

# UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

SUMMARY REPORT OF THE SEPTEMBER 21, 1990

UNOLS ANNUAL MEETING  
AMERICAN INSTITUTE OF ARCHITECTS  
1735 NEW YORK AVENUE N.W.  
WASHINGTON, D.C.

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Summary Report of the UNOLS Annual Meeting

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**Summary Report of the UNOLS Annual Meeting  
September 21, 1990**

**American Institute of Architects  
1735 New York Avenue NW  
Washington, D.C.**

**General:** Issues and items are reported in the order in which they are addressed at the September, 1990 UNOLS Annual Meeting. Exceptions to the order in the published agenda (Appendix I) are noted.

**A list of registered attendees** has been compiled from forms submitted at the meeting. (Appendix II). Information available from the UNOLS Office included: **UNOLS Directory, UNOLS Fleet Ship Scheduling Contacts, UNOLS Fleet Marine Operations Contacts, List of Advisory/UNOLS Councils, List of Executive Committees, and Summary of UNOLS Fleet Operations, 1989 -- Operating Days and Sea Days (Appendices III - IX).**

**Introduction and Welcome:** George Keller, UNOLS Chair, called the meeting, welcomed UNOLS member representatives and other attendees and presented the agenda.

**Report from UNOLS Chair and Council:** George Keller opened his report by noting that during 1989-1990, UNOLS had operated in accordance with philosophies and policy set forth in the revised UNOLS Charter adopted September 15, 1989. That is, UNOLS has been shifted so as to more fully represent **academic ocean researchers who are users of UNOLS research vessels and facilities.** The UNOLS Council has acted as a UNOLS board of directors, while many UNOLS activities and issues have been under the purview of appropriate standing UNOLS committees. (There are four standing committees: the ALVIN Review Committee, the Fleet Improvement Committee, the Research Vessel Operators Committee and the Ship Scheduling Committee.)

**Designation of UNOLS Vessels** had been an issue during the past year. While those criteria that relate UNOLS vessels to the academic-based portion of the federally-sponsored national oceanographic program remain of importance (e.g. ships operated by an institution appropriate to UNOLS, in support of the national ocean program, and receiving significant federal funding), increased importance has been placed on safety and performance standards (e.g. adherence to UNOLS safety standards, successful completion of a recognized ship inspection program, cost accounting and performance standards and participation in UNOLS scheduling).

**The UNOLS Council reiterates the statement that designation as a UNOLS vessel carries no assurance of federal funding. Rather, it provides assurance to prospective users that the designated vessel is capable of supporting oceanographic research to acceptable levels of safety and performance.**

Concern has been voiced that these policies result in an open-ended UNOLS fleet. It can be particularly awkward to ask for federal appropriation to build new ships at the same time the UNOLS fleet is growing through newly-designated UNOLS vessels. The Council has considered these items but has not been willing to apply additional criteria that would limit fleet size.

Two additional ships were designated UNOLS vessels in 1989-1990: MAURICE EWING and SEWARD JOHNSON.

Problems with UNOLS ship scheduling had been addressed during the year. In recent years changes in the UNOLS fleet and changes in the patterns of science program ship requirements had, together, led to questions as to the balance between vessels of the UNOLS fleet and science program requirements for ship time. Further, the efficiency of the UNOLS ship scheduling process was questioned. Late in 1989 the funding agencies, NSF and ONR, presented and the UNOLS Council accepted charges:

to address the UNOLS ship scheduling process and, as necessary, take steps to improve the process and

to examine the UNOLS fleet regionally to determine if available ships matched requirements especially in the mid Atlantic region

UNOLS Schedule Review meetings were initiated by the UNOLS chair, beginning in July, 1990. Recommendations arising from the Schedule Reviews were reviewed by the UNOLS Council and then sent to individual Operators by letter from the UNOLS Chair. Letters and recommendations arising from the September 19 Schedule Review were to be sent during the week of September 24. (The general tenor of those recommendations is discussed in the report of the Ship Scheduling Committee.) In addition to the development of an effective UNOLS-fleet schedule for 1991, a continuing concern has been to achieve schedule support for all essential science programs within funding and budgeting limits. The process has been successful in achieving that goal. The UNOLS Chair and Council commended Ship Scheduling Chair Mike Rawson, L-DGO and Vice Chair George Shor, Scripps for their diligent efforts.

The Fleet Improvement Committee has been among the hardest working and most productive of the UNOLS Committees. Their efforts toward establishing science mission requirements for various ship types and classes and in developing conceptual and preliminary designs, especially for large ships, have been very useful. The FIC also produced and published the UNOLS Fleet Improvement plan, 1990. Members of the Fleet Improvement Committee deserve the UNOLS community's praise and appreciation for their hard work. During 1990 members were: Donn Gorsline and Worth Nowlin, co-Chairs, and members Bob Dinsmore, Ken Johnson, Mark Langseth, Jim Murray, Bruce Robison and Tom Royer.



The FIC will continue work toward an ice-capable ship for the Arctic (a crucial item for the 1990's) and to examine the flexibility of a research submarine.

The ALVIN Review Committee had, in June, 1990, reviewed requests for ALVIN dives in 1991 and had recommended investigations for a total of about 150 dives. Although this should result in an efficient ALVIN/ATLANTIS II schedule, the ARC remained concerned that requests for ALVIN use were considerably lower than they had been throughout most of the 1980's. Reasons for this reduced demand were varied. The ARC had taken steps to try to promote a higher rate of subscription for ALVIN dives. The report **Submersible Science Study for the 1990's** had been completed and accepted for publication by the UNOLS Council. The report focuses on the need for expanded facilities for undersea research. The UNOLS Council intends to review recommendations in the report, especially those dealing with UNOLS oversight roles for the undersea research and with the need for more and highly capable facilities.

Changes to the UNOLS fleet, especially the imminent addition of large, highly capable ships have been issues of broad interest throughout UNOLS. Renovations of the KNORR and MELVILLE have run into problems of more-than-expected costs and uncertain delays to operational availability. Delays in availability have had significant impact on 1992 schedules. It is not clear whether or not there will be impact on future ship acquisitions.

The THOMAS G THOMPSON (AGOR-23) was launched in July, 1990. Professor (emeritus) Dora P. Henry was named sponsor for the launching. Construction has proceeded nicely on what promises to be a very impressive, modern research vessel.

The MAURICE EWING has been converted to UNOLS use and joined the fleet.

The issues of export licenses for certain oceanographic instrumentation and whether or not multi-beam echo sounding systems such as SEABEAM were on the munitions list had been before UNOLS for most of the year. A resolution of these issues had been reached, generally satisfactory to UNOLS. Although SEABEAM remains on the munitions list and licenses for its temporary export must be sought from the Office of Defense Trade Controls, Department of State, many conditions on the licenses that would have been particularly onerous to academic research institutions have been waived.

Many agencies are beginning to place new emphasis on their programs in coastal oceanography. The scope of these programs, their requirements for ships and other facilities and other definitions of the kinds of ships and facilities needed will be important issues to UNOLS over the next several years.



Competition for an institution to host the UNOLS Office and for a new Executive Secretary was completed during the year. The University of Rhode Island received UNOLS' endorsement, and forwarded their proposal to NSF in August, 1990. Jack Bash would be Executive Secretary when the new Office opens at URI in May, 1991.

George Kellar closed the report by asserting to the UNOLS membership the need for an agency-champion for the federally-sponsored national program in oceanography. He contended that because of their structure, authority and purpose, neither NSF nor ONR can fill that role. NOAA was the best hope (though not ideal) and has, especially with John Knauss as Administrator, the will to undertake the role. The chair reiterated the need for aggressive leadership among oceanographic agencies, and urged UNOLS members to support efforts to establish a champion.

**COMMITTEE REPORTS**

Mike Rawson, Chair, Ship Scheduling Committee, reported on September 19 Ship Scheduling and Schedule Review meetings. He also characterized the UNOLS scheduling process as it was conducted during 1990.

Estimates of ship operations costs and tentative schedules for 1992 as submitted by UNOLS Operators prior to the Ship Scheduling meeting exceeded available funding and science days funded:

	NSF		ONR		OTHER		TOTAL	
	Days	\$M	Days	\$M	Days	\$M	Days	\$M
Estimated	4,063	38.7	780	7.05	763	5.09	5,606	50.84
Anticipated		26-28		7.1		5.1		38-40
Shortfall		12-10						12-10

The general reason for the extraordinary estimated shortfall (\$10-\$12 million in operations proposed to NSF and in the fleet total) was that few of the funding decisions arising from NSF's August panels were yet available. NSF did, however provide information on their overall program priorities for 1991 operations, thus allowing strong inferences on most pending projects. With the information available during the Ship Scheduling meeting, problem areas in schedules were identified. Recommendations were reached at the Schedule Review meeting that would reduce estimated 1991 fleet costs and operations to:

	NSF		ONR		OTHER		TOTAL	
	Days	\$M	Days	\$M	Days	\$M	Days	\$M
Recommended	2,927	28.5	769	7.9	763	5.09	4,459	41.5

The recommendations for reduced levels of operation were reached by eliminating projects not likely to be funded, eliminating from the schedules a set of NSF projects to be deferred until 1992, and by swapping projects among ships to reduce transits and to

enhance overall schedule efficiency. Significant problems identified with fleet schedule were:

1. Uncertainties in delivery dates for the KNORR and MELVILLE jeopardized NSF requirements for WOCE operations and ONR requirements for the ML-ML project. If these ships would not be available at or near the times currently projected, then contingency options would be essential to support WOCE and ML-ML.
2. Schedules for large and intermediate ships needed review and rearrangement to eliminate some long transits.
3. Schedules for three ships then scheduled for work in the western Pacific had to be examined for consolidation so that one or more of the three would not be deployed there.
4. JGOFS field operations in the Pacific were deferred until 1992; the THOMPSON would require an alternative schedule.
5. Schedules for four class IV ships in the mid-Atlantic were reviewed to improve efficiency and to consolidate the work on three or fewer ships.

The fleet schedule recommended for 1991 would allow most ships to operate at reasonable levels, although a few could be laid up.

NSF and ONR representatives agreed that the addition of a UNOLS schedule review process had been an essential improvement and that the scheduling process for 1991 had been satisfactory. The last target date for proposals requiring ship time in 1992 will be May, 1991, so next year's tentative schedule should not carry such a high percentage of pending projects so late.

Mike Rawson and George Shor, retiring Chair and Vice Chair recommended that 1991 Ship Scheduling and Schedule Review meetings will be on about the same dates as were meetings in 1990.

The Ship Scheduling Committee had selected and George Keller, UNOLS Chair, had appointed Ken Palfrey, Oregon State University as Ship Scheduling Committee Chair and Ron Hutchinson, University of Miami as Vice Chair. They would take those positions for the 1991 scheduling cycle (1992 schedules).

Jim Williams, Research Vessel Operators Committee Chair reported that safety aboard ships continued as RVOC's main emphasis during 1990. The RVOC Safety and Training manual was to be finished in late 1990. The RVOC Safety Committee, Bill Coste, Ken Palfrey, Jack Bash, Mike Prince and Joe Coburn had, by contract, produced an excellent, useful manual. The RVOC hopes to produce

additional safety and training aids, after the **Safety and Training Manual** has been distributed.

The RVOC Annual Meeting was to be held in October, 1990, in New Orleans. The meeting was to emphasize shipboard technology (new winches, use of fibre optics), safety, chartering policy, small boat operations and smoking on board ships. (Smoking aboard UNOLS ships, especially in public spaces had become a significant issue in 1990.) The RVOC expected new regulations or anticipates the need for policies on UNOLS ships on the disposal of plastics and garbage, on pollution abatement/control and on smoking aboard ships. Ship operators would also be alerted that it may be necessary soon, to provide handicap access on research vessels.

RVOC was also working with NSF and the American Academy of Undersea Scientists (AAUS) to develop consistent policy for diving from aboard UNOLS ships and to improve UNOLS Safety Standards pertaining to diving.

RVOC and UNOLS operators appreciate support received from the UNOLS Chair, Council and Members in setting a consistent policy on the use of alcohol aboard ships. No incidents have been reported since the UNOLS community were notified on the uniform UNOLS alcohol policy, consistent with USCG regulations of 1988.

The impact of U.S. Customs policies concerning inspections for drugs (i.e. the Zero Tolerance Program) was less in 1990 than had been. RVOC's 1989 meeting with Customs and Coast Guard representatives had had positive effect. Unofficially, the Customs policy relative to UNOLS research vessels would now call for citation or a fine upon discovery of minute quantities of illegal drugs in an individual's possession. There would be no constructive seizure.

Most UNOLS operators had implemented their mandatory drug testing program for ship crews. Implementation by multi-ship operators had gone well; there had been only a few positive test results.

Feenan Jennings, ALVIN Review Committee Chair reported that the ARC had reviewed results for ALVIN/ATLANTIS II use in 1991. In June, 1990, the ARC had reviewed 20 requests for ALVIN dives. They had recommended that 15 requests for 151 dives be scheduled in 1991. In addition, the ARC had recommended that ATLANTIS II undertake a 28-day non-ALVIN project. The recommended 1991 ALVIN/ATLANTIS II schedule would begin with the ATLANTIS II SEA BEAM project off Mexico (January), followed by ALVIN projects in California Basins and Guaymas Basin (February, March), three projects on the EPR (April-June), a project on Fieberling Guyot (July), and a series of projects on Gorda-Juan de Fuca (August-October). Funding decisions were then still pending for more than half of the recommended projects. Although recommendations would comprise a tight, efficient schedule, the ALVIN/ATLANTIS II would not be employed after October. The ARC remained concerned that requests for ALVIN use remained at a lower level than they



had been during most of the 1980's. Reasons for the lower rate of subscription for ALVIN are not simple. A factor is competition for NSF science funds from large programs such as WOCE, JGOFS and RIDGE. Another factor is the almost-total lack of ALVIN requests under ONR sponsorship. The ARC Chair gave a review of the report **Submersible Science Study for the 1990's**. The Study, by a committee of Bruce Robison, Chair, and members Robert Aller, Richard Cooper, Joe Curray, Dan Fornare, Robert Wall, Karen Wishner and Dana Yoerger, made an assessment of trend in the use of manned and unmanned submersibles in oceanographic research and projected levels of use through the 1990's. The study goes on to develop a comprehensive submersible science facilities plan which satisfies the science requirements identified, provides a rationale for those facilities and suggests funding and management arrangements.

