC would probably ask UNOLS to determine the academic oceanographic community's interest in and requirements for programs of investigation on the Gulf of Mexico semi-submersibles. It was also emphasized that true requirements for at-sea experimentation must be rigorously defined, because the at-sea facility can rarely (and then only at great expense) be made comparable to a shoreside laboratory. The Council was insistent that the need for each of the three novel facilities (or others that might arise) should be evaluated in a context of over-all facility needs for oceanography.

The Council endorsed the Knox report, and it was agreed that Bob Knox would draft a query for distribution throughout the community and a UNOLS response to ONR in line with his two-stage report recommendations.

Since about October, 1988 there had been confusion concerning the status of an AGOR-24 for the academic fleet. A mixture of reports from various sources, some authoritative, others more casual, had led to uncertainty as to the status of an AGOR-24. **Keith Kaulum, ONR, agreed to brief the Council on the current status of effort to acquire an AGOR-24.** Since the October, 1988 UNOLS meeting the Office of Naval Research and the Office of the Oceanographer of the Navy have reached agreement on a combined submission for ship acquisition and construction. Earlier plans had been:

- in 1990 AGOR-24, for ONR  
2 TAGS-OCEAN, for Ocean Nav
- in 1991 1 TAGS-OCEAN, for Ocean Nav

This has been revised so that the current ONR-OON plan is:

- in 1990 2 TAGS-OCEAN, for Ocean Nav
- in 1991 1 TAGS-OCEAN, for Ocean Nav
- in 1992 AGOR-24, for ONR  
Ice-capable vessel for Ocean Nav

Circulars of requirements for all of the TAGS-OCEAN vessels and for AGOR-24 have been modeled after the AGOR-23 design. The TAGS-OCEANS would be similar to AGOR-23, except about 350 tons greater displacement and 20 ft longer (to accommodate different manning and berthing schedules). **Current plans are that an AGOR-24 would have a separate COR aimed at a ship virtually the same as AGOR-23.**

Mr. Kaulum discussed SWATH ships noting that ONR had looked at a great number of concept designs for large SWATHS (i.e. Class II or Class I). The current ONR stance is that none of these designs would result in a ship that could be successful in the UNOLS fleet. Among the problems: SWATH designs that meet UNOLS' medium and high endurance criteria together with criteria for operating speed become too large and expensive to operate. How can they be competitive in the academic fleet? Over-the-side handling and arrangements for towed arrays haven't been worked out. (This is, to some degree, true for all designs examined, not just the rejected NavSea SWATH design.) Although ONR shares the widespread view that SWATHS show great promise as research vessels, commitment to build the first SWATH in the fleet as its largest, probably, most expensive unit is too great a risk. **The prudent approach would be to start with a SWATH whose characteristics were comparable to an intermediate or smaller class.** ONR has supported FIC in the Committee's conceptual efforts toward a SWATH with less demanding characteristics (i.e. roughly, an intermediate). There is no suggestion that NavSea would pursue such a design, however.

The ice-capable research vessel to be acquired by the Office of the Oceanographer in 1992 should be available to the academic community for part of each year. MSC operation is anticipated.

**Bob Knox had been part of a WHOI team to assess the Japanese SWATH KAIYO for utility in ocean research.** The KAIYO is very impressive. Sea keeping and sea kindness are superb. (Rolling, pitching and associated accelerations are exceedingly gentle; even coarse changes weren't noticeable.) The KAIYO at 68 meter L.O.A. may be larger than UNOLS wants.

**ONR is very pleased with AGOR-23.** Construction has begun on the contract let last July to Halter Marine. Since the design and construction contract was for less than the \$28 million available, about \$7 million has been available to enhance the scientific suite, improve layout and increase performance. Construction has begun (the formal keel laying is scheduled for the end of March), and several change order packages were near submission or acceptance. The first change order package included layout improvements (e.g. ladders, doors, chill stores, and van arrangements, winch replacement and relocation, and a sanitary device). A second package, due soon, would include a new-generation, deep water SWATH mapping system. A third change, under negotiation, would increase the ship to 275 ft L.O.A. The operators, University of Washington, are having opportunity to consider and provide input to changes in design and equipment. **ONR expects funds will be available for all of the changes/improvements, and wants the ship to be fully completed and equipped when it is accepted.**

The construction completion date may have slipped by a few months.

Bids were received in late December for renovation of the KNORR and MELVILLE. The lowest acceptable bid, from McDermott's, was \$4-5 million more than available funding. By accepting a number of minor reductions (e.g. changes in bilge keels), reducing reserve funds, deferring some scientific upgrading and using that (6.1) money, agreement was reached and a shipyard contract was signed. There remain, however, about \$1.5 million in construction items that should be restored and scientific upgrading still to be covered. NSF has a WHOI proposal for \$500,000 for some upgrading (1991 funds). The option for the MELVILLE would have to be signed within 30 days. The KNORR was delivered to the yard in mid February, 1989 and is scheduled for completion in late 1989. MELVILLE would be delivered in November, 1989, for completion in about August, 1990.

USC has all funds in hand to complete conversion of the OSPREY. NSF has agreed to fund a 30-day scientific project and scientific shakedown in 1989. UNOLS Council consideration of OSPREY (probably to be renamed) for designation as a UNOLS ship is a part of the overall review of UNOLS vessels and designations. (See later discussion in this report.)

Dick West, NSF, provided information on the status of the BERNIER. The ship has been purchased by L-DGO/Columbia University, and is in Fall River, Massachusetts. NSF has agreed to support \$6.5 million purchase, \$3.5 million conversion and \$1.4 million interest. The NSF schedule is \$2.4 million each in 1989 and 1990, and \$1.3 million each in 1991, 1992, and 1993. Plans are to complete the conversion and become operational in late 1989. As part of the plan for converting the vessel to general purpose, L-DGO had proposed a NECOR-based advisory committee. At NSF's urging the advisory group has been broadened to include experienced ship users from West Coast UNOLS institutions. In UNOLS Council discussion of the BERNIER, it was noted that NECOR had advised L-DGO to give careful consideration during the conversion to general purpose use, since recent use of the CONRAD had been increasingly general purpose, for non-L-DGO scientists.

#### **RVOC**

Jim Williams, RVOC Chair, advised the Council on a number of issues active in RVOC and important to UNOLS operations.

The USCG has issued their final rules on Programs for Chemical Drug and Alcohol Testing of Commercial Vessel Personnel, 46CFR Parts 4,5, and 16, (effective December 21, 1988). These regulations, which do apply to most or all UNOLS vessels and institutions, specify testing of crews of vessels at pre-employment, within a random sampling program, following any serious incident and with reasonable cause. The last two categories could involve scientists. Some parts of the program begin immediately, and the entire program depending on crew population must be in place by June or December 1989. The testing

program additionally is relevant to Coast Guard rules proscribing the use of alcohol on ships (in effect since January, 1988). RVOC (Jim Williams and others) has been following the development of these rules closely, and is providing information to UNOLS operators. UNOLS institutions must comply, or else papers for all of their licensed and documented personnel are at risk and individual operators are in jeopardy through Unseaworthiness and Jones Act interactions. Formulating and implementing the required program will be complicated and costly, and it seems unlikely that any UNOLS institution could devise an adequate one without outside help and advice.

UNOLS ships and institutions will face a number of special problems related to their modes of operation and science policies. RVOC may recommend that UNOLS adopt a policy wherein scientists are uniformly notified of their responsibilities under the program and asked to recognize those responsibilities.

RVOC is updating UNOLS Safety Standards, but at the Council meeting the Standards were still in preliminary draft, had not been distributed to or endorsed by RVOC as a whole, and were not ready for UNOLS Council evaluation. Material from the NSF-sponsored symposium on Diving Safety (see Appendix II) had not been received; the UNOLS Council, and, informally, Jim Williams for RVOC, agreed that when a useful package is available the RVOC Safety Standards Committee should consider the material for inclusion in UNOLS standards.

Discussion of a plan to implement the RVOC lay-up letter was brief. The Advisory Council working group led by Bob Dinsmore had exchanged correspondence, but had not met. Because of Bob Dinsmore's expanded responsibilities (program manager, KNORR/MELVILLE renovation) and because of interaction of lay-up policy and scheduling, George Shor was asked to take the lead for the working group (now George Shor, chair, Jack Bash, Bob Dinsmore and Tom Malone). At the Council's suggestion, George agreed to request that each UNOLS operator develop and file a schedule for major overhauls/renovation (e.g. mid-life refits or other extraordinary refits). This could at least form a basis for determining the costs of implementing the lay-up policy. Keith Kaulum urged that the Council be careful to not adopt a policy doomed to fail because it cost more than agencies could afford or demanded advanced commitments that agencies could not make.

George Grice, WHOI, had recently written the UNOLS Chair concerning **sexual discrimination and sexual harassment** on ships in the UNOLS fleet. A study on equity issues commissioned by WHOI had alleged disturbing levels of sexual discrimination and harassment on some WHOI and other UNOLS ships. Dr. Grice passed portions of the report to UNOLS simply as information. He did, however, suggest that UNOLS might want to take the issue under consideration since it might be appropriate to take some UNOLS-wide action (e.g. community-wide exchange of information on

experience, institutional policies, responsible authorities, generation of "standard" policies and practices).

In the Council discussion it was noted that all UNOLS institutions have policies and procedures on sexual discrimination, harassment and related problems. Informal assessments are that conditions aboard UNOLS ships have improved materially since serious events of several years ago. The subject is a serious one, and continuing training, scrutiny, etc. is prudent. The Council agreed that should UNOLS-wide action be indicated, first steps (assessing the climate on UNOLS ships) should be through RVOC. Jim Williams, RVOC chair, agreed for RVOC to gather preliminary information.

#### **ALVIN Program**

Feenan Jennings, ALVIN Review Committee Chair, reporting on the ALVIN schedule for 1989, noted that ALVIN is in overhaul until about June, and ATLANTIS II will do non-ALVIN work in the Atlantic March through July and September-November. Only three ALVIN projects will be undertaken, in August-September and November-December, all in the north Atlantic.

The ALVIN overhaul is going well, and no problem is foreseen in completing work in time for sea trials scheduled for mid-July to August.

The ALVIN planning meeting held December 4, 1988 was highly successful. There was an excellent turnout of potential investigators, with intense interest in the ALVIN program, primarily in the Pacific. Preliminary notices of interest in using ALVIN requested at the meeting:

- 7 off northwest U.S.  
(Gorda, Juan de Fuca, Escanaba, Oregon-California margin),
- 5 in Guaymas Basin
- 4 on EPR (mostly south of equator)
- 2 off Chile in western Pacific
- 1 in Monterey Canyon
- 3 on Mid-Atlantic Ridge (probably for 1991-1992)

Based on information from the 1988 and earlier workshops, the ARC issued the **ALVIN FLYER**, soliciting Dive Requests for 1990 (Appendix IV, to be distributed March, 1989). The Flyer forecasts ALVIN/ATLANTIS II entering the Pacific in early 1990 and remaining there until late 1991. Dive requests are solicited for any area in the Pacific.

The UNOLS Council asked if there were any problems in the ALVIN program, especially concerning personnel or instrumentation. Feenan Jennings noted that some recent users had expressed concern that the traditional, very high level of ALVIN-group competence might be eroding. The ALVIN Review Committee will continue to monitor that problem, but notes that the WHOI operators (the WHOI Submersible Program) are well aware of the situation and have just recently modified their personnel structure to address potential problems.

There has been concern for several years that ALVIN navigation on the sea floor should be improved. Solutions are not yet in hand, but sponsoring agencies and the operators have agreed on an approach to improving the system. (Reliance would be placed on as-yet-not-selected commercial vendors.)

The ALVIN Review Committee had earlier endorsed an **ALVIN-25th Anniversary Symposium** and a related WHOI proposal. NSF, NOAA and ONR, ALVIN sponsoring agencies, had rejected the first WHOI proposal, but according to NSF representatives, had agreed to a scaled-back version for a symposium to be held in late 1989.

The ARC had also recommended action to improve archives for ALVIN program material, especially to archive and selectively reproduce film products that are in danger of disintegrating and being lost. A WHOI proposal was submitted but was rejected by the agencies with informal guidance for resubmission. A revised proposal had not been received.

The Fleet Improvement Committee had requested advise of the ALVIN Review Committee on two issues: the need within the UNOLS fleet of a second ship outfitted to support ALVIN and suggestions for a new chair for the FIC working group on **Science Mission Requirements for a Submarine Research Vessel**.

Feenan Jennings had responded for ARC recommending that a second ship outfitted to support ALVIN was not warranted, and suggesting that in the near future any requirements for additional ALVIN ship support should first consider either Harbor Branch or the LANNIE CHQUEST.

