UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS ANNUAL MEETING

SUMMARY REPORT

October 1, 1993

National Trust for Historic Preservation
1785 Massachusetts Avenue, NW
Washington, DC

UNOLS ANNUAL MEETING
8:30 A.M. FRIDAY 1 OCTOBER 1993
NATIONAL TRUST FOR HISTORIC PRESERVATION
WASHINGTON, DC

GENERAL: Issues and items are reported in the order in which they were addressed in the 1 October 1993 UNOLS Annual Meeting Agenda except as modified herein. The published agenda is enclosed as **Appendix I.**

Appendices

I. Annual Meeting Agenda
II. Annual Meeting Attendance List
III. UNOLS Directory
IV. UNOLS Ship Scheduling Contacts
V. UNOLS Advisory Council (1971-1993)
VI. UNOLS Executive Committee (1971-1993)
VII. UNOLS Fleet Marine Operations Contacts
VIII. UNOLS Council/Committees
IX. Summary of UNOLS Fleet Operations 1992 - Ship Statistics Summary Report
X. FIC Slides
XI. RVTEC Slides
XII. NOAA Slides
XIII. NSF Slides
XIV. Coastal Workshop Slides
XV. Guidelines for Chartering non-UNOLS Vessels
XVI. SEA DIVER Flier
XVII. Annexes II & IV
XVIII. UNOLS Charter, Annex V
XIX. Slate of Candidates

ATTENDANCE: A list of registered attendees has been compiled and is presented as **Appendix II.**

DIRECTORIES: Information from the UNOLS Office which has been appended to this report include: UNOLS Directory, UNOLS Fleet Ship Scheduling Contacts, UNOLS Advisory Council (1971-1993), UNOLS Executive Committee (1971-1993), UNOLS Fleet Marine Operations Contacts, UNOLS Council/Committees, and Summary of UNOLS Fleet Operations, 1992 -- Ship Statistics Summary Report **(Appendix III-IX).**

INTRODUCTIONS AND WELCOME: Garry Brass, UNOLS Chair, called the meeting to order and welcomed the UNOLS members and other attendees to the UNOLS Annual Meeting. He provided the membership with a brief overview of the year's UNOLS activities. These included the successes of the DESSC and the significant increase in the ALVIN usage; the signing of the MOA by NSF/ONR/NOAA for the support of the National Deep Submergence Facility; the merger of the WHOI Deep Submergence Lab and the ALVIN Group; the FIC's coastal research facility workshop; progress with the Arctic R/V design; the UNOLS involvement with the Arctic nuclear submarine cruise; the first year for RVTEC which is off to a good start; publishing of a revised RVOC Safety Standards; publishing Guidelines for chartering non-UNOLS ships; improved working relations with the federal agencies, particularly with NOAA and USCG; the work on Capital Hill to find answers to the radio officer problem and the GPS P-code and announcing of the UNOLS booth at the San Francisco AGU.

COMMITTEE REPORTS

RESEARCH VESSEL OPERATORS' COMMITTEE - Mike Prince, RVOC Chair, gave the RVOC report. He reported that this year's RVOC Vice Chair is Paul Ljunggren from Lamont-Doherty and the Safety Committee Chair is Tom Smith from the University of Alaska. The 1992 RVOC Meeting was hosted by Wadsworth Owen in Lewes, Delaware. A major action item that came out of that meeting was to develop guidelines for chartering non-UNOLS vessels. These guidelines have been drafted and were adopted by the UNOLS Council. The RVOC has been following two legislative issues. The first is the requirement to have radio operators on board vessels and the second is for UNOLS vessels to have access to the GPS P-Code. Basically, they feel that navigation should be improved overall.

Personnel changes to RVOC include the retirement of Jim Williams from Scripps. His replacement is Tom Althouse. Scripps has established an award in Jim's name. Harry Barnes has left Bermuda Biological Research Station and moved on to the Smithsonian Tropical Research Institution. Joe Coburn is serving as liaison to the FIC and Steve Rabalais is the liaison to RVTEC.

This year's RVOC Annual Meeting will be hosted by Dean Letzring at the Texas A&M facility in Galveston, TX on October 26-28. The first day of the meeting will include agency reports and discussions of legislative issues and USCG regulations. The second day will include three workshops to address specific issues:

1) Crew Compensation Structure
   - Benefit rates will be examined, as well as, how costs are determined. Innovative practices will be identified.
2) Future needs of research vessels
   - Do the ships of today meet the science needs?
   - The paper on lay-up schedules will be reviewed.

3) Environmental Issues
   - Control of Pollution and Hazardous Material
   - The Oil Pollution Act of 1990

Representatives from three major winch manufacturers will be invited to speak. The last day of the meeting will be a round table discussion by the operators. Representatives from both east and west Canada and Mexico have been invited. Next year's meeting is scheduled to be held in Savannah, Georgia.

DEEP SUBMERGENCE SCIENCE Committee - Jack Bash summarized DESSC highlights that had been prepared by Jeff Fox, DESSC Chair. In 1993, ALVIN resumed operations after its overhaul. In its first leg problems were experienced with pressure compensated motor controllers and after four dives the program was abandoned. Old motor controllers were installed and have worked flawlessly to present (i.e. approximately eighty dives made and no dives lost to weather or equipment). However, the controllers have been repaired and have failed again during tests. The problem has yet to be identified.

A twelve dive program on Juan de Fuca has been scheduled for October to respond to a recent eruption on Juan de Fuca (ten dives supplied by NSF; two by NOAA).

For 1994, a full year of operations is scheduled and ATLANTIS II/ALVIN has a full program with 186 dive days; work areas are the Eastern Pacific Rise north of the equator, California Coast, and Juan de Fuca. They will end the year in Panama. The bad news is that most of this work is being funded by NSF, a burden that they cannot carry year in and year out.

Operations for 1995 are still unclear but approximately fifty days are funded and strong letters of interest indicate proposal pressure is for central North Atlantic, Eastern Pacific Rise north of the equator, the California coast and Juan de Fuca. In response to an NSF/Japan initiative, proposals are being solicited to carry out a three to four month program along the Southern East Pacific Rise (Easter Island Region). Barring any complexities (i.e. ATLANTIS II buyer is found and sold early; KNORR funding in late 1995 is weak), AII/ALVIN will return to WHOI in the Spring of 1996 for retirement of AII and conversion of KNORR to support ship.

Following conversion, a tentative plan is to take ALVIN to the Western Pacific.

Other ongoing issues that involve DESSC, include:

- Developing an imaging/data management upgrade proposal. Based on community input, DESSC and the operators have created a plan for an upgrade in technology. The proposal will be submitted very soon to the agencies.

- ALVIN's recertification to a 4500 meter depth (500 meter increase; 12% more of the seafloor will be accessible). The process is waiting for NAVSEA to bless the strategy. Titanium spheres will need to be fabricated to house the old motor controllers; cost is estimated at $56,000 with a four month lead time. DESSC endorses this process.

- Seabeam operations on AII: To streamline operations and lower costs, the responsibility for Seabeam operations is in the process of being transferred from GSO/URI to WHOI.

- Engineering Dives: Three dives are scheduled for early December in order to install and test a suite of new equipment for ALVIN (new lighting system; mesotech swath bathymetric system; new digital cameras). DESSC strongly endorses this commitment of resources for engineering dives.

SCHEDULING COMMITTEE - Ken Palfrey provided the report for the Ship Scheduling Committee. The 1993 schedule is being carried out. ENDEAVOR began a mid-life refit this year. WECOMA and OCEANUS are scheduled for stand down at the last part of this year to begin their refits. VICKERS ceased operations mid-way through the year, most all work was rescheduled to other UNOLS vessels.

A meeting was held in Washington, DC at the beginning of this month to coordinate the 1994 UNOLS ship operations. MELVILLE and THOMPSON schedules appear healthy. THOMPSON will operate in the Indian Ocean in the fall for JGOFS field work. MELVILLE is scheduled for WOCE work in the Southern Ocean. KNORR's schedule is solid in the first half of the year, but light in second half. KNORR is working with NUWC for additional ship time. They will not know until October if this will be funded. There is some softness in the schedules of the intermediate vessels on the East coast. ENDEAVOR has a schedule of approximately 200 days. GYRE's schedule shows approximately 100 days, while COLUMBUS ISELIN has 173 days. OCEANUS is being recommended for no operations following its mid-life refit. The West Coast intermediates are also showing signs of some lightness in their schedules, however, MOANA WAVE and ALPHA HELIX schedules look fine.

Ken Palfrey explained that the scheduling process has become very efficient over the years due to electronic communications. As a result, revisions to the scheduling process are proposed. In June, only a review would be performed, followed by recommendations by the Review Group. The September meeting would be a full review, but participation by the small vessel institutions would not be mandatory. However, representatives from all institutions would be encouraged to attend the annual meeting. The Council recommended that the revised procedure be implemented on a trial basis.

****

KEYNOTE ADDRESS

Dr. D. James Baker, Undersecretary for Oceans and Atmosphere, National Oceanic and Atmospheric Administration, provided the Keynote address. Dr. Baker provided the gathering with an insight of the current administration and their interest and concern for the environment. He related that these issues will receive significant attention from the administration and that he and other agency leaders involved in environmental issues have access to the Executive Branch. This Administration would like to sign the Law of the Sea Amendment and be a leader internationally in environmental issues. He also said that the Secretary of Commerce, Ron Brown, is very interested in NOAA.

Dr. Baker reiterated that funding restraints will drive issues since he administration is sincerely committed to deficit reduction. The Vice President's "Recreating Government" theme is designed to reduce costs and streamline government activities. The down sizing of the DOD could impact the academic community with possibly fewer dollars yet opening opportunities as the military seeks new missions.

The replacement of the NOAA fleet holds a high priority. This will be accomplished by building new ships, acquisition of existing Navy assets such as the T-AGOS and chartering which could impact UNOLS. Dr. Baker believes that collaboration and partnerships are the way to operate in the existing climate and he sees NOAA opening new doors to cooperation.

****

COMMITTEE REPORTS CONTINUED

FLEET IMPROVEMENT COMMITTEE - Marcus Langseth, FIC Chair, reported on FIC activities, see **Appendix X**. In 1993, FIC activities include updating the Fleet Improvement Plan, conducting a coastal ocean science facilities workshop, and developing a preliminary design of an Arctic Research Vessel (ARV). The Fleet Improvement Plan addresses the future needs of the science community along with the trends in ship usage and funding. Marcus presented a chart of large ships in 1988, 1993 and 1998. Marcus pointed out that by 1998, we may see an enormous added capacity in large ships, with seven vessels which includes an ARV. Six of these vessels will be over 270 feet in length; today's fleet has three vessels over 270 feet. There will be an increase of approximately 100 science births. Additionally, four intermediate vessels will undergo refits in the next two years, however, there is softness in their schedules. Perhaps an increase in coastal science field work will alleviate some of this problem.

Arctic Research Vessel (ARV) - The concept design for the ARV was widely distributed throughout the community. As a result of feedback, the size of the vessel

has grown. Model tests of the ARV hull design are being conducted in Hamburg, Germany and will continue into October. Ice breaking operations are being simulated. The design is exceeding performance expectations with the nozzles staying clear of ice. There is some problem with ice in the stern when backing up. It is being redesigned and will be retested. The design which combines features of the ODEN and TYSSEN/WAAS hull appears to be the most efficient to date.

SPECIAL REPORT - Scientific Opportunity on a NUCLEAR SUBMARINE. Ted DeLaca of the University of Alaska was the scientific coordinator on the recent US Navy nuclear submarine cruise to the Arctic and provided the UNOLS membership with a first hand report of this exciting cruise. Ted gave a brief background of the preparation for this cruise where both the Navy and the science community worked together in addressing their respective concerns for this historic event. This was the first time the US Navy permitted academic scientists aboard a nuclear submarine that was on a mission under the Arctic ice. The opportunity was announced in January 1993 and rapid planning was necessary to prepare. All members of the science party were required to have secret clearances. The data collected, once released by DOD, would be unclassified and publishable. Submarine operations were restricted to a depth not to exceed 400 feet and a speed of less than 20 knots.

The opportunity was announced to the science community through OMNET and EOS. Forty scientists from seventeen institutions provide input in developing the science plan. Five scientists made the cruise which was judged an unqualified success. Secret clearances were required to ride the submarine. The cruise lasted 40 days which included 22 days under the Arctic ice. Fifteen surface stations were planned, twenty were conducted. Over 2000 water samples were taken which was more than 30% estimated. The cruise tract totaled approximately 4900 miles. Continuous gravity data was taken. Ted remarked about the outstanding enthusiasm of the vessel's crew and the fine cooperation they offered. He sighted the superb navigation of the ship. Ted could not be more enthusiastic about the cruise. This was a learning experience for both the Navy and the science community which got off to a splendid start. He is hopeful that this had been a solid beginning for a long and productive relationship.

RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE - Rich Findley provided the report for RVTEC, his slides are attached as **Appendix XI**. He reported that last September an organizational meeting was held and RVTEC was formed. This year's Annual Meeting was held at Scripps on 19-21 September. Fifteen of the nineteen UNOLS Operator Institutions had representatives at the meeting. Tim Pfieffer was elected as the new Vice Chair. The by-laws were approved for submission to the UNOLS membership for adoption as Annex V of the UNOLS Charter. Subcommittee activities included organization of technician/equipment databases and technician exchange/training programs.