The Study concluded that ocean community requirements for manned and unmanned submersibles facilities was high in all disciplines of oceanographic research. Critical research targets exist throughout the water column and at all ocean depths. The principal recommendations from the study:

1. ALVIN should significantly upgrade its tools and instrumentation for a continuing high level of utilization.
2. Efforts to provide effective access to depths beyond 4000 meters are critical and should be processed without delay.
3. NSF and ONR should develop means for commercial leasing of submersibles, NOAA's NURP centers should establish a west coast regional program and NURP centers should join UNOLS.
4. UNOLS should establish a Submersible Science Committee.

Don Heinrichs had written to ARC suggesting that, although **Submersible Science Study for the 1990's** was valuable and raised a number of excellent issues, it needed stricter definition and better scaling to support its recommendations.

David Duane, NOAA, briefed UNOLS members on NOAA's Undersea Research Programs and, at the same time, advanced some NOAA reservations on the **Submersible Science Study**.

The NOAA Undersea Research Program (NURP) has consistently received strong support from NOAA and from Congress although there has been resistance from the Administration, including the Department of Commerce. NOAA sees NURP as a national program rather than a NOAA program as portrayed in the Study. Last year NURP supported 500 investigators from 200 institutions; fewer than 5% were from NOAA. NURP has reached agreement with the

University of Alaska to establish a west coast center for undersea research. NURP operates under funding constraints, a consequence of level funding over the past several years. NURP funding to investigators emphasize facilities support; procedures are straightforward for submitting proposals to NURP.

The ARC recommended and the UNOLS Chair and Council appointed Karen Von Damm, Oak Ridge National Laboratory as a member of the Committee, replacing Geoff Thompson, WHOI. The rest of the Committee will be Feenan Jennings, Chair, and members Dave Cacchione, USGS, Jeff Fox, URI, Casey Moore, UCSC, Doug Nelson, UCD, Mary Scranton, SUNY StonyBrook, Gary Taghon, OSU and Richard Pittinger, ex officio, from WHOI.

The Fleet Improvement Committee report was deferred until later in the meeting.

#### REPORTS FROM FEDERAL FUNDING AGENCIES

Don Henrichs, reporting from NSF, noted a number of personnel changes. Eric Bloch had resigned as Director. The White House had forwarded nomination for Walter Massey, a physicist, then at the University of Chicago, as Director of the National Science Foundation. Dr. Massey was expected to take up those duties in January, 1991.

Budget status for FY-1990 and a projection for FY-1991 were made. Earlier budget projections for 1990 (e.g. UNOLS Council meeting July 12, 13, 1990, Appendix III) had held up. Almost all of NSF'S funded science had been supported within the Ship Operations allocation. (A few projects funded for the western Pacific had been deferred.) A more serious problem, due in part to budgetary constraints, but also to delay in KNORR/MELVILLE availability, was that WOCE field investigations could not be initiated in October, 1990 as planned. Funds for Ships, Upgrades included \$2.8 million in payments for EWING acquisition. The EWING began operation in the UNOLS fleet in June, 1990, about six weeks later than scheduled. Funds for Technology Development included, among other equipment development projects, the WOCE water sampler.

NSF'S budget request for 1991 was before Congress. Congressional reaction had been positive and the Ocean Sciences Division hoped to realize increased funding for Global Change and to begin ship upgrades for the OCEANUS class. Ship Operations funding would probably be about at the FY-1990 level.

Al Sutherland reported that DPP'S budget outlook for 1991 was very uncertain. Uncertainties arose from the strong possibility that Congressional language might direct parts of the appropriation to DPP toward specified Arctic or Antarctic activities.

Among DDP personnel changes of interest to the UNOLS community; Ron La Count had left DDP and NSF; Skip Owen, Antarctic Support Associates, who is currently the point of contact for POLAR DUKE operations and scheduling, was to fill the same role for the NATHANIEL B. PALMER when that ship initiates Antarctic operations.

A presentation on the NATHANIEL B. PALMER provided information on the ship's characteristics, projected operations, scientific work spaces, scientific equipment and instrumentation (see Appendix X). Performance specifications for the ship were patterned after UNOLS Science Mission Requirements for a large, high-endurance, general purpose research vessel. Capabilities for operations in ice (e.g. 3 knots in 3 feet of level ice, baltic door, weatherized staging hangers) were developed in DPP and the polar oceanographic committee. A PALMER oversight committee has been established with representatives from NSF/OCE, Office of the Oceanographer of the Navy, NAVSEA and MARAD in addition to UNOLS community/user representatives Bob Dinsmore, Sharon Smith, Dave Nelson, Dennis Hayes, Tom Royer and Dolly Dieter.

Keith Kaulum noted that ONR could face cuts of up to 15%, a consequence of Operation Desert Shield. Cuts of 15% would probably be taken vertically, thus cancelling entire programs.

Many problems remained unresolved in the KNORR-MELVILLE renovation project. Although the shipyard had recently overhauled contract supervision and replaced some subcontractors, there was, as yet, no conclusive evidence that the rate of progress had been made satisfactory. According to two assessments of contract progress, KNORR was about 80% completed, MELVILLE 35-40%. At ONR, Admiral Miller, Chief of Naval Research, had brought major decisions on the program to his own desk; critical decisions were expected by the end of September.

Construction of the Thomas G. Thompson, by contrast was proceeding very well. Delivery was scheduled for early July, 1991, as projected when construction began in 1989. The contract had been a model for NAVSEA, one reason that AGOR-24 and AGOR-25 were projected as clones. The ship promised to be an excellent research vessel for service to the UNOLS community.

AGOR-24 was secure in the Navy's budget for 1992. The Circular of Requirements was to be finished by about March, 1991 with RFP for construction in April-May, 1991, proposals due in August and construction award in December, 1991.

AGOR-25 was in Navy budget plans for 1994, as an option buy on AGOR-23/24.

Solicitation for proposals to operate AGOR-24 or AGOR-25 (but not both by one institution) was expected in October, 1990, with proposals due in May, 1991. The solicitation was to be similar



to that used for AGOR-23, emphasizing similar criteria except without the *quid pro quo* of retiring an existing AGOR-23.

Scott McKeller, NOAA, Office of NOAA Corps and Operations, (ONCO) reported that the NOAA fleet operated for 3700 days at sea in FY-1990. The ships OCEANOGRAPHER, ALBATROSS IV, DAVIDSON, PIERCE and COBB were inactive during 1990. Plans for 1991 would have 18 ships active for 3,485 days at sea. A 1992 initiative for fleet operations would provide for critical maintenance throughout the NOAA fleet, modernization of selected ships and increase in fleet days at sea.

Admiral Sigmund Petersen had replaced Admiral Billy Moran as head of ONCO. Admiral J. Austin Yeager, was the new head of Charting and Geodetic Services.

Virginia Tippie, Assistant Administrator, National Ocean Sciences, National Oceanic and Atmospheric Administration addressed the UNOLS Members on New Directions in NOAA Ocean Programs.

In his introduction UNOLS Chair George Keller noted that NOAA remained the principal mission-oriented civil oceanographic agency in the federal government. As head of NOS, the NOAA component responsible for ocean mission activities, Ms. Tippie was a key player in the national ocean program and for UNOLS-NOAA cooperation.

Ms. Tippie began by noting NOAA Administrator John Knauss's vision of NOAA as The Earth System Agency. In developing efforts to describe and understand the Earth System, NOAA will emphasize strong ties and cooperative endeavors with the academic community, and, with UNOLS, reciprocal availability and use of ships.

The National Ocean Service (NOS) is one of five main components (offices) in NOAA, along with the National Weather Service, National Marine Fisheries Service, Oceanographic and Atmospheric Research and Environmental Satellite and Data Services. NOS is responsible for NOAA's ocean-oriented missions, together with mission-related research and development; it maps and monitors the oceans. Activities are conducted through four offices: Charting and Geodetic Services (again, soon, to be called Coast and Geodetic Survey), Ocean and Earth Sciences (a new division whose new director is Dana Kester), Ocean and Coastal Resource Management (coastal zone and marine sanctuaries management) and Ocean and Coastal Resource Assessment. Immediate goals in NOS are to modernize procedures and facilities for mapping and monitoring the oceans and to strengthen their science program in support of their mission, the management needs of NOAA and of the Administration.

NOAA-wide initiatives in FY-1991 and 1992 would expand ocean research and service programs, and intensify the opportunity and

**UNOLS.** NOAA's Climate and Global Change initiative would provide \$87 million in new program funds in 1991. The Coastal Ocean Program initiative would provide \$17.4 million and an initiative for Earth Systems Data and Information Management (to provide service to all national Global Change Programs, not just NOAA's) would provide \$7 million.

In response to queries from UNOLS members, Ms. Tippie suggested that the most immediate opportunities for cooperative ventures were in joint use of ships and other facilities and in the development and implementation of global ocean observing networks. On the question of a co-operative (federal agencies, states and academic institutions) effort to acquire a fleet of ships to support burgeoning levels of coastal/estuarine oceanography, NOAA is interested and flexible.

Donn Gorsline, Fleet Improvement Committee Chair, reported that FIC had, in 1990, published and distributed an updated UNOLS Fleet Improvement Plan. The Committee hopes to complete and publish early in 1991: Science Mission Requirements for a Research Submarine, Science Mission requirements for a Submersible Support Ship and a Small Ship Compendium (an encyclopedia of small ship designs, design criteria, mission requirements, etc.).

- Liaison with sponsoring agencies includes projects underway: participation in and overview of the NSF-sponsored conceptual design for an ice-capable research vessel for the Arctic,
- overview of OCEANUS-class intermediate ship refits,
- review of NOAA Fleet Modernization Study
- review to ONR of the Navy's Circular of Requirements for AGOR-24, and
- overview of ships under construction or major renovation (EWING, T.G. THOMPSON, KNORR, MELVILLE, VICKERS and PALMER).

The Committee has also proceeded through a contract with conceptual design and model testing for an intermediate SWATH research vessel.

The FIC has begun work in conjunction with the UNOLS Council on the question of research vessel needs for coastal oceanography.

Donn Gorsline, Worth Nowlin, Jim Murray and Bruce Robison were stepping down from the FIC. George Keller, UNOLS Chair, commended these members for their service to the oceanographic community and thanked them for their hard work.

The UNOLS Chair appointed Marcus Langseth as FIC Chair and new committee members Peter Betzer, Teri Chereskin, Charlie Miller and Don Wright to join continuing members Bob Dinsmore, Ken Johnson and Tom Royer.

Tom Cocke, Department of State, reported that of 71 requests for clearance in research in foreign waters reviewed during 1990, 52 (73%) were received late (with less than the specified lead time). (See Appendix XI for details.) This is a serious matter because late submissions might not be granted clearance, thus preventing research and because habitually late submission of clearance requests can jeopardize subsequent timely requests. Although Tom's office in DOS will continue to make extra efforts to gain clearances when extraordinary circumstances justify late requests, they cannot continue to put forth special efforts for late requests resulting from indifference. The UNOLS Council recognized the overall threat to research in waters under foreign jurisdiction. They urged that DOS adopt a tougher policy, to the point of refusing to process clearance papers from P.I.'s/Institutions who were habitually late without justification.

In other developments, an additional position to aid in processing clearance requests had been established (NSF funding through JOI). A computer system for tracking requests was on line.

The UNOLS Chair had notified NSF that UNOLS had reviewed proposals for hosting the UNOLS Office and had endorsed the proposal from the University of Rhode Island with Jack Bash as candidate-executive secretary. (See Appendix XII) The University of Rhode Island had submitted their proposal to NSF.

UNOLS Elections: A Slate of Candidates (Appendix XIII) had been prepared for elections to UNOLS Chair, UNOLS Vice Chair and one UNOLS Council position each from among designated representatives of Member, Operator institutions and at-large, affiliated with any UNOLS Member institution.

Election results:

Gary Brass	UNOLS Chair
Tom Johnson	UNOLS Vice Chair
George Grice	UNOLS Council, designated reps, Operators
David Karl	UNOLS Council, at-large, UNOLS Members

There being no further business the meeting was adjourned.



**ANNUAL MEETING AGENDA**  
**0830, Friday, September 21, 1990**  
**Board Room**  
**American Institute of Architects**  
**1735 New York Avenue NW**  
**Washington, DC**

**Introduction and Welcome:** George Keller, UNOLS Chair.

**Report from UNOLS Chair and Council:** George Keller, UNOLS and Council Chair, will report on 1989-1990 activities, current issues and issues continuing into 1991.

**Ship Scheduling Committee:** Mike Rawson, Chair, will report on the scheduling process during 1990, schedules for 1991, costs balanced against expected funds and recommendations from the SSC.

**Research Vessel Operators Committee:** Jim Williams, Chair, will report on RVOC activities and issues during the year and preview the agenda for the October 9-11, 1990 RVOC meeting.

**ALVIN Review Committee:** Feenan Jennings, Chair, will provide a report on ALVIN program status, ARC activities during the year and plans for 1991-1992. Presentation of the Submersible Science Study for the 1990's.

**Fleet Improvement Committee:** Donn Gorsline, Chair, will report on 1989-1990 accomplishments, reports issued, including the updated UNOLS Fleet Improvement Plan, issues and plans for the coming year.

**Remarks from Federal Funding Agencies:** Information from Federal funding agencies (DOE, MMS, NOAA, NSF, ONR and USGS) on 1990 funding and forecasts for 1991 or later, ship operations and science support. ONR will report on construction status of THOMAS G. THOMPSON (AGOR-23), KNORR and MELVILLE renovation and budgetary status of AGOR-24 and AGOR-25. NSF/DPP will report on their build/lease contract for RVIB and activities/plans for 1991 and beyond.

**Clearances for Research in Foreign Jurisdictions:** Tom Cocke, Department of State/Office of Ocean Affairs, will summarize the 1990 clearance experience and note issues and problems. Discussion, as appropriate on export control for high resolution bathymetry systems (and other research instrumentation).

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LUNCH

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**ADDRESS TO UNOLS:** Virginia Tippie, Assistant Administrator, National Ocean Services, National Oceanic and Atmospheric Administration will speak on **New Directions in NOAA Ocean Programs**. There will be opportunity for discussion.

**Issues before UNOLS:** Various issues of interest to UNOLS Members have arisen during the year. The UNOLS Chair will introduce these issues or elaborate on remarks made earlier:

- Improving the UNOLS ship scheduling process
- criteria for designating UNOLS research vessels
- mix of large and small ships in UNOLS Fleet Improvement
- potential for additional ship construction under Federal funding
- what is an effective schedule year for a UNOLS ship

UNOLS Members may wish to raise additional issues.