Several names were suggested to evaluate requirements for a research submarine.

#### **Fleet Improvement Committee**

**George Keller, UNOLS Chair, had attended the February, 1989 Fleet Improvement Committee meeting and reported on recent FIC activities.**

Spies and Fisher are developing science mission requirements for a FLIP-II. An advanced draft will be out for community review in April. Preliminary estimates are for a construction cost of \$15 million.



Fred Spiess is also leading the effort toward a preliminary design for a large, medium-endurance research vessel. The design, by Glosten Associates, is based on the Scripps-Glosten conceptual design commissioned under the UNOLS Fleet Replacement Committee.

A workshop on the existing CAPE class research vessels (CAPE HATTERAS and POINT SUR) had been organized and conducted by Tom Johnson, Duke/UNC. A preliminary report has been submitted to FIC. Some conclusions: the ships are not identical, have different modes of operation and different operational requirements. A study should be made on the effectiveness of stretching one or both. The need for more berths is a common request.

The FIC discussed both the BERNIER and the AGOR-23. It is evident that L-DGO is genuinely committed to converting BERNIER to an effective general-purpose vessel albeit with strong MCS capabilities. Information on AGOR-23 was as reported to the UNOLS Council earlier.

The FIC is refining their earlier concept study for an intermediate (about 150 ft. L.O.A.) SWATH. The focus of the effort is to improve the vertical acceleration problems experienced in the first design by examining alternative strut designs.

The Committee is also acquiring (free) a 100 ft. L.O.A. SWATH design from a commercial firm.

The Committee's examination of refit needs for intermediate vessels is awaiting the final report from Dick Barber's workshop and committee study.

The FIC, in examining the potential for high latitude research vessel capability notes:

- The Navy has preliminary plans for an ice-capable research vessel for the Arctic in FY 1992,
- NSF/DPP'S RVIB (research vessel, with ice-breaking capability) for the Antarctic is out for proposals,
- The Coast Guard's new icebreaker, in the FY 1990 budget, has oceanographic capabilities. In addition, the Coast Guard is improving geological and oceanographic support capabilities on their POLAR class icebreakers. Plans were reviewed by an FIC working group who endorsed them as providing effective improvement.
- Finally, the "small, ice-capable research vessel" for which the Tom Royer working group is developing science mission

requirements and concepts has evolved into an intermediate to large ship of about 195 ft L.O.A. and costing an estimated \$75-100 million.

Bill Barbee briefly reviewed CG plans for an oceanographic upgrade on the POLAR STAR.

### Ship Scheduling

George Shor, Ship Scheduling Chair, noted that UNOLS institutions were currently gathering Ship Time Requests for 1990. As is not unusual for late February, it was not yet clear whether science program requirements would be high or low, or whether UNOLS fleet use would be heavy or light. It was noted that MELVILLE would be in rehab for most of 1990 and AGOR-23 will not yet be in the fleet.

Because of this year's schedule for submission of Ship Operations proposals and NSF'S schedule for science proposals and review panels, ship scheduling meetings should be in the second weeks of July and September.

In setting dates for ship scheduling the UNOLS Council reviewed the calendar for all UNOLS meetings in 1989:

Meeting	Dates	Place
ALVIN Review Committee	June 21,22,23	Woods Hole, MA
Fleet Improvement Committee	July 11, 12	Washington, D.C.
Ship Scheduling	July 12	Washington, D.C.
UNOLS Council	July 13,14	Cambridge, MD
UNOLS Council	Sept 13	Washington, D.C.
Ship Scheduling	Sept 14	Washington, D.C.
UNOLS Annual	Sept 15	Washington, D.C.
RVOC	Oct 3,4,5	Miami, FL

Bill Barbee briefed the Council on his February 16 visit with Ferris Webster, Jim Crease and Katherine Bouton, all University of Delaware, to discuss an effective means of entering UNOLS ship schedules via telemail into UDelaware's OCEANIC (formerly SONICS) ship schedule information system. In addition to the two-year long UNOLS and Advisory Council interest in an automated system for UNOLS ship schedule information, NSF had recently asked the UNOLS Office to negotiate with the University of Delaware for UNOLS fleet participation and input into an international ship schedule database using OCEANIC.

Both objectives can be met by a single University of Delaware proposal to UNOLS, and NSF indicates that they might be willing to support such a proposal.

At about the same time, Robert Heinmiller, OMNET, submitted a letter proposal to UNOLS through the FIC for a somewhat parallel ship scheduling information system (Appendix V, Heinmiller to Gorsline).

The Council instructed the executive secretary to submit the University of Delaware proposal for Council review. Bill Barbee was also asked to contact Heinmiller to determine if OCEANIC could be used as the database in the system he proposed and if the two systems could be merged.

George Shor will chair a group to include Larry Atkinson, Gary Brass and Jeff Fox to review the University of Delaware proposal. Two questions were posed explicitly by the Council:

1. Will either or both of the scheduling information systems reflect the dynamics of real life wherein ship schedules evolve from tentative and imprecise to final, precise operational schedules?
2. Will either or both systems allow a user to dump the entire database for his leisurely (off-line) perusal and manipulation? (On-line manipulation might be too expensive for many users.)

#### **Clearances for Research in Foreign Waters**

Tom Cocke, Office of Marine Science and Polar Affairs, Department of State, briefed the Council on efforts to acquire an additional person to assist with the foreign clearance process in his office. (See Appendix VI.) It was noted that there had been lengthy discussion on this matter, especially between Department of State and NSF. NSF will give consideration to supporting an additional person.

The Council asked concerning current problems on clearances for research in foreign waters. Mr. Cocke responded that the most recent problem was with Senegal. (The demand was made that the ship involved pay the observers placed aboard.) Mexico remains the most difficult situation, reflecting the large number of clearance requests there. A general problem is in reaching agreements on what is research, what is surveying or what is ancillary to navigation.

The Council discussed with Bill Barbee the Lee Stevens/JOI concept for a clearance clearinghouse. Lee Stevens had recently advised the UNOLS Office that he (for JOI) did not intend to submit a proposal to UNOLS for a clearinghouse. Rather, he expected to propose to revise the **Handbook for International Operations of U.S. Scientific Research Vessels**. (Mr. Stevens is author of the current edition.) The Council discussed the need for and background on the Handbook but deferred any decision until a proposal was submitted.

## UNOLS Charter

A copy of the UNOLS Charter, as adopted in principle by UNOLS on October 28, 1988 and revised to reflect changes suggested by UNOLS members, had been distributed to the Council. These changes and their objectives, are outlined below:

- Page 2, Paragraph 4b. Adds requirement that UNOLS Chair consult with UNOLS Council in appointments to committees.
- Page 3, Paragraph 4c. An editorial change to make clear the membership of the UNOLS Council. No substantive change to October 28, 1988 version.
- Page 3, paragraph 4f. Principle change is to add language such that [Permanent or standing committees shall be established by vote of UNOLS members; then formed by the UNOLS Chair in consultation with the UNOLS Council. Special purpose or temporary committees may be established and formed by the UNOLS Chair and Council on their own authority.]

The objective here was to retain UNOLS membership control over the kind and number of permanent committees, whose chairs become ex-officio members of the UNOLS Council.

During discussion, Jim Williams raised some concerns about Annex IV, paragraph 4, on Membership in RVOC. The Advisory Council devised changes to that paragraph establishing criteria for RVOC membership that are in accord with RVOC by-laws.

The UNOLS Council endorsed the UNOLS Charter with the minor modifications noted above.

Since the Charter had been "adopted in principle" by UNOLS at the October 1988 meeting and the changes herein resulted then from UNOLS Member suggestions, the UNOLS Council resolved to operate under the February 28, 1989 version immediately. The Executive Secretary was instructed to distribute the Charter, together with a brief explanation of the minor changes, to UNOLS Members, Committee Members and sponsors. The UNOLS Charter will be introduced for formal adoption by the UNOLS membership at their September 15, 1989 meeting.

The Charter calls for an Executive Committee of the UNOLS Chair, UNOLS Vice Chair and two additional individuals selected by the Council from among their elected or ex-officio members.

The Council selected Robert Knox, Scripps and Art Maxwell, University of Texas, Austin, to form the Executive Committee together with George Keller, UNOLS Chair and Tom Johnson, UNOLS Vice Chair.

The Council decided to review UNOLS membership and the list of UNOLS vessels (and candidates) before offering their recommendations on membership to UNOLS or making Council designations of UNOLS vessels. A working group was formed to undertake the reviews:

Art Maxwell, Chair  
Gary Brass, Member  
Jim Kennett, Member  
Tom Malone, Member

Basis for the reviews will be the current lists of UNOLS Members and of Research Vessels operated by UNOLS institutions. The Council also agreed to defer their consideration of the one application on hand for UNOLS operator/vessel designation until the working group had reviewed that application as a part of their overall review.

#### **Policy for the use of radio-isotopes on UNOLS facilities**

**Tom Malone, University of Maryland, had been heading a group on UNOLS Policies and Procedures for the Transport and Use of Radioactive Substances.** The group had met (February 3) and formulated draft recommendations for a policy (Appendix VIII). After Tom Malone had summarized his group's recommendations, **the UNOLS Council endorsed the draft and urged that similar final recommendations be prepared for adoption by UNOLS.** One aspect of the process will be for Malone and his group to compile relevant extracts from the recommendations for inclusion in the **UNOLS Safety Standards** presently being reviewed and updated by RVOC. Dr. Malone agreed to submit such input.

George Shor noted that the recommendations presented only briefly covered the issues of the control or banning of radio-isotope use on selected UNOLS vessels, the central emphasis in earlier UNOLS position papers. The Council agreed that the current paper did not emphasize that issue, but noted that their present concern had been focused intentionally on inter-institution, pre-cruise and post-cruise problems and on generic safety/risk problems.

#### **Remarks from Funding Agencies**

**RADM Austin Yeager, Director, Office of Marine Operations, NOS, NOAA was attending his first UNOLS Council meeting.**

He noted that the UNOLS and NOAA fleets face many common operational problems, especially pertaining to enforcement of health standards for vessel personnel, alcohol and drug testing and, of course, funding. He welcomed the opportunity to participate.

NOAA continues to have inadequate funding to operate all of their ships and to fill all of their program ship requirements. They have laid up six ships in the last two years. In 1988 NOAA was

asked to testify before the House Merchant Marine and Fisheries Committee, justifying the lay ups, and were questioned concerning their lack of a fleet replacement plan. Soon thereafter Representative Walter Jones, HMMFC Chair, introduced a bill to modernize the NOAA fleet, calling for the replacement of six ships, construction of seven new ships and refit of others. The Bill is in the new Congress, and may pass, thus providing authorization for the program. NOAA is not as confident that appropriations will follow, however.

The Administration's 1990 budget proposes an additional \$6.3 million cut in ship operations.

The Office of Marine Operations, NOAA Corps and Office of Aircraft Operations are operating under a reorganization that combines them as one organization on the NOAA Administrator's staff.

Keith Kaulum, reporting for ONR, noted that less of his division's \$5.5 million ship operations funds had been spent in 1989 than had been in 1988. Although ONR is concerned and had considered changing their formula for watching science program funds they decided not to change the 55%-45% ratio, at least for another year. ONR believes that science program managers are being educated, and that the process is moving to meet ONR objectives: to increase effective program use of their ships and to provide better ship support, especially to Navy-owned ships.

Art Maxwell, Gary Brass and George Shor all commended ONR on their ship operations funding program, noting that there seemed to be more funded projects for 1990 and program managers were becoming more open to projects requiring ship time.

Bruce Malfait presented an NSF report covering ship construction and Replacement Plans, NSF Ship Status and Operations, and Budget Information for FY-1989 and FY-1990. (Appendix VIII).

Long-range plans for the Division of Ocean Sciences, adopted in 1987, called for two large ships and a smaller ice-capable ship during 1990-1994. These plans are complementary to ONR plans for the construction of two large ships (AGOR-23 and AGOR-24) and modernization of KNORR and MELVILLE. The combined ship acquisition programs are consistent with the UNOLS Fleet Replacement Plan of 1986.

Currently NSF/OCE is supporting Lamont-Doherty Geological Observatory of Columbia University in replacing R/V CONRAD with a renamed R/V BERNIER. BERNIER is being converted for a general-purpose research vessel with special capabilities for MG&G, multi-channel seismics and high latitude research.

Further plans call for the acquisition of another large general-purpose research vessel for Global Geoscience requirements and a

smaller ice-capable ship for Arctic research needs. Construction of the two would be in 1991-1996.