Rich reported that two mini workshops were held at the meeting to address CTD and ADCP technologies. Bob Millard and Jim Swift were invited to speak on CTDs. Bob

Millard has agreed to provide post processing/calibration software to RVTEC. The RVTEC membership list was added to the WOCE standards mailing list. Teri Chereskin and Eric Firing were invited to speak on ADCPs. It was noted that a clearinghouse needs to be established for collected data. Discussions also indicated the need for standard setups. It was also recommended the 3D GPS systems become part of system installations.

The RVTEC addressed the need for data standards. They will investigate the data formats, net CDF and HDF, and select a desired format. For storage, it was decided to consider CD ROM: ISO 9660. Implementing data standards throughout the fleet will be useful to the ship technicians. Investigators will still have the option to request whatever data format they are comfortable with.

Ellen Kappel, JOI; Rex Buddenberg, JOI; and Andy Moffei, WHOI made a presentation on a proposal to install SeaNet in the UNOLS fleet. The talk addressed the installation of shipboard LANs for support of SeaNet. RVTEC recommended that all ships in the UNOLS fleet be equipped, and as a result costs should be minimized to be affordable to all.

RVTEC plans to establish an Internet FTP site to hold the technician database, the equipment database, and various software.

AGENCY REPORTS

OFFICE OF NAVAL REARCH. Keith Kaulum provided the ONR report by first giving the membership an update on AGOR-24 which is under construction at Halter Marine. The first round of changes have been incorporated in the plans which include additional berthing for eight. A second round of changes is still under consideration. The AGOR-25 option is presently in limbo. The KNORR INSURV has been completed and the INSURV for MELVILLE is scheduled for mid October. Keith reported that the 1994 ONR budget should be about the same as their 1993 budget. Major overhaul funds for FLIP were removed from the budget.

OFFICE OF THE OCEANOGRAPHER OF THE NAVY. The Oceanographer of the Navy report was given by Pat Dennis. Pat reported that the last of the Navy lab research ships, BARTLETT has been removed from the fleet and transferred to Morocco. The labs are working with ONR for cost sharing of their ship needs. The present cost sharing formula is ONR 75% and NRL 25%. This is likely to change to 50/50 for the out years. NRL is looking to UNOLS to fill their ship needs. Pat advised that Bob Winoker has moved to NOAA and that Stu Nelson has retired. In other personnel notes Pat informed the group that Admiral James Watkins has taken over the job as President of JOI.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION. Scott McKellar presented slides for the NOAA presentation. These are included as

Appendix XII. In 1993, NOAA projected 3463 ship days for its eighteen ships, 504 of which were scheduled for the Office of Oceanic and Atmosphere Research (OAR). NOAA has received two additional T-AGOS ships, RELENTLESS and TITAN. The first NOAA T-AGOS was ADVENTUROUS and the second, WORTHY will be operated by NOAA for USGS. NOAA anticipates level funding in fleet maintenance for FY94. In FY95 the budget structure will follow NOAA's strategic plan. (During the meeting word was received that Congress had appropriated an additional $47M for the construction of AGOR-26 which was originally planned for their 1995 budget.) Fleet Replacement and Modernization funding has been as follows: 1992 - $33.2M, 1993 - $28.5M and 1994 - $77M. Scott gave a report on FY94 fleet modernization plans.

NOAA'S UNDERSEA RESEARCH PROGRAM. David Duane gave the gathering and update of NOAA's Undersea Research Program (NURP). He reported that the NURP budget for 1994 would be $16-18M and that they plan to meet their obligation for support of the National Deep Submergence Facility. NOAA continues to work with the Navy and SEACLIFF to make this facility available to academic scientists, however, they are not sure if they will be ready for operations in 1994. TURTLE and/or NR-1 maybe available in 1994, if so, there will be an announcement in late fall. NOAA's undersea habitat AQUARIUS is in operation. The Congressional budget now formally recognizes the National Undersea Research Program with line item funding.

NATIONAL SCIENCE FOUNDATION. Don Heinrichs provided a series of slides for the NSF report. a copy of these slides are included as **Appendix XIII.** Don's first two slides are an analysis of where the funding support is coming from by agency and where they are being spent by ship size. The 1994 projected figures are based on the UNOLS estimates from the fall scheduling meeting. In 1994 NSF's support is estimated at $33M, ONR support is down, but there is a big jump in support from other sources. ARPA funding is driving this support. In 1993, we see that large ships are using approximately 45 percent of the total support available (this does not include MOANA WAVE) and intermediates are using approximately 32 percent. His next slide presents a utilization study of the UNOLS fleet and predicts the needed project increases for full utilization by ship class. The East Coast Intermediates appear to be a problem operating significantly under capacity.

The budget projection for 1994 indicates a 5.5% increase in the Ocean Sciences Division budget and a 4.6% increase for the Oceanographic Facilities. In the last two slides Don shows where the support has or will be going. Capital facilities for 1993 included funding for preliminary design for the Arctic research vessel, mid-life refit for ENDEAVOR, the start of mid-life refit for OCEANUS and WECOMA, and the final amortization payment for EWING. In 1994, NSF has been directed by Congress to postpone acquisition of the Arctic research vessel; funds are planned to complete the mid-life refit of OCEANUS and WECOMA. In 1993 operations, ENDEAVOR was out-of-service and VICKERS ceased operations midyear. Don also presented two concerns: the operators feel pinched on maintenance support and NSF is concerned

with the crew compensation for several institutions. In 1994, OCEANUS will be out of service and the major Indian Ocean programs begin. Don provided a glimpse at long range NSF planning. These include the acquisition of the Arctic research vessel, response to the UNOLS Fleet Improvement Plan, a review/update of NSF requirements analysis and the retirement of ATLANTIS II along with the KNORR refit for DSF operations. On the management side, NSF plans to increase interagency/international coordination; continue constrained total fleet operations funds; examine Coastal and Arctic facilities requirements; monitor large ship operations costs and look at the role of the intermediate ship.

UNITED STATES GEOLOGICAL SERVICE. Janet Morton provided the membership with a report from USGS. She discussed the conversion of the T-AGOS vessel, WORTHY, received from the Navy via NOAA which will be homeported in Redwood City, CA. The vessel is 214 feet in length and considered to be acoustically quiet. This ship will undergo a phased refit to prepare it for its work with USGS. The decks will be raised 4 feet and some fuel tanks removed to allow weight for winches and compressors. A modified A-frame and two cranes will be installed. The ship will be operated by a NOAA crew in the Pacific Northwest and is expected to be ready for service in late 1994. The refit/acquisition of equipment is estimated at $2-3M; $1M has already been spent on acquisition.

MINERAL MANAGEMENT SERVICE. MMS was represented by Ron Lai who provided the report from that agency. Ron reported that MMS was working on a new biological study in the California Bight. The LATEX work in the Gulf of Mexico will be completed soon. A "Coastal Marine Institute" at Louisiana State is being supported by MMS. A second such institute is planned for Alaska.

NATIONAL AERONAUTICS SPACE ADMINISTRATION. James Acker provided information about NASA activities for the membership. Jim reported that the TOPEX/POSEIDEN satellite has been a great success. The SeaWiFS satellite is scheduled for launch in 1994 and should be available for support of the Indian Ocean J-GOFS work. A MODIS instrument is planned for the EOS satellite scheduled for a 1998 launch.

UNOLS ISSUES

Coastal Facility Workshop - Don Wright, Chair of the Coastal Subcommittee, provided a report on the results of the Coastal Facilities Workshop held in Williamsburg, VA on 22-24 February, 1993. The slides from Don's presentation are included as **Appendix XIV.** Seventy five scientists, engineers and agency persons attended this three day workshop. The purpose of the workshop was "To consider national needs for field research facilities in support of interdisciplinary coastal & estuarine marine science." The assemblage was divided into four working groups that looked at types of coastal research requirements. These were: Synoptic observations;

Time series measurements; Multidisciplinary studies; and Information management and communications. These groups came up with a summary of needs:

More effective data transmission
Higher resolution data collection capability
Increased ability to operate inshore in heavy weather
Aircraft, satellites must be used in coordinated programs along with vessels
Scientific need for vessels that can accommodate groups of 20 or more scientists
Interdisciplinary ship with the ability to work in shallow water
Standard set of routinely acquired data from all vessels
Enhanced communication/data transfer links
Regional pools of shared equipment
Access to larger vessels to support multidisciplinary teams
Ability to service very dense station spacing
Quick-response vessels needed to service moorings
Ability to support multiple wires from anchored vessel
Ability to maintain 3-point mooring for prolonged periods

After reporting out, the assemblage was again broken into groups relating to types of facilities. These were: Large ships; Small ships and boats; Aircraft, satellites, moorings, and fixed platforms; and Field and shipboard instrumentation. Recommendation from these workshops were:

Vessel-specific recommendations:

Large ships should be available to the coastal community.
A new generation of shallow draft vessels are needed.
Increased sea-keeping ability for coastal vessels.
Ability to support multi-wire operations.
Increased ability to launch AUV'S, ROV'S, moorings, etc..
Modified water-sampling techniques via flow-through intakes, towed systems.
Vessels should be capable of 3-point anchoring in depths < 100 m.
Improve links to shore-based communications for data transfer.
New generation small coastal vessels (about 30 m) are needed.

Non-vessel recommendations:

Educate the coastal community on new platforms and instruments.
Develop better algorithms for analysis of satellite data.
Develop comprehensive data archive and index.
Develop better shore-based data acquisition systems.
Establish regional or national pools of shared, expensive equipment.
Establish regional or national shore-based facilities for instrument calibrations, technician training, computer applications, etc..

A full report from this workshop will be out in the near future.

The Council requested that the Fleet Improvement Committee proceed with Science Mission Requirements for a Coastal Vessel.

Issues before UNOLS

Arctic Research Vessel - This subject was discussed in the Committee Reports.

Opportunities on Nuclear Submarines - This was discussed during Ted DeLuca's presentation above.

Radio Officer/GPS - Dick Pittenger reported that legislation was before Congress in the form of two bills. One is a bill is to retain the radio officer and the other bill is to eliminate the requirement for a radio officer. The GPS issue is being resolved by permitting the UNOLS ships access to the P-code. A memorandum of understanding is about to be signed between DOD and NSF to lay out the rules.

Mid life refit of OCEANUS Class - Ken Palfrey provided information on the refit status of the three OCEANUS class ships. ENDEAVOR is expected to complete the refit at Peterson Builders in mid November and is essentially on schedule and budget. OCEANUS received word that the bid for their work package was within the cap and the ship would be proceeding to the yard in late October. The bids for the WECOMA refit came in high which will necessitate a new look at the process.

UNOLS Booth at AGU - Annette DeSilva informed the membership that UNOLS is planning a booth at the San Francisco AGU meeting in December and solicited videos from member institutions of ships and facilities for incorporation into a UNOLS video. The video will be viewed at the UNOLS booth.

Guidelines for Chartering Non-UNOLS Vessels - The RVOC has developed and the Council approved a set of guidelines for chartering non-UNOLS vessels. A copy of this is included as **Appendix XV.**

KNORR Conversion to Submersible Support Ship - A joint FIC/DESSC committee has met to assist WHOI in the planning for converting KNORR to replace ATLANTIS II as the ALVIN support ship with the added capability of handling other deep submersible vehicles.

SeaNet Proposal for UNOLS Vessels - The membership was advised that the Joint Oceanographic Institution (JOI) is preparing a proposal to install SeaNet on the UNOLS Fleet. UNOLS will have input into the proposal. The goal of SeaNet is to establish high-speed data communications transfer between ship/shore, ship/ship, shore/buoy, ship/buoy, etc.

New UNOLS Vessel - RV SEA DIVER, Operator HBOI - The membership was informed that the UNOLS Council approved the addition of SEA DIVER, operated by

Harbor Branch Oceanographic Institution, as a UNOLS vessel. A copy of the SEA DIVER flier is included as **Appendix XVI.**

UNOLS Charter Annexes II & IV - Readoption - The membership was informed that the UNOLS Charter Annex II, which addresses National Oceanographic Facilities and Annex IV which provide the terms of reference for the Fleet Improvement Committee have been updated and readopted. They are included as **Appendix XVII.**

Dues for UNOLS Members - Garry Brass presented a proposal to the membership to require dues of UNOLS members. The dues should be from unappropriated funds and would be used for such things as flowers for deceased persons, farewell gifts for retiring members, wine and cheese socials at our meetings and other similar expenses. The proposed dues amounts would be $100.00 per year for operator institutions and $50.00 per year for non-operator institutions. After a brief discussion, the proposal passed by unanimous vote.

VICKERS Status - Doug Hammond of USC provided information concerning R/V VICKERS. VICKERS ceased operating in mid summer due to a financial decision within the University and is presently at the pier. It has passed both USCG and NSF inspections which are being kept current. The ship is for sale. The oceanographic programs at USC remain intact.

Other Issues - Don Heinrichs presented additional comments concerning the Arctic R/V. The NSF plans to continue with activities to acquire this ship. NSF believes this ship should be university based and that it should be the next addition to the fleet. Don asked that UNOLS restate their position on the acquisition of this ship. He also said there is a GAO type study underway that is investigating the best operating paradigm for research vessels.

Brian Taylor of the University of Hawaii asked UNOLS to take more than economics into consideration when scheduling ships. Concerns such as multi-use systems aboard the ships and technician support should be part of the decision process. The Ship's Scheduling Committee was asked to address this issue at their next meeting.