**UNOLS Office:** Since the September, 1989 UNOLS Meeting, a competition has been completed among UNOLS Operator institutions for **hosting the UNOLS Office and providing a new Executive Secretary**. The University of Rhode Island, together with their candidate Executive Secretary, Jack Bash, were recommended by an Evaluation Committee, the UNOLS Council and UNOLS Members. The recommendation was forwarded to funding agencies and the University of Rhode Island has submitted their proposal. It is anticipated that the UNOLS Office will be moved to the University of Rhode Island in May, 1991. Bill Barbee and the current Office will be maintained for a few months thereafter, to help provide for an orderly transition. Remarks by George Keller, Bill Barbee and Jack Bash.

**UNOLS Elections:** Election for the following UNOLS positions will be held:

**UNOLS Chair**  
**UNOLS Vice Chair**  
**UNOLS Council Member**, from among designated representatives of UNOLS Operator institutions  
**UNOLS Council Member**, at large, affiliated with any Member institution

A call for Nominations was issued in July, 1990. Slates of nominees have been distributed.

**Appointments to UNOLS Committees:** The UNOLS Chair will announce new appointments to ARC, FIC, RVOC and SSC, in accordance with the UNOLS Charter.

**Other Business:** Other issues, actions or recommendations as might be introduced. The order of business may be rearranged to reach a hoped-for mid-afternoon adjournment.

**UNOLS ANNUAL MEETING**  
**WASHINGTON, DC - September 21, 1990**

**Attendees:**

Timothy M. Askew, Harbor Branch Oceanographic Institution  
William D. Barbee, UNOLS Office  
Howard S. Barnes, Bermuda Biological Station for Research  
John F. Bash, University of Rhode Island  
Peter R. Betzer, University of South Florida  
Douglas C. Biggs, Texas A&M University  
Garrett W. Brass, University of Miami  
Larry Clark, National Science Foundation  
W. Thomas Cocke, U.S. Department of State  
Bruce K. Cornwall, Johns Hopkins University  
James W. Coste, University of Hawaii  
Patrick Dennis, Joint Oceanographic Institutions, Inc.  
Emma R. Dieter, National Science Foundation  
David B. Duane, National Oceanic & Atmospheric Administration  
Barbara Funke, UNOLS Office  
Linda M. Goad, University of Michigan  
Donn S. Gorsline, University of Southern California  
Judith Gray, National Oceanic & Atmospheric Administration  
George D. Grice, Woods Hole Oceanographic Institution  
James J. Griffin, University of Rhode Island  
Douglas E. Hammond, University of Southern California  
Donald F. Heinrichs, National Science Foundation  
Ron Hutchinson, University of Miami  
K. William Jeffers, University of Washington  
Feenan D. Jennings, Texas A&M University  
Tom Johnson, DUKE/University of North Carolina  
A.N. Kalvaitis, National Oceanic & Atmospheric Administration  
Keith Kaulum, Office of Naval Research  
George H. Keller, Oregon State University  
June E. Keller, Office of Naval Research  
Scott M. McKellar, National Oceanic & Atmospheric Administration  
Stewart Nelson, Office of the Oceanographer of the Navy  
D. L. Newman, University of Southern California  
Charles A. Nittrouer, State University of New York, Stony Brook  
Harold H. Owen, Antarctic Support Associates  
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Kennard M. Palfrey, Oregon State University  
Mike Prince, Moss Landing Marine Laboratories  
Steve C. Rabalais, Louisiana Universities Marine Consortium  
Gilbert T. Rowe, Texas A&M University  
Michael Rawson, Lamont-Doherty Geological Observatory  
Thomas C. Royer, University of Alaska  
George Shor, Jr., Scripps Institution of Oceanography  
Lee R. Stevens, Council on Ocean Affairs  
Alexander L. Sutherland, National Science Foundation  
Peter Thomas, University of Texas  
Virginia Tippie, National Oceanic & Atmospheric Administration  
Joseph F. Ustach, DUKE/University of North Carolina  
James G. Williams, Scripps Institution of Oceanography  
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& AQUATIC SCIENCES Dr. Theodore C. Moore, Jr.

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Dr. Bruce Robison

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NAVAL POSTGRADUATE SCHOOL Dr. Curtis Collins

UNIVERSITY OF NEW HAMPSHIRE Professor E. Eugene Allmendinger

NEW YORK STATE UNIVERSITY COLLEGE AT BUFFALO  
Dr. Harlsh Sikka

STATE UNIVERSITY OF NEW YORK AT STONY BROOK  
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NORTH CAROLINA STATE UNIVERSITY

UNIVERSITY OF NORTH CAROLINA AT WILMINGTON  
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OLD DOMINION UNIVERSITY Dr. Larry Atkinson

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SAN DIEGO STATE UNIVERSITY Dr. Clive Dorman

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UNIVERSITY SYSTEM OF GEORGIA, SKIDAWAY INSTITUTE  
OF OCEANOGRAPHY Dr. David W. Menzel

UNIVERSITY OF TEXAS Dr. Arthur E. Maxwell

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VIRGINIA INSTITUTE OF MARINE SCIENCE Dr. Frank O. Perkins

UNIVERSITY OF WASHINGTON Dr. Arthur Nowell

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UNIVERSITY OF WISCONSIN AT SUPERIOR Dr. Mary Balcer

WOODS HOLE OCEANOGRAPHIC INSTITUTION  
Dr. George Grice



## SHIP SCHEDULING CONTACT

THE UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM  
LIST OF RESEARCH VESSELS (>20M) OPERATED BY UNOLS INSTITUTIONS

							Rev. (9/90)
OPERATOR	NAME	LOA (FT/M)	BUILT/ CONVERTED	NO. of SCIENTISTS	OWNER	SHIP SCHED. CONTACT	
University of Hawaii Marine Center #1 Sand Island Road Honolulu, HI 96819	MOANA WAVE	210/64	1973/1984	19	NAVY	Capt. J.W. Coste Marine Superintendent (808) 847-2661	
University of Alaska Institute of Marine Science Fairbanks, AK 99701	ALPHA HELIX	133/41	1966	15	NSF	Dr. Thomas Royer Chair, Ship Committee (907) 474-7835	
University of Washington School of Oceanography, WB-10 Seattle, WA 98195	C.A. BARNES	66/20	1966/1984	6	NSF	Dr. Arthur Nowell Director (206) 543-6487	
Oregon State University College of Oceanography Newport, OR 97365	WECOMA	177/54	1975	16	NSF	Capt. Kennard M. Palfrey Marine Superintendent (503) 867-0224	
Moss Landing Marine Laboratories PO Box 450 Moss Landing, CA 95039	POINT SUR	135/41	1981	12	NSF	Mr. Michael Prince Marine Superintendent (408) 633-3534	
University of Southern California Hancock Institute for Marine Studies 820 South Seaside Avenue Terminal Island, CA 90731	VICKERS	220/67	1973/1989	25	USC	Mr. Don Newman, Mgr. Marine Support Facility (213) 743-6977 830-4570	
University of California, San Diego Scripps Institution of Oceanography La Jolla, CA 92093-0210	MELVILLE T. WASHINGTON NEW HORIZON R.G. SPROUL	245/75 209/64 170/52 125/38	1969 1965 1978 1981/1985	29 22 13 12	NAVY NAVY U.C U.C.	Dr. George Shor, Jr. Ms. Rose M. Dufour Ship Scheduler(s) Code A-010 (619) 534-2853 534-2841	
University of Michigan Center for Great Lakes & Aquatic Sciences 2200 Bonisteel Boulevard Ann Arbor, MI 48109-2099	LAURENTIAN	80/24	1974	8	U.M.	Dr. Linda Goad Marine Superintendent (313) 763-5393	
Texas A&M University Department of Oceanography PO Box 1675 Galveston, TX 77553	GYRE	182/55	1973/80	20	NAVY	Capt. Dean Letzring Mngr. Marine Operations (409) 740-4469	
University of Texas Marine Science Institute Port Aransas, TX 78373	LONGHORN	105/32	1971/1986	12	U.T.	Mr. John Thompson Assoc. Director, Admin. (512) 749-6760	
Louisiana Universities Marine Consortium Marine Research & Education Center Star Route Box 541 (Cocodrie) Chauvin, LA 70344	PELICAN	105/32	1985	15	LUMCON	Mr. Steve Rabalais Marine Ops. Supervisor (504) 851-2808	
Harbor Branch Oceanographic Institution 5600 Old Dixie Highway Ft. Pierce, FL 34946	SEWARD JOHNSON EDWIN LINK	176/54 168/51	1984 1982/1988	20 20	H.B. H.B.	Mr. Tim Askew Marine Operations (407) 465-2400	
University of Miami, RSMAS Marine Department 4600 Rickenbacker Causeway Miami, FL 33149	COLUMBUS ISELIN CALANUS	170/52 64/20	1972 1971	16 6	U.M. U.M.	Mr. Ronald Hutchinson Marine Operations (305) 361-4880	
University System of Georgia Skidaway Institute of Oceanography P.O. Box 13687 Savannah, GA 31416-0687	BLUE FIN	72/22	1972/1975	8	U.G.	Mr. Lee Knight Assist. Director, Operations (912) 356-2486	
Duke/UNC Oceanographic Consortium Duke University Marine Laboratory Beaufort, NC 28516	CAPE HATTERAS	135/41	1981	12	NSF	Mr. Quentin Lewis Marine Superintendent (919) 728-3372	
Johns Hopkins University Chesapeake Bay Institute 4800 Atwell Road Shady Side, MD 20764	R. WARFIELD	106/32	1967	10	JHU	Mr. Bruce Cornwall Marine Superintendent (301) 867-7550, Ext. 246	
University of Delaware College of Marine Studies 700 Pilottown Road Lewes, DE 19958	CAPE HENLOPEN	120/37	1976	12	U.D.	Mr. Wadsworth Owen Director, Marine Operations (302) 645-4320	
Lamont-Doherty Geological Observatory Columbia University Palisades, NY 10964	MAURICE EWING	239/73	1983/1990	32	L-DGO	Mr. Michael Rawson Marine Sci. Coordinator (914) 359-2900, Ext. 367	
University of Rhode Island Graduate School of Oceanography Narragansett, RI 02881	ENDEAVOR	177/54	1976	16	NSF	Mr. John F. Bash Marine Superintendent (401) 792-6203	
Woods Hole Oceanographic Institution Woods Hole, MA 02543	KNORR ATLANTIS II OCEANUS DSRV ALVIN	279/85 210/64 177/54 25.8	1970/1989 1963 1975 1964	34 *29 12 2	NAVY WHOI NSF NAVY	Mr. Donald Moller Marine Ops. Admin. (508) 548-1400, Ex. 2277	

\*20 Scientists (includes one medic), plus 9 ALVIN group

## MARINE OPERATIONS CONTACT

THE UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM  
LIST OF RESEARCH VESSELS (>20M) OPERATED BY UNOLS INSTITUTIONS

								Rev. (9/90)
OPERATOR	NAME	LOA (FT/M)	BUILT/ CONVERTED	CREW	NO. of SCI.	OWNER	MARINE OPS. CONTACT	
University of Hawaii Marine Center #1 Sand Island Road Honolulu, HI 96819	MOANA WAVE	210/64	1973/1984	16	19	NAVY	Capt. J.W. Coste Marine Superintendent (808) 847-2661	
University of Alaska Institute of Marine Science Fairbanks, AK 99701	ALPHA HELIX	133/41	1966	9	15	NSF	Mr. Thomas Smith Marine Superintendent (907) 224-5261	
University of Washington School of Oceanography, WB-10 Seattle, WA 98195	C.A. BARNES	66/20	1966/1984	2	6	NSF	Capt. William Jeffers Marine Superintendent (206) 543-5062	
Oregon State University College of Oceanography Newport, OR 97365	WECOMA	177/54	1975	12	16	NSF	Capt. Kennard M. Palfrey Marine Superintendent (503) 867-0224	
Moss Landing Marine Laboratories PO Box 450 Moss Landing, CA 95039	POINT SUR	135/41	1981	9	12	NSF	Mr. Michael Prince Marine Superintendent (408) 633-3534	
University of Southern California Hancock Institute for Marine Studies 820 South Seaside Avenue Terminal Island, CA 90731	VICKERS	220/67	1973/1989	14	25	USC	Mr. Don Newman, Mgr. Marine Support Facility (213) 743-6977 830-4570	
University of California, San Diego Scripps Institution of Oceanography La Jolla, CA 92093-0210	MELVILLE T. WASHINGTON NEW HORIZON R.G. SPROUL	245/75 209/64 170/52 125/38	1969 1965 1978 1981/1985	23 23 12 5	29 22 13 12	NAVY NAVY U.C. U.C.	Capt. Jim Williams Marine Facilities Code P-005 (619) 225-9600	
University of Michigan Center for Great Lakes & Aquatic Sciences 2200 Bonisteel Boulevard Ann Arbor, MI 48109-2099	LAURENTIAN	80/24	1974	6	8	U.M.	Dr. Linda Goad Marine Superintendent (313) 763-5393	
Texas A&M University Department of Oceanography PO Box 1675 Galveston, TX 77553	GYRE	182/55	1973/1980	10	20	NAVY	Capt. Dean Letzring Manager, Marine Ops. (409) 740-4469	
University of Texas Marine Science Institute Port Aransas, TX 78373	LONGHORN	105/32	1971/1986	4	12	U.T.	Mr. John Thompson Assoc. Director, Admin. (512) 749-6760	
Louisiana Universities Marine Consortium Marine Research & Education Center Star Route Box 541 (Cocodrie) Chauvin, LA 70344	PELICAN	105/32	1985	5	15	LUMCON	Mr. Steve Rabalais Marine Ops. Supervisor (504) 851-2808	
Harbor Branch Oceanographic Institution 5600 Old Dixie Highway Ft. Pierce, FL 34946	SEWARD JOHNSON EDWIN LINK	176/54 168/51	1984 1982/1988	10 10	20 20	H.B. H.B.	Mr. Tim Askew Marine Operations (407) 465-2400	
University of Miami, RSMAS Marine Department 4600 Rickenbacker Causeway Miami, FL 33149	COLUMBUS ISELIN CALANUS	170/52 64/20	1972 1971	12 2	16 6	U.M. U.M.	Mr. Ronald Hutchinson Marine Operations (305) 361-4880	
University System of Georgia Skidaway Institute of Oceanography P.O. Box 13687 Savannah, GA 31416-0687	BLUE FIN	72/22	1972/1975	5	8	U.G.	Mr. Lee Knight Assist. Director, Operations (912) 356-2486	
Duke/UNC Oceanographic Consortium Duke University Marine Laboratory Beaufort, NC 28516	CAPE HATTERAS	135/41	1981	10	12	NSF	Mr. Quentin Lewis Marine Superintendent (919) 728-3372	
Johns Hopkins University Chesapeake Bay Institute 4800 Atwell Road Shady Side, MD 20764	R. WARFIELD	106/32	1967	11	10	JHU	Mr. Bruce Comwall Marine Superintendent (301) 867-7550, Ext. 246	
University of Delaware College of Marine Studies 700 Pilottown Road Lewes, DE 19958	CAPE HENLOPEN	120/37	1976	7	12	U.D.	Mr. Wadsworth Owen Director, Marine Operations (302) 645-4320	
Lamont-Doherty Geological Observatory Columbia University Pallsades, NY 10964	MAURICE EWING	239/73	1983/1990	18	32	L-DGO	Capt. Louis Hannigan Marine Superintendent (914) 359-2900, Ext. 367	
University of Rhode Island Graduate School of Oceanography Narragansett, RI 02882	ENDEAVOR	177/54	1976	12	16	NSF	Mr. John F. Bash Marine Superintendent (401) 792-6203	
Woods Hole Oceanographic Institution Woods Hole, MA 02543	KNORR ATLANTIS II OCEANUS DSRV ALVIN	279/85 210/64 177/54 25.8	1970/1989 1963 1975 1964	25 27 12	34 *29 12 2	NAVY WHOI NSF NAVY	Capt. Joe Coburn Manager, Marine Ops. (508) 548-1400, Ex.2277	

\*20 Scientists (includes one medic), plus 9 ALVIN group

UNOLS ADVISORY COUNCIL

1971-1976. Comprised of four members from Member Institutions and three from Associate Members Institutions.