Two replacement small ships and upgrades-midlifes for most intermediates also have high priority.

NSF/DPP continues with plans to acquire a research vessel with icebreaking capability (RVIB). NSF's FY-1989 authorization gave preference to an American built vessel if costs would not be more than 50% higher than for a foreign built one. As a consequence DPP's civilian contractor, ITT/ANTARCTIC SERVICES, cancelled an earlier procurement then nearing award. A revised RFP, conforming to the authorization language is near release. Technical requirements are essentially as before, calling for a ship of about 300 feet L.O.A., 12,000 horsepower, able to break three feet of level ice at three knots, accommodate about 37 scientists, have about 3,000 square feet of working deck area and 4,000 square feet of laboratory space and be outfitted with a modern suite of oceanographic gear, including swath mapping and MCS.

Tentative schedule is for award in late 1989 and operations in 1992 at annual cost of \$12-15 million.

Information was provided summarizing NSF's budgets for 1988 and 1989, and comparing with 1990 estimates. Further comparison between 1989 and 1990 together with detail for the Ocean Sciences Division is shown in the table below:

#### THE FY 1989 AND 1990 NSF BUDGET

	88-89 Increase	FY 1990 Request
<b>RESEARCH AND RELATED</b>		
Math & Physical Sci.	6.6%	+10.0%
Engineering	8.7%	+12.8%
Bio., Behavioral, Soc.	6.0%	+11.7%
<b>GEOSCIENCES</b>	6.9%	+10.0%
Comp & Inform. Sci.	23.6%	+25.7%
Sci., Tech. & Int.	16.0%	+15.4%
U.S. ANTARCTIC PROGRAM	5.6%	+18.9%
SCI. AND ENGINEERING ED.	23.9%	+11.1%
<b>TOTAL FOUNDATION</b>	<b>9.8%</b>	<b>+13.9%</b>
In <b>GEOSCIENCES</b> (Earth, Atmospheric, Ocean, Arctic Sciences)		
Requested Increase	\$30M (10.0%)	\$31.0M (10%)
Actual Increase	\$19.6M (6.9%)	
In <b>OCEAN SCIENCES</b> (MG&G, Bio, Phys, Chem, Facilities, ODP)		
Requested Increase	\$11.1M (8.2%)	\$6.7M (4.1%)
Actual Increase	\$11.1M (8.2%)	

OCEAN SCIENCES DIVISION DETAIL

OCEAN SCIENCES DIVISION	\$	<u>FY 1988</u>	<u>FY 1989</u>	<u>FY 1990</u>
		135.3 M	146.2 M	152.9 M
Ocean Sciences Research		67.2 M	71.2 M	74.7 M
Ocean Drilling Program		30.9 M	31.4 M	32.9 M
Oceanographic Facilities		37.2 M	43.6 M	45.3 M
Facilities Detail				
Operations				
Ship Operations		24.9 M*	26.5 M*	27.5 M*
Alvin, Aircraft, etc.		2.0 M	1.3 M	2.0 M
Marine Techs		3.5 M	3.4 M	3.4 M
Acquisition and Development				
Science Instruments		1.8 M	1.6 M	1.6 M
Shipboard Equipment		1.0 M	.9 M	.9 M
Technology Development		2.8 M	4.8 M	4.8 M
AMS Center		0 M	1.8 M	1.8 M
UNOLS, ACQ, MISC		1.2 M	3.3 M**	3.3 M

\* Additional \$1.5M provided by Ocean Drilling Program

\*\* For acquisition of BERNIER

Dr. Robert Halley, Deputy Chief, St. Petersburg Field Office, USGS, described a new National Center for Coastal Geology just established in St. Petersburg under a joint USGS-University of South Florida program. The Center, to employ about 20 professionals, will emphasize studies on coastal resources, erosion and pollution. Much of the work will be cooperative with states, as in continuing programs with Louisiana and Illinois. They expect to support work at various universities.

Bill Barbee had represented UNOLS as an observer at the February 17 meeting of the Federal Oceanographic Fleet Coordinating Council (FOFCC). The meeting had centered around plans and activities affecting the combined Federal Oceanographic Fleet. Ship acquisition plans were presented by the Coast Guard, Office of the Oceanographer (including ONR programs for the academic fleet) and the National Science Foundation. NOAA reiterated that they had no active plans for ship acquisition. The Oceanographer of the Navy led a strong plea by the FOFCC that support be generated for revitalizing the NOAA fleet since it is a vital component of the federal fleet.



In the report requested of UNOLS on its fleet improvement plans, it was first pointed out that UNOLS plans are, in effect, recommendations to the funding agencies, NSF and ONR, and these agencies have the true ship acquisition/fleet improvement programs. UNOLS is impressed that ONR and NSF have been very successful in programming the large new ships recommended in the 1986 **UNOLS FLEET REPLACEMENT PLAN**.

Although a revised **UNOLS FLEET IMPROVEMENT PLAN** will not be released until later in 1989, indications now are that the new plan will refine and extend the 1986 plan rather than change it drastically. Perhaps the major change will be that the new plan will more fully consider intermediate and small ships, and a schedule will be included for mid-life modernization (upgrade) of ships in all size classes.

UNOLS' continuing interest in SWATH ships was emphasized, the recent rejection of NavSea's design for a large one notwithstanding.

#### **UNOLS NEWS**

**Tom Malone, who had been UNOLS NEWS Editor since July, 1985, asked to step down.** His reasons were that he had recently gained other pressing obligations, and could no longer give UNOLS NEWS the attention it deserves. After some discussion **George Shor agreed to be editor, assisted by Larry Atkinson.** The next issue of the News will be in April 1989. The Council suggested several articles for the new issue.

Concern had been expressed by Council members and other ship users over the **Ship Operations, 1989** article in **UNOLS News, v.5, n.3, December, 1988.** According to that article 1989 ship use was low, because "...ship demand from science projects funded by both NSF and ONR is down." Although it was not the intent in the article, that statement was interpreted by some as implying that requests from P.I.'s for ship use (and for science projects requiring ships) were down. Clearly, that was not the case, and not the intent in UNOLS News.

**Discussion of UNOLS Cruise Assessments was not held.**

#### **UNOLS Council Agenda for 1989**

The only issue raised in addition to those discussed earlier in these minutes concerned the need for a more convenient means for P.I.'s to get information on ships from other UNOLS institutions. In addition to information on individual ship characteristics (which generally is available) P.I.'s need, at various times, information on ship layouts, navigation, communication and data logging facilities, availability and costs of marine technicians and of shared use equipment. Much of this information is available for an individual ship after one has been selected.

Marine operations staffs and ship user handbooks fill most needs. But there is no single, fleet-wide source as is often needed when preparing budget submissions for science proposals or to aid in selecting a candidate ship.

Dick West, NSF, suggested that UNOLS publish a **CONSUMER'S GUIDE TO UNOLS SHIPS**. A first cut would include a compilation of the equipment sections of all users manuals, augmented with information on equipment and costs compiled earlier in the UNOLS Office. **The Council accepted the suggestion and instructed the Executive Secretary to initiate efforts toward a Consumer's Guide to UNOLS Ships.** Larry Atkinson will provide oversight.

It was also suggested that all UNOLS marine operations departments exchange ship users manuals and keep an up-to-date set on file. This would comprise an information source for P.I.'s at each UNOLS institution.

**The UNOLS Office had earlier been instructed to initiate either a clipping service or a clipping service/newsletter on proposed rulemaking, legislation, international conventions, etc. with potential effect on research vessel operations.** Primary coverage would be of the Federal Register, Coast Guard and Safety Board publications, etc.

Two tentative proposals had been received: for a clipping service at about \$10,000/year and for a newsletter, published bimonthly at about \$30,000/year. **The UNOLS Council instructed that the clipping service be pursued and implemented.**

George Shor asked if the submission of ROSCOP forms is still required of all UNOLS cruises. If it is, can the form be redesigned to be more useful? Both NSF and UNOLS representatives responded that the form is still required (under interagency agreement with NOAA). Contact was made with NOAA during 1988 concerning ROSCOPs. NOAA still wants and uses the form, although they recognized that it could be more useful if it were redesigned to promote more thoughtful completion. Although contacts were established between NOAA and UNOLS, there has been no follow up. **The UNOLS Office was instructed to pursue the matter.**

**The Council commended Dr. Peter Betzer and the University of South Florida for graciously hosting the meeting.**

**The meeting was adjourned at noon on February 28.**



# UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

**AGENDA**  
**UNOLS Council Meeting**  
**February 27, 28, 1989, 8:30 a.m.**  
**Marine Science Laboratory Conference Room**  
**University of South Florida**  
**St. Petersburg, Florida**

**Call the Meeting - George Keller, Chair**

**Accept Minutes of October 26, 1988 Advisory Council Meeting - Distributed to Council**

**Issues before the UNOLS Council:**

**Fleet Management.**

1. **Laboratory-grade at-sea research facility.** The Council (10/26/88 meeting) addressed an earlier request from Eric Hartwig to determine the community need for a stable platform for research at sea, and to develop a technological response to those needs. R. Knox was to develop a letter proposal for a means to quantify community interest/need. Subsequent correspondence is attached. Status of effort and discussion.
2. **Ship acquisition for UNOLS fleet; UNOLS community interest in SWATH ships.** A. Keith Kaulum will give a Status Report on plans/budget for AGOR-24. George Keller will lead discussion based on communications among ONR, Office of the Oceanographer and UNOLS re: AGOR-24 and SWATHS. B. Status of design/construction of AGOR-23 (Kaulum, others) C. Bids, contract, etc. for renovation of AGOR-14, 15. (Dinsmore, Knox, Shor, Williams). D. OSPREY. OSPREY conversion will be essentially completed during 1989 (see attached correspondence). NSF has agreed to fund in 1989 a scientific shakedown cruise based on at least one NSF-funded science project. UNOLS Advisory Council at an earlier date advised USC that they would consider OSPREY for UNOLS designation when it became operational. E. Review of BERNIER acquisition and discussion (see NSF/OCE letter of Dec 8, 1988).
3. **RVOC** A. Jim Williams, RVOC Chair, will advise on USCG Programs for Chemical Drug and Alcohol Testing of Commercial Vessel Personnel and will introduce a tentative proposal for developing a responsive UNOLS program (See Fed. Register v.53, n.224, attached and teletail message). B. The RVOC subcommittee on Safety Standards (Bill Coste, UHIG, Chair) will submit final draft of revised Standards to RVOC for approval in Jan/Feb 1989. Next step will be UNOLS Council approval (in July?). UNOLS Office support. NSF has sponsored a symposium on Diving Safety, report for which may be appropriate re: UNOLS Safety Standards (see L.Clark message attached). C. UNOLS Council Subcommittee on the RVOC lay-up letter (Dinsmore, Shor, Malone and Bash) will report. Council to consider their scheme for a long-term rehabilitation and renovation schedule for ships in the UNOLS fleet.
4. **ALVIN Review Committee.** Feenan Jennings, ARC Chair, will review the ALVIN Planning meeting (Dec 4, 1988) and the ALVIN flyer inviting Dive Requests for 1990. Additional issues, need for a second UNOLS vessel capable of handling ALVIN and the FIC subcommittee on research submarines are noted in FIC letter of 3 Jan 1989.
5. **Fleet Improvement Committee.** Worth Nowlin, FIC Chair or Bob Dinsmore and George Keller will review FIC activities and issues (see minutes of October, 1988 meeting and 5 January 1989 FIC budget letter).
6. **Ship Scheduling.** A. George Shor, Ship Scheduling Chair will review scheduling issues, procedures and discuss 1989 meeting calendar. B. Bill Barbee will review meeting with University of Delaware representative on SONIC-UNOLS ship scheduling bulletin board interface and, etc. Council action/recommendations.
7. **Clearances for Research in Foreign Waters.** A. (See correspondence among UNOLS, DOS, NOAA.) Subsequent discussions/agreements among NSF, DOS, UNOLS have modified situation; NSF will probably fund position at DOS to support clearance process. Lee Stevens/JOI may or may not submit a proposal to UNOLS for the clearance clearing house concept. If Council were to review such a proposal favorably they would have to solicit additional funds from agencies.
8. **New Charter and Transition Process.** A. A few suggestions were received concerning the new UNOLS Charter. The suggestions and a charter reflecting appropriate changes are attached. UNOLS Council action would be to accept the changes, so that the adopted Charter can be distributed to members. B. A paper on the transition process is also attached. C. UNOLS Council should designate UNOLS vessels. (Review current list; possible changes to consider: FRED MOORE, OSPREY, WEATHERBIRD.)