UNOLS Membership Votes. The membership voted to adopt the RVTEC By-laws as Annex V to the UNOLS Charter, attached as **Appendix XVIII.** The membership also voted unanimously to admit the Smithsonian Tropical Research Institute as a new UNOLS member.

UNOLS Elections. A slate of candidates (**Appendix XIX**) had been prepared for elections to fill two UNOLS Council positions. These were: Council member at large and Council member from an operating institution, both three year terms. No nominations were made from the floor. The election results are as follows:

Member at large - David Karl
Member operating institution - Tom Royer

Appointments to UNOLS Committees - Over the past year, appointments to UNOLS standing committees were as follows:

DESSC - Bob Collier, OSU; Dan Orange, MBARI; and Jim Billingham, MIT Sea Grant; Karen Von Damm, UNH; Ken Johnson, MLML (FIC liaison)
FIC - Tom Royer, U. Alaska; Ken Johnson, MLML (both reappointed) and Joe Coburn WHOI (RVOC Liaison)
RVOC - Mike Prince, MLML, (Chair) and Paul Ljunggren, LDEO, (Vice Chair)
RVTEC - Rich Findley, U. Miami, (Chair) and Tim Pfeiffer, U. Delaware, (Vice Chair)

Addition Issues. Hawaii was selected for the winter meeting site and Maine for the summer meeting site.

The meeting was adjourned at 1500 hrs 1 October 1993.

APPENDIX I

UNOLS ANNUAL MEETING AGENDA

8:30 A.M., FRIDAY, OCTOBER 1, 1993
NATIONAL TRUST FOR HISTORIC PRESERVATION
WASHINGTON, D.C.

Introduction and Welcome: **Garry Brass, UNOLS Chair** will report on 1992-1993 activities, current issues and issues continuing into 1994.

KEYNOTE ADDRESS

Dr. D. James Baker, Undersecretary for Oceans and Atmosphere, National Oceanic and Atmospheric Administration, will provide the keynote address for the 1993 UNOLS Annual Meeting.

COMMITTEE REPORTS

Fleet Improvement Committee: Marcus Langseth, Chair, will report on 1992-1993 accomplishments and plans for next year. He will provide the status of the Fleet Improvement Plan update, the Arctic Research Vessel design and construction plans.

Research Vessel Operators Committee: Mike Prince, Chair, will report on 1992-1993 RVOC activities, issues and the upcoming RVOC meeting in Galveston, Texas.

DEep Submergence Science Committee: Jeff Fox, Chair, will review DESSC activities including the outcome of the DESSC workshop held in Alexandria, VA in November, 1992. An overview of a proposal for technical improvements for ALVIN will be provided. Jeff will report on ALVIN's overhaul and operations in 1992-1993. He will review DESSC's recommendations for ALVIN and ROV operations in 1994 and beyond.

Ship Scheduling Committee: Ken Palfrey, Chair, will report on the scheduling process during 1993, schedules for 1994, costs balanced against expected funds and recommendations from the SSC. Ken will discuss plans for revising the scheduling process by eliminating the Spring Scheduling Meeting.

Research Vessel Technical Enhancement Committee: Rich Findley, Chair, will report on the activities of RVTEC in their first year (1992-1993). He will summarize the events of the committee's annual meeting held at Scripps on September 19-21, 1993.

AGENCY REPORTS

Federal Agency Reports: Information from Federal Agencies (DOE, EPA, MMS, NOAA, NRL, NSF, ONR, OON, USCG and USGS) on 1993 funding, forecasts for 1994 or later, ship operations and science support. Other areas of discussion will include:

- NSF will report on activities/plans for 1994 and beyond.
- ONR will report on the construction status of AGOR-24 and the budgetary status of AGOR-25.
- ONR/NRL will report on the cost sharing arrangement to utilize UNOLS vessels.
- NOAA will discuss their ship time use of UNOLS vessels and modernization plans for their fleet.
- OON will discuss the construction and retirement status of the Navy's research vessels.
- USCG will report on the status of the construction of their Ice-Breaker.
- USGS will report on the modification schedule and planned use of their T-AGOS vessel.
- Department of State/Office of Ocean Affairs - Tom Cocke, will summarize the 1993 clearance status.

12:00 - 1:00 ***Lunch Break*** ***12:00 - 1:00***

UNOLS ISSUES

Coastal Facility Workshop: Don Wright, Chair of the Coastal Subcommittee, will report on the outcome of the Coastal Facility Workshop held in Williamsburg, VA on February 22-24, 1993.

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:

- Arctic Research Vessel
- Opportunity on Nuclear Submarine
- Radio Officer/GPS
- Midlife refit of OCEANUS Class
- UNOLS Booth at AGU
- Guidelines for Chartering Non-UNOLS Vessels
- KNORR Conversion to Submersible Support Ship
- SeaNet Proposal for UNOLS Vessels
- New UNOLS Vessel - RV SEA DIVER, Operator HBOI
- Charter Annexes II & IV - Readoption

UNOLS Members may wish to raise additional issues.

UNOLS MEMBERSHIP VOTES: The following issues require a membership vote for approval:

- *Annex Addition to UNOLS Charter* - Adoption of Annex V, RVTEC By-Laws
- *New UNOLS Member* - Smithsonian Tropical Research Institute Application for membership

UNOLS Elections: Election for the following UNOLS positions will be held (The slate of nominees is enclosed (Encl. 1):
UNOLS Council Member, at large, affiliated with any Member institution (3-year term).
UNOLS Council Member, from among designated representatives of UNOLS Operator Institutions (3-year term).

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

Other Business: Other issues, actions or recommendations as might be introduced.

For further information, please contact:

UNOLS Office
P.O. Box 392
Saunderstown, RI 02874

TELEPHONE: (401)792-6825
FAX: (401) 792-6486
OMNET TELEMAIL: UNOLS.OFFICE
INTERNET: unols@gsosun1.gso.uri.edu

UNOLS

The University National Oceanographic Laboratory System is a planning mechanism for oceanographic facilities. It is a joint effort of the academic community and the federal funding agencies, principally the NSF, ONR, NOAA, DOE, MMS, and USGS.

UNOLS provides for community-wide cooperation and review of the utilization of facilities and opportunities for access to those facilities. It assesses the match of programs to the needs of academic programs and makes recommendations of priorities for replacing or improving the numbers and mix of facilities.

UNOLS serves as a focus for new ideas and requirements for specialized facilities.

UNOLS does not replace direct contact between the investigator and institution's operating facilities. It does, however, serve as a backup and clearinghouse for information and coordination that might not otherwise be available to the researcher and his laboratory.

UNOLS is composed of institutions and laboratories which use or operate and use sea-going facilities and maintain an academic program in the marine sciences. It is composed of the operator institution, several standing committees dealing with ship scheduling, marine operations, their regulations and logistics, fleet improvement and replacement and national facilities. Member institutions' representatives are individuals whose role is to provide oceanographic facility services or use those facilities. Membership does not ensure Federal funding.

UNIVERSITY NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

ANNOUNCEMENT OF AGENDA

UNOLS ANNUAL MEETING

Friday, October 1, 1993
8:30 a.m.
National Trust for Historic Preservation
1785 Massachusetts Avenue, NW
Washington, DC

This meeting is open to all investigators, users, operators and sponsors of university oceanographic facilities. It is a public forum for discussing the utilization and scheduling of research vessels and other facilities as well as their support and future planning.

Garrett W. Brass, Chairman

John F. Bash, Executive Secretary

APPENDIX II

UNOLS ANNUAL MEETING ATTENDANCE

Name	Affiliation
James Acker	NASA
Tim Askew	HBOI
Vernon Asper	U Southern Mississippi
D. James Baker	NOAA
John Bash	UNOLS
Peter Betzer	U South Florida
Doug Biggs	Texas A&M
Garry Brass	U Miami, RSMAS
Curtis Collins	Naval Postgraduate School
Michael Dagg	LUMCON
Ted DeLaca	U Alaska
Patrick Dennis	JOI
Annette DeSilva	UNOLS
Dolly Dieter	NSF
David Duane	NOAA
Rich Findley	U Miami, RSMAS
Linda Goad	U Michigan
Douglas Hammond	U Southern California
John Harper	MAS
Dennis Hayes	L-DEO
Don Heinrichs	NSF
Robert Jones	BBSR
David Karl	U Hawaii
Keith Kaulum	ONR
Robert Knox	SIO
Ronald Lai	MMS
Michael Lang	Smithsonian Institution
Russell McDuff	U Washington
Scott McKellar	NOAA
John Milliman	VIMS
Janet Morton	USGS
Donald Nortrup	NOAA
John Ogden	Florida Institute of Oceanography
Wadsworth Owen	U Delaware
Ken Palfrey	OSU
Stephen Piotrowicz	NOAA/OAR
Dick Pittenger	WHOI
Mike Prince	MLML
Steve Rabalais	LUMCON

Name	Affiliation
Lisa Rom	NSF
Tom Royer	U Alaska
William Stubblefield	NOAA
Alexander Sutherland	NSF
Brian Taylor	U Hawaii
Joe Ustach	DUKE/UNC
Robert Wall	U Maine
Dick West	NSF
Don Wright	VIMS

APPENDIX III

UNOLS DIRECTORY (with designated representatives)

Operator Institutions in **BOLD**

Rev. 11/93

ALABAMA MARINE ENVIRONMENTAL SCIENCES CONSORTIUM
Dr. George F. Crozier

UNIVERSITY OF ALASKA Dr. Thomas Royer

BERMUDA BIOLOGICAL STATION for RESEARCH, Inc. Dr. Robert Jones

BIGELOW LABORATORY FOR OCEAN SCIENCES
Dr. David Townsend

BROOKHAVEN NATIONAL LABORATORY Dr. Creighton D. Wirick

UNIVERSITY OF CALIFORNIA, SAN DIEGO, SCRIPPS INSTITUTION OF OCEANOGRAPHY Dr. Robert Knox

UNIVERSITY OF CALIFORNIA, SANTA BARBARA
Dr. James P. Kennett

CAPE FEAR TECHNICAL INSTITUTE Mr. Edward Foss

COLUMBIA UNIVERSITY, LAMONT-DOHERTY EARTH OBSERVATORY Dr. Dennis Hayes

UNIVERSITY OF CONNECTICUT Dr. Richard Cooper

UNIVERSITY OF DELAWARE Dr. Carolyn A. Thoroughgood

DUKE UNIVERSITY/UNIVERSITY OF NORTH CAROLINA Dr. Dirk Frankenberg

FLORIDA INSTITUTE FOR OCEANOGRAPHY Dr. John C. Ogden

FLORIDA INSTITUTE OF TECHNOLOGY

FLORIDA STATE UNIVERSITY Dr. William C. Burnett

HARBOR BRANCH OCEANOGRAPHIC INSTITUTION
Mr. Richard Herman

HARVARD UNIVERSITY Dr. M.E. McElroy

UNIVERSITY OF HAWAII Dr. Brian Taylor

HOBART & WILLIAM SMITH COLLEGES Dr. Donald L. Woodrow

THE JOHNS HOPKINS UNIVERSITY Dr. Gordon D. Smith

LEHIGH UNIVERSITY Dr. Bobb Carson

LOUISIANA UNIVERSITIES MARINE CONSORTIUM
Dr. Paul Sammarco

UNIVERSITY OF MAINE Dr. Robert E. Wall

THE MARINE SCIENCE CONSORTIUM Dr. Darlene Richardson

UNIVERSITY OF MARYLAND Dr. Tom Malone

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Dr. John M. Edmond

UNIVERSITY OF MIAMI, ROSENSTIEL SCHOOL OF MARINE & ATMOSPHERIC SCIENCES
Dr. Garrett W. Brass

UNIVERSITY OF MICHIGAN, CENTER FOR GREAT LAKES & AQUATIC SCIENCES Dr. Theodore C. Moore, Jr.

MONTEREY BAY AQUARIUM RESEARCH INSTITUTE
Dr. Bruce Robison

MOSS LANDING MARINE LABORATORIES
Dr. Kenneth Johnson

NAVAL POSTGRADUATE SCHOOL Dr. Curtis Collins

UNIVERSITY OF NEW HAMPSHIRE
Mr. E. Eugene Allmendinger

STATE UNIVERSITY OF NEW YORK AT STONY BROOK
Dr. Charles A. Nittrouer

UNIVERSITY OF NORTH CAROLINA AT WILMINGTON
Dr. Alan Hulbert

NOVA UNIVERSITY Dr. Julian P. McCreary

OCCIDENTAL COLLEGE Dr. John S. Stephens, Jr.