1977-1988. Increased membership in the Advisory Council to eight - five from Member Institutions, and three from Associate Member Institutions.

	Expires		Expires
<u>1971-1972</u>		<u>1975-1976</u>	
J. V. Byrne, OSU, Chair	5/75	R. C. Dugdale, BIGELOW, Chair	5/77
D. W. Menzel, SKIO	5/74	P. L. Parker, U/TEXAS	7/76
R. A. Ragotzkie, U/WISC	5/73	A. F. Richards, LEHIGH	7/76
H. M. Stommel, MIT	5/74	T. K. Treadwell, TAMU	5/78
W. S. Wooster, SIO	5/73	D. Hood, U/ALASKA	5/76
J. P. Craven, U/HAWAII	5/75	F. Webster, WHOI	5/77
C. L. Drake, DARTMOUTH	(resigned)	J. A. Knauss, URI, ex-officio	UNOLS CH
A. E. Maxwell, WHOI, ex-officio	UNOLS CH	G. C. Shor, SIO, ex-officio	UNOLS V-CH
J. M. Savage, USC, ex-officio	UNOLS V-CH		
<u>1972-73</u>		<u>1976-1977</u>	
J. V. Byrne, OSU, Chair	5/75	R. C. Dugdale, BIGELOW, Chair	5/77
D. W. Menzel, SKIO	5/74	R. T. Barber, DUKE	5/79
R. A. Ragotzkie, U/WISC	5/73	D. Frankenberg, UNC	5/79
A. F. Richards, LEHIGH	5/73	M. G. Gross, JHU	5/78
H. M. Stommel, MIT	5/74	G. H. Keller, OSU	5/77
W. S. Wooster, SIO	5/73	J. H. Martin, MLML	5/79
J. P. Craven, U/HAWAII	5/75	T. K. Treadwell, TAMU	5/78
A. E. Maxwell, WHOI, ex-officio	UNOLS CH	W. S. Wooster, U/WA, ex-officio	UNOLS CH
J. M. Savage, USC, ex-officio	UNOLS V-CH	F. Webster, WHOI, ex-officio	UNOLS V-CH
<u>1973-1974</u>		<u>1977-1978</u>	
J. V. Byrne, OSU, Chair	5/75	G. H. Keller, OSU, Chair	7/76-6/80
J. P. Craven, U/HAWAII	5/75	D. Frankenberg, UNC, V-Chair	7/76-6/79
D. W. Menzel, SKIO	5/74	R. T. Barber, DUKE	7/76-6/79
R. A. Ragotzkie, U/WISC	5/74	R. L. Fisher, SIO	7/77-6/80
A. F. Richards, LEHIGH	5/76	M. G. Gross, JHU	7/75-6/80
H. M. Stommel, MIT	5/74	J. H. Martin, MLML	7/76-6/79
P. L. Parker, U/TEXAS	7/76	J. R. Schubel, SUNY	7/77-6/80
R. C. Dugdale, U/WA	7/76	T. K. Treadwell, TAMU	7/75-6/78
R. Colwell, U/MARYLAND	(Interim Appointee)	W. S. Wooster, U/WA, ex-officio	7/76-6/78 UNOLS CH
A. E. Maxwell, WHOI, ex-officio	UNOLS CH	F. Webster, WHOI, ex-officio	7/76-6/78 UNOLS V-CH
J. M. Savage, USC, ex-officio	UNOLS V-CH		
<u>1974-1975</u>		<u>1978-1979</u>	
J. V. Byrne, SIO, Acting Chair	5/75	G. H. Keller, OSU, Chair	7/76-6/80
P. L. Parker, U/TEXAS	7/76	R. T. Barber, DUKE, V-Chair	7/76-6/79
A. F. Richards, LEHIGH	7/76	G. C. Anderson, U/WA	7/78-6/81
W. S. Richardson, NOVA U, Chair	(deceased)	R. L. Fisher, SIO	7/77-6/80
R. J. Wold, U/WISC	(resigned)	J. H. Martin, MLML	7/76-6/79
R. C. Dugdale, U/WA	5/76	W. B. F. Ryan, L-DGO	7/78-6/81
J. P. Craven, U/HAWAII	5/76	J. R. Schubel, SUNY/STONY BROOK	7/77-6/81
J. A. Knauss, URI, ex-officio	UNOLS CH	J. M. Zeigler, VMS	7/78-6/81
G. C. Shor, SIO, ex-officio	UNOLS V-CH	T. K. Treadwell, TAMU, ex-officio	7/78-6/79 UNOLS CH
		A. F. Richards, LEHIGH, ex-officio	7/78-6/79 UNOLS V-CH



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	Expires		Expires
<u>1979-1980</u>		<u>1983-1984</u>	
G. C. Anderson, U/WA, Chair	7/78-6/81	C. B. Miller, OSU, Chair	7/80-6/86
J. R. Schubel, SUNY/SB, V-Chair	7/77-6/80	H. B. Stewart, Jr., OLD DOMINION, V-Chair	7/83-6/86
G. H. Keller, OSU	7/76-6/80	R. W. Corell, UNH	7/81-6/84
B. H. Robison, UCSB	7/79-6/82	R. P. Dinsmore, WHOI	7/83-6/86
H. T. Rossby, URI	7/79-6/82	D. S. Gorsline, USC	7/81-6/85
W. B. F. Ryan, L-DGO	7/78-6/81	R. Larson, URI	7/82-6/85
R. L. Fisher, SIO	7/77-6/80	B. H. Robison, UCSB	7/79-6/85
J. M. Zeigler, VIMS	7/78-6/81	J. C. Van Leer, U/MIAMI	7/81-6/84
T. K. Treadwell, TAMU, ex-officio	7/78-6/80 UNOLS CH	F. Webster, U/DEL, ex-officio	7/83-6/84 UNOLS CH
J. H. Martin, MLML, ex-officio	7/79-6/80 UNOLS V-CH	J. R. Curray, SIO, ex-officio	7/83-6/84 UNOLS V-CH
<u>1980-1981</u>		<u>1984-1985</u>	
G. C. Anderson, U/WA, Chair	7/78-6/81	C. B. Miller, OSU, Chair	7/80-6/86
H. T. Rossby, URI, V-Chair	7/78-6/82	H. B. Stewart, Jr., OLD DOMINION, V-Chair	7/83-6/86
B. H. Robison, UCSB	7/79-6/82	R. P. Dinsmore, WHOI	7/83-6/86
C. B. Miller, OSU	7/70-6/83	D. S. Gorsline, USC	7/81-6/84
W. B. F. Ryan, L-DGO	7/78-6/81	B. H. Robison, UCSB	7/79-6/85
W. M. Sackett, U/S FL	7/80-6/83	A. E. Maxwell, U/TX, Austin	7/84-6/87
D. W. Spencer, WHOI	7/80-6/83	C. J. Lorenzen, U/WA	7/84-6/87
J. M. Zeigler, VIMS	7/78-6/81	T. Malone, U/MD	7/84-6/87
T. K. Treadwell, TAMU, ex-officio	7/79-6/81 UNOLS CH	F. Webster, U/DEL, ex-officio	7/83-6/84 UNOLS CH
J. H. Martin, MLML, ex-officio	7/79-6/81 UNOLS V-CH	R. W. Corell, UNH, ex-officio	7/84-6/85 UNOLS V-CH
<u>1981-1982</u>		<u>1985-1986</u>	
B. H. Robison, UCSB, Chair	7/79-6/82	C. B. Miller, OSU, Chair	7/80-6/86
H. T. Rossby, URI, V-Chair	7/79-6/82	T. Malone, U/MD, V-Chair	7/84-6/87
R. W. Corell, UNH	7/81-6/84	R. P. Dinsmore, WHOI	7/83-6/86
J. R. Curray, SIO	7/81-6/83	C. J. Lorenzen, U/WA	7/84-6/87
D. S. Gorsline, USC	7/81-6/84	J. H. Martin, MLML	7/85-6/88
C. B. Miller, OSU	7/80-6/83	A. E. Maxwell, U/TX, Austin	7/84-6/87
W. M. Sackett, U/S FL	7/80-6/83	C. N. Mooers, NPS	7/85-6/88
J. C. Van Leer, U/MIAMI	7/80-6/83	H. B. Stewart, Jr., OLD DOMINION	7/83-6/86
D. W. Spencer, WHOI, ex-officio	7/81-6/82 UNOLS CH	F. Webster, U/DEL, ex-officio	7/83-6/86 UNOLS CH
D. Frankenberg, UNC, ex-officio	7/81-6/82 UNOLS V-CH	R. W. Corell, UNH, ex-officio	7/81-6/86 UNOLS V-CH
<u>1982-83</u>		<u>1986-1987</u>	
B. H. Robison, UCSB, Chair	7/82-6/85	J. H. Martin, MLML, Chair	7/85-6/88
J. R. Curray, SIO, V-Chair	7/82-6/85	T. Malone, U/MD, V-Chair	7/84-6/87
R. W. Corell, UNH	7/81-6/84	R. P. Dinsmore, WHOI	7/83-6/89
D. S. Gorsline, USC	7/81-6/84	P. J. Fox, URI	10/86-6/87
R. L. Larson, URI	7/82-6/85	R. A. Knox, SIO	7/86 6/89
C. B. Miller, OSU	7/80-6/83	K. C. MacDonald, UCSB	7/86-6/89
W. B. Sackett, U/S FL	7/80-6/83	A. E. Maxwell, U/TX, Austin	7/84-6/87
J. C. Van Leer, U/MIAMI	7/80-6/83	C. S. Yentsch, Bigelow	10/86-6/88
D. W. Spencer, WHOI, ex-officio	7/82-6/83 UNOLS CH	G. H. Keller, OSU, ex-officio	7/86-6/88 UNOLS CH
D. Frankenberg, UNC, ex-officio	7/82-6/83 UNOLS V-CH	R. W. Corell, UNH, ex-officio *	7/84-1/87 UNOLS V-CH

\* resigned 1/87

## UNOLS ADVISORY COUNCIL

**1971-1976.** Comprised of four members from Member Institutions and three from Associate Members Institutions.

**1977-1988.** Increased membership in the Advisory Council to eight - five from Member Institutions, and three from Associate Member Institutions.

	Expires
<u>1987-1988</u>	
J. H. Martin, MLML, Chair	7/85-10/88
T. Malone, U/MD, V-Chair	7/84-10/90
R. P. Dinsmore, WHOI	7/83-10/89
R. A. Knox, SIO	7/86-10/89
T. C. Johnson, Duke/UNC	7/87-10/90
A. E. Maxwell, U/TX, Austin	7/84-10/90
J. P. Kennett, UCSB	7/87-10/89
C. S. Yentsch, Bigelow	10/86-10/88
G. H. Keller, OSU, ex-officio	7/86-10/88 UNOLS CH
J. Langfelder, HBOI*	10/87-10/89 UNOLS V-CH
* resigned 4/88	

## UNOLS COUNCIL

In October 1988, the Advisory Council was reconstituted as the  
UNOLS Council

<u>1988-1989</u>	
G. H. Keller, OSU, UNOLS Chair	7/86-10/90
T. C. Johnson, Duke/UNC, UNOLS V-Ch	10/87-10/90
L. P. Atkinson, OLD DOMINION	10/88-10/91
G. W. Brass, U/MIAMI	10/88-10/91
R. P. Dinsmore, WHOI	7/83-10/89
P. J. Fox, URI	10/88-10/91
J. P. Kennett, UCSB	10/87-10/89
R. A. Knox, SIO	7/86-10/89
T. C. Malone, U/MD	7/84-10/90
A. E. Maxwell, U/TX, Austin	7/84-10/90
F. D. Jennings, TAMU, ex-officio	10/88-10/9X ARC CH
W. D. Nowlin, TAMU, ex-officio	10/89-10/9X FIC CH
G. G. Shor, Jr., SIO, ex-officio	10/89-10/9X SSC CH
J. G. Williams, SIO, ex-officio	10/88-10/90 RVOC CH

<u>1989-1990</u>	
G. H. Keller, OSU, UNOLS Chair	7/86-10/90
T. C. Johnson, Duke/UNC, UNOLS V-Chair	10/87-10/90
L. P. Atkinson, OLD DOMINION	10/88-10/91
P. Betzer, U/SOUTH FL	10/89-10/92
G. W. Brass, U/MIAMI	10/88-10/91
P. J. Fox, URI	10/88-10/91
T. C. Malone, U/MD	7/84-10/90
A. E. Maxwell, U/TX, Austin	7/84-10/90
W. D. Nowlin, TAMU	10/89-10/92
F. D. Jennings, TAMU, ex-officio	10/88-10/9X ARC CH
D. Gorsline, USC, ex-officio	10/89-10/9X FIC CH
M. Rawson, L-DGO, ex-officio	10/89-10/9X SSC CH
J. G. Williams, SIO, ex-officio	10/88-10/90 RVOC CH

Rev. 7/90

**UNOLS Chairman and Vice-Chairman  
Advisory Council Chairman and Vice-Chairman and Executive Secretary  
(Executive Committee consists of UNOLS Chairman and Vice-Chairman,  
Advisory Council Chairman and Executive Secretary)**