9. **UNOLS Radioactive Isotopes in UNOLS.** Tom Malone will have held a meeting of the working group on UNOLS Policy/Procedures for the Transport and Use of Radioactive Substances. Report and recommendations.
10. **Remarks From Federal Funding Agencies.** Information from funding agencies (NSF, ONR, NOAA, and maybe DOE, MMS and USGS) on science and operational support for 1989, 1990; other items not covered elsewhere in the agenda. Bruce Malfait, Dick West, NSF, Keith Kaulum, ONR, RADM. Austin Yeager and Elizabeth White, NOAA.
11. **UNOLS News.** The last issue (v.5, n.3, December, 1988) is attached. Comments or suggestions. Contents for the next issue.
12. **Cruise Assessments.** Bob Dinsmore will summarize Cruise Assessments received (third and fourth quarter, 1988).
13. **UNOLS Council Agenda, 1989; Council members involvement.** Project issues of importance to UNOLS during 1986, develop a responsive agenda, and divide the load to achieve broad Council member participation. Some issues: Crosscutting federal agency science (oceanography) budgets, participation in Council on Ocean Affairs (see OSN attached), UNOLS Committee (ARC, FIC, RVOC, Ship Scheduling) activities and issues, cruise assessments, UNOLS News, marine technicians and shared use equipment (with RVOC), Group Insurance. (Response to the Dolly Dieter/Dennis Nixon report to UNOLS of October 28, 1988, together with funding agency positions.)
14. **UNOLS Office Procedures and Activities.** UNOLS Office practices and activities rarely receive formal review. Some potential activities need Council evaluation before action is taken. An opportunity for Council oversight. (Items: Payment for teletail, Publication of safety standards and training manual/aids, publication of revisions to Handbook for International Operations of U.S. Research Vessels, clipping service/advisory service for marine regulations, sponsorship from aquaria, UNOLS Directory, List of Vessels, etc.



February 24, 1989

To: UNOLS Council

From: R. A. Knox

Subj: Proposed response to ONR request for advice concerning scientific need for laboratory-grade, at-sea research facility

At the October meeting I was given the task of drafting a Council response to the ONR request to sound the scientific need for a "laboratory-grade, at-sea research facility," with the idea that this response would say how UNOLS would act on this request. The following is my proposal, offered for Council consideration at the February, 1989 meeting.

#### I. BACKGROUND

It has become clear that (at least) three different, but related, ideas about novel non-ship at-sea research facilities are being discussed in the oceanographic community, and have achieved varying degrees of definition and support. These are:

A. FLIP-II. This idea is driven by the desire to carry on and improve the sort of research that FLIP has done so well for so many years, recognizing that the end of FLIP's useful life is drawing near. FIC has discussed this need at its October 1988 meeting and has encouraged concept designs to go forward.

The essence of the FLIP concept is to minimize the response of the platform to seas and to minimize the obstruction that the platform presents to wind and water flow at the sea surface. The former consideration enhances performance of various acoustic and physical oceanographic sensors, and the latter enhances the usefulness of the platform as a base for local air-sea interaction studies, by minimizing platform-induced perturbations of the flow. These considerations point strongly in the direction of a spar buoy, like the present FLIP. The ability to move the platform handily from place to place is a secondary consideration, and the ability to carry large payloads, laboratory spaces, or scientific parties is of lesser priority.

B. Laboratory-Grade, At-Sea (LGAS) Facility. The form of such a facility is not so well-defined as for FLIP-II. A highly heterogeneous complex of activities is envisioned, ranging from studies of the hydrodynamics of torpedoes in real seawater to complex molecular biological studies that require immediate analysis of samples in complex laboratories to physiological studies of large animals in extensive platform-based enclosures to elaborate investigations at the surface for connection to remote sensing studies. Some common aspects can be discerned, however:

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 repetively and in parallel - a multiple time series. The laboratory space demands are significant, 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 I-A and I-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

A brief overview of some current activities relating to FLIP-II, DSO, and LGAS Facility is in order, so that advice to ONR about determining scientific needs for the latter can be given in an informed way.

A. FLIP-II. Planning is going forward. FIC has encouraged a concept design, and a naval architect (Glosten Associates) will work with the interested scientific community. There seems to be no need for UNOLS to do more than to encourage this activity to continue.

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 how to obtain this clarification was the charge given to UNOLS.

### III. RESPONSE TO ONR

In communication to UNOLS (E. Hartwig letter of December 27, 1988 to G. Keller) ONR has asked that UNOLS assess the scientific need for an LGAS Facility and has suggested that it do so by the mechanism of a broad invitation for written input, which a UNOLS subcommittee would then review, fashion into a report, recirculate for comments, and then finally submit to ONR. The interlocking nature of the three kinds of novel platforms noted above, and the fact that two of them already have planning steps in motion (section II) suggests an alternate approach might be more fruitful. This would be for ONR to augment the NSF DSO Planning Grant (assuming it is awarded) so that a wider community of scientists could attend the first of the two workshops. The terms of the workshop then could include discussion of the degree to which both the time series program of the DSO and the activities of an LGAS Facility could coexist, and even reinforce each other to their mutual benefit, as mentioned in section I-C. A workshop could be a more effective way to pin this overlap down, though it undeniably would cost more than the collection of individual inputs as suggested by ONR. The capabilities of FLIP-II are also relevant, as already noted - it may be that some of what could be done on an LGAS Facility or on a DSO could be done on FLIP-II and vice versa.

### IV. RECOMMENDATION

A. UNOLS should suggest that ONR join forces with NSF to fund a joint DSO/LGAS Facility workshop along the lines mentioned in section III, with the primary objective of identifying the full range of research that could be carried out without detriment, and even with positive mutual benefit, on a common facility. Participation by the FLIP-II community should be encouraged, so that the capabilities all the novel platforms could be explained and matched up against the requirements of the various research interests.

B. If ONR declines Recommendation A, then UNOLS should offer to carry out the same assessment but without a workshop, using the "mail-in" approach originally suggested by ONR. A small review and report-writing committee will be needed (3-4 persons); it should be established by the UNOLS Chairman, in consultation with ONR.



Posted: Tue Jan 17, 1989 8:29 AM PST  
From: L.CLARK  
To: UNOLS.OFFICE  
CC: A.Maxwell, R.West  
Subj: Safe Diving Workshop

Msg: FGIJ-3853-7524

Bill: Last year NSF and NOAA jointly sponsored a workshop entitled "Guidelines for Safe Diving from Ships at Sea." This was organized and conducted by Dr. Leon Greenbaum, Executive Director, Undersea & Hyperbaric Medical Society in Bethesda. John McMillan initiated this in response to several recent diving accidents. As best I can reconstruct, the intent was to augment the UNOLS Safety Standards, or produce a companion for scientific diving from ships at sea.

We have received a bibliography on scientific diving procedures and practices, several papers that were submitted to the workshop by scientists and diving officers and an unedited transcript of the workshop discussions. I do not feel that this is a particularly useful package to users or to circulate in its present form.

I have approved a further effort to produce an edited useful version of the workshop discussions. I anticipate that this edited version will be attached to the existing papers that were submitted to the workshop and the bibliography and sent to NSF in a form that may be reproduced and distributed to the ship operations and scientific diving community.

I'm informing you of all this for two reasons. If there is any interest at all, the proceedings will have to be duplicated and distributed. And when I mentioned this workshop and the eventual proceedings at the 1988 RVOC meeting, there wasn't much enthusiasm. I also recollect a similar reaction at a recent UNOLS AC meeting. I'm suggesting this might be a topic for discussion at the upcoming council meeting.

I don't believe the existing documents are worth duplicating for all participants. However a useful outline might be prepared and presentable for discussion. I think the issues are: should this be reviewed, "blessed," and distributed by UNOLS and/or who wants it?

Regards, Larry

Action?



## Opportunities for Oceanographic Research **DSV ALVIN** at the Woods Hole Oceanographic Institution **1990**

### **The Deep Submergence Vehicle ALVIN**

The Deep Submergence Vehicle ALVIN, based at Woods Hole Oceanographic Institution, is designated a UNOLS National Oceanographic Facility. Diving time is available for qualified research projects selected on the basis of scientific merit and compatibility of the proposed research.

ALVIN is owned by the U.S. Navy under the purview of the Office of Naval Research and is operated by the Woods Hole Oceanographic Institution. Operations are supported under a Memorandum of Understanding among the National Science Foundation, the National Oceanic and Atmospheric Administration and the Office of Naval Research.

### **Planning and Scheduling for ALVIN**

The UNOLS ALVIN Review Committee (ARC) makes recommendations for ALVIN-ATLANTIS II areas of operation two and three years in advance and makes schedule recommendations one year in advance of the operating year. Over the last several years the task of matching dives available on ALVIN with requests from skilled individual investigators has become critical and requires careful advance planning.

The ARC conducts annual workshops to solicit interest in using ALVIN two, three and more years into the future. The workshop held in December 1988 and Notices of Intent submitted there are the ALVIN Review Committee's principal source of planning information for the period 1990-1991 (until the next ALVIN overhaul).

Through this **Opportunities for Oceanographic Research**, DSV ALVIN, the ARC solicits requests for ALVIN dives, to be reviewed by the Committee in June 1989. On the basis of that review, the ARC will make 1990 schedule recommendations to the three funding agencies and to the W.H.O.I. operators.

### **Recent and Scheduled Operations**

Since the last overhaul in 1986, ALVIN diving operations from ATLANTIS II have been more consistently successful than ever: 495 dives have been scheduled and made with only 10 lost for all reasons. The 485 dives completed is about three times the number that could be scheduled and completed between major overhauls in earlier years.

After ALVIN's major overhaul, work began in the north Atlantic. Upon completing several projects, ALVIN/ATLANTIS II moved into the Pacific where they remained until late 1988. Work there included a major deployment to the western Pacific (Mariana Back-arc, Bonins), Gorda-Juan de Fuca-Escanaba and Oregon subduction zone, Guaymas Basin, East Pacific Rise and California canyons and basins.

In 1989 ALVIN will undergo a six-month overhaul at the Woods Hole Oceanographic Institution. At their June 1988 meeting, the ALVIN Review Committee reviewed and made recommendations on **ALVIN Time Requests** for operations in late 1989. Because of the ALVIN overhaul, a dearth of requests for ALVIN time in the Atlantic, the generally low level of funded science projects and strong requirements for a suitable ship, the Committee also considered non-ALVIN requests for ATLANTIS II time. A schedule was reached for a mixture of ALVIN and other projects on ATLANTIS II, all in the north Atlantic, during March-November. ATLANTIS II will end 1989 in shipyard somewhere on the east coast.

### **Requests for 1990**

ALVIN and ATLANTIS II should, at the beginning of 1990, be just out of shipyard and ready for operational deployment. There should be no backlog of already recommended Time Requests (for either ALVIN or non-ALVIN use). At the December 1988 ALVIN Planning Meeting, the ARC noted strong interest in using ALVIN in the Pacific, with potential for extended deployments to the southern East Pacific Rise as far south as the Chile triple junction, northern East Pacific Rise-Galapagos-and nearby seamounts, Guaymas Basin, California coastal areas, Gorda-Juan de Fuca-Oregon subduction, and western Pacific. A more modest interest was expressed in the Atlantic.

In response to the interest expressed, the Committee expects that ALVIN/ATLANTIS II will enter the Pacific early in 1990 and will likely remain there until late 1991, returning in time for possible deployment in the Atlantic and for ALVIN overhaul at Woods Hole. The ALVIN Review Committee solicits and will consider ALVIN Time Requests for work in 1990 in any area in the Pacific or along transects. A schedule for 1990 could accommodate two extended deployments (e.g. southern EPR and western Pacific or Gorda-Juan de Fuca and northern EPR/Guaymas) together with some other convenient work. The Committee will review Time Requests at their June 1989 meeting and will recommend a number that can be accommodated during 1990. Requests that cannot be accommodated during 1990 will be tabled. The Committee will suggest that investigators who so desire re-submit tabled requests for later annual review.

ALVIN Time Requests through UNOLS are for the use of the facility only and no research or travel funding is implied. Associated research proposals should be submitted in a timely fashion through usual channels to funding agencies. (NSF has reiterated their policy that proposals involving the use of UNOLS-operated facilities must meet a proposal target date not later than June 1 in the year preceding operations.) ALVIN Time Requests for which the associated science proposal has not been submitted by June 1 are of such doubtful funding status that, realistically, they cannot be reviewed by the Committee.