OLD DOMINION UNIVERSITY Dr. Larry Atkinson

OREGON STATE UNIVERSITY Dr. Lawrence F. Small

UNIVERSITY OF PUERTO RICO Dr. M.L. Hernandez-Avila

UNIVERSITY OF RHODE ISLAND Dr. Paul J. Fox

RUTGERS UNIVERSITY Dr. Frederick Grassle

SAN DIEGO STATE UNIVERSITY Dr. Clive Dorman

SEA EDUCATION ASSOCIATION Dr. John J. McMahon

SMITHSONIAN TROPICAL RESEARCH INSTITUTE
Mr. Howard Barnes

UNIVERSITY OF SOUTH CAROLINA Dr. Robert Thunell

UNIVERSITY OF SOUTH FLORIDA Dr. Peter R. Betzer

UNIVERSITY OF SOUTHERN CALIFORNIA Dr. Douglas Hammond

UNIVERSITY OF SOUTHERN MISSISSIPPI Dr. Vernon Asper

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

UNIVERSITY OF TEXAS Dr. T.E. Whitledge

TEXAS A&M UNIVERSITY Dr. Douglas Biggs

VIRGINIA INSTITUTE OF MARINE SCIENCE Dr. Frank O. Perkins

UNIVERSITY OF WASHINGTON Dr. Arthur Nowell

UNIVERSITY OF WISCONSIN AT MADISON Dr. Anders W. Andren

UNIVERSITY OF WISCONSIN AT MILWAUKEE
Dr. David E. Edgington

UNIVERSITY OF WISCONSIN AT SUPERIOR Dr. Mary Balcer

WOODS HOLE OCEANOGRAPHIC INSTITUTION
RADM Richard Pittenger

APPENDIX IV

SHIP SCHEDULING CONTACT

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

Rev (11/93)

OPERATOR	NAME	LOA (FT/M)	BUILT/ CONVERTED	NO. of SCIENTISTS	OWNER	SHIP SCHED. CONTACT
University of Hawaii SOEST (HIG) 2525 Correa Rd. Honolulu, HI 96819	MOANA WAVE	210/64	1973/1984	19	NAVY	Dr. Geoff Wheat Ship Scheduler PHONE: (808) 956-2364 FAX: (808) 956-9225 TELEMAIL:
University of Alaska Institute of Marine Science Fairbanks, AK 99775	ALPHA HELIX	133/41	1966	15	NSF	Dr. Thomas Royer Chair, Ship Committee PHONE: (907) 474-7835 FAX: (907) 474-7204 TELEMAIL: T.ROYER
University of Washington School of Oceanography, WB-10 Seattle, WA 98195	T. G. THOMPSON C.A. BARNES	274/84 66/20	1991 1966/1984	36 6	NAVY NSF	Mr. Robert Hinton Marine Superintendent PHONE: (206) 543-5062 FAX: (206) 543-6073 TELEMAIL: R.HINTON
Oregon State University College of Oceanography Newport, OR 97365	WECOMA	177/54	1975	20	NSF	Capt. Kennard M. Palfrey Marine Superintendent PHONE: (503) 867-0295 FAX: (503) 867-0224 TELEMAIL: OSU.SHIPS
Moss Landing Marine Laboratories PO Box 450 Moss Landing, CA 95039	POINT SUR	135/41	1981	12	NSF	Mr. Michael Prince Marine Superintendent PHONE: (408) 633-3534 FAX: (408) 633-4580 TELEMAIL: MLML.SHIPS
University of California, San Diego Scripps Institution of Oceanography La Jolla, CA 92093-0210	MELVILLE T. WASHINGTON NEW HORIZON R.G. SPROUL	279/86 209/64 170/52 125/38	1969/1990-91 1965 1978 1981/1985	35 22 13 12	NAVY NAVY U.C U.C.	Ms. Rose M. Dufour Ship Scheduler(s) Code A-010 PHONE: (619) 534-2841 FAX: (619) 535-1817 TELEMAIL: SCRIPPS.INST
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 PHONE: (313) 763-5393 FAX: (313) 747-2748 TELEMAIL: T.MOORE
Texas A&M University Department of Oceanography PO Box 1675 Galveston, TX 77553	GYRE	182/55	1973/80	23	NAVY	Capt. Dean Letzring Mngr. Marine Operations PHONE: (409) 740-4469 FAX: (409) 740-4456 TELEMAIL: RV.GYRE
University of Texas Marine Science Institute Port Aranses, TX 78373	LONGHORN	105/32	1971/1986	12	U.T.	Mr. John Thompson Assoc. Director, Admin. PHONE: (512) 749-6760 FAX: (512) 749-6777
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 PHONE: (504) 851-2808 FAX: (504) 851-2874 TELEMAIL: S.RABALAIS.LUMCON

Rev. (11/93)

OPERATOR	NAME	LOA (FT/M)	BUILT/ CONVERTED	NO. of SCIENTISTS	OWNER	SHIP SCHED. CONTACT
Harbor Branch Oceanographic Institution 5600 US 1 N Ft. Pierce, FL 34946	SEWARD JOHNSON EDWIN LINK SEA DIVER	176/54 168/51 113/34	1984 1982/1988 1959/1992	20 20 12	H.B. H.B. H.B.	Mr. Tim Askew Marine Operations PHONE: (407) 465-2400 x262 FAX: (407) 465-2116 TELEMAIL: HBOI.SHIPS
University of Miami, RSMAS Marine Department 4600 Rickenbacker Causeway Miami, FL 33149	COLUMBUS ISELIN CALANUS	170/52 64/20	1972 1971	24 6	U.M. U.M.	Mr. Ronald Hutchinson Marine Operations PHONE: (305) 361-4980 FAX: (305) 365-0840 TELEMAIL: R.HUTCHINSON
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 PHONE: (912) 356-2486 FAX: (912) 356-2751 TELEMAIL: D.MENZEL
Duke/UNC Oceanographic Consortium Duke University Marine Laboratory Beaufort, NC 28516	CAPE HATTERAS	135/41	1981	12	NSF	Mr. Quentin Lewis Marine Superintendent PHONE: (919) 728-3372 FAX: (919) 728-2514 TELEMAIL: DUKE.UNC
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 PHONE: (302) 645-4320 FAX: (302) 645-4006 TELEMAIL: W.OWEN
Lamont-Doherty Earth Observatory Columbia University Palisades, NY 10964	MAURICE EWING	239/73	1983/1990	32	L-DEO	Mr. Michael Rawson Marine Sci. Coordinator PHONE: (914) 359-2900 x367 FAX: (914) 359-6817 TELEMAIL: M.RAWSON.LDGO
University of Rhode Island Graduate School of Oceanography Narragansett, RI 02882	ENDEAVOR	177/54	1976	16	NSF	Mr. William Hahn Marine Superintendent PNE: (401) 792-6203 FAX: (401) 792-6574 TELEMAIL: RHODE.ISLAND
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. PHONE: (508)548-1400 x2277 FAX: (508) 457-2185 TELEMAIL: D.MOLLER or WOODS.HOLE
Bermuda Biological Station for Research Inc. 17 Biological Station Lane Ferry Reach St. George's GE-01 BERMUDA	WHEATHERBIRD II	115/35	1982/1989	10	BBSR	Mr. Dennis Hansell Operations PHONE: (809) 297-1880 FAX: (809) 297-8143

*20 Scientists, plus 9 ALVIN group

APPENDIX V

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.

Rev. 11/93

1971-1972

		Expires
J.V.	Byrne, OSU, Chair	5/75
D.W.	Menzel, SKIO	5/74
R.A.	Ragotzkie, U/WISC	5/73
H.M.	Stommel, MIT	5/74
W.S.	Wooster, SIO	5/73
J.P.	Craven, U/HAWAII	5/75
C.L.	Drake, DARTMOUTH	(resigned)
A.E.	Maxwell, WHOI, ex-officio	UNOLS CH
J.M.	Savage, USC, ex-officio	UNOLS V-CH

1972-73

		Expires
J.V.	Byrne, OSU, Chair	5/75
D.W.	Menzel, SKIO	5/74
R.A.	Ragotzkie, U/WISC	5/73
A.F.	Richards, LEHIGH	5/73
H.M.	Stommel, MIT	5/74
W.S.	Wooster, SIO	5/73
J.P.	Craven, U/HAWAII	5/75
A.E.	Maxwell, WHOI, ex-officio	UNOLS CH
J.M.	Savage, USC, ex-officio	UNOLS V-CH

1973-1974

		Expires
J.V.	Byrne, OSU, Chair	5/75
J.P.	Craven, U/HAWAII	5/75
D.W.	Menzel, SKIO	5/74
R.A.	Ragotzkie, U/WISC	5/74
A.F.	Richards, LEHIGH	5/76
H.M.	Stommel, MIT	5/74
P.L.	Parker, U/TEXAS	7/76
R.C.	Dugdale, U/WA	7/76
R.	Colwell, U/MARYLAND	(Interim Appointee)
A.E.	Maxwell, WHOI, ex-officio	UNOLS CH
J.M.	Savage, USC, ex-officio	UNOLS V-CH

1974-1975

		Expires
J.V.	Byrne, SIO, Acting Chair	5/75
P.L.	Parker, U/TEXAS	7/76
A.F.	Richards, LEHIGH	7/76
W.S.	Richardson, NOVA U, Chair	(deceased)
R.J.	Wold, U/WISC	(resigned)
R.C.	Dugdale, U/WA	5/76
J.P.	Craven, U/HAWAII	5/76
J.A.	Knauss, URI, ex-officio	UNOLS CH
G.G.	Shor, SIO, ex-officio	UNOLS V-CH

1975-1976

		Expires
R.C.	Dugdale, BIGELOW, Chair	5/77
P.L.	Parker, U/TEXAS	7/76
A.F.	Richards, LEHIGH	7/76
T.K.	Treadwell, TAMU	5/78
D.	Hood, U/ALASKA	5/76
F.	Webster, WHOI	5/77
J.A.	Knauss, URI, ex-officio	UNOLS CH
G.G.	Shor, SIO, ex-officio	UNOLS V-CH

1976-1977

		Expires
R.C.	Dugdale, BIGELOW, Chair	5/77
R.T.	Barber, DUKE	5/79
D.	Frankenberg, UNC	5/79
M.G.	Gross, JHU	5/78
G.H.	Keller, OSU	5/77
J.H.	Martin, MLML	5/79
T.K.	Treadwell, TAMU	5/78
W.S.	Wooster, U/WA, ex-officio	UNOLS CH
F.	Webster, WHOI, ex-officio	UNOLS V-CH

1977-1978

		Term	
G.H.	Keller, OSU, Chair	7/76-6/80	
D.	Frankenberg, UNC, V-Chair	7/76-6/79	
R.T.	Barber, DUKE	7/76-6/79	
R.L.	Fisher, SIO	7/77-6/80	
M.G.	Gross, JHU	7/75-6/80	
J.H.	Martin, MLML	7/76-6/79	
J.R.	Schubel, SUNY	7/77-6/80	
T.K.	Treadwell, TAMU	7/75-6/78	
W.S.	Wooster, U/WA, ex-officio	7/76-6/78	UNOLS CH
F.	Webster, WHOI, ex-officio	7/76-6/78	UNOLS V-CH

1978-1979

		Term	
G.H.	Keller, OSU, Chair	7/76-6/80	
R.T.	Barber, DUKE, V-Chair	7/76-6/79	
G.C.	Anderson, U/WA	7/78-6/81	
R.L.	Fisher, SIO	7/77-6/80	
J.H.	Martin, MLML	7/76-6/79	
W.B.	Ryan, L-DGO	7/78-6/81	
J.R.	Schubel, SUNY/STONY BROOK	7/77-6/81	
J.M.	Zeigler, VIMS	7/78-6/81	
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

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.

1979-1980

		Term	
G.C.	Anderson, U/WA, Chair	7/78-6/81	
J.R.	Schubel, SUNY/SB, V-Chair	7/77-6/80	
G.H.	Keller, OSU	7/76-6/80	
B.H.	Robison, UCSB	7/79-6/82	
H.T.	Rossby, URI	7/79-6/82	
W.B.	Ryan, L-DGO	7/78-6/81	
R.L.	Fisher, SIO	7/77-6/80	
J.M.	Zeigler, VIMS	7/78-6/81	
T.K.	Treadwell, TAMU, ex-officio	7/78-6/80	UNOLS CH
J.H.	Martin, MLML, ex-officio	7/79-6/80	UNOLS V-CH

1980-1981

		Term	
G.C.	Anderson, U/WA, Chair	7/78-6/81	
H.T.	Rossby, URI, V-Chair	7/78-6/82	
B.H.	Robison, UCSB	7/79-6/82	
C.B.	Miller, OSU	7/70-6/83	
W.B.	Ryan, L-DGO	7/78-6/81	
W.M.	Sackett, U/S FL	7/80-6/83	
D.W.	Spencer, WHOI	7/80-6/83	
J.M.	Zeigler, VIMS	7/78-6/81	
T.K.	Treadwell, TAMU, ex-officio	7/79-6/81	UNOLS CH
J.H.	Martin, MLML, ex-officio	7/79-6/81	UNOLS V-CH

1981-1982

		Term	
B.H.	Robison, UCSB, Chair	7/79-6/82	
H.T.	Rossby, URI, V-Chair	7/79-6/82	
R.W.	Corell, UNH	7/81-6/84	
J.R.	Curray, SIO	7/81-6/83	
D.S.	Gorsline, USC	7/81-6/84	
C.B.	Miller, OSU	7/80-6/83	
W.M.	Sackett, U/S FL	7/80-6/83	
J.C.	Van Leer, U/MIAMI	7/80-6/83	
D.W.	Spencer, WHOI, ex-officio	7/81-6/82	UNOLS CH
D.	Frankenberg, UNC, ex-officio	7/81-6/82	UNOLS V-CH