May 1971-1972

A. E. Maxwell, WHOI	UNOLS CH.
J. M. Savage, USC	UNOLS V-CH.
J. V. Byrne, OSU	A/C CH.
R. P. Dinsmore, UNOLS	E/S

May 1972-1973

A. E. Maxwell, WHOI	UNOLS CH.
J. M. Savage, USC	UNOLS V-CH.
J. V. Byrne, OSU	A/C CH.
R. P. Dinsmore, UNOLS	E/S

May 1973-1974

A. E. Maxwell, WHOI	UNOLS CH.
J. M. Savage, USC	UNOLS V-CH.
J. V. Byrne, OSU	A/C CH.
R. P. Dinsmore, UNOLS	E/S

May 1974-1975

J. A. Knauss, URI	UNOLS CH.
G. C. Shor, SIO	UNOLS V-CH.
R. C. Dugdale, BIGELOW	A/C CH.
R. P. Dinsmore, UNOLS	E/S

May 1975-1976

J. A. Knauss, URI	UNOLS CH.
G. C. Shor, SIO	UNOLS V-CH.
R. C. Dugdale, BIGELOW	A/C CH.
R. P. Dinsmore, UNOLS	E/S

May 1976-1977

W. S. Wooster, U/WA	UNOLS CH.
T. F. Webster, WHOI	UNOLS V-CH.
R. C. Dugdale, BIGELOW	A/C CH.
T. R. Stetson, UNOLS	E/S

May 1977-1978

W. S. Wooster, U/WA	UNOLS CH.
T. F. Webster, WHOI	UNOLS V-CH.
G. H. Keller, OSU	A/C CH.
D. Frankenberg, UNC	A/C V-CH.
T. R. Stetson, UNOLS	E/S

May 1978-1979

T. K. Treadwell, TAMU	UNOLS CH.
A. F. Richards, LEHIGH	UNOLS V-CH.
G. H. Keller, OSU	A/C CH.
R. T. Barber, DUKE	A/C V-CH.
T. R. Stetson, UNOLS	E/S

May 1979-1980

T. K. Treadwell, TAMU	UNOLS CH.
J. H. Martin, MLML	UNOLS V-CH.
G. C. Anderson, U/WA	A/C CH.
J. R. Schubel, SUNY/SB	A/C V-CH.
T. R. Stetson, UNOLS	E/S

May 1980-1981

T. K. Treadwell, TAMU	UNOLS CH.
J. H. Martin, MLML	UNOLS V-CH.
G. C. Anderson, U/WA	A/C CH.
H. T. Rossby, URI	A/C V-CH.
T. R. Stetson, UNOLS	E/S

May 1981-1982

D. W. Spencer, WHOI	UNOLS CH.
D. Frankenberg, UNC/CH	UNOLS V-CH.
B. H. Robison, UCSB	A/C CH.
H. T. Rossby, URI	A/C V-CH.
T. R. Stetson, UNOLS	E/S

May 1982-1983

D. W. Spencer, WHOI	UNOLS CH.
D. Frankenberg, UNC/CH	UNOLS V-CH.
B. H. Robison, UCSB	A/C CH.
J. R. Curray, SCRIPPS	A/C V-CH.
W. D. Barbee, UNOLS	E/S

May 1983-1984

F. Webster, U/DEL	UNOLS CH.
J. R. Curray, SCRIPPS	UNOLS V-CH.
C. B. Miller, OSU	A/C CH.
H. B. Stewart, OLD DOM	A/C V-CH.
W. D. Barbee, UNOLS	E/S

May 1984-1985

F. Webster, U/DEL	UNOLS CH.
R. W. Corell, U/NH	UNOLS V-CH.
C. B. Miller, OSU	A/C CH.
H. B. Stewart, OLD DOM	A/C V-CH.
W. D. Barbee, UNOLS	E/S

May 1985-1986

F. Webster, U/DEL	UNOLS CH.
R. W. Corell, U/NH	UNOLS V-CH.
C. B. Miller, OSU	A/C CH.
T. Malone, U/MD	A/C V-CH.
W. D. Barbee, UNOLS	E/S



**UNOLS Chairman and Vice-Chairman  
Advisory Council Chairman and Vice-Chairman and Executive Secretary  
(Executive Committee consists of UNOLS Chairman and Vice-Chairman,  
Advisory Council Chairman and Executive Secretary)**

May 1986-Oct 1987

G. H. Keller, OSU	UNOLS CH.
R. W. Corell, U/NH *	UNOLS V-CH.
J. H. Martin, MLML	A/C CH.
T. Malone, U/MD	A/C V-CH.
W. D. Barbee, UNOLS	E/S

\* resigned 1/29/87

Oct 1987-Sept 1988

G. H. Keller, OSU	UNOLS CH.
J. Langfelder, HBR.BR.	UNOLS V-CH.
J. H. Martin, MLML	A/C CH.
T. Malone, U/MD	A/C V-CH.
W. D. Barbee, UNOLS	E/S

In 1988 the UNOLS Charter was revised, the Executive Committee was redefined to include the UNOLS Chair, Vice-Chair and two members elected from the UNOLS Council.

Sept 1988-1989

G. H. Keller, OSU	UNOLS CH.
T. C. Johnson, DUKE/UNC	UNOLS V-CH.
R. A. Knox, SCRIPPS	UNOLS Council
A. E. Maxwell, U/TX	UNOLS Council

Sept 1989-1990

G. H. Keller, OSU	UNOLS CH.
T. C. Johnson, DUKE/UNC	UNOLS V-CH.
G. W. Brass, U/MIAMI	UNOLS Council
W. D. Knowlin, TAMU	UNOLS Council

## UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1989 -

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## CRUISE DAYS PROFILES

AGENCY	PHYS. OCEAN	ACCOUS- TICS	CHEM. OCEAN	BIOL. OCEAN	ENVIR. ECOL	FISH. INVST	CLIM. METEO	GEOLO GEOPH	MAP. CHRTG	OCEAN ENGIN	TRAIN- ING	TRANS. NONSCI	POLL. ASSESS	OTHER	TOTAL -----
National Science Foundation	779.00	.00	368.00	858.00	.00	10.00	.00	537.00	.00	14.00	13.00	186.00	.00	.00	2765.00
Office of Naval Research	233.00	17.00	33.00	45.00	.00	.00	.00	152.00	.00	23.00	.00	19.00	.00	.00	522.00
U.S. Geological Survey	.00	.00	.00	.00	.00	.00	.00	11.00	.00	.00	.00	.00	.00	.00	11.00
Bureau of Land Management/Minerals Mgmt. Service	.00	.00	.00	1.00	2.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.00
National Oceanic and Atmospheric Administration	43.00	.00	.00	27.00	.00	4.00	.00	2.00	.00	1.00	.00	.00	.00	.00	77.00
Department of Energy (ERDA)	20.00	.00	2.00	13.00	.00	.00	.00	2.00	.00	.00	.00	.00	.00	.00	37.00
Other Federal	17.00	.00	2.00	20.00	.00	1.00	.00	.00	.00	.00	.00	.00	.00	.00	40.00
State/Municipal	66.00	.00	52.00	35.50	.00	19.00	.00	40.00	.00	3.00	65.50	7.00	.00	.00	288.00
Other/Private	5.00	.00	3.00	.00	.00	.00	.00	.00	.00	8.00	1.00	.00	.00	.00	17.00
*****															
TOTALS	1163.00	17.00	460.00	999.50	2.00	34.00	0.00	744.00	0.00	49.00	79.50	212.00	0.00	0.00	3760.00
PERCENT	30.93	0.45	12.23	26.58	0.05	0.90	0.00	19.79	0.00	1.30	2.11	5.64	0.00	0.00	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1989 -

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CRUISE DAYS PROFILES

INSTITUTION	PHYS. OCEAN	ACCOUS- TICS	CHEM. OCEAN	BIOL. OCEAN	ENVIR. ECOL	FISH. INVST	CLIM. METEO	GEOLO GEOPH	MAP. CHRTG	OCEAN ENGIN	TRAIN- ING	TRANS. NONSCI	POLL. ASSESS	OTHER	TOTAL -----
University of Hawaii	133.00	.00	.00	39.00	.00	.00	.00	71.00	.00	.00	.00	52.00	.00	.00	295.00
University of Alaska	63.00	.00	21.00	59.00	.00	11.00	.00	.00	.00	.00	1.00	.00	.00	.00	155.00
University of Washington	16.00	.00	35.00	30.00	.00	.00	.00	3.00	.00	12.00	13.00	.00	.00	.00	109.00
Oregon State University	163.00	.00	.00	7.00	.00	.00	.00	38.00	.00	7.00	.00	2.00	.00	.00	217.00
Scripps Institution of Oceanography	169.00	17.00	106.00	152.00	.00	.00	.00	289.00	.00	11.00	2.00	24.00	.00	.00	770.00
Texas A & M University	11.00	.00	39.00	48.00	.00	.00	.00	39.00	.00	.00	19.00	7.00	.00	.00	163.00
University of Texas	35.00	.00	3.00	24.50	.00	.00	.00	.00	.00	.00	13.50	1.00	.00	.00	77.00
University of Miami, RSMAS	97.00	.00	69.00	141.00	.00	.00	.00	62.00	.00	.00	.00	13.00	.00	.00	382.00
University of Georgia, Skidaway	10.00	.00	2.00	38.00	.00	.00	.00	7.00	.00	.00	.00	.00	.00	.00	57.00
Duke University/University of North Carolina	2.00	.00	34.00	113.00	.00	.00	.00	10.00	.00	.00	13.00	15.00	.00	.00	187.00
Johns Hopkins University	29.00	.00	4.00	78.00	.00	.00	.00	.00	.00	.00	1.00	.00	.00	.00	112.00
University of Delaware	22.00	.00	31.00	23.00	.00	.00	.00	18.00	.00	.00	.00	9.00	.00	.00	103.00
Lamont-Doherty Geological Observatory	.00	.00	.00	.00	.00	.00	.00	64.00	.00	.00	.00	30.00	.00	.00	94.00
University of Rhode Island	106.00	.00	.00	84.00	.00	.00	.00	20.00	.00	12.00	.00	36.00	.00	.00	258.00
Woods Hole Oceanographic Institution	200.00	.00	111.00	46.00	.00	.00	.00	89.00	.00	7.00	.00	19.00	.00	.00	472.00
University of Michigan	2.00	.00	.00	29.00	.00	.00	.00	22.00	.00	.00	.00	4.00	.00	.00	57.00
Moss Landing Marine Laboratory	83.00	.00	5.00	51.00	.00	.00	.00	12.00	.00	.00	12.00	.00	.00	.00	163.00
Louisiana Universities Marine Consortium	22.00	.00	.00	37.00	2.00	23.00	.00	.00	.00	.00	5.00	.00	.00	.00	89.00
*****															
TOTALS	1163.00	17.00	460.00	999.50	2.00	34.00	.00	744.00	.00	49.00	79.50	212.00	.00	.00	3760.00
PERCENT	30.93	0.45	12.23	26.58	0.05	0.90	0.00	19.79	0.00	1.30	2.11	5.64	0.00	0.00	100.00



UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1989 -

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CRUISE DAYS PROFILES

VESSEL	PHYS. OCEAN	ACCOUS- TICS	CHEM. OCEAN	BIOL. OCEAN	ENVIR. ECOL	FISH. INVST	CLIM. METEO	GEOLO GEOPH	MAP. CHRTG	OCEAN ENGIN	TRAIN- ING	TRANS. NONSCI	POLL. ASSESS	OTHER	TOTAL -----
MELVILLE	106.00	.00	35.00	.00	.00	.00	.00	70.00	.00	.00	.00	13.00	.00	.00	224.00
MOANA WAVE	133.00	.00	.00	39.00	.00	.00	.00	71.00	.00	.00	.00	52.00	.00	.00	295.00
ATLANTIS II	22.00	.00	81.00	11.00	.00	.00	.00	87.00	.00	.00	.00	19.00	.00	.00	220.00
T. WASHINGTON	.00	.00	19.00	39.00	.00	.00	.00	191.00	.00	.00	.00	11.00	.00	.00	260.00
CONRAD	.00	.00	.00	.00	.00	.00	.00	64.00	.00	.00	.00	30.00	.00	.00	94.00
WECOMA	163.00	.00	.00	7.00	.00	.00	.00	38.00	.00	7.00	.00	2.00	.00	.00	217.00
ENDEAVOR	106.00	.00	.00	84.00	.00	.00	.00	20.00	.00	12.00	.00	36.00	.00	.00	258.00
OCEANUS	178.00	.00	30.00	35.00	.00	.00	.00	2.00	.00	7.00	.00	.00	.00	.00	252.00
GYRE	11.00	.00	39.00	48.00	.00	.00	.00	39.00	.00	.00	19.00	7.00	.00	.00	163.00
NEW HORIZON	52.00	15.00	35.00	41.00	.00	.00	.00	16.00	.00	10.00	.00	.00	.00	.00	169.00
ISELIN	37.00	.00	49.00	85.00	.00	.00	.00	39.00	.00	.00	.00	12.00	.00	.00	222.00
POINT SUR	83.00	.00	5.00	51.00	.00	.00	.00	12.00	.00	.00	12.00	.00	.00	.00	163.00
CAPE HATTERAS	2.00	.00	34.00	113.00	.00	.00	.00	10.00	.00	.00	13.00	15.00	.00	.00	187.00
ALPHA HELIX	63.00	.00	21.00	59.00	.00	11.00	.00	.00	.00	.00	1.00	.00	.00	.00	155.00
ROBERT G. SPROUL	11.00	2.00	17.00	72.00	.00	.00	.00	12.00	.00	1.00	2.00	.00	.00	.00	117.00
CAPE HENLOPEN	22.00	.00	31.00	23.00	.00	.00	.00	18.00	.00	.00	.00	9.00	.00	.00	103.00
WARFIELD	29.00	.00	4.00	78.00	.00	.00	.00	.00	.00	.00	1.00	.00	.00	.00	112.00
PELICAN	22.00	.00	.00	37.00	2.00	23.00	.00	.00	.00	.00	5.00	.00	.00	.00	89.00
LAURENTIAN	2.00	.00	.00	29.00	.00	.00	.00	22.00	.00	.00	.00	4.00	.00	.00	57.00
LONGHORN	35.00	.00	3.00	24.50	.00	.00	.00	.00	.00	.00	13.50	1.00	.00	.00	77.00
BLUE FIN	10.00	.00	2.00	38.00	.00	.00	.00	7.00	.00	.00	.00	.00	.00	.00	57.00
CLIFFORD A. BARNES	16.00	.00	35.00	30.00	.00	.00	.00	3.00	.00	12.00	13.00	.00	.00	.00	109.00
CALANUS	60.00	.00	20.00	56.00	.00	.00	.00	23.00	.00	.00	.00	1.00	.00	.00	160.00
*****															
TOTALS	1163.00	17.00	460.00	999.50	2.00	34.00	.00	744.00	.00	49.00	79.50	212.00	.00	.00	3760.00
PERCENT	30.93	0.45	12.23	26.58	0.05	0.90	0.00	19.79	0.00	1.30	2.11	5.64	0.00	0.00	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1989 -