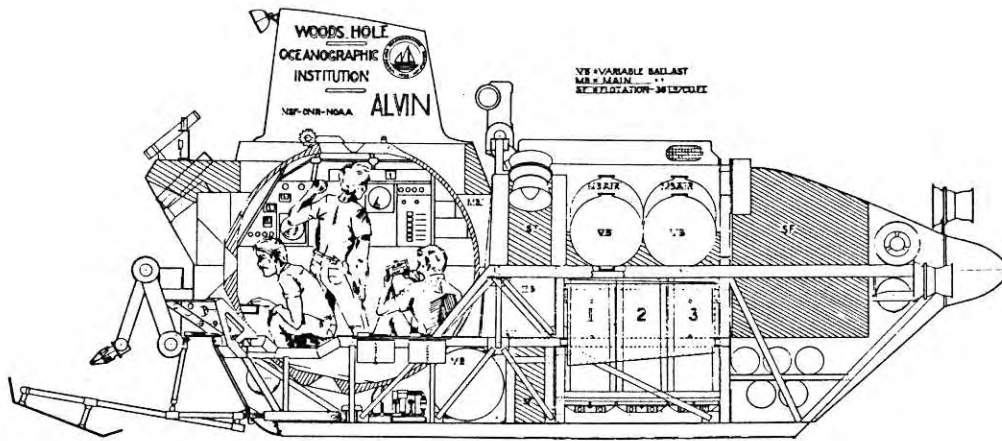
The ALVIN Review Meeting will be held in June 1989. Criteria for the review include scientific merit and suitability for ALVIN/ATLANTIS II. The Committee makes schedule recommendations based on favorably reviewed Requests.

Principal Investigators are expected to meet pre- and post-cruise obligations that may exist for operations within jurisdiction of foreign states.

Requests for 1990 should be submitted so as to arrive in the UNOLS Office by May 1, 1989. Requests should include the Request form or a copy together with the additional information on the intended investigation as requested in this announcement. Failure to meet the submission deadline will jeopardize consideration of the Time Request.

Proposals should be addressed to:

Chairman, ALVIN Review Committee  
UNOLS Office, WB-15  
School of Oceanography  
University of Washington  
Seattle, Washington 98195  
Telephone: (206) 543-2203



## DSV ALVIN

### Description of DSV ALVIN

Length: 7.6 meters (25 feet)  
 Beam: 2.4 meters (8 feet)  
 Draft: 2.1 meters (7 feet) surround  
 Full Speed: 2 knots  
 Cruising Speed: 1 knot  
 Cruising Range: 5 miles submerged  
 Displacement: 18 tons  
 Endurance: 72 hours  
 Normal Drive Duration: 6-10 hours  
 Depth Capacity: 4,000 meters (13,120 feet)  
 Complement: 1 pilot, 2 scientific observers  
 Ownership: The submersible ALVIN is a Navy owned national oceanographic facility operated by the Woods Hole Oceanographic Institution and jointly supported by the National Science Foundation, the Office of Naval Research and the National Oceanic and Atmospheric Administration.  
 Communications: Sonar telephone, voice or code (submerged); marine band UHF radio (surface).  
 Navigation: Gyro compass; magnetic compass; forward looking horizontal scanning sonar system (CTFM); echo sounder; indicators for depth and altitude; long baseline acoustic positioning system (by request).  
 Electrical Power: Three banks of lead-acid batteries configured for 120 VDC (450 Amp. hours) and 30 VDC (450 Amp. hours) A limited amount of 115 volt 60 cycle AC power is also available.  
 Hydraulic Power: The Science basket is supplied with 1 GPM of 1500 PSI hydraulic oil for science applications.  
 Data Logging: Most of the information obtained from the permanently installed instrumentation is logged on 3-1/2 inch computer disks. Also, selected data is superimposed on the video camera images and recorded on 1/2" VHS tape. Contact the ALVIN group for more information.  
 Additional capabilities: The submersible is designed to be versatile with respect to payload, space and power available to meet the differing needs of scientists using the vehicle. Scientific equipment which remains on board most of the time includes two remotely controlled mechanical arms, two 35 mm. cameras and a closed circuit video system with recorder. Additionally, specialized equipment such as hot water samplers, precision temperature sensors, a magnetometer and increased navigation capability is available but requires advance notice and may require additional funding for installation and operation. Contact the ALVIN group for further information.

### Description of RV ATLANTIS II

Built: 1963  
 Beam: 44 feet (13 meters)  
 Gross Tonnage: 1,529 tons  
 Crew: 27  
 Length: 210 feet LOA (64 meters)  
 Draft: 16 feet (5 meters)  
 Disp.: 2,300 L tons  
 Scientific Personnel: 9 ALVIN support team plus 1 corpsman plus 19 scientists  
 Main Engines: Two GM 12-567E diesel engines driving through reduction gears with variable speed, hydraulic clutches. 2,000 shp.  
 Bow Thruster: 800 hp trainable. DC motor driving from main gear PTO.  
 Ships Service Generators: Two 480/120 volt AC 300-KW generators driven by CAT 353 diesel engines.  
 Propellers: Twin screw: 3 fixed blade; bronze.  
 Ownership: Built under grant from NSF. Conditional title rests with W.H.O.I.  
 Speed: Cruising: 11.0 knots  
           Full: 13.5 knots  
           Minimum: Dead Slow  
 Endurance: 45 days  
 Fuel Capacity: 90,000 gallons  
 Range: 9,000 miles  
 Laboratories: wet - 400 square feet  
                   dry (4) - 3,500 square feet plus 28' by 13' ALVIN hanger  
 Sewage System: Two type III holding tanks;  
                   Five to ten days endurance.  
 Ship is equipped for full range of oceanographic observations and work. One trawl winch: 30,000 feet 1/2" cable. One CTD winch 27,000 feet 0.303" cable or 30,000 feet 3/16" wire.  
 One marine crane: 20 ton capacity  
 One hydraulic powered A-frame: 18 ton capacity for launch and recovery of ALVIN.

To obtain further information regarding ALVIN/ATLANTIS II system capabilities or specialized equipment contact:

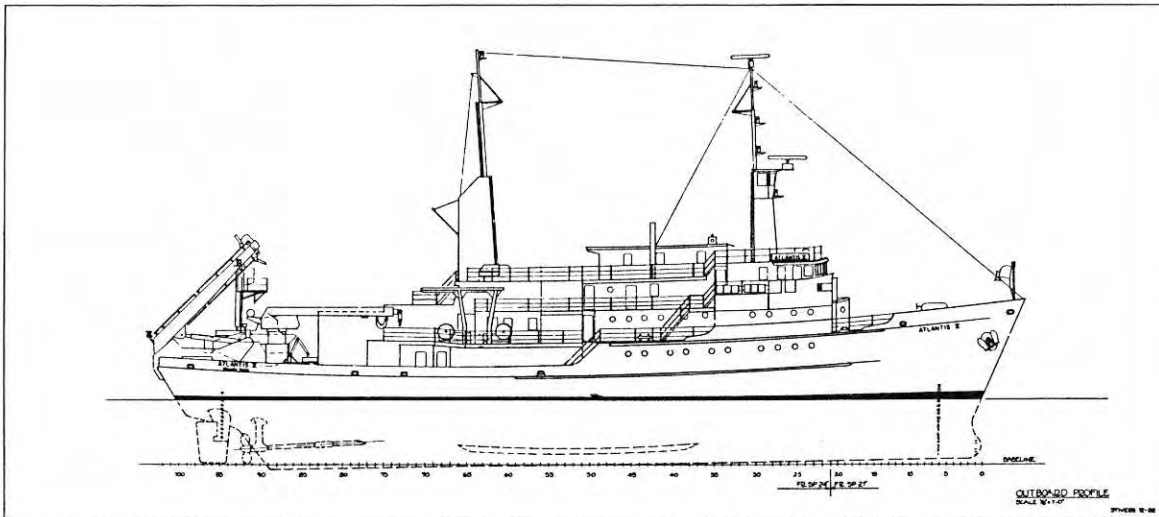
Woods Hole Oceanographic Institution  
 Woods Hole, MA 02543  
 Telephone: (617) 548-1400

#### ALVIN Information:

Barrie B. Walden, Submersible Program Manager  
 Extension 2407

#### ATLANTIS II Information:

Donald A. Moller, Marine Operations Coordinator  
 Extension 2277



**RV ATLANTIS II**

### **Submission of ALVIN Time Requests**

Requests for the use of DSV ALVIN should be initiated by sending a completed time request form (copy overleaf) to: Chairman, ALVIN Review Committee, c/o UNOLS Office, WB-15, School of Oceanography, University of Washington, Seattle, WA 98195. Requests may be made by scientists and engineers at any university or research institution in the United States, and should be supported by a research proposal (preferred length: 4-8 pages, single spaced for items 1 to 6) which specifically addresses **each of the following**:

1. The nature and significance of the proposed research;
2. The scientific questions being asked and the approaches that would be used toward their resolution; how ALVIN will be employed is critical to the Committee's evaluation;
3. Justifications of the need for ALVIN to do this work;
4. The research site(s) and its justification;
5. Number of dives required, justification for the number of dives and any seasonal consideration; it is especially important to include a dive plan or other description of how each dive will be used, and why each is critical.
6. Likely requirements for future ALVIN dives (not requested here) for completion of the research;
7. Proposed number of scientists and engineers in the party;
8. Curricula vitae of principal participants;
9. Potential or current support for the proposed research effort; in virtually all cases science proposals should already have been submitted by the date of the Committee's review;
10. List of publications resulting from any previous ALVIN work;
11. Any special engineering required for dive operations;

- NOTE: (1) If operations are to be carried out in foreign waters, the required clearances should be requested as early as possible. Collaboration with foreign scientists is encouraged.
- (2) If the program is not already funded, a comprehensive proposal must be submitted by the investigator to his sponsoring agency in the conventional way. The ALVIN Review Committee will submit scheduling recommendations for consideration by the research sponsor. Final scheduling depends on approval of the pertinent research proposal by the funding agency.

### **ALVIN Review Committee**

F. Jennings, Texas A&M University  
 D. A. Cacchione, U.S. Geological Survey  
 J. Eckman, Skidaway Institute of Oceanography  
 P. J. Fox, University of Rhode Island  
 J. C. Moore, University of California, Santa Cruz  
 D. Nelson, University of California, Davis  
 M. Scranton, State University of New York, Stony Brook  
 G. Thompson, Woods Hole Oceanographic Institution  
 G. Grice, Woods Hole Oceanographic Institution, **ex-officio**

UNIVERSITY NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM  
DEEP SUBMERGENCE VEHICLE ALVIN  
TIME REQUEST

To: Chairman, ALVIN Review Committee  
UNOLS Office, WB-15  
School of Oceanography  
University of Washington  
Seattle, WA 98195

DATE: \_\_\_\_\_

USE OF THE ALVIN SUBMERSIBLE RESEARCH SYSTEM IS REQUESTED FOR \_\_\_\_\_ AS FOLLOWS:  
YEAR

PURPOSE (Project title and brief outline of program) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PRINCIPAL INVESTIGATOR (Name, Title, Address, Tel. No.) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

OTHER INVESTIGATORS INVOLVED \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PROPOSED CHIEF SCIENTIST \_\_\_\_\_

TOTAL NUMBER OF SHIPBOARD PERSONNEL \_\_\_\_\_

PROJECT REQUIREMENTS

NO. OF DIVES REQUESTED \_\_\_\_\_ PREFERRED DATES \_\_\_\_\_ ALTERNATE \_\_\_\_\_

AREA OF OPERATIONS: LAT. & LONG. (Attach page size chart showing location of dives and bathymetry)  
\_\_\_\_\_  
\_\_\_\_\_

NAME OF NEAREST PORT \_\_\_\_\_ DISTANCE \_\_\_\_\_ NAUT.MI

ATTACH BRIEF DESCRIPTION OF PROPOSED ESCORT/SURFACE SUPPORT SHIP IF ONE IS REQUIRED. LIST SPECIAL EQUIPMENT REQUIREMENTS (e.g., SENSING, SAMPLING AND NAVIGATION REQUIREMENTS).  
\_\_\_\_\_  
\_\_\_\_\_

COUNTRIES FOR WHICH RESEARCH CLEARANCE WILL BE REQUIRED: \_\_\_\_\_

FUNDING STATUS

\_\_\_\_\_  
FUNDED

\_\_\_\_\_  
NOT FUNDED

\_\_\_\_\_  
FUNDING AGENCY

\_\_\_\_\_  
PROPOSAL SUBMITTED: \_\_\_ TO:

\_\_\_\_\_  
GRANT NO:

\_\_\_\_\_  
WILL BE SUBMITTED: \_\_\_ DATE:  
AMOUNT REQUESTED:

\_\_\_\_\_  
AMOUNT OR ANNUAL RATE BEGIN DATE DURATION

\_\_\_\_\_  
NEW or RENEWAL OF  
PROPOSAL \_\_\_ GRANT NO:

ATTACH RESEARCH PROPOSAL OR PRELIMINARY PROPOSAL ADDRESSING POINTS LISTED ON OVERLEAF

SUBMITTED BY \_\_\_\_\_  
SIGNATURE

APPROVED \_\_\_\_\_  
DEPARTMENT CHAIR or LABORATORY DIRECTOR

\_\_\_\_\_  
TITLE, ADDRESS & TELEPHONE NO. IF  
DIFFERENT FROM PRINCIPAL INVESTIGATOR  
\_\_\_\_\_  
\_\_\_\_\_

2:40 PM PST                      Msg: JGIJ-3885-4384  
From: R.HEINMILLER  
To: W.Nowlin, D.Gorsline, W.Barbee  
Subj: Ship Scheduling Database Draft Proposal

Worth, Donn, and Bill....