1982-83

		Term	
B.H.	Robison, UCSB, Chair	7/82-6/85	
J.R.	Curray, SIO, V-Chair	7/82-6/85	
R.W.	Corell, UNH	7/81-6/84	
D.S.	Gorsline, USC	7/81-6/84	
R.L.	Larson, URI	7/82-6/85	
C.B.	Miller, OSU	7/80-6/83	
W.B.	Sackett, U/S FL	7/80-6/83	
J.C.	Van Leer, U/MIAMI	7/80-6/83	
D.W.	Spencer, WHOI, ex-officio	7/82-6/83	UNOLS CH
D.	Frankenberg, UNC, ex-officio	7/82-6/83	UNOLS V-CH

1983-1984

		Term	
C.B.	Miller, OSU, Chair	7/80-6/86	
H.B.	Stewart, Jr., Old Dominion U, V-Chair	7/83-6/86	
R.W.	Corell, UNH	7/81-6/84	
R.P.	Dinsmore, WHOI	7/83-6/86	
D.S.	Gorsline, USC	7/81-6/85	
R.	Larson, URI	7/82-6/85	
B.H.	Robison, UCSB	7/79-6/85	
J.C.	Van Leer, U/MIAMI	7/81-6/84	
F.	Webster, U/DEL, ex-officio	7/83-6/84	UNOLS CH
J.R.	Curray, SIO, ex-officio	7/83-6/84	UNOLS V-CH

1984-1985

		Term	
C.B.	Miller, OSU, Chair	7/80-6/86	
H.B.	Stewart, Jr., Old Dominion U, V-Chair	7/83-6/86	
R.P.	Dinsmore, WHOI	7/83-6/86	
D.S.	Gorsline, USC	7/81-6/84	
B.H.	Robison, UCSB	7/79-6/85	
A.E.	Maxwell, U/TX, Austin	7/84-6/87	
C.J.	Lorenzen, U/WA	7/84-6/87	
T.	Malone, U/MD	7/84-6/87	
F.	Webster, U/DEL, ex-officio	7/83-6/84	UNOLS CH
R.W.	Corell, UNH, ex-officio	7/84/6/85	UNOLS V-CH

1985-1986

		Term	
C.B.	Miller, OSU, Chair	7/80-6/86	
T.	Malone, U/MD, V-Chair	7/84-6/87	
R.P.	Dinsmore, WHOI	7/83-6/86	
C.J.	Lorenzen, U/WA	7/84-6/87	
J.H.	Martin, MLML	7/85-6/88	
A.E.	Maxwell, U/TX, Austin	7/84-6/87	
C.N.	Mooers, NPS	7/85-6/88	
H.B.	Stewart, Jr., Old Dominion U	7/83-6/86	
F.	Webster, U/DEL, ex-officio	7/83-6/86	UNOLS CH
R.W.	Corell, UNH, ex-officio	7/81-6/86	UNOLS V-CH

1986-1987

		Term	
J.H.	Martin, MLML, Chair	7/85-6/88	
T.	Malone, U/MD, V-Chair	7/84-6/87	
R.P.	Dinsmore, WHOI	7/83-6/89	
P.J.	Fox, URI	10/86-6/87	
R.A.	Knox, SIO	7/86 6/89	
K.C.	MacDonald, UCSB	7/86-6/89	
A.E.	Maxwell, U/TX, Austin	7/84-6/87	
C.S.	Yentsch, Bigelow	10/86-6/88	
G.H.	Keller, OSU, ex-officio	7/86-6/88	UNOLS 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.

1987-1988

		Term	
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

1988-1989

		Term	
G.H.	Keller, OSU, Chair	7/86-10/90	
T.C.	Johnson, Duke/UNC, V-Chair	10/87-10/90	
L.P.	Atkinson, Old Dominion U	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

1989-1990

		Term	
G.H.	Keller, OSU, Chair	7/86-10/90	
T.C.	Johnson, Duke/UNC, V-Chair	10/87-10/90	
L.P.	Atkinson, Old Dominion U	10/88-10/91	
P.	Betzer, U/S 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.S.	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

1990-1991

		Term	
G.W.	Brass, U/Miami, Chair	10/90-10/92	
T.C.	Johnson, Duke/UNC, V-Chair	10/87-10/92	
L.P.	Atkinson, Old Dominion U,V-Chair	10/88-10/91	
P.	Betzer, U/S FL	10/89-10/92	
D.S.	Gorsline, USC	2/91-10/91	
P.J.	Fox, URI	10/88-10/91	
G.D.	Grice, WHOI *	10/90-10/93	
D.M.	Karl, U/Hawaii	10/90-10/93	
W.D.	Nowlin, TAMU *	10/89-10/92	
F.D.	Jennings, TAMU, ex-officio	10/88-10/9X	ARC CH
M.G.	Langseth, L-DGO, ex-officio	10/90-10/9X	FIC CH
K.M.	Palfrey, OSU, ex-officio	10/90-10/9X	SSC CH
J.G.	Williams, SIO, ex-officio	10/88-10/9X	ROVC CH

* Resigned10/91

1991-1992

		Term	
G.W.	Brass, U/Miami, Chair	10/90-10/92	
T.C.	Johnson, Duke/UNC, V-Chair	10/87-10/92	
P.	Betzer, U/S FL	10/89-10/92	
P.J.	Fox, URI	10/88-10/92	
D.E.	Hayes, L-DGO	10/91-10/94	
R.	Jahnke, Skidaway	10/91-10/94	
D.M.	Karl, U/Hawaii	10/90-10/93	
R.A.	Knox, Scripps	10/91-10/93	
C.A.	Nittrouer, SUNY	10/91-10/94	
F.D.	Jennings, TAMU, ex-officio	10/88-10/9X	ARC CH
M.G.	Langseth, L-DGO, ex-officio	10/90-10/9X	FIC CH
K.M.	Palfrey, OSU, ex-officio	10/90-10/9X	SSC CH
J.G.	Williams, SIO, ex-officio	10/88-10/9X	ROVC CH

1992-1993

		Term	
G.W.	Brass, U/Miami, Chair	10/90-10/94	
P.	Betzer, U/S FL, V-Chair	10/92-10/94	
D.E.	Hayes, L-DEO	10/91-10/94	
R.	Jahnke, Skidaway	10/91-10/94	
D.M.	Karl, U/Hawaii	10/90-10/93	
R.A.	Knox, Scripps	10/91-10/93	
C.A.	Nittrouer, SUNY	10/91-10/94	
R.	Piitenger, WHOI	10/92-10/95	
R.	Wall, U/Maine	10/92-10/95	
P.J.	Fox, URI, ex-officio	10/92-10/9X	DeSSC CH
M.G.	Langseth, L-DEO, ex-officio	10/90-10/9X	FIC CH
K.M.	Palfrey, OSU, ex-officio	10/90-10/9X	SSC CH
M.	Prince, MLML, ex-officio	10/92-10/9X	RVOC CH

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.

1993-1994

		Term	
G.W.	Brass, U/Miami, Chair	10/90-10/94	
P.	Betzer, U/S FL, V-Chair	10/92-10/94	
D.E.	Hayes, L-DEO	10/91-10/94	
R.	Jahnke, Skidaway	10/91-10/94	
D.M.	Karl, U/Hawaii	10/90-10/96	
T.C.	Royer, U/Alaska	10/93-10/96	
C.A.	Nittrouer, SUNY	10/91-10/94	
R.	Pittenger, WHOI	10/92-10/95	
R.	Wall, U/Maine	10/92-10/95	
R.	Findley, U/Miami	10/92-10/95	
P.J.	Fox, URI, ex-officio	10/92-10/9X	DeSSC CH
M.G.	Langseth, L-DEO, ex-officio	10/90-10/9X	FIC CH
K.M.	Palfrey, OSU, ex-officio	10/90-10/9X	SSC CH
M.	Prince, MLML, ex-officio	10/92-10/9X	RVOC CH

APPENDIX VI

Rev 11/93

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

Sept 1990-1991

G. W. Brass, U/Miami	UNOLS CH.
T. C. Johnson, DUKE/UNC	UNOLS V-CH.
K. M. Palfrey, OSU	UNOLS Council
L. P. Atkinson, OLD DOM	UNOLS Council

Oct 1991-1992

G. W. Brass, U/Miami	UNOLS CH.
T. C. Johnson, DUKE/UNC	UNOLS V-CH.
K. M. Palfrey, OSU	UNOLS Council
D. M. Karl, U/Hawaii	UNOLS Council

Sept 1992-1993

G. W. Brass, U/Miami	UNOLS CH.
P. Betzer, U/ S FL	UNOLS V-CH.
K. M. Palfrey, OSU	UNOLS Council
D. M. Karl, U/Hawaii	UNOLS Council

Sept 1993-1994

G. W. Brass, U/Miami	UNOLS CH.
P. Betzer, U/ S FL	UNOLS V-CH.
K. M. Palfrey, OSU	UNOLS Council
D. M. Karl, U/Hawaii	UNOLS Council

APPENDIX VII

MARINE OPERATIONS CONTACT

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

Rev. (11/93)

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 PHONE: (808) 847-2661 FAX: (808) 848-5451 TELEMAIL: UH.SNUG.HARBOR
University of Alaska Institute of Marine Science Fairbanks, AK 99701	ALPHA HELIX	133/41	1966	9	15	NSF	Mr. Thomas Smith Marine Superintendent PHONE: (907) 224-5261 FAX: (907) 224-3392 TELEMAIL: SEWARD.STA
University of Washington School of Oceanography, WB-10 Seattle, WA 98195	T. G. THOMPSON C.A. BARNES	274/84 66/20	1991 1966/1984	22 2	36 6	NAVY NSF	Mr. Robert Hinton Marine Superintendent PHONE: (206) 543-5062 FAX: (206) 543-6073 TELEMAIL: R.HINTON
Oregon State University College of Oceanography Newport, OR 97365	WECOMA	177/54	1975	13	20	NSF	Capt. Kennard M. Palfrey Marine Superintendent PHONE: (503) 867-0224 FAX: (503) 867-0294 TELEMAIL: OSU.SHIPS
Moss Landing Marine Laboratories PO Box 450 Moss Landing, CA 95039	POINT SUR	135/41	1981	9	12	NSF	Mr. Michael Prince Marine Superintendent PHONE: (408) 633-3534 FAX: (408) 633-4580 TELEMAIL: MLML.SHIPS
University of California, San Diego Scripps Institution of Oceanography La Jolla, CA 92093-0210	MELVILLE T. WASHINGTON NEW HORIZON R.G. SPROUL	279/86 209/64 170/52 125/38	1969/1990-1 1965 1978 1981/1985	23 23 12 5	35 22 13 12	NAVY NAVY U.C U.C.	Capt. Thomas S. Althouse Marine Facilities Code P-005 PHONE: (619) 225-9600 FAX: (619) 534-1635 TELEMAIL: SCRIPPS.MARFA
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 PHONE: (313) 763-5393 FAX: (313) 747-2748 TELEMAIL: T.MOORE
Texas A&M University Department of Oceanography PO Box 1675 Galveston, TX 77553	GYRE	182/55	1973/1980	10	23	NAVY	Capt. Dean Letzring Manager, Marine Ops. PHONE: (409) 740-4469 FAX: (409) 740-4456 TELEMAIL: RV.GYRE
University of Texas Marine Science Institute Port Aranses, TX 78373	LONGHORN	105/32	1971/1986	4	12	U.T.	Mr. John Thompson Assoc. Director, Admin. PHONE: (512) 749-6760 FAX: (512) 749-6777 TELEMAIL: J.THOMPSON
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 PHONE: (504) 851-2808 FAX: (504) 851-2874 TELEMAIL: S.RABALAIS.LUMCON

Rev. (11/93)

OPERATOR	NAME	LOA (FT/M)	BUILT/ CONVERTED	CREW	NO. of SCI.	OWNER	MARINE OPS. CONTACT
Harbor Branch Oceanographic Institution 5600 US 1 N Ft. Pierce, FL 34946	SEWARD JOHNSON	176/54	1984	10	20	H.B.	Mr. Tim Askew Marine Operations PHONE: (407)465-2400 x262 FAX: (407) 465-2116 TELEMAIL: HBOI.SHIPS
	EDWIN LINK	168/51	1982/1988	10	20	H.B.	
	SEA DIVER	113/34	1959/1992	6	12	H.B.	
University of Miami, RSMAS Marine Department 4600 Rickenbacker Causeway Miami, FL 33149	COLUMBUS ISELIN	170/52	1972	12	24	U.M.	Mr. Ronald Hutchinson Marine Operations PHONE: (305) 361-4880 FAX: (305) 365-0840 TELEMAIL: R.HUTCHINSON
	CALANUS	64/20	1971	2	6	U.M.	
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 PHONE: (912) 356-2486 FAX: (912) 356-2751 TELEMAIL: D.MENZEL
Duke/UNC Oceangraphic Consortium Duke University Marine Laboratory Beaufort, NC 28516	CAPE HATTERAS	135/41	1981	10	12	NSF	Mr. Quentin Lewis Marine Superintendent PHONE: (919) 728-3372 FAX: (919) 728-2514 TELEMAIL: DUKE.UNC
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 PHONE: (302) 645-4320 FAX: (302) 645-4006 TELEMAIL: W.OWEN
Lamont-Doherty Earth Observatory Columbia University Palisades, NY 10964	MAURICE EWING	239/73	1983/1990	18	32	L-DEO	Capt. Paul Ljunggren Marine Superintendent PHONE: (914)359-2900 x367 FAX: (914) 359-6817 TELEMAIL: LAMONT
University of Rhode Island Graduate School of Oceanography Narragansett, RI 02882	ENDEAVOR	177/54	1976	12	16	NSF	Mr. William Hahn Marine Superintendent PHONE: (401) 792-6203 FAX: (401) 792-6574 TELEMAIL: RHODE.ISLAND
Woods Hole Oceanographic Institution Woods Hole, MA 02543	KNORR	279/85	1970/1989	25	34	NAVY	Capt. Joe Coburn Manager, Marine Ops. PHONE:(508) 457-2000 x262 FAX: (508) 540-8675 TELEMAIL: WHOI.SHIPS
	ATLANTIS II	210/64	1963	27	*29	WHOI	
	OCEANUS	177/54	1975	12	12	NSF	
	DSRV ALVIN	25.8	1964		2	NAVY	
Bermuda Biological Station for Research Inc. 17 Biological Station Lane Ferry Reach St. George's GE-01 BERMUDA	WHEATHERBIRD II	115/35	1982/1989	6	10	BBSR	Dr. Robert Jones Operations PHONE: (809) 297-1880 FAX: (809) 297-8143 TELEMAIL: BDA.BIOSTATION