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OPERATIONAL DAYS CHARGED BY SPONSOR

INSTITUTION	NATL SCI. FNDTN	OFF. NAVAL RES.	U.S. GEOL. SURV.	MIN. MGMT. SERV.	NATL. OCEAN. ATM AD.	DEPT. OF ENERGY	OTHER FEDER. FUNDS	STATE OR MUNIC.	PRIV/ FORGN. FUNDS	TOTAL -----
University of Hawaii	285.00	.00	.00	.00	6.00	.00	.00	4.00	.00	295.00
University of Alaska	125.00	.00	.00	.00	.00	.00	2.00	25.00	3.00	155.00
University of Washington	80.00	2.00	2.00	.00	1.00	.00	2.00	14.00	8.00	109.00
Oregon State University	188.00	29.00	.00	.00	.00	.00	.00	.00	.00	217.00
Scripps Institution of Oceanography	537.00	173.00	.00	.00	.00	.00	.00	60.00	.00	770.00
Texas A & M University	91.00	.00	.00	.00	.00	.00	.00	69.00	3.00	163.00
University of Texas	.00	13.00	.00	.00	.00	.00	17.00	46.00	1.00	77.00
University of Miami, RSMAS	266.00	73.00	.00	.00	43.00	.00	.00	.00	.00	382.00
University of Georgia, Skidaway	35.00	.00	.00	.00	.00	17.00	.00	5.00	.00	57.00
Duke University/University of North Carolina	175.00	.00	.00	.00	.00	.00	.00	10.00	2.00	187.00
Johns Hopkins University	111.00	.00	.00	.00	.00	.00	.00	1.00	.00	112.00
University of Delaware	83.00	18.00	.00	.00	.00	.00	.00	2.00	.00	103.00
Lamont-Doherty Geological Observatory	52.00	42.00	.00	.00	.00	.00	.00	.00	.00	94.00
University of Rhode Island	192.00	44.00	.00	.00	.00	20.00	2.00	.00	.00	258.00
Woods Hole Oceanographic Institution	418.00	41.00	.00	.00	13.00	.00	.00	.00	.00	472.00
University of Michigan	46.00	.00	9.00	.00	.00	.00	.00	2.00	.00	57.00
Moss Landing Marine Laboratory	60.00	87.00	.00	.00	.00	.00	.00	16.00	.00	163.00
Louisiana Universities Marine Consortium	21.00	.00	.00	3.00	14.00	.00	17.00	34.00	.00	89.00
*****										
TOTALS	2765.00	522.00	11.00	3.00	77.00	37.00	40.00	288.00	17.00	3760.00
PERCENT	73.54	13.88	0.29	0.08	2.05	0.98	1.06	7.66	0.45	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1989 -

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OPERATIONAL DAYS CHARGED BY SPONSOR

VESSEL	LENGTH	NATL SCI. FNDTN	OFF. NAVAL RES.	U.S. GEOL. SURV.	MIN. MGMT. SERV.	NATL. OCEAN. ATM AD.	DEPT. OF ENERGY	OTHER FEDER. FUNDS	STATE OR MUNIC.	PRIV/ FORGN. FUNDS	TOTAL -----
MELVILLE	245 FT	154.00	70.00	.00	.00	.00	.00	.00	.00	.00	224.00
MOANA WAVE	210 FT	285.00	.00	.00	.00	6.00	.00	.00	4.00	.00	295.00
ATLANTIS II	210 FT	191.00	16.00	.00	.00	13.00	.00	.00	.00	.00	220.00
T. WASHINGTON	209 FT	233.00	23.00	.00	.00	.00	.00	.00	4.00	.00	260.00
CONRAD	209 FT	52.00	42.00	.00	.00	.00	.00	.00	.00	.00	94.00
WECOMA	177 FT	188.00	29.00	.00	.00	.00	.00	.00	.00	.00	217.00
ENDEAVOR	177 FT	192.00	44.00	.00	.00	.00	20.00	2.00	.00	.00	258.00
OCEANUS	177 FT	227.00	25.00	.00	.00	.00	.00	.00	.00	.00	252.00
GYRE	174 FT	91.00	.00	.00	.00	.00	.00	.00	69.00	3.00	163.00
NEW HORIZON	170 FT	67.00	62.00	.00	.00	.00	.00	.00	40.00	.00	169.00
ISELIN	170 FT	172.00	50.00	.00	.00	.00	.00	.00	.00	.00	222.00
POINT SUR	135 FT	60.00	87.00	.00	.00	.00	.00	.00	16.00	.00	163.00
CAPE HATTERAS	135 FT	175.00	.00	.00	.00	.00	.00	.00	10.00	2.00	187.00
ALPHA HELIX	133 FT	125.00	.00	.00	.00	.00	.00	2.00	25.00	3.00	155.00
ROBERT G. SPROUL	125 FT	83.00	18.00	.00	.00	.00	.00	.00	16.00	.00	117.00
CAPE HENLOPEN	120 FT	83.00	18.00	.00	.00	.00	.00	.00	2.00	.00	103.00
WARFIELD	106 FT	111.00	.00	.00	.00	.00	.00	.00	1.00	.00	112.00
PELICAN	105 FT	21.00	.00	.00	3.00	14.00	.00	17.00	34.00	.00	89.00
LAURENTIAN	80 FT	46.00	.00	9.00	.00	.00	.00	.00	2.00	.00	57.00
LONGHORN	80 FT	.00	13.00	.00	.00	.00	.00	17.00	46.00	1.00	77.00
BLUE FIN	72 FT	35.00	.00	.00	.00	.00	17.00	.00	5.00	.00	57.00
CLIFFORD A. BARNES	65 FT	80.00	2.00	2.00	.00	1.00	.00	2.00	14.00	8.00	109.00
CALANUS	64 FT	94.00	23.00	.00	.00	43.00	.00	.00	.00	.00	160.00
*****											
TOTALS		2765.00	522.00	11.00	3.00	77.00	37.00	40.00	288.00	17.00	3760.00
PERCENT		73.54	13.88	0.29	0.08	2.05	0.98	1.06	7.66	0.45	100.00



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PROJECT PERSON-DAYS AT SEA BY SPONSOR

VESSEL	LOA	TOTAL DAYS CHARGED	NATL SCI. FNDTN	OFF. NAVAL RES.	U.S. GEOL. SURV.	MIN. MGMT. SERV.	NATL. OCEAN. ATM AD.	DEPT. OF ENERGY	OTHER FEDER. FUNDS	STATE OR MUNIC.	PRIV/ FORGN. FUNDS	TOTAL -----
MELVILLE	245 FT	224.00	2959.00	1129.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4088.00
MOANA WAVE	210 FT	295.00	4202.00	0.00	0.00	0.00	90.00	0.00	0.00	20.00	0.00	4312.00
ATLANTIS II	210 FT	220.00	3004.00	176.00	0.00	0.00	320.00	0.00	0.00	0.00	0.00	3500.00
T. WASHINGTON	209 FT	260.00	3541.00	368.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	3919.00
CONRAD	209 FT	94.00	559.00	573.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1132.00
WECOMA	177 FT	217.00	2935.00	254.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3189.00
ENDEAVOR	177 FT	258.00	2130.00	628.00	0.00	0.00	0.00	310.00	14.00	0.00	0.00	3082.00
OCEANUS	177 FT	252.00	2067.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2367.00
GYRE	174 FT	163.00	1405.00	0.00	0.00	0.00	0.00	0.00	0.00	1199.00	15.00	2619.00
NEW HORIZON	170 FT	169.00	689.00	748.00	0.00	0.00	0.00	0.00	0.00	711.00	0.00	2148.00
ISELIN	170 FT	222.00	2799.00	711.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3510.00
POINT SUR	135 FT	163.00	550.00	861.00	0.00	0.00	0.00	0.00	0.00	323.00	0.00	1734.00
CAPE HATTERAS	135 FT	187.00	1755.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	12.00	1907.00
ALPHA HELIX	133 FT	155.00	1518.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	326.00	1884.00
ROBERT G. SPROUL	125 FT	117.00	977.00	290.00	0.00	0.00	0.00	0.00	0.00	184.00	0.00	1451.00
CAPE HENLOPEN	120 FT	103.00	635.00	156.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	795.00
WARFIELD	106 FT	112.00	775.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	795.00
PELICAN	105 FT	89.00	316.00	0.00	0.00	14.00	154.00	0.00	211.00	356.00	0.00	1051.00
LAURENTIAN	80 FT	57.00	224.00	0.00	54.00	0.00	0.00	0.00	0.00	48.00	0.00	326.00
LONGHORN	80 FT	77.00	0.00	81.00	0.00	0.00	0.00	0.00	90.00	867.50	26.00	1064.50
BLUE FIN	72 FT	57.00	55.00	0.00	0.00	0.00	0.00	76.00	0.00	25.00	0.00	156.00
CLIFFORD A. BARNES	65 FT	109.00	311.00	8.00	6.00	0.00	4.00	0.00	8.00	413.00	51.00	801.00
CALANUS	64 FT	160.00	609.00	72.00	0.00	0.00	349.00	0.00	0.00	0.00	0.00	1030.00
*****												
TOTALS		3760.00	34015.00	6355.00	60.00	14.00	917.00	386.00	330.00	4646.50	137.00	46860.50
PERCENT			72.59	13.56	0.13	0.03	1.96	0.82	0.70	9.92	0.29	100.00

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## UNOLS CRUISE PARTICIPANTS AND AFFILIATIONS

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SHIP	SCI	TECH	GRAD	STU/OBS	TOTAL	ASSOC	NON-UNOLS	FED	FRGN	TOTAL
MELVILLE	58	121	28	7	214	4	14	9	4	31
MOANA WAVE	56	97	52	33	238	12	11	0	18	41
ATLANTIS II	76	121	30	42	269	15	25	12	4	56
T. WASHINGTON	32	47	40	11	130	15	12	1	8	36
CONRAD	13	37	1	8	59	0	0	3	3	6
WECOMA	53	99	36	15	203	5	25	9	15	54
ENDEAVOR	82	100	27	22	231	40	8	2	1	51
OCEANUS	78	66	23	23	190	1	19	3	7	30
GYRE	63	116	59	10	248	21	13	4	8	46
NEW HORIZON	72	106	38	16	232	5	30	8	6	49
ISELIN	109	66	33	33	241	61	36	7	22	126
POINT SUR	136	84	311	140	671	244	157	15	1	417
CAPE HATTERAS	54	42	38	13	147	45	54	7	4	110
ALPHA HELIX	52	61	33	43	189	8	31	1	7	47
ROBERT G. SPROUL	52	81	55	55	243	12	29	1	12	54
CAPE HENLOPEN	114	27	17	2	160	91	0	0	0	91
WARFIELD	91	130	45	26	292	150	7	1	1	159
PELICAN	109	51	20	89	269	6	138	9	0	153
LAURENTIAN	18	22	18	54	112	0	40	4	0	44
LONGHORN	124	51	136	310	621	0	392	25	0	417
BLUE FIN	38	82	1	1	122	1	20	0	0	21
CLIFFORD A. BARNES	72	101	59	230	462	0	102	7	1	110
CALANUS	39	19	44	5	107	1	17	0	3	21
*****										
TOTALS	1591	1727	1144	1188	5650	737	1180	128	125	2170
PERCENT	28.2	30.6	20.2	21.0	100.0	13.0	20.9	2.3	2.2	38.4

## UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1989 -

## SEA DAY PROFILES

AGENCY	PHYS. OCEAN	ACCOUS- TICS	CHEM. OCEAN	BIOL. OCEAN	ENVIR. ECOL	FISH. INVST	CLIM. METEO	GEOLO GEOPH	MAP. CHRTG	OCEAN ENGIN	TRAIN- ING	TRANS. NONSCI	POLL. ASSESS	OTHER	TOTAL -----
National Science Foundation	724.00	.00	344.50	804.50	.00	10.00	.00	497.00	.00	14.00	13.00	174.00	.00	.00	2581.00
Office of Naval Research	228.00	17.00	33.00	41.00	.00	.00	.00	135.00	.00	23.00	.00	14.00	.00	.00	491.00
U.S. Geological Survey	.00	.00	.00	.00	.00	.00	.00	11.00	.00	.00	.00	.00	.00	.00	11.00
Bureau of Land Management/Minerals Mgmt. Service	.00	.00	.00	1.00	2.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.00
National Oceanic and Atmospheric Administration	42.00	.00	.00	25.00	.00	4.00	.00	2.00	.00	1.00	.00	.00	.00	.00	74.00
Department of Energy (ERDA)	20.00	.00	2.00	12.50	.00	.00	.00	2.00	.00	.00	.00	.00	.00	.00	36.50
Other Federal	17.00	.00	2.00	20.00	.00	1.00	.00	.00	.00	.00	.00	.00	.00	.00	40.00
State/Municipal	66.00	.00	52.00	35.50	.00	19.00	.00	39.00	.00	3.00	65.50	6.00	.00	.00	286.00
Other/Private	5.00	.00	3.00	.00	.00	.00	.00	.00	.00	8.00	1.00	.00	.00	.00	17.00
*****															
TOTALS	1102.00	17.00	436.50	939.50	2.00	34.00	0.00	686.00	0.00	49.00	79.50	194.00	0.00	0.00	3539.50
PERCENT	31.13	0.48	12.33	26.54	0.06	0.96	0.00	19.38	0.00	1.38	2.25	5.48	0.00	0.00	100.00