During a trip to L.A. last week, we stopped to see Donn Gorsline. Among other things, we discussed ideas for a ship scheduling database system. We have been developing some ideas and Donn suggested that, since there was a FIC meeting coming up soon, we should send an outline to the appropriate people. This may be considered a preliminary draft proposal from Omnet.

Omnet would like to help create and operate, on behalf of UNOLS, a system for managing ship scheduling information. The system would have three basic modes.

**\*\* Ship Operators' Mode**

- Enter, delete, and modify schedules for the ships that they operate. Each operator would have an account, with password, that allows them to enter, delete, or modify schedules for their own ships only.

**\*\* Ship Users' Mode**

- Search for cruises that meet criteria: location, time, vessel size, special equipment, etc.
- Submit requests for ship time: vessel, where, when, special equipment needed, etc. Requests would be by filling in an on-line form, posted automatically to the appropriate Operator's mailbox.

**\*\* Administrator's Mode**

- Update and maintain the standard list of ships, operators, and the 'permissions' for each.
- Generate reports from the database.

**General**

There is a possibility that NOAA may be willing to provide the indefinite loan of a MicroVAX for the database. Omnet is pursuing this possibility informally. If it works out, then Omnet would propose the following:

**\* NOAA:**

- Provide a MicroVAX

**\* UNOLS:**

- Fund the Telenet connection
- Provide the Administrator

**\* Omnet:**

- Program the system in close cooperation with anyone designated by UNOLS
- Provide basic physical and operational support (space, power, etc.)
- Maintain and upgrade the software as needed
- Arrange the connection to SCIENCEnet mailboxes via the Telenet gateway

To clarify roles: Omnet proposes to work with UNOLS to design and create the system and to provide basic hardware and software management. As always, we will provide support to the end user on accessing the database. However, we would not propose to be ship schedule coordinators. That is, we will not deal with content. We would expect UNOLS to do that, as they do now.

Consideration might be given to eventually broadening the coverage of the database to include NOAA ships, non-US vessels, and even charters. We would certainly want to design in sufficient flexibility to handle this, just in case. For example, there should be a 'country' field for each ship, even if it is just US ships for now.

The system should include a report generator. For instance, the Administrator would be able to produce a year-end report summarizing cruises by ship, institution, PI, funding agency, geographical area, etc.

\*\* Note 1 -- I would emphasize that we have no commitment from NOAA on this. We have only discussed the possibility with one or two individuals at NOAA. We have made no representations at all on behalf of UNOLS. If the NOAA hardware does not materialize, we would propose an alternative arrangement.

\*\* Note 2 -- We are not yet ready to do a budget. However, to give you some idea of costs, the installation costs for a Telenet connection capable of supporting four simultaneous users at 1200 baud (or two at 2400 baud) would be about \$1200, and then about \$800 per month to operate. (This is the entry-level bandwidth.) If all access were from SCIENCEnet via the Telenet gateway, there would be no traffic charges, but there would be a gateway setup charge of \$1000.

\*\* Note 3 -- Omnet would contribute the programming, house and maintain the hardware, connect to SCIENCEnet, etc. In return, we would ask that access be via SCIENCEnet only. (We would be willing to add SPAN access if UNOLS wants it and someone is willing to fund the costs of connecting the MicroVAX to SPAN.)

Action?



United States Department of State

*Bureau of Oceans and International  
Environmental and Scientific Affairs*

*Washington, D.C. 20520*

February 2, 1989

MEMORANDUM

TO: NSF - Dr. Donald Heinrichs  
FROM: OES/OSP - R. Tucker Scully  
SUBJECT: Research Vessel Clearance Officer Assistant

During our meeting on 12 January 1989 we discussed the requirement for additional support in the area of research vessel clearance processing. Attached for your review is a statement which seeks to justify the urgent need to recruit an assistant to the Research Vessel Clearance Officer in the Office of Marine Science and Polar Affairs (OSP). I trust this statement may serve as a basis for further discussions and I look forward to receiving any comments you may have.

cc: Dr. George Keller  
Capt. William Barbee  
Dr. Gary Hill  
Dr. Mel Peterson  
Dr. Eric Hartwig



Justification for a Research Vessel  
Clearance Officer Assistant

The Office of Marine Science and Polar Affairs (OSP) within the Bureau of Oceans and International, Environmental and Scientific Affairs (OES) in the Department of State has responsibility for processing research vessel clearance requests for U.S. private, academic and government marine science research organizations. Associated functions include record-keeping, providing advice, preparation of reports, post-cruise obligation monitoring and management, and policy development. These tasks are presently carried out by the Research Vessel Clearance Officer (Thomas Cocke) and a part-time contract employee (Robert Junghans). Other OSP officers provide back-up support when necessary.

Since the U.S. EEZ Proclamation in 1983, research vessel clearance requests have more than tripled. The number of clearance requests processed in 1988 was 268. This can be compared to the total in 1980 of 68. The average number of requests per year between 1985 and 1988 was 266 per year. Between 1980 and 1982 the average per year was 73. To deal with the increase in workload OSP received financial assistance from ONR, NOAA and USGS in 1987 and 1988, which provided for the contract-hire of Mr. Junghans. In March 1989 Mr. Junghans plans to retire, and this will coincide with the termination of assistance from the various agencies.

The Department, reacting to the increase in clearance requests, undertook to automate the office operation and purchased three IBM-PS/2 Mod 50/60 computers in 1987. Since 1986 software for the system has been under development by the General Services Corporation but remains incomplete since funding was incremental from end-of-year remnant sources. Additional funds have not yet been identified, although OSP is actively seeking these funds. The software package would enable OSP to implement a database management system - the Research Vessel Tracking System (RVTS). RVTS would provide an inventory data bank for clearance records and associated information about individual countries and input, in part, could be made via E-mail. RVTS could eventually enable scientists to submit clearance requests directly to the R/V Clearance Officer's desk via E-mail. Problem analyses, record maintenance and advisory services will be facilitated by use of the RVTS system. The management of responses to meet post-cruise obligations would also be accomplished eventually by using RVTS.

The immediate requirement of OSP is to replace Mr. Junghans. Realizing this will take several months, the objective is to minimize the period of time. The ideal candidate would have an interest in marine science and be proficient in working with the computer system. The RTVS

Program is designed to be menu-driven and much of the activity involves data entry. The person will work under the supervision of the Research Vessel Clearance Officer (Mr. Cocke) and will serve as his backup. We believe that the position would be classified between the GS-5 and GS-9 level.

The position would involve the following duties:

1. Managing the post-cruise obligation (PCO) system - This involves record keeping, searching files to determine obligations due or overdue, reminding scientists by mail and phone that obligations are overdue, transmitting reports and data to Embassies for relay to governments of coastal states, developing summaries of PCO's, and assisting in resolving problem cases when necessary.
2. Preliminary clearance request review - When clearances are initially received from the scientist they are reviewed for completeness and requirements for clearances by relevant coastal states are determined. Scientists are contacted to provide additional materials, as necessary, after consultation with the R/V Clearance Officer.
3. Drafting clearance requests - Clearance requests may be drafted under direction of the R/V Clearance Officer.
4. Provision of advice and information - Advice and information may be provided on clearance procedures when directed by and under the guidance of the R/V Clearance Officer.
5. Preparation of annual summaries - An annual summary of clearance events will be prepared.
6. Information collection - Independently, or as directed, information concerning foreign clearance procedures and related information will be collected, stored and disseminated to the U.S. marine science research community.

Until the RVTS program is on line, the tasks will involve carrying out the functions identified above manually. With the computer program operational, many of these tasks will be automated or the products enhanced, although data entry will remain a substantial and integral function.

The tasks identified above are essentially the tasks presently performed by Mr. Junghans. With Mr. Junghans' departure in March, there will be a significant problem. In view of the almost four-fold increase in clearance requests since the early 80's the R/V Clearance Officer cannot carry out the required functions alone. Others in the office can and

often do lend support but they have duties of their own. Without additional help, some of the more routine operations will suffer (record keeping, post-cruise obligation management and routine reporting). Over time this deficiency will affect our general ability to secure clearances.

We have been seeking, and will continue to seek, Department of State authorization for a new position to carry out these tasks. However, we are not optimistic that this will be approved in the near-term. Therefore, we seek the assistance of funding agencies in supporting recruitment of an assistant to the Research Vessel Clearance Officer. Such recruitment should look toward an individual prepared to make a long-term commitment. We would hope to be able to convert the position to a Department of State position within two years and thus, could offer the possibility for advancement at least within the area of marine science and polar affairs.

RECOMMENDATIONS FOR THE SAFE AND ORDERLY USE OF  
RADIOISOTOPES ABOARD UNOLS VESSELS

Report of the *Ad Hoc* Radioisotope Committee

Thomas C. Malone, Chairman

The Committee met at the National Science Foundation on 3 February, 1989. This report summarizes the consensus recommendations of the committee which consisted of the following individuals:

Mr. Edward W. Blackburn	Radiation Safety Officer University of Maryland System
Mrs. Robin Elliot	Department of Occupational Health and Safety University of Delaware
Mr. William B. Hahn	Science Officer University of Rhode Island
Mr. Steven T. Hand	Health Physicist University of Maryland System
Mr. Stuart Kline	Radiation Safety Officer University of Delaware
Dr. Hugh D. Livingston	Radioisotope Users Committee Woods Hole Oceanographic Institution
Mr. Gordon A. Little	Radiation Safety Officer Oregon State University
Dr. Thomas C. Malone	Acting Director University of Maryland System Center for Environmental and Estuarine Studies
Dr. Donald G. Redalje	Radiation Safety Officer Center for Marine Science The University of Southern Mississippi

## BACKGROUND

Radioisotopes are essential tools for the study of many important biological and chemical processes in the marine environment. The frequency of use, the amount of activity used and the variety of radioisotopes used has increased in recent years. Environmental problems associated with both the use of radioisotopes and the disposal of radioactive waste are also becoming of greater concern. It is in this context that the UNOLS Advisory Council established an *ad hoc* committee to recommend the basic procedures that should be followed to insure the safe and orderly use of radioisotopes on UNOLS vessels in accordance with the Code of Federal Regulations as set forth by the NRC.

Current regulations and procedures are given by UNOLS in *Research Vessel Safety Standards* published in May, 1985. In essence, this document states that (1) the amount of activity taken to sea shall not exceed that authorized by the operating institution's NRC license (or equivalent); (2) UNOLS institutions may restrict the use of radioisotopes to laboratory vans designed for this purpose; and (3) the operators "must insure that scientists are familiar not only with usual regulations and procedures, but also with the special shipboard practices." It further states that "shipboard procedures and regulations should be in the ship's Cruise Handbook and discussed with the scientists well in advance of the cruise so that all hands will be alerted."

The recommendations which follow are consistent with the intent of these general guidelines and are not intended to replace existing regulations and procedures now in place at many UNOLS institutions. Rather, they are suggested as a means of reducing much of the existing confusion by establishing a minimum set of guidelines to be used throughout the UNOLS community.

## RESPONSIBILITIES OF THE PRINCIPAL INVESTIGATOR

The Principal Investigator (PI) must have been granted authority by the home institutions Radiation Safety Officer (RSO) to possess and use radioisotopes. Upon notification of funding, the PI must contact the operating institution and initiate the procedures required to obtain authorization to use radioisotopes on the assigned vessel. The RSO of the PI's home institution must also be notified and requested to verify to the operating institution that the PI is an authorized user.