*20 Scientists, plus 9 ALVIN group

APPENDIX VIII

UNOLS COUNCIL/COMMITTEES

UNOLS COUNCIL (UC)

(305) 361-4690	Garry Brass, U Miami, (Chair)	10/90-10/94
(813) 893-9630	Peter Betzer, U South Florida, (V-Chair)	09/92-10/94
(914) 359-2900	Dennis E. Hayes, L-DEO	10/91-10/94
(912) 598-2491	Richard Jahnke, Skidaway	10/91-10/94
(808) 956-8964	David Karl, U Hawaii	10/90-10/96
(907) 474-7835	Thomas C. Royer, U Alaska	10/93-10/96
(516) 632-8652	Charles A Nittrouer, SUNY	10/91-10/94
(508) 548-1400 x2597	Richard Pittenger, WHOI	09/92-10/95
(207) 581-1110	Robert Wall, U Maine	09/92-10/95
(305) 361-4175 x9	Richard Findley, U Miami, (Chair, RVTEC)	09/92-10/9X
(401) 792-6229	Paul J. Fox, URI (Chair, DSSC)	09/92-10/9X
(914) 365-8518	Marcus Langseth, L-DEO, (Chair, FIC)	10/90-10/9X
(503) 867-0224	Ken Palfrey, OSU, (Chair, Ship Scheduling)	10/90-10/9X
(408) 633-3534	Michael Prince, MLML, (Chair, RVOC)	09/92-10/9X

DEEP SUBMERGENCE SCIENCE COMMITTEE (DESSC)

(401) 792-6229	Paul J. Fox, URI (Chair)	7/92-6/95
(617) 253-7136	James Bellingham, MIT	7/93-6/96
(503) 737-4357	Robert Collier, Oregon State University	7/93-6/96
(508) 548-1400 X2857	Daniel Fornari, WHOI	7/92-6/95
(206) 526-6169	Hugh Milburn, NOAA	7/92-6/95
(408) 459-2574	Dan Orange, UC Santa Cruz	7/93-6/96
(908) 932-1326	Gary Taghon, Rutgers	7/89-6/95
(603) 862-1718	Karen Von Damm, UNH	7/90-6/96
(508) 548-2900	Carl Wirsen, WHOI	7/92-6/95
(408) 755-8657	Kenneth Johnson, MLML, (ex-officio)	10/92-10/9X
508) 548-1400 x2597	Richard Pittenger, WHOI, (ex-officio)	6/91-XXXX

RESEARCH VESSEL OPERATORS' COMMITTEE (RVOC)

(408) 633-3534	Michael Prince, MLML, (Chair)	10/92-10/94
(914) 359-2900 x245	Paul Ljunggren, L-DEO, (V-Chair)	10/92-10/94

FLEET IMPROVEMENT COMMITTEE (FIC)

(914) 365-8518	Marcus Langseth, L-DEO, (Chair)	10/90-10/93
(813) 893-9630	Peter Betzer, U South Florida	10/90-10/93
(619) 534-6368	Teresa Chereskin, Scripps	10/90-10/93
(808) 956-7894	Eric Firing, U Hawaii	02/92-05/95
(408) 755-8657	Kenneth Johnson, MLML	10/89-10/95
(503) 737-4524	Charles Miller, OSU	10/90-10/93
(907) 474-7835	Thomas Royer, U Alaska	10/89-10/95
(804) 642-7267	L. Donelson Wright, VIMS	10/90-10/93
(305) 361-4690	Garry Brass, U Miami, (ex-officio)	10/90-10/9X
(508) 457-2000 x2624	Joseph Coburn, WHOI, (ex-officio)	10/92-10/9X

RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE (RVTEC)

(304) 361-4175 x9	Richard Findley, U Miami, (Chair)	10/92-10/94
(302) 645-4320	Tim Pfeiffer, U Delaware, (V-Chair)	9/93-9/95

SHIP SCHEDULING COMMITTEE

(503) 867-0224	Ken Palfrey, OSU, (Chair)	10/90-10/94
(305) 361-4880	Ron Hutchinson, U Miami, (V-Chair)	10/90-10/94

APPENDIX IX

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

CRUISE DAY PROFILES

AGENCY	PHYS. OCEAN	ACOUS-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	866.00	750.00	.00	10.00	.00	854.00	52.00	.00	.00	.00	.00	212.00	3468.00
Office of Naval Research	258.00	3.00	73.00	23.00	.00	.00	.00	54.00	.00	17.00	18.00	.00	.00	25.00	471.00
U.S. Geological Survey	5.00	.00	.00	.00	.00	.00	.00	30.00	.00	.00	.00	.00	.00	.00	35.00
Bureau of Land Management/Minerals Mgmt. Service	50.00	.00	1.00	43.00	.00	.00	6.00	14.00	.00	.00	.00	.00	.00	.00	114.00
National Oceanic and Atmospheric Administration	16.00	.00	58.00	87.00	13.00	.00	.00	14.00	.00	.00	6.00	.00	6.00	24.00	224.00
Department of Energy (ERDA)	5.00	.00	9.00	1.00	.00	.00	.00	6.00	.00	.00	.00	.00	.00	.00	21.00
Other Federal	17.00	.00	2.00	8.00	.00	.00	.00	.00	1.00	.00	.00	.00	1.00	6.00	35.00
State/Municipal	22.00	.00	19.00	104.00	.00	9.00	.00	41.00	.00	.00	23.00	.00	4.00	137.00	359.00
Other/Private	53.00	.00	15.00	55.00	.00	.00	4.00	5.00	.00	.00	2.00	.00	19.00	32.00	185.00
TOTALS	1150.00	3.00	1043.0	1071.00	13.00	19.00	10.00	1018.0	53.00	17.00	49.00	.00	30.00	436.00	4912.00
PERCENT	23.41	.06	21.23	21.80	.26	.39	.20	20.72	1.08	.35	1.00	.00	.61	8.88	100.00

UNOLS OFFICE

DATE: 9/23/93

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

CRUISE DAY PROFILES

INSTITUTION	PHYS. OCEAN	ACOUS-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	177.00	.00	.00	34.00	.00	.00	.00	42.00	.00	15.00	.00	.00	.00	11.00	279.00
University of Alaska	49.00	.00	37.00	49.00	.00	.00	10.00	.00	.00	.00	1.00	.00	.00	.00	146.00
University of Washington	7.00	.00	213.00	77.00	.00	10.00	.00	2.00	.00	.00	12.00	.00	.00	44.00	365.00
Oregon State University	121.00	.00	43.00	45.00	.00	.00	.00	40.00	.00	.00	.00	.00	.00	21.00	270.00
Scripps Institution of Oceanography	83.00	3.00	44.00	139.00	.00	.00	.00	273.00	1.00	2.00	1.00	.00	.00	64.00	590.00
Texas A & M University	15.00	.00	13.00	22.00	.00	.00	.00	22.00	.00	.00	.00	.00	.00	58.00	130.00
University of Texas	1.00	.00	43.00	21.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11.00	76.00
University of Miami, RSMAS	120.00	.00	34.00	80.00	.00	.00	.00	76.00	.00	.00	.00	.00	.00	1.00	311.00
University of Georgia, Skidaway	5.00	.00	17.00	63.00	.00	1.00	.00	.00	.00	.00	.00	.00	22.00	.00	108.00
Duke University/University of North Carolina	10.00	.00	18.00	61.00	.00	.00	.00	111.00	.00	.00	.00	.00	.00	.00	200.00
University of Delaware	32.00	.00	120.00	11.00	.00	.00	.00	7.00	.00	.00	.00	.00	.00	.00	170.00
Lamont-Doherty Earth Observatory	.00	.00	.00	.00	.00	.00	.00	216.00	52.00	.00	.00	.00	.00	33.00	301.00
University of Rhode Island	76.00	.00	50.00	33.00	.00	.00	.00	40.00	.00	.00	.00	.00	.00	.00	199.00
Woods Hole Oceanographic Institution	370.00	.00	117.00	53.00	.00	.00	.00	130.00	.00	.00	.00	.00	.00	93.00	763.00
University of Michigan	1.00	.00	.00	28.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	22.00	55.00
Moss Landing Marine Laboratory	59.00	.00	4.00	85.00	.00	.00	.00	.00	.00	.00	28.00	.00	.00	1.00	177.00
Louisiana Universities Marine Consortium	18.00	.00	34.00	110.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.00	169.00
Harbor Branch Oceanographic Institution	24.00	.00	23.00	160.00	13.00	8.00	.00	59.00	.00	.00	7.00	.00	4.00	61.00	359.00
Bermuda Biological Station for Research	2.00	.00	233.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.00	244.00
TOTALS	1150.00	3.00	1043.0	1071.00	13.00	19.00	10.00	1018.0	53.00	17.00	49.00	0.00	30.00	436.00	4912.00
PERCENT	23.41	0.06	21.23	21.80	0.26	0.39	0.20	20.72	1.08	0.35	1.00	0.00	0.61	8.88	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

CRUISE DAY PROFILES

UNOLS OFFICE
DATE: 09/23/93

VESSELS	PHYS. OCEAN	ACOUS-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
KNORR	141.00	.00	74.00	.00	.00	.00	.00	32.00	.00	.00	.00	.00	.00	24.00	271.00
MELVILLE	.00	.00	.00	.00	.00	.00	.00	139.00	1.00	.00	.00	.00	.00	30.00	170.00
T.THOMPSON	7.00	.00	182.00	39.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	37.00	265.00
EWING	.00	.00	.00	.00	.00	.00	.00	216.00	52.00	.00	.00	.00	.00	33.00	301.00
MOANA WAVE	177.00	.00	.00	34.00	.00	.00	.00	42.00	.00	15.00	.00	.00	.00	11.00	279.00
ATLANTIS II	53.00	.00	.00	53.00	.00	.00	.00	50.00	.00	.00	.00	.00	.00	23.00	179.00
T. WASHINGTON	.00	.00	.00	.00	.00	.00	.00	105.00	.00	.00	.00	.00	.00	.00	105.00
WECOMA	121.00	.00	43.00	45.00	.00	.00	.00	40.00	.00	.00	.00	.00	.00	21.00	270.00
ENDEAVOR	76.00	.00	50.00	33.00	.00	.00	.00	40.00	.00	.00	.00	.00	.00	.00	199.00
OCEANUS	176.00	.00	43.00	.00	.00	.00	.00	48.00	.00	.00	.00	.00	.00	46.00	313.00
SEWARD JOHNSON	24.00	.00	23.00	59.00	13.00	.00	.00	34.00	.00	.00	6.00	.00	4.00	51.00	214.00
GYRE	15.00	.00	13.00	22.00	.00	.00	.00	22.00	.00	.00	.00	.00	.00	58.00	130.00
NEW HORIZON	32.00	.00	35.00	87.00	.00	.00	.00	18.00	.00	.00	.00	.00	.00	3.00	175.00
ISELIN	108.00	.00	33.00	60.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	201.00
EDWIN LINK	.00	.00	.00	101.00	.00	8.00	.00	25.00	.00	.00	1.00	.00	.00	10.00	145.00
POINT SUR	59.00	.00	4.00	85.00	.00	.00	.00	.00	.00	.00	28.00	.00	.00	1.00	177.00
CAPE HATTERAS	10.00	.00	18.00	61.00	.00	.00	.00	111.00	.00	.00	.00	.00	.00	.00	200.00
ALPHA HELIX	49.00	.00	37.00	49.00	.00	.00	10.00	.00	.00	.00	1.00	.00	.00	.00	146.00
ROBERT G. SPROUL	31.00	3.00	9.00	52.00	.00	.00	.00	11.00	.00	2.00	1.00	.00	.00	31.00	140.00
CAPE HENLOPEN	32.00	.00	120.00	11.00	.00	.00	.00	7.00	.00	.00	.00	.00	.00	.00	170.00
WEATHERBIRD II	2.00	.00	233.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.00	244.00
PELICAN	18.00	.00	34.00	110.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.00	169.00
LAURENTIAN	1.00	.00	.00	28.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	22.00	55.00
LONGHORN	1.00	.00	43.00	21.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11.00	76.00
BLUE FIN	5.00	.00	17.00	63.00	.00	1.00	.00	.00	.00	.00	.00	.00	22.00	.00	108.00
CLIFFORD A. BARNES	.00	.00	31.00	38.00	.00	10.00	.00	2.00	.00	.00	12.00	.00	.00	7.00	100.00
CALANUS	12.00	.00	1.00	20.00	.00	.00	.00	76.00	.00	.00	.00	.00	.00	1.00	110.00
TOTALS	1150.00	3.00	1043.0	1071.00	13.00	19.00	10.00	1018.0	53.00	17.00	49.00	.00	30.00	436.00	4912.00
PERCENT	23.41	.06	21.23	21.80	.26	.39	.20	20.72	1.08	.35	1.00	.00	.61	8.88	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992