SEA DAY PROFILES

INSTITUTION	PHYS. OCEAN	ACCOUS- TICS	CHEM. OCEAN	BIOL. OCEAN	ENVIR. ECOL	FISH. INVST	CLIM. METEO	GEOLO GEOPH	MAP. CHRTG	OCEAN ENGIN	TRAIN- ING	TRANS. NONSCI	POLL. ASSESS	OTHER	TOTAL -----
University of Hawaii	127.00	.00	.00	36.00	.00	.00	.00	65.00	.00	.00	.00	49.00	.00	.00	277.00
University of Alaska	63.00	.00	21.00	59.00	.00	11.00	.00	.00	.00	.00	1.00	.00	.00	.00	155.00
University of Washington	15.00	.00	35.00	30.00	.00	.00	.00	3.00	.00	12.00	13.00	.00	.00	.00	108.00
Oregon State University	153.00	.00	.00	7.00	.00	.00	.00	38.00	.00	7.00	.00	2.00	.00	.00	207.00
Scripps Institution of Oceanography	161.00	17.00	101.00	149.00	.00	.00	.00	265.00	.00	11.00	2.00	20.00	.00	.00	726.00
Texas A & M University	11.00	.00	32.50	47.00	.00	.00	.00	39.00	.00	.00	19.00	7.00	.00	.00	155.50
University of Texas	35.00	.00	3.00	24.50	.00	.00	.00	.00	.00	.00	13.50	1.00	.00	.00	77.00
University of Miami, RSMAS	96.00	.00	67.00	106.00	.00	.00	.00	60.00	.00	.00	.00	13.00	.00	.00	342.00
University of Georgia, Skidaway	10.00	.00	2.00	37.00	.00	.00	.00	6.00	.00	.00	.00	.00	.00	.00	55.00
Duke University/University of North Carolina	2.00	.00	34.00	106.00	.00	.00	.00	10.00	.00	.00	13.00	15.00	.00	.00	180.00
Johns Hopkins University	29.00	.00	4.00	77.00	.00	.00	.00	.00	.00	.00	1.00	.00	.00	.00	111.00
University of Delaware	22.00	.00	31.00	23.00	.00	.00	.00	18.00	.00	.00	.00	9.00	.00	.00	103.00
Lamont-Doherty Geological Observatory	.00	.00	.00	.00	.00	.00	.00	52.00	.00	.00	.00	25.00	.00	.00	77.00
University of Rhode Island	96.00	.00	.00	75.00	.00	.00	.00	13.00	.00	12.00	.00	31.00	.00	.00	227.00
Woods Hole Oceanographic Institution	175.00	.00	101.00	46.00	.00	.00	.00	83.00	.00	7.00	.00	18.00	.00	.00	430.00
University of Michigan	2.00	.00	.00	29.00	.00	.00	.00	22.00	.00	.00	.00	4.00	.00	.00	57.00
Moss Landing Marine Laboratory	83.00	.00	5.00	51.00	.00	.00	.00	12.00	.00	.00	12.00	.00	.00	.00	163.00
Louisiana Universities Marine Consortium	22.00	.00	.00	37.00	2.00	23.00	.00	.00	.00	.00	5.00	.00	.00	.00	89.00
*****															
TOTALS	1102.00	17.00	436.50	939.50	2.00	34.00	.00	686.00	.00	49.00	79.50	194.00	.00	.00	3539.50
PERCENT	31.13	0.48	12.33	26.54	0.06	0.96	0.00	19.38	0.00	1.38	2.25	5.48	0.00	0.00	100.00



UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1989 -

SEA DAY PROFILES

DATE: 09/04/90

VESSEL	PHYS. OCEAN	ACCOUS- TICS	CHEM. OCEAN	BIOL. OCEAN	ENVIR. ECOL	FISH. INVST	CLIM. METEO	GEOLO GEOPH	MAP. CHRTG	OCEAN ENGIN	TRAIN- ING	TRANS. NONSCI	POLL. ASSESS	OTHER	TOTAL ----
MELVILLE	98.00	.00	31.00	.00	.00	.00	.00	58.00	.00	.00	.00	11.00	.00	.00	198.00
MOANA WAVE	127.00	.00	.00	36.00	.00	.00	.00	65.00	.00	.00	.00	49.00	.00	.00	277.00
ATLANTIS II	18.00	.00	71.00	11.00	.00	.00	.00	81.00	.00	.00	.00	18.00	.00	.00	199.00
T. WASHINGTON	.00	.00	17.00	35.00	.00	.00	.00	179.00	.00	.00	.00	9.00	.00	.00	240.00
CONRAD	.00	.00	.00	.00	.00	.00	.00	52.00	.00	.00	.00	25.00	.00	.00	77.00
WECOMA	153.00	.00	.00	7.00	.00	.00	.00	38.00	.00	7.00	.00	2.00	.00	.00	207.00
ENDEAVOR	96.00	.00	.00	75.00	.00	.00	.00	13.00	.00	12.00	.00	31.00	.00	.00	227.00
OCEANUS	157.00	.00	30.00	35.00	.00	.00	.00	2.00	.00	7.00	.00	.00	.00	.00	231.00
GYRE	11.00	.00	32.50	47.00	.00	.00	.00	39.00	.00	.00	19.00	7.00	.00	.00	155.50
NEW HORIZON	52.00	15.00	35.00	41.00	.00	.00	.00	16.00	.00	10.00	.00	.00	.00	.00	169.00
ISELIN	37.00	.00	47.00	73.00	.00	.00	.00	37.00	.00	.00	.00	12.00	.00	.00	206.00
POINT SUR	83.00	.00	5.00	51.00	.00	.00	.00	12.00	.00	.00	12.00	.00	.00	.00	163.00
CAPE HATTERAS	2.00	.00	34.00	106.00	.00	.00	.00	10.00	.00	.00	13.00	15.00	.00	.00	180.00
ALPHA HELIX	63.00	.00	21.00	59.00	.00	11.00	.00	.00	.00	.00	1.00	.00	.00	.00	155.00
ROBERT G. SPROUL	11.00	2.00	18.00	73.00	.00	.00	.00	12.00	.00	1.00	2.00	.00	.00	.00	119.00
CAPE HENLOPEN	22.00	.00	31.00	23.00	.00	.00	.00	18.00	.00	.00	.00	9.00	.00	.00	103.00
WARFIELD	29.00	.00	4.00	77.00	.00	.00	.00	.00	.00	.00	1.00	.00	.00	.00	111.00
PELICAN	22.00	.00	.00	37.00	2.00	23.00	.00	.00	.00	.00	5.00	.00	.00	.00	89.00
LAURENTIAN	2.00	.00	.00	29.00	.00	.00	.00	22.00	.00	.00	.00	4.00	.00	.00	57.00
LONGHORN	35.00	.00	3.00	24.50	.00	.00	.00	.00	.00	.00	13.50	1.00	.00	.00	77.00
BLUE FIN	10.00	.00	2.00	37.00	.00	.00	.00	6.00	.00	.00	.00	.00	.00	.00	55.00
CLIFFORD A. BARNES	15.00	.00	35.00	30.00	.00	.00	.00	3.00	.00	12.00	13.00	.00	.00	.00	108.00
CALANUS	59.00	.00	20.00	33.00	.00	.00	.00	23.00	.00	.00	.00	1.00	.00	.00	136.00
*****															
TOTALS	1102.00	17.00	436.50	939.50	2.00	34.00	.00	686.00	.00	49.00	79.50	194.00	.00	.00	3539.50
PERCENT	31.13	0.48	12.33	26.54	0.06	0.96	0.00	19.38	0.00	1.38	2.25	5.48	0.00	0.00	100.00

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SEA DAYS CHARGED BY SPONSOR

INSTITUTION	NATL SCI. FNDTN	OFF. NAVAL RES.	U.S. GEOL. SURV.	MIN. MGMT. SERV.	NATL. OCEAN. ATM AD.	DEPT. OF ENERGY	OTHER FEDER. FUNDS	STATE OR MUNIC.	PRIV/ FORGN. FUNDS	TOTAL -----
University of Hawaii	269.00	.00	.00	.00	4.00	.00	.00	4.00	.00	277.00
University of Alaska	125.00	.00	.00	.00	.00	.00	2.00	25.00	3.00	155.00
University of Washington	79.00	2.00	2.00	.00	1.00	.00	2.00	14.00	8.00	108.00
Oregon State University	178.00	29.00	.00	.00	.00	.00	.00	.00	.00	207.00
Scripps Institution of Oceanography	510.00	157.00	.00	.00	.00	.00	.00	59.00	.00	726.00
Texas A & M University	83.50	.00	.00	.00	.00	.00	.00	69.00	3.00	155.50
University of Texas	.00	13.00	.00	.00	.00	.00	17.00	46.00	1.00	77.00
University of Miami, RSMAS	228.00	72.00	.00	.00	42.00	.00	.00	.00	.00	342.00
University of Georgia, Skidaway	34.50	.00	.00	.00	.00	16.50	.00	4.00	.00	55.00
Duke University/University of North Carolina	168.00	.00	.00	.00	.00	.00	.00	10.00	2.00	180.00
Johns Hopkins University	110.00	.00	.00	.00	.00	.00	.00	1.00	.00	111.00
University of Delaware	83.00	18.00	.00	.00	.00	.00	.00	2.00	.00	103.00
Lamont-Doherty Geological Observatory	40.00	37.00	.00	.00	.00	.00	.00	.00	.00	77.00
University of Rhode Island	168.00	37.00	.00	.00	.00	20.00	2.00	.00	.00	227.00
Woods Hole Oceanographic Institution	378.00	39.00	.00	.00	13.00	.00	.00	.00	.00	430.00
University of Michigan	46.00	.00	9.00	.00	.00	.00	.00	2.00	.00	57.00
Moss Landing Marine Laboratory	60.00	87.00	.00	.00	.00	.00	.00	16.00	.00	163.00
Louisiana Universities Marine Consortium	21.00	.00	.00	3.00	14.00	.00	17.00	34.00	.00	89.00
*****										
TOTALS	2581.00	491.00	11.00	3.00	74.00	36.50	40.00	286.00	17.00	3539.50
PERCENT	72.92	13.87	0.31	0.08	2.09	1.03	1.13	8.08	0.48	100.00

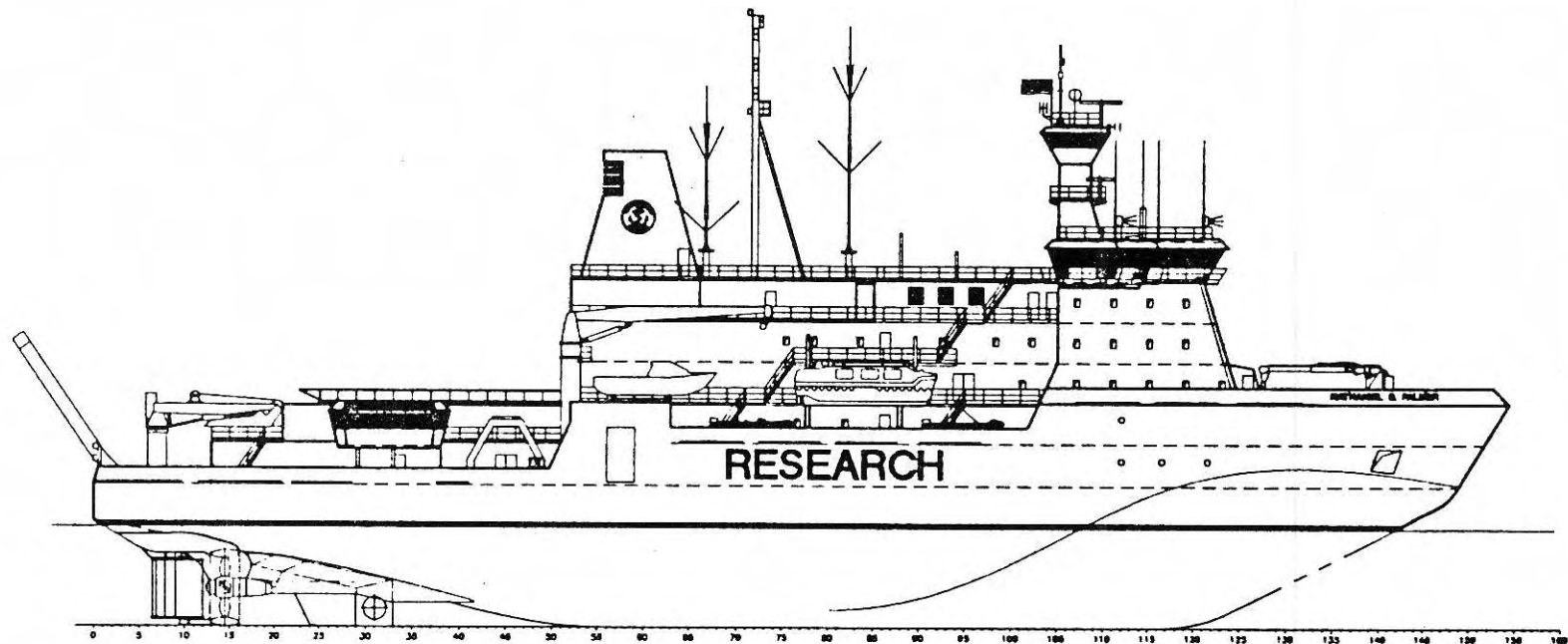
## SEA DAYS CHARGED BY SPONSOR

VESSEL	LENGTH	NATL SCI. FNDTN	OFF. NAVAL RES.	U.S. GEOL. SURV.	MIN. MGMT. SERV.	NATL. OCEAN. ATM AD.	DEPT. OF ENERGY	OTHER FEDER. FUNDS	STATE OR MUNIC.	PRIV/ FORGN. FUNDS	TOTAL -----
MELVILLE	245 FT	142.00	56.00	.00	.00	.00	.00	.00	.00	.00	198.00
MOANA WAVE	210 FT	269.00	.00	.00	.00	4.00	.00	.00	4.00	.00	277.00
ATLANTIS II	210 FT	172.00	14.00	.00	.00	13.00	.00	.00	.00	.00	199.00
T. WASHINGTON	209 FT	216.00	21.00	.00	.00	.00	.00	.00	3.00	.00	240.00
CONRAD	209 FT	40.00	37.00	.00	.00	.00	.00	.00	.00	.00	77.00
WECOMA	177 FT	178.00	29.00	.00	.00	.00	.00	.00	.00	.00	207.00
ENDEAVOR	177 FT	168.00	37.00	.00	.00	.00	20.00	2.00	.00	.00	227.00
OCEANUS	177 FT	206.00	25.00	.00	.00	.00	.00	.00	.00	.00	231.00
GYRE	174 FT	83.50	.00	.00	.00	.00	.00	.00	69.00	3.00	155.50
NEW HORIZON	170 FT	67.00	62.00	.00	.00	.00	.00	.00	40.00	.00	169.00
ISELIN	170 FT	157.00	49.00	.00	.00	.00	.00	.00	.00	.00	206.00
POINT SUR	135 FT	60.00	87.00	.00	.00	.00	.00	.00	16.00	.00	163.00
CAPE MATTERAS	135 FT	168.00	.00	.00	.00	.00	.00	.00	10.00	2.00	180.00
ALPHA HELIX	133 FT	125.00	.00	.00	.00	.00	.00	2.00	25.00	3.00	155.00
ROBERT G. SPROUL	125 FT	85.00	18.00	.00	.00	.00	.00	.00	16.00	.00	119.00
CAPE HENLOPEN	120 FT	83.00	18.00	.00	.00	.00	.00	.00	2.00	.00	103.00
WARFIELD	106 FT	110.00	.00	.00	.00	.00	.00	.00	1.00	.00	111.00
PELICAN	105 FT	21.00	.00	.00	3.00	14.00	.00	17.00	34.00	.00	89.00
LAURENTIAN	80 FT	46.00	.00	9.00	.00	.00	.00	.00	2.00	.00	57.00
LONGHORN	80 FT	.00	13.00	.00	.00	.00	.00	17.00	46.00	1.00	77.00
BLUE FIN	72 FT	34.50	.00	.00	.00	.00	16.50	.00	4.00	.00	55.00
CLIFFORD A. BARNES	65 FT	79.00	2.00	2.00	.00	1.00	.00	2.00	14.00	8.00	108.00
CALANUS	64 FT	71.00	23.00	.00	.00	42.00	.00	.00	.00	.00	136.00
*****											
TOTALS		2581.00	491.00	11.00	3.00	74.00	36.50	40.00	286.00	17.00	3539.50
PERCENT		72.92	13.87	0.31	0.08	2.09	1.03	1.13	8.08	0.48	100.00

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## The R/V NATHANIEL B. PALMER

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Operated for  
**National Science Foundation, Division of Polar Programs**

By  
**Antarctic Support Associates**

Under a charter with  
**Edison Chouest Offshore**



## FEATURES OF THE R/V NATHANIEL B. PALMER

The R/V NATHANIEL B. PALMER is being constructed by Edison Chouest Offshore, a private vessel construction and operating firm located in Galliano, Louisiana. The vessel has been designed as a multi-purpose, ice-capable, Antarctic research vessel. She will be operated by Antarctic Support Associates of Englewood, Colorado, under their contract with the National Science Foundation, Division of Polar Programs, to support the U.S. Antarctic Program. The R/V NATHANIEL B. PALMER is ice classed to the new ABS rules, ABS-A2. The vessel will be able to break 3 feet of level ice at 3 knots. The vessel will have stringent track and station keeping abilities. It will be acoustically quiet and will be able to support multi-disciplinary long range programs. The vessel conforms to UNOLS Safety and Science Mission Requirements for large high endurance vessels.