Once the PI has been authorized to use isotopes by the operating institution, the PI should notify the Chief Scientist for the cruise and confirm the laboratory space or van which will be restricted for isotope use. The PI will be responsible for posting the area and for monitoring. All users must have personnel dosimeters and work areas must be surveyed as required by the operating institution. All spills must be reported to the Chief Scientist who will report them to the Captain. Upon completion of the cruise, the PI will report the results of all surveys and the disposition of waste and unused isotope to the Chief Scientist.

The cost of clean-up, disposal and transport of all waste will be borne by the PI.

#### RESPONSIBILITIES OF THE OPERATING INSTITUTION

Of central importance is the establishment of procedures by which a PI may be granted the authority to use radioisotopes at sea. This responsibility rests with the operating institution and its RSO. The information upon which authority is granted should include at least the following:

(1) The names of all personnel that will be engaged in the use of isotopes aboard ship, and the quantities and forms of all isotopes to be used.

(2) Verification by the RSO of the PI's home institution that the PI and/or the personnel listed above are currently authorized to possess and use the quantity and type(s) of isotope(s) proposed by the PI.

(3) A description of experimental protocol. This should include the proposed location of work and procedures for storage and manipulation, for isolation and control of samples, for containment and cleanup of spills, and for the disposition of liquid and solid waste.

To insure the safe and orderly use of radioisotopes at sea, the operating institution should also assume the following responsibilities:

(1) Provide suitable facilities for use and storage. Such facilities include appropriately designed laboratory space and monitoring equipment (personnel dosimeters and scintillation counter).

(2) Prior to departure, ship's personnel and the scientific party should be briefed on the types of isotopes to be used, locations of use and storage, and potential hazards.

(3) A member of the ship's complement (e.g. an officer or marine technician) should be trained in basic radiation safety and emergency procedures. This individual, designated as the ship's radiation safety officer, would work with the scientists to insure that isotope work is conducted in designated areas, that these areas are properly posted and monitored, and that spills are properly cleaned up and reported.

#### RECOMMENDATIONS TO THE NSF

It is essential that ship operators are informed of the intent to use radioisotopes as early in the scheduling process as possible. To this end, the committee makes the following recommendations:

1) The amounts and types of isotopes to be used aboard ship and the name and telephone number of the RSO from the principal investigators home institution should be provided on the UNOLS Ship Request form.

2) Upon notification of funding by NSF, the PI should be told how to initiate the procedure required to obtain authorization to use radioisotopes on UNOLS vessels, i.e. to immediately contact ship operations for instructions and to notify their own RSO.

3) The trend toward the use of laboratory van restricted for radioisotope use should be encouraged, i.e. all operating institutions should maintain at least one laboratory van for this purpose.

4) In order to insure proper monitoring of work areas, all UNOLS vessels should be equipped with monitoring equipment (e.g. pancake probe and scintillation counter) and should provide personnel dosimeters.

#### RECOMMENDATIONS TO UNOLS

As part of the procedure for obtaining authorization to use radioisotopes at sea, the PI must submit an application which includes information on the amount and type of isotope

to be used, protocols for the experiments in which these isotopes will be used, and how radioactive waste will be stored or disposed of. We recommend that all operating institutions establish a Radioisotope Users Committee (or equivalent) to review and authorize the proposed research. Such a committee should consist of an RSO and representatives from ship operations and the user community.

Laboratory vans and other work areas designated for isotope use should conform to minimum standards for such facilities. A fume hood should be available for all activities for which there is the potential of airborne radioactivity. All working surfaces should be constructed of materials which are nonporous and resistant to erosion by radioactive solutions.

All UNOLS institutions should be encouraged to provide monitoring equipment for both personnel and surveys of work areas while at sea. Such equipment should include personnel dosimeters, a pancake probe or equivalent, and a scintillation counter (for wipe tests).

Likewise, UNOLS institutions should be encouraged to require the appropriate personnel to be trained in basic radiation safety procedures. At the beginning of each cruise, this person would be responsible for briefing the crew and scientific party on the isotopes to be used, where they are to be used and stored, the disposition of wastes, and potential hazards.

The disposition of radioactive wastes is an increasing problem. In terms of safety and the risk of contamination, it is clear that the number of transfers between localities should be minimized. To this end, operators should be encouraged to work with their RSO's and the NRC to obtain permission to discharge dilute solutions of low energy beta emitters at sea. Failing in this, shipboard facilities for the safe and secure storage of liquid waste should be provided.



## NSF Ship Construction and Replacement Plans

### Ocean Sciences

The long-range plan for the Division of Ocean Sciences of NSF adopted in 1987 calls for engineering designs leading to construction of two large ships plus a smaller ice-capable ship in the period 1990-94. Navy plans at that time called for the construction of two new large ships for academic research plus modernization of the KNORR and MELVILLE in the late 1980's. The complementary NSF and Navy plans were in response to, and consistent with, the UNOLS Fleet Replacement Committee report of 1986.

### Current Status

NSF, through a Cooperative Agreement, is assisting Lamont-Doherty Geological Observatory of Columbia University with replacing the Navy-owned R/V CONRAD with the M/V BERNIER. The BERNIER was built in 1983 by Petro-Canada for geophysical survey operations. NSF funds totaling \$11,380,000 over seven years will support the purchase, reflagging and conversion of the BERNIER to a general purpose research vessel with special capabilities for MG&G, multichannel seismic and high latitude oceanographic research. The ship is expected to be ready for service in 1990. Lamont retains title to the BERNIER unless NSF exercise its option to convey title to the Foundation.

Attached is a summary table comparing the CONRAD and converted BERNIER characteristics, and sketches of the BERNIER before and after conversion.

### Long-Range Plans

The current NSF Ocean Sciences long-range plan calls for the acquisition of two additional modern research ships to replace existing outdated ships. One large general purpose ship for Global Geoscience requirements and a smaller ice-capable ship for Arctic research needs. Preliminary design of a large ship is nearing completion with science mission requirements and conceptual design of the ice-capable ship planned for 1989. Construction would be phased over FY 1991 to FY 1996.

UNOLS through the Fleet Improvement Committee, with NSF and Navy support, is examining the evolving science mission requirements for new oceanographic ships based on the academic fleet which is expected to be in service in late 1989. The UNOLS plan will update and revise the 1986 study. NSF expects to respond to the UNOLS recommendations and modify current plans in 1989. Preliminary recommendations are to focus on the acquisition of a smaller ice-capable ship to replace the R/V ALPHA HELIX by 1994 and a large general purpose ship with submersible handling capabilities to replace the R/V ATLANTIS II between 1995 and 1999.

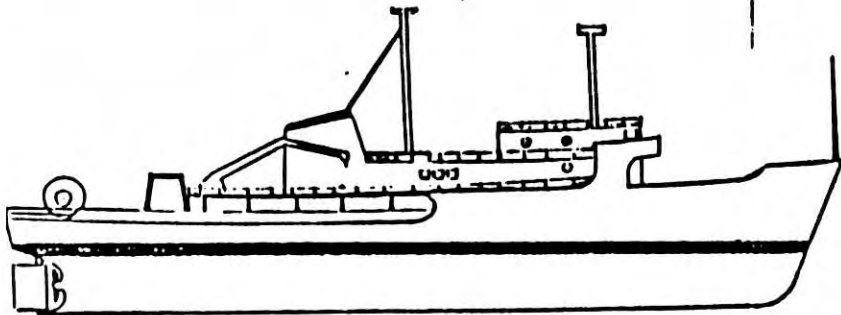
Two replacement small ships and upgrades/midlife refits for most of the intermediate ships are also identified as high priority items.

### Polar Programs

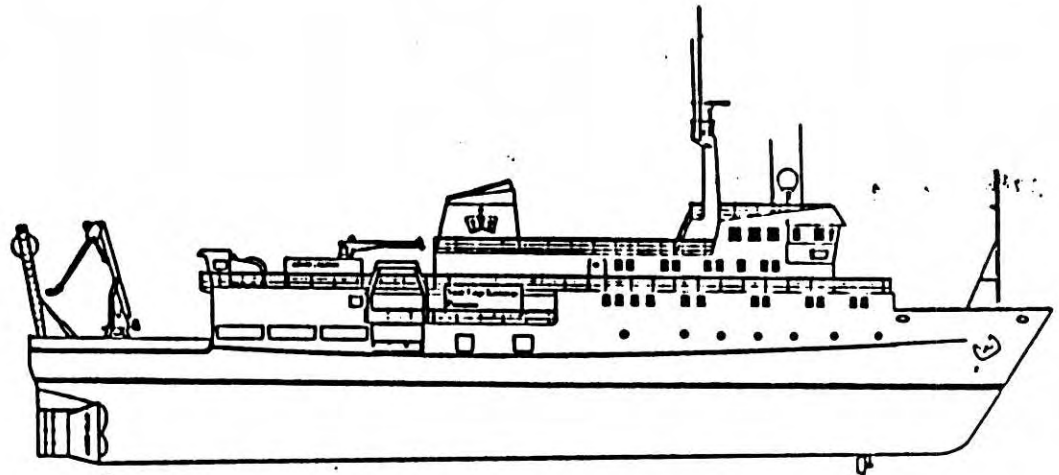
The Division of Polar Programs is proceeding with plans to acquire a research vessel with icebreaking capability (RVIB). Part of NSF's FY 1989 authorization bill called for a new competition, with preference given to an American built vessel, if the cost of such a ship would not be more than 50% higher than a foreign built vessel. DPP's civilian contractor for antarctic support, ITT/Antarctic Services, cancelled the procurement reported as nearing completion at the last FOFCC meeting, and will soon release a revised RFP for the ship, incorporating the preferred language. Strong interest in the new competition has been expressed by both U.S. and foreign firms.

There have been no significant changes to the technical requirements. Expectation is that the RVIB will be new construction, about 300 feet long, 12,000 horsepower, able to continuously break three feet of level ice at three knots, accommodate about 37 scientists, have about 3,000 sq. ft. of working deck, 4,000 sq. ft. of laboratory space, and be outfitted with a modern suite of oceanographic equipment including swath mapping and multichannel seismic systems.

NSF expects that the contractor will make an award by the end of 1989 and that the vessel will be in service in FY 1992 at an annual operating cost of from \$12 to \$15 million.