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	220.00	59.00	.00	.00	.00	.00	.00	.00	00	279.00
University of Alaska	102.00	.00	.00	6.00	.00	.00	.00	1.00	37.00	146.00
University of Washington	308.00	13.00	1.00	.00	.00	.00	.00	43.00	.00	365.00
Oregon State University	229.00	41.00	.00	.00	.00	.00	.00	.00	.00	270.00
Scripps Institution of Oceanography	457.00	50.00	5.00	17.00	4.00	.00	8.00	49.00	.00	590.00
Texas A & M University	51.00	.00	.00	15.00	.00	.00	.00	64.00	.00	130.00
University of Texas	14.00	.00	.00	.00	30.00	.00	.00	32.00	.00	76.00
University of Miami, RSMAS	277.00	19.00	.00	.00	6.00	.00	8.00	1.00	.00	311.00
University of Georgia, Skidaway	72.00	.00	.00	.00	2.00	6.00	3.00	6.00	19.00	108.00
Duke University/University of North Carolina	166.00	.00	14.00	.00	.00	6.00	.00	14.00	.00	200.00
University of Delaware	141.00	3.00	.00	10.00	.00	.00	4.00	.00	12.00	170.00
Lamont-Doherty Earth Observatory	259.00	40.00	.00	.00	.00	.00	.00	.00	2.00	301.00
University of Rhode Island	151.00	34.00	.00	14.00	.00	.00	.00	.00	.00	199.00
Woods Hole Oceanographic Institution	588.00	116.00	15.00	.00	26.00	.00	.00	18.00	.00	763.00
University of Michigan	28.00	.00	.00	.00	.00	.00	.00	27.00	.00	55.00
Moss Landing Marine Laboratory	79.00	64.00	.00	.00	3.00	.00	10.00	10.00	11.00	177.00
Louisiana Universities Marine Consortium	34.00	.00	.00	52.00	64.00	9.00	2.00	8.00	.00	169.00
Harbor Branch Oceanographic Institution	58.00	32.00	.00	.00	89.00	.00	.00	86.00	94.00	359.00
Bermuda Biological Station for Research	234.00	.00	.00	.00	.00	.00	.00	.00	10.00	244.00
TOTALS	3468.00	471.00	35.00	114.00	224.00	21.00	35.00	359.00	185.00	4912.00
PERCENT	70.60	9.59	.71	2.32	4.56	.43	.71	7.31	3.77	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

OPERATIONAL DAYS CHARGED BY SPONSOR

VESSELS	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
KNORR	279 FT	271.00	.00	.00	.00	.00	.00	.00	.00	.00	271.00
MELVILLE	279 FT	137.00	22.00	.00	.00	.00	.00	1.00	10.00	.00	170.00
T. THOMPSON	274 FT	227.00	7.00	.00	.00	.00	.00	.00	31.00	.00	265.00
EWING	239 FT	259.00	40.00	.00	.00	.00	.00	.00	.00	2.00	301.00
MOANA WAVE	210 FT	220.00	59.00	.00	.00	.00	.00	.00	.00	.00	279.00
ATLANTIS II	210 FT	146.00	7.00	.00	.00	26.00	.00	.00	.00	.00	179.00
T. WASHINGTON	209 FT	94.00	9.00	.00	.00	.00	.00	.00	2.00	.00	105.00
WECOMA	177 FT	229.00	41.00	.00	.00	.00	.00	.00	.00	.00	270.00
ENDEAVOR	177 FT	151.00	34.00	.00	14.00	.00	.00	.00	.00	.00	199.00
OCEANUS	177 FT	171.00	109.00	15.00	.00	.00	.00	.00	18.00	.00	313.00
SEWARD JOHNSON	176 FT	36.00	32.00	.00	.00	89.00	.00	.00	2.00	55.00	214.00
GYRE	174 FT	51.00	.00	.00	15.00	.00	.00	.00	64.00	.00	130.00
NEW HORIZON	170 FT	130.00	13.00	.00	.00	.00	.00	1.00	31.00	.00	175.00
ISELIN	170 FT	192.00	9.00	.00	.00	.00	.00	.00	.00	.00	201.00
EDWIN LINK	168 FT	22.00	.00	.00	.00	.00	.00	.00	84.00	39.00	145.00
POINT SUR	135 FT	79.00	64.00	.00	.00	3.00	.00	10.00	10.00	11.00	177.00
CAPE HATTERAS	135 FT	166.00	.00	14.00	.00	.00	6.00	.00	14.00	.00	200.00
ALPHA HELIX	133 FT	102.00	.00	.00	6.00	.00	.00	.00	1.00	37.00	146.00
ROBERT G. SPROUL	125 FT	96.00	6.00	5.00	17.00	4.00	.00	6.00	6.00	.00	140.00
CAPE HENLOPEN	120 FT	141.00	3.00	.00	10.00	.00	.00	4.00	.00	12.00	170.00
WEATHERBIRD II	115 FT	234.00	.00	.00	.00	.00	.00	.00	.00	10.00	244.00
PELICAN	105 FT	34.00	.00	.00	52.00	64.00	9.00	2.00	8.00	.00	169.00
LAURENTIAN	80 FT	28.00	.00	.00	.00	.00	.00	.00	27.00	.00	55.00
LONGHORN	80 FT	14.00	.00	.00	.00	30.00	.00	.00	32.00	.00	76.00
BLUE FIN	72 FT	72.00	.00	.00	.00	2.00	6.00	3.00	6.00	19.00	108.00
CLIFFORD A. BARNES	65 FT	81.00	6.00	1.00	.00	.00	.00	.00	12.00	.00	100.00
CALANUS	64 FT	85.00	10.00	.00	.00	6.00	.00	8.00	1.00	.00	110.00
TOTALS		3468.00	471.00	35.00	114.00	224.00	21.00	35.00	359.00	185.00	4912.00
PERCENT		70.60	9.59	.71	2.32	4.56	.43	.71	7.31	3.77	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

PROJECT PERSON-DAYS AT SEA BY SPONSOR

VESSELS	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
KNORR	279 FT	5206.00	.00	.00	.00	.00	.00	.00	.00	.00	5206.00
MELVILLE	279 FT	2648.00	32.00	.00	.00	.00	.00	19.00	210.00	.00	2909.00
T. THOMPSON	274 FT	7220.00	105.00	.00	.00	.00	.00	.00	674.00	.00	7999.00
EWING	239 FT	3894.00	880.00	.00	.00	.00	.00	.00	.00	36.00	4810.00
MOANA WAVE	210 FT	2933.00	957.00	.00	.00	.00	.00	.00	.00	.00	3890.00
ATLANTIS II	210 FT	2462.00	126.00	.00	.00	440.00	.00	.00	.00	.00	3028.00
T. WASHINGTON	209 FT	859.00	91.00	.00	.00	.00	.00	.00	8.00	.00	958.00
WECOMA	177 FT	2497.00	908.00	.00	.00	.00	.00	.00	.00	.00	3405.00
ENDEAVOR	177 FT	1511.00	251.00	.00	210.00	.00	.00	.00	.00	.00	1972.00
OCEANUS	177 FT	1550.00	855.00	160.00	.00	.00	.00	.00	153.00	.00	2718.00
SEWARD JOHNSON	176 FT	434.00	184.00	.00	.00	937.00	.00	.00	.00	416.00	1971.00
GYRE	174 FT	960.40	.00	.00	300.00	.00	.00	.00	767.80	.00	2028.20
NEW HORIZON	170 FT	1358.00	178.00	.00	.00	.00	.00	10.00	369.00	.00	1915.00
.3ELIN	170 FT	2852.00	90.00	.00	.00	.00	.00	.00	.00	.00	2942.00
EDWIN LINK	168 FT	183.00	.00	.00	.00	.00	.00	.00	824.00	296.00	1303.00
POINT SUR	136 FT	876.00	621.00	.00	.00	24.00	.00	100.00	183.00	59.00	1863.00
CAPE HATTERAS	136 FT	1727.00	.00	14.00	.00	.00	72.00	.00	148.00	.00	1981.00
ALPHA HELIX	133 FT	1058.00	.00	.00	74.00	.00	.00	.00	14.00	360.00	1506.00
ROBERT G. SPROUL	126 FT	908.00	58.00	79.00	188.00	.00	.00	39.00	36.00	43.00	1349.00
CAPE HENLOPEN	120 FT	1165.00	15.00	.00	60.00	.00	.00	28.00	.00	84.00	1352.00
WEATHERBIRD II	115 FT	1214.00	.00	.00	.00	.00	.00	.00	.00	28.00	1242.00
PELICAN	105 FT	335.50	.00	.00	686.75	712.50	126.00	42.00	86.00	.00	1988.75
LAURENTIAN	80 FT	198.00	.00	.00	.00	.00	.00	.00	287.00	.00	483.00
LONGHORN	80 FT	54.00	.00	.00	.00	139.00	.00	.00	416.00	.00	609.00
BLUE FIN	72 FT	175.00	.00	.00	.00	7.00	18.00	20.00	44.00	98.00	362.00
CLIFFORD A. BARNES	65 FT	203.00	30.00	4.00	.00	.00	.00	.00	103.00	.00	340.00
CALANUS	64 FT	545.00	46.00	.00	.00	36.00	.00	47.00	17.00	.00	691.00
TOTALS		37167.90	5395.00	257.00	1518.75	2295.50	216.00	286.00	4129.80	1420.00	52685.95
PERCENT		70.55	10.24	.49	2.88	4.36	.41	.54	7.84	2.70	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

UNOLS CRUISE PARTICIPANTS AND AFFILIATIONS

VESSELS	SCI	TECH	GRAD	STU/ OBS	TOTAL	NON-OPER UNOLS	NON-UNOLS	FED	FRGN	TOTAL
KNORR	63.00	101.00	10.00	10.00	184.00	8.00	12.00	1.00	14.00	35.00
MELVILLE	31.00	116.00	27.00	48.00	222.00	15.00	44.00	2.00	29.00	90.00
T.THOMPSON	93.00	110.00	53.00	12.00	268.00	50.00	14.00	15.00	1.00	80
EWING	59.00	89.00	8.00	4.00	160.00	2.00	9.00	.00	14.00	25
MOANA WAVE	97.00	197.00	74.00	51.00	419.00	29.00	47.00	15.00	18.00	109
ATLANTIS II	262.00	250.00	59.00	34.00	587.00	107.00	81.00	10.00	143.00	341
T. WASHINGTON	15.00	30.00	5.00	4.00	54.00	1.00	.00	.00	.00	1
WECOMA	89.00	118.00	56.00	53.00	316.00	4.00	35.00	7.00	14.00	60
ENDEAVOR	85.00	49.00	29.00	3.00	166.00	18.00	18.00	7.00	6.00	49
OCEANUS	90.00	84.00	24.00	6.00	204.00	1.00	38.00	25.00	6.00	70
SEWARD JOHNSON	139.00	36.00	47.00	77.00	299.00	66.00	118.00	43.00	5.00	232
GYRE	71.00	106.00	78.00	31.00	286.00	15.00	25.00	7.00	6.00	53
NEW HORIZON	74.00	105.00	60.00	23.00	262.00	44.00	17.00	14.00	11.00	86
ISELIN	97.00	64.00	45.00	10.00	215.00	59.00	20.00	4.00	20.00	103
EDWIN LINK	136.00	24.00	62.00	16.00	238.00	37.00	78.00	13.00	20.00	148
POINT SUR	144.00	90.00	264.00	28.00	524.00	208.00	57.00	21.00	3.00	289
CAPE HATTERAS	71.00	66.00	71.00	14.00	222.00	75.00	50.00	10.00	.00	135
ALPHA HELIX	71.00	57.00	33.00	14.00	175.00	9.00	52.00	1.00	30.00	92
ROBERT G. SPROUL	89.00	173.00	48.00	30.00	340.00	8.00	55.00	32.00	2.00	97
CAPE HENLOPEN	249.00	51.00	26.00	30.00	356.00	193.00	34.00	5.00	.00	232
WEATHERBIRD II	175.00	287.00	21.00	66.00	549.00	2.00	33.00	3.00	4.00	42
PELICAN	117.00	111.00	54.00	40.00	322.00	41.00	77.00	14.00	12.00	144
LAURENTIAN	52.00	29.00	28.00	113.00	222.00	22.00	88.00	1.00	1.00	112
LONGHORN	25.00	22.00	75.00	35.00	157.00	3.00	30.00	4.00	.00	37
BLUE FIN	52.00	89.00	18.00	7.00	166.00	6.00	4.00	.00	7.00	17
CLIFFORD A. BARNES	53.00	34.00	56.00	49.00	192.00	.00	1.00	.00	.00	1
CALANUS	24.00	10.00	35.00	36.00	105.00	12.00	3.00	15.00	.00	30
TOTALS	2523.00	2498.00	1366.00	844.00	7210.00	1035.00	1040.00	269.00	366.00	2710.00
PERCENT	34.99	34.65	18.95	11.71	100.00	38.19	38.38	9.93	13.51	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