Berthing for 37 scientists in one and two person staterooms.

4,000 square feet of laboratory space located on the main deck.

An Oceanographic Staging Hangar on the starboard side with its own boom and winch system.

Three winch systems capable of handling .322 EM cable, 1/4" and 9/16" torque balanced wire, and .680 conducting cable without changing drums or winches.

An Ether-Net Science Information System

Fully automated Dynamic Positioning System

Hull design and structure to effectively support a multi-beam bathymetric swath mapping system.

High pressure (2,000 psi) compressor and distribution system to support single and multi-channel seismic experiments.

## Projected Operations

The R/V NATHANIEL B. PALMER is scheduled for delivery, to Antarctic Support Associates, at Punta Arenas, Chile, in January 1992. She will undergo acceptance tests and trials in the Gulf of Mexico and on the cruise through the South Atlantic preceding arrival at Punta Arenas. The vessel will then commence year-round operations in Antarctic waters.

Requests for information concerning the vessel or her schedule may be addressed to the Division of Polar Program, NSF, or to:

Antarctic Support Associates  
61 Inverness Drive East  
Suite 300  
Englewood, CO 80112

By phone at ASA:

Les Bonde, Deputy Projector Director, Peninsula Systems  
Henry Kennedy, Manager RVIB Procurement

(303) 790-8606  
(914) 358-5647

## THE R/V NATHANIEL B. PALMER

### Principal Characteristics

Length Overall	308.50 feet
Length at Waterline	279.75 feet
Beam, Maximum	60.00 feet
Beam at Design Waterline	60.00 feet
Draft at Design Waterline	21.75 feet
Depth	30.00 feet
Displacement	6,500 long tons
Shaft Horsepower	12,720
Accommodations	37 scientists 26 crew
Helicopters	Ability to carry 2
Endurance	75 days
Diesel Oil Tankage	1,683 longtons
Classification	ABS A-2 for vessels operating in ice

## Additional Characteristics

Stem Angle	27 degrees
Main Propulsion Brake Horsepower	13,320 BHP
Number of Main Diesel Engines	4
Horsepower per Main Diesel Engine	3,330 BHP @ 100 rpm 3,080 BHP @ 900 rpm
Diesel Manufacturer	Caterpillar
Diesel Designation	3608
Transmission Efficiency (design)	0.96
Number of Shafts	2
Propellers	Controllable Pitch in a Nozzle 4-bladed 4-meter diameter Material: stainless steel
Number of Rudders	2
Type of Rudder	High Lift
Number of Ship Service Generators	4
Rating of Each Ship Service Generator	1,070 KW
Manufacturer	Caterpillar
Diesel Designation	3512
Bow Thrusters	2
Bow Thruster Horsepower	1,500
Prime Mover	Diesel Direct Drive
Type	Water Jet
Stern Thruster	1
Stern Thruster Horsepower	800
Prime Mover	Electric Motor
Type	Tunnel



## Scientific Work Spaces

LABORATORIES	Eight, totaling 5,440 square feet.
Deck Bolting Grid	3/8" threaded boltdown fittings on a 2' grid pattern.
Unistrut Sections	At 2' intervals on all bulkheads conforming to the deck bolting grid.
Fume Hoods	2 laboratory grade laminar flow Class A; a 44" type in the Biochemical Analytical Clean Lab and 36" portable, removable unit in the Wet Lab.
Compressed Air	15 psi at 8' intervals along laboratory bench tops.
Sinks	2 each stainless steel in Main Lab, Hydro Lab, and Wet Lab with 2 ceramic in Biochemical Lab, and one each in Hydro Lab and Wet Lab.
SCIENCE STOREROOMS	One totaling 400 square feet. One hazardous materials storeroom, 200 square feet and one cold storage room (science freezer) 120 square feet.
Container Space	Below deck storage for four science lab/cargo vans.
Loading Hatches	On open decks above science hold; interior access available to each from Main Deck.
CLIMATE CONTROL CHAMBERS	2 - 8' x 8' x 10', capable of controlling internal temperature at -1 degrees C, plus or minus 0.5 degrees C.
SCIENTIFIC FREEZER	8' x 8' x 10', capable of maintaining a temperature of -18 degrees C.

## Ship Equipment

### SHIP SERVICE

Clean Power M-G sets supply 88 KW for laboratories, plus necessary clean power for exterior communications, navigation equipment, and DPS and propulsion machinery controls

UPS 12 KW

Water Capacity  
Freshwater 30 longtons per day from two evaporators.  
Saltwater Uncontaminated saltwater system supplies 20 gpm to labs.

### DECK

#### Winches

##### CTD

Markey DUSH-5, electric/hydraulic, 10,000 meters of 0.322" EM cable.

##### CTD/Hydrographic

Markey DUSH-5-5WF with 10,000 meters of 0.322" EM cable and 10,000 meters of 1/4" 3 x 19 torque balanced wire.

##### Trawl/Coring

Markey DUSH-9-11WF double drum electric/hydraulic, in sheltered winch room, 10,000 m. of 9/16" 3 x 19 torque balanced wire and 10,000 m. of 0.680" EM cable. Closed circuit TV monitors winch room.

#### Frames

##### A-Frame

On stern, 60-ton static load, 20 tons in motion, vertical clearance, 30'; outreach 20', inboard 15', inside width 20' at base, 16' at top.

On starboard side, 60-ton static load, 20 tons in motion, vertical clearance 20' outreach 8', inboard 6'.

##### Hydraulic Boom

A 6-ton in motion capacity hydraulic boom which extends outboard from the Oceanographic Staging Hangar, with a reach of 15' from the side of the vessel.

DARK ROOM                      Sinks and cabinets provided; installation of autoprocessor and enlarger planned.

DIVING LOCKER                Accessible from starboard side of the Main Deck; installation of a breathing air compressor system with storage tanks planned.

SCIENCE OFFICE                Desk, file cabinets, bookcase, light table, chart file, and marker board provided.

LABORATORY VANS                Two ISO standard 8' x 8' x 20' vans, configured as Hot Isotope Labs are available for use on the vessel.

                                    10 KVA, 115/208V power panel; connections for both fresh and uncontaminated seawater, 2 unistrut support systems with 3/8" threaded boltdown fittings on a 2' grid pattern.

                                    Full services as stated above are available at lab van locations in the hold, in the helicopter hangar, and on the helo deck.

Cranes

The vessel is fitted with several articulated cranes capable of servicing all areas of the working decks forward and aft. These cranes range in capacity from 2 1/2 tons to 10 tons.

Workboats

A 26-foot steel boat with forward cabin and aft working deck. This boat will be ice strengthened similar to the R/V NATHANIAL B. PALMER and fitted for safe operation in the polar environment.

There will also be several inflatable boats aboard for scientist's use.

### Scientific Instrumentation and Equipment

Scientific Instrumentation and Equipment decisions are currently being made by NSF for this vessel. Systems under consideration include:

CTD System

Doppler Current Profile

3.5 and 12 KHz Precision Depth Recording Systems

Single and multi-channel Seismic systems

A multi-beam swath mapping system



## Late Research Vessel Clearance Requests

Dept of State, Office of Ocean Affairs has tabulated the 71 clearance requests (for 117 coastal states) received during 1990 in terms of timeliness. The result indicates that 52 (73%) of the requests were received with less than the required prior notice and more than half of those (28 requests-39%) were already late in terms of coastal state requirements. The result of this high number of late requests is that other requests submitted in a timely manner must sometimes be set aside to process one that is close to becoming late, or perhaps already late. Given the high number of requests being received and the frequent coastal state problems which must be dealt with, we must be careful to assure that requests reaching our office on time are not made late by the frequent late requests. The most serious result of this unnecessarily high number of late requests is that the coastal state may become impatient and U.S. access could be jeopardized. Secondly, having to interrupt our schedule of processing to accommodate late requests costs our office valuable time which, in many instances, may be needed for attention to problems with pending requests.

Although the responsibility for submitting the clearance requests is shared by the ship operating institution, its ship's master and the scientist in charge of the research, it is obviously of primary interest to the ship operator to assure that the necessary clearances are obtained. As soon as the research cruise is scheduled for a vessel, the operator should begin considering the clearance process. Although much of the input for the clearance must be provided by the chief scientist, it is not wise for the ship operator to depend entirely on the scientist to initiate or monitor the clearance process (nor should the scientist assume the operator alone will secure the clearance).

Most of the late requests have no really valid reasons for their lateness and few institutions even bother to fabricate a reason; the assumption obviously being that we are a government agency required to carry out this function for the users. Our policy is, and will remain, that we will not jeopardize a request submitted on time to deal with one submitted late. In some cases we may decide not to process the request at all, if it is determined that the late request will jeopardize other pending clearances, or if the pattern of late requests to a particular coastal state has become an irritant that could result in denial of our future requests. This will be particularly true when a coastal state has already lodged a complaint about late requests, as is the situation with France, Mexico and Spain.

This is one area of clearance processing which we are able to improve ourselves. All that is necessary to eliminate this problem is for researchers to plan ahead and submit requests on time, in accordance with the UNOLS "Handbook for International Operations of U.S. Scientific Research Vessels, Appendix F (Notice to Research Vessel Operators No. 68)". There will be occasions wherein a valid reason exists for submission of a late request. Please cooperate and give us time to deal with those.

## UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

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

Research, Graduate Studies,  
and International Programs  
Oregon State University  
Administrative Services A312  
Corvallis, OR 97331-2140  
(503) 737-3467

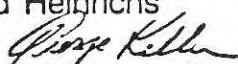
July 17, 1990

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UNOLS OFFICE

## MEMORANDUM

TO: Donald Heinrichs  
FROM:   
George H. Keller, Chairman  
SUBJECT: Proposal to host the UNOLS Office

In recent months, UNOLS has gone through the process of soliciting and evaluating proposals from the UNOLS community to host and staff the UNOLS office, commencing in late 1991. This process has now been completed, and by vote of the majority of the UNOLS membership, the proposal from the University of Rhode Island has received our endorsement. This proposal, which includes Jack Bash as the Executive Secretary, received very strong endorsement from throughout the UNOLS community.

I am pleased to relay UNOLS' strong support for the University of Rhode Island's proposal which you should receive in the near future.

GHK:mg

cc: W. Barbee  
G. Brass  
R. Duce  
T. Johnson  
W. Nowlin

**UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM**

September, 1990

**UNOLS Nominating Committee**

The UNOLS Nominating Committee has assembled the following slate of candidates for the UNOLS Council positions to be filled at the 1990 Annual Meeting.

**THE SLATE****For UNOLS Chair:**Gary Brass  
Ross HeathUniversity of Miami  
University of Washington**For UNOLS Vice Chair:**Tom Johnson  
Bob KnoxDuke University Marine Laboratory  
Scripps, University of California, San Diego**For UNOLS Council - from among designated representatives of Member, Operator institutions:**George Grice  
Carolyn ThoroughgoodWoods Hole Oceanographic Institution  
University of Delaware**For UNOLS Council - at-large, individual affiliated with any UNOLS Member institution:**Curt Collins  
David KarlNaval Postgraduate School  
University of Hawaii

## VITAE

**Gary Brass, Professor and Chairman, Division of Geology and Geophysics  
Rosenstiel School of Marine and Atmospheric Sciences, University of Miami  
Geochemistry; Paleo-oceanography and circulation and geochemistry of the mesozoic ocean**

**Ross Heath, Dean, College of Ocean and Fishery Sciences  
and Professor of Oceanography, University of Washington  
Geochemistry of deep-sea sediments; science and policy studies of deep-sea manganese  
nodules and deep-sea disposal of radioactive wastes; academic administration**

**Tom Johnson, Director, Duke-University of North Carolina Oceanographic Consortium  
and Professor of Geology, Duke University  
Geology; Paleocirculation of deep western North Atlantic, and paleoclimatic and  
sedimentological studies of large lakes**

**Bob Knox, Director, Physical Oceanography Research Division & Research Oceanographer  
Scripps Institution of Oceanography, University of California, San Diego  
Physical Oceanography; Global and equatorial ocean circulation and acoustic remote sensing**

**George Grice, Associate Director for Science Operations  
Woods Hole Oceanographic Institution  
Biological Oceanography; Research program administration and management**

**Carolyn Thoroughgood, Dean, College of Marine Studies  
University of Delaware  
Marine and Biochemistry; academic and research program administration**

**Curt Collins, Chairman and Professor  
Oceanography Department, Naval Postgraduate School  
Physical Oceanography; Dynamics and Kinematics of California Undercurrent**

**David Karl, Professor of Oceanography, Department of Oceanography  
and Chair, Oceanic Biology, Hawaii Institute of Geophysics, University of Hawaii  
Biological Oceanography; Marine microbiological ecology, particle-bacterial interactions,  
deep-sea hydrothermal vents**