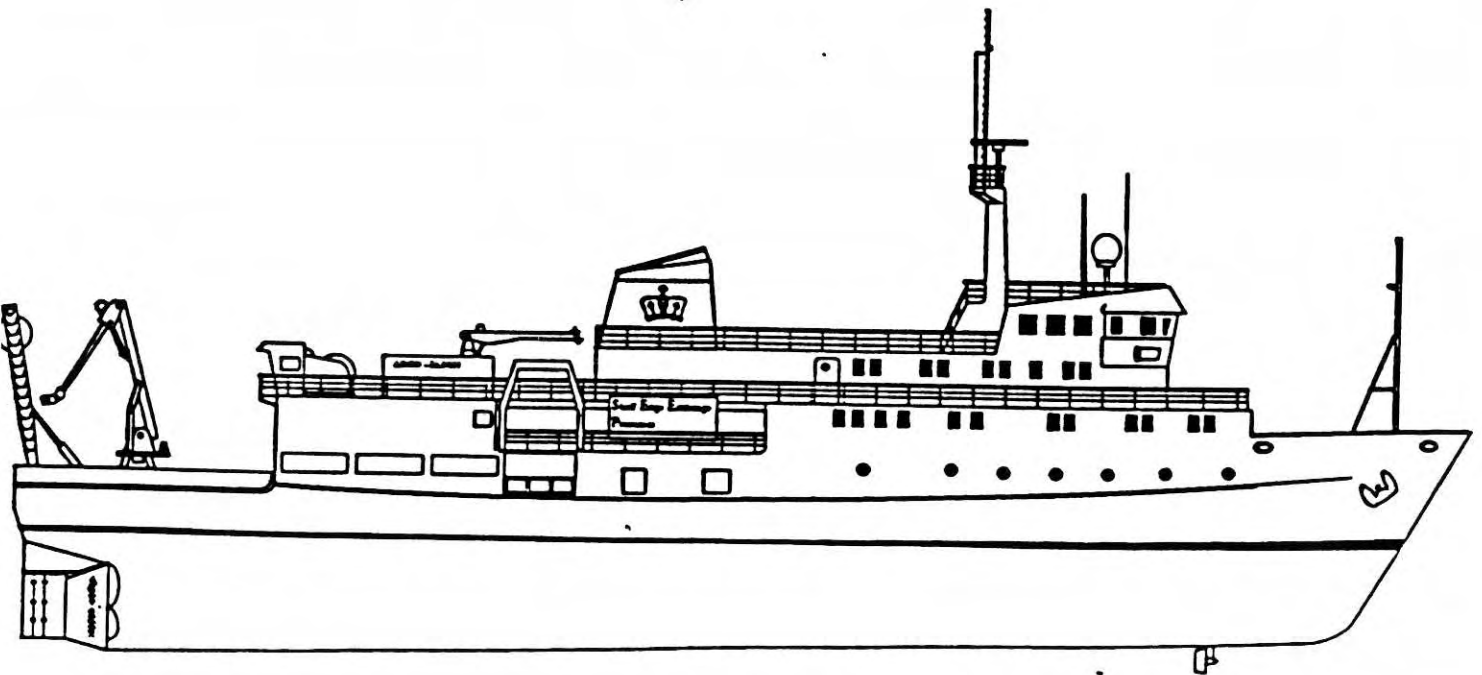
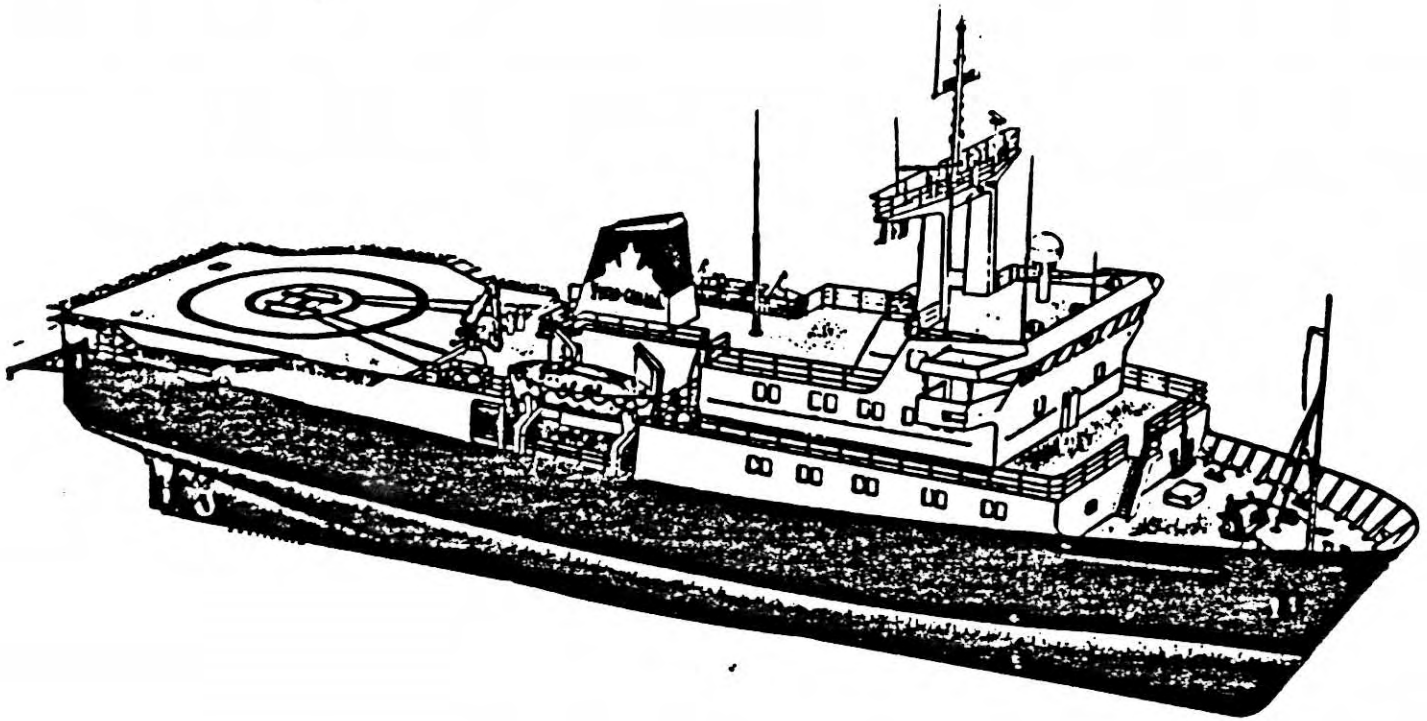
R/V CONRAD



M/V BERNIER

1962	..... BUILT	..... 1983
208' 4"	..... LENGTH OVERALL	..... 238' 8"
37' 5"	..... BEAM	..... 45' 11"
15' 3"	..... DRAFT	..... 17' 4"
1,000 HP	..... PROPULSION	..... 3,200 HP
1,072	..... GROSS TONS	..... 1,978
1,425 T	..... DISPLACEMENT (FULL)	..... 2,665 T
68,720 Gals	..... FUEL CAPACITY	..... 173,054 Gals
Marine Gas Oil (MGO)	..... FUEL TYPE	..... Intermediate WT Diesel Fuel
10 Kts.	..... SPEED (CRUISING)	..... 12 Kts
9,000 MI	..... RANGE (AT CRUISING SPEED)	..... 15,000 MI
12 Kts.	..... SPEED (FULL)	..... 14 Kts
\$2,957	..... FUEL COST/1,000 MILES @ CRUISING*	..... \$2,152
45 Days	..... ENDURANCE	..... 60 Days
21	..... CREW	..... 18
22	..... SCIENTIST	..... 32
1,340	..... LABORATORIES (SQ. FT.)	..... 2,800
1,558	..... MAIN DECK WORK AREA (SQ. FT.)	..... 2,950
4,900	..... STORAGE SPACE (CU. FT.)	..... 11,732
\$12,804 (1988 Actual)	..... DAILY OPERATING COST	..... (1990 Projected) \$12,948

\*Based on average price of MGO and Intermediate Fuel Nov. 1, 1988.



## NSF Ship Status and Operations

### UNOLS SHIPS

Large Ships	Age	Operator	FY89 Operations Status
ATLANTIS II	1963	WHOI	Full operations, 1/2 w/o ALVIN
BERNIER	1983	Lamont	CONRAD replacement, no ops.
THOMPSON	1965	U.Wash	Removed from service
WASHINGTON	1965	Scripps	Full Operations
KNORR	1969	WHOI	Undergoing stretch & upgrade
MOANA WAVE	1973	U.Hawaii	Seven months operations
MELVILLE	1970	Scripps	Six months ops before shipyard
OSPREY	1980	U.So.Cal.	Complete conv, 1 mo. seatrials

#### Medium Ships

FRED MOORE	1967	U.Texas	Removed from service, for sale
ISELIN	1972	U.Miami	Full Operations
GYRE	1973	Texas A&M	Short Schedule
OCEANUS	1975	WHOI	Full schedule
WECOMA	1975	Oregon S.	Full schedule
ENDEAVOR	1976	U.RI	Full schedule
NEW HORIZON	1978	Scripps	Full schedule

#### Small Ships

ALPHA HELIX	1966	U.Alaska	Short schedule
WARFIELD	1967	Johns Hop	Reasonably Busy
C.HENLOPEN	1975	U.Del.	Reasonably busy
POINT SUR	1981	Moss Lndg	Reasonably busy
C.HATTERAS	1981	Duke U.	Full schedule
SPROUL	1981	Scripps	Rerasonably busy
WEATHERBIRD	1975	Bermuda	Full schedule, replacement planned

#### FY1990 Projection:

A full analysis for 1990 is not yet possible since the academic research fleet is funded from a variety of sources. A review of proposed 1990 research programs is still underway. Projected costs for full fleet operations will increase because several of the large ships that were not in operation during 1989 will return. The following changes from 1989 are projected:

- KNORR and MELVILLE will return to operational status.
- BERNIER (CONRAD replacement) will be available
- OSPREY (which replaces VALERO) will become available for scheduling and operations following its University sponsored purchase and conversion to a research vessel.

**BUDGET SUMMARY OF OBLIGATIONS BY ACTIVITY AND SUBACTIVITY**

**SHOWING DOLLAR AND PERCENTAGE CHANGES: FY 1990/FY 1989 (Dollars in Thousands)**

	Actual FY 1988	Request FY 1989	Current Plan FY 1989	Estimate FY 1990	Difference FY 1990/1989	
					Amount	Percent
<b>BIOLOGICAL, BEHAVIORAL &amp; SOCIAL SCIENCES</b>						
Molecular Biosciences	\$44,493	\$47,706	\$46,573	\$51,380	\$4,807	10.3%
Cellular Biosciences	53,877	56,930	55,590	60,580	4,990	9.0%
Biotic Systems and Resources	58,659	64,431	62,889	76,010	13,121	20.9%
Behavioral and Neural Sciences	43,590	45,900	44,814	48,280	3,466	7.7%
Social and Economic Science	30,104	32,194	30,888	33,220	2,332	7.5%
Instrumentation and Resources	34,357	38,420	36,626	40,030	3,404	9.3%
Science and Technology Centers	0	0	4,150	5,000	850	20.5%
<b>Total, BBS</b>	<b>265,080</b>	<b>285,581</b>	<b>281,530</b>	<b>314,500</b>	<b>32,970</b>	<b>11.7%</b>
<b>COMPUTER AND INFORMATION SCIENCE AND ENGINEERING</b>						
Computer and Computation Research	19,848	22,167	21,148	23,673	2,525	11.9%
Information Robotics and Intelligent Systems	17,732	19,727	19,117	21,637	2,520	13.2%
Microelectronic Information Processing Systems	13,286	15,904	14,962	18,952	3,990	26.7%
Advanced Scientific Computing Networking and Communications	44,702	55,829	55,829	71,689	15,860	28.4%
Research and Infrastructure Cross-Disciplinary Activities	11,474	17,683	17,683	27,133	9,450	53.4%
Science and Technology Centers	16,871	17,416	17,416	21,416	4,000	23.0%
	0	0	5,925	6,700	775	13.1%
<b>Total, CISE</b>	<b>123,913</b>	<b>148,726</b>	<b>152,080</b>	<b>191,200</b>	<b>39,120</b>	<b>25.7%</b>
<b>ENGINEERING</b>						
Chemical and Thermal Systems	31,610	34,486	33,196	35,912	2,716	8.2%
Mechanical and Structural Systems	23,670	26,225	24,715	26,778	2,063	8.3%
Electrical and Communications Systems	28,957	32,606	31,793	36,040	4,247	13.4%
Design and Manufacturing Systems	17,660	20,011	19,280	21,850	2,570	13.3%
Biological and Critical Systems	33,787	37,774	36,639	39,920	3,281	9.0%
Engineering Centers	36,391	43,225	41,638	50,700	9,062	21.8%
<b>Total, ENG.</b>	<b>172,075</b>	<b>194,327</b>	<b>187,261</b>	<b>211,200</b>	<b>23,939</b>	<b>12.8%</b>
<b>GEOSCIENCES</b>						
Atmospheric Sciences	96,154	103,975	98,726	109,440	10,714	10.9%
Earth Sciences	51,262	59,120	54,159	65,160	11,001	20.3%
Ocean Sciences	134,946	146,120	146,173	152,880	6,707	4.6%
Arctic Research Program	8,293	10,810	10,324	12,820	2,496	24.2%
Science and Technology Centers	0	0	900	1,000	100	11.1%
<b>Total, GEO</b>	<b>290,655</b>	<b>320,025</b>	<b>310,282</b>	<b>341,300</b>	<b>31,018</b>	<b>10.0%</b>
<b>MATHEMATICAL AND PHYSICAL SCIENCES</b>						
Mathematical Sciences	63,763	67,591	65,873	76,046	10,173	15.4%
Astronomical Sciences	85,788	89,501	89,518	94,018	4,500	5.0%
Physics	117,896	125,961	122,558	129,998	7,440	6.1%
Chemistry	94,028	98,571	96,628	103,428	6,800	7.0%
Materials Research	110,556	118,181	114,977	135,177	20,200	17.6%
Science and Technology Centers	0	0	13,699	14,833	1,134	8.3%
<b>Total, MPS</b>	<b>472,031</b>	<b>499,805</b>	<b>503,253</b>	<b>553,500</b>	<b>50,247</b>	<b>10.0%</b>
<b>PROGRAM DEVELOPMENT AND MANAGEMENT</b>	<b>84,466</b>	<b>95,550</b>	<b>91,650</b>	<b>104,000</b>	<b>12,350</b>	<b>13.5%</b>
<b>SCIENCE AND TECHNOLOGY CENTERS</b>	<b>0</b>	<b>30,000</b>	<b>326</b>	<b>20,000</b>	<b>19,674</b>	<b>N/A</b>

\*Upon approval of the requested increase in the FY 1989 PD&M limitation, \$1,100,000 will be transferred to the PD&M activity for cost increases resulting from the 1989 government-wide pay adjustment. Proportional reductions will be made in all other Research and Related Activities to accommodate this transfer.