SEA DAY PROFILES

AGENCY	PHYS. OCEAN	ACOUS-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	659.00	.00	775.50	708.50	.00	10.00	.00	787.50	45.00	.00	.00	.00	.00	188.00	3173.50
Office of Naval Research	234.00	3.00	66.00	21.00	.00	.00	.00	50.00	.00	18.00	16.00	.00	.00	24.00	432.00
U.S. Geological Survey	7.00	.00	.00	.00	.00	.00	.00	30.00	.00	.00	.00	.00	.00	.00	37.00
Bureau of Land Management/Minerals Mgmt. Service	52.00	.00	1.00	41.00	.00	.00	6.00	11.50	.00	.00	.00	.00	.00	.00	111.50
National Oceanic and Atmospheric Administration	16.00	.00	54.00	83.00	12.00	.00	.00	11.00	.00	.00	6.00	.00	5.00	22.00	209.00
Department of Energy (ERDA)	5.00	.00	9.00	1.00	.00	.00	.00	6.00	.00	.00	.00	.00	.00	.00	21.00
Other Federal	18.00	.00	2.00	8.00	.00	.00	.00	.00	1.00	.00	.00	.00	1.00	6.00	36.00
State/Municipal	22.00	.00	16.00	98.00	.00	8.00	.00	38.00	.00	.00	23.00	.00	4.00	135.00	344.00
Other/Private	51.00	.00	15.00	46.00	.00	.00	4.00	5.00	.00	.00	1.00	.00	19.00	25.00	166.00
TOTALS	1064.00	3.00	938.50	1006.50	12.00	18.00	10.00	939.00	46.00	18.00	46.00	.00	29.00	400.00	4530.00
PERCENT	23.49	.07	20.72	22.22	.26	.40	.22	20.73	1.02	.40	1.02	.00	.64	8.83	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

SEA DAY PROFILES

INSTITUTION	PHYS. OCEAN	ACOUS-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	165.00	.00	.00	34.00	.00	.00	.00	39.00	.00	15.00	.00	.00	.00	10.00	263.00
University of Alaska	48.00	.00	37.00	49.00	.00	.00	10.00	.00	.00	.00	1.00	.00	.00	.00	145.00
University of Washington	7.00	.00	207.00	73.00	.00	10.00	.00	2.00	.00	.00	12.00	.00	.00	43.00	354.00
Oregon State University	107.00	.00	37.00	35.00	.00	.00	.00	35.00	.00	.00	.00	.00	.00	17.00	231.00
Scripps Institution of Oceanography	67.00	3.00	42.00	137.00	.00	.00	.00	259.00	1.00	3.00	1.00	.00	.00	60.00	573.00
Texas A & M University	15.00	.00	13.00	22.00	.00	.00	.00	22.00	.00	.00	.00	.00	.00	58.00	130.00
University of Texas	1.00	.00	42.00	19.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11.00	73.00
University of Miami, RSMAS	115.00	.00	33.00	72.00	.00	.00	.00	63.00	.00	.00	.00	.00	.00	1.00	284.00
University of Georgia, Skidaway	5.00	.00	17.00	63.00	.00	1.00	.00	.00	.00	.00	.00	.00	22.00	.00	108.00
Duke University/University of North Carolina	9.00	.00	17.00	57.00	.00	.00	.00	106.00	.00	.00	.00	.00	.00	.00	189.00
University of Delaware	32.00	.00	119.00	11.00	.00	.00	.00	7.00	.00	.00	.00	.00	.00	.00	169.00
Lamont-Doherty Earth Observatory	.00	.00	.00	.00	.00	.00	.00	195.00	45.00	.00	.00	.00	.00	29.00	269.00
University of Rhode Island	74.00	.00	45.50	33.00	.00	.00	.00	35.00	.00	.00	.00	.00	.00	.00	187.50
Woods Hole Oceanographic Institution	322.00	.00	103.00	48.00	.00	.00	.00	119.00	.00	.00	.00	.00	.00	83.00	675.00
University of Michigan	1.00	.00	.00	28.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	21.00	54.00
Moss Landing Marine Laboratory	57.00	.00	4.00	85.00	.00	.00	.00	.00	.00	.00	26.00	.00	.00	1.00	173.00
Louisiana Universities Marine Consortium	18.00	.00	34.00	101.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.00	160.00
Harbor Branch Oceanographic Institution	20.00	.00	20.00	139.50	12.00	7.00	.00	57.00	.00	.00	6.00	.00	3.00	51.00	315.50
Bermuda Biological Station for Research	1.00	.00	168.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8.00	177.00
TOTALS	1064.00	3.00	938.50	1006.50	12.00	18.00	10.00	939.00	46.00	18.00	46.00	.00	29.00	400.00	4530.00
PERCENT	23.49	.07	20.72	22.22	.26	.40	.22	20.73	1.02	.40	1.02	.00	.64	8.83	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

SEA DAY PROFILES

VESSELS	PHYS. OCEAN	ACOUS-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
KNORR	121.00	.00	66.00	.00	.00	.00	.00	32.00	.00	.00	.00	.00	.00	23.00	242.00
MELVILLE	.00	.00	.00	.00	.00	.00	.00	131.00	1.00	.00	.00	.00	.00	30.00	162.00
T. THOMPSON	7.00	.00	176.00	35.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	36.00	254.00
EWING	.00	.00	.00	.00	.00	.00	.00	195.00	45.00	.00	.00	.00	.00	29.00	269.00
MOANA WAVE	165.00	.00	.00	34.00	.00	.00	.00	39.00	.00	15.00	.00	.00	.00	10.00	263.00
ATLANTIS II	49.00	.00	.00	48.00	.00	.00	.00	41.00	.00	.00	.00	.00	.00	19.00	157.00
T. WASHINGTON	.00	.00	.00	.00	.00	.00	.00	103.00	.00	.00	.00	.00	.00	.00	103.00
WECOMA	107.00	.00	37.00	35.00	.00	.00	.00	35.00	.00	.00	.00	.00	.00	17.00	231.00
ENDEAVOR	74.00	.00	45.50	33.00	.00	.00	.00	35.00	.00	.00	.00	.00	.00	.00	187.50
OCEANUS	152.00	.00	37.00	.00	.00	.00	.00	46.00	.00	.00	.00	.00	.00	41.00	276.00
SEWARD JOHNSON	20.00	.00	20.00	52.00	12.00	.00	.00	34.00	.00	.00	5.00	.00	3.00	42.00	188.00
GYRE	15.00	.00	13.00	22.00	.00	.00	.00	22.00	.00	.00	.00	.00	.00	58.00	130.00
NEW HORIZON	31.00	.00	34.00	86.00	.00	.00	.00	13.00	.00	.00	.00	.00	.00	3.00	167.00
ISELIN	103.00	.00	32.00	59.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	194.00
EDWIN LINK	.00	.00	.00	87.50	.00	7.00	.00	23.00	.00	.00	1.00	.00	.00	9.00	127.50
POINT SUR	57.00	.00	4.00	85.00	.00	.00	.00	.00	.00	.00	26.00	.00	.00	1.00	173.00
CAPE HATTERAS	9.00	.00	17.00	57.00	.00	.00	.00	106.00	.00	.00	.00	.00	.00	.00	189.00
ALPHA HELIX	48.00	.00	37.00	49.00	.00	.00	10.00	.00	.00	.00	1.00	.00	.00	.00	145.00
ROBERT G. SPROUL	36.00	3.00	8.00	51.00	.00	.00	.00	12.00	.00	3.00	1.00	.00	.00	27.00	141.00
CAPE HENLOPEN	32.00	.00	119.00	11.00	.00	.00	.00	7.00	.00	.00	.00	.00	.00	.00	169.00
WEATHERBIRD II	1.00	.00	168.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8.00	177.00
PELICAN	18.00	.00	34.00	101.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7.00	160.00
LAURENTIAN	1.00	.00	.00	28.00	.00	.00	.00	.00	.00	.00	.00	.00	4.00	21.00	54.00
LONGHORN	1.00	.00	42.00	19.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11.00	73.00
BLUE FIN	5.00	.00	17.00	63.00	.00	1.00	.00	.00	.00	.00	.00	.00	22.00	.00	108.00
CLIFFORD A. BARNES	.00	.00	31.00	38.00	.00	10.00	.00	2.00	.00	.00	12.00	.00	.00	7.00	100.00
CALANUS	12.00	.00	1.00	13.00	.00	.00	.00	63.00	.00	.00	.00	.00	.00	1.00	90.00
TOTALS	1064.00	3.00	938.50	1006.50	12.00	18.00	10.00	939.00	46.00	18.00	46.00	.00	29.00	400.00	4530.00
PERCENT	23.49	.07	20.72	22.22	.26	.40	.22	20.73	1.02	.40	1.02	.00	.64	8.83	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

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	207.00	56.00	.00	.00	.00	.00	.00	.00	.00	263.00
University of Alaska	102.00	.00	.00	6.00	.00	.00	.00	1.00	36.00	145.00
University of Washington	297.00	13.00	1.00	.00	.00	.00	.00	43.00	.00	354.00
Oregon State University	196.00	35.00	.00	.00	.00	.00	.00	.00	.00	231.00
Scripps Institution of Oceanography	434.00	51.00	7.00	19.00	4.00	.00	9.00	49.00	.00	573.00
Texas A & M University	51.00	.00	.00	15.00	.00	.00	.00	64.00	.00	130.00
University of Texas	14.00	.00	.00	.00	29.00	.00	.00	30.00	.00	73.00
University of Miami, RSMAS	250.00	19.00	.00	.00	6.00	.00	8.00	1.00	.00	284.00
University of Georgia, Skidaway	72.00	.00	.00	.00	2.00	6.00	3.00	6.00	19.00	108.00
Duke University/University of North Carolina	156.00	.00	14.00	.00	.00	6.00	.00	13.00	.00	189.00
University of Delaware	140.00	3.00	.00	10.00	.00	.00	4.00	.00	12.00	169.00
Lamont-Doherty Earth Observatory	231.00	36.00	.00	.00	.00	.00	.00	.00	2.00	269.00
University of Rhode Island	144.00	32.00	.00	11.50	.00	.00	.00	.00	.00	187.50
Woods Hole Oceanographic Institution	523.00	99.00	15.00	.00	23.00	.00	.00	15.00	.00	675.00
University of Michigan	28.00	.00	.00	.00	.00	.00	.00	26.00	.00	54.00
Moss Landing Marine Laboratory	79.00	60.00	.00	.00	3.00	.00	10.00	10.00	11.00	173.00
Louisiana Universities Marine Consortium	27.00	.00	.00	50.00	64.00	9.00	2.00	8.00	.00	160.00
Harbor Branch Oceanographic Institution	54.50	28.00	.00	.00	78.00	.00	.00	78.00	77.00	315.50
Bermuda Biological Station for Research	168.00	.00	.00	.00	.00	.00	.00	.00	9.00	177.00
TOTALS	3173.50	432.00	37.00	111.50	209.00	21.00	36.00	344.00	166.00	4530.00
PERCENT	70.06	9.54	.82	2.46	4.61	.46	.79	7.59	3.66	100.00

UNOLS RESEARCH VESSELS FLEET OPERATIONS - 1992 -

SEA DAYS CHARGED BY SPONSOR

VESSELS	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
KNORR	279 FT	242.00	.00	.00	.00	.00	.00	.00	.00	.00	242.00
MELVILLE	279 FT	129.00	22.00	.00	.00	.00	.00	1.00	10.00	.00	162.00
T. THOMPSON	274 FT	216.00	7.00	.00	.00	.00	.00	.00	31.00	.00	254.00
EWING	239 FT	231.00	36.00	.00	.00	.00	.00	.00	.00	2.00	269.00
MOANA WAVE	210 FT	207.00	56.00	.00	.00	.00	.00	.00	.00	.00	263.00
ATLANTIS II	210 FT	130.00	4.00	.00	.00	23.00	.00	.00	.00	.00	157.00
T. WASHINGTON	209 FT	92.00	9.00	.00	.00	.00	.00	.00	2.00	.00	103.00
WECOMA	177 FT	196.00	35.00	.00	.00	.00	.00	.00	.00	.00	231.00
ENDEAVOR	177 FT	144.00	32.00	.00	11.50	.00	.00	.00	.00	.00	187.50
OCEANUS	177 FT	151.00	95.00	15.00	.00	.00	.00	.00	15.00	.00	276.00
SEWARD JOHNSON	176 FT	36.00	28.00	.00	.00	78.00	.00	.00	2.00	44.00	188.00
GYRE	174 FT	51.00	.00	.00	15.00	.00	.00	.00	64.00	.00	130.00
NEW HORIZON	170 FT	122.00	13.00	.00	.00	.00	.00	1.00	31.00	.00	167.00
S_LIN	170 FT	185.00	9.00	.00	.00	.00	.00	.00	.00	.00	194.00
EDWIN LINK	168 FT	18.50	.00	.00	.00	.00	.00	.00	76.00	33.00	127.50
POINT SUR	135 FT	79.00	60.00	.00	.00	3.00	.00	10.00	10.00	11.00	173.00
CAPE HATTERAS	135 FT	156.00	.00	14.00	.00	.00	6.00	.00	13.00	.00	189.00
ALPHA HELIX	133 FT	102.00	.00	.00	6.00	.00	.00	.00	1.00	36.00	145.00
ROBERT G. SPROUL	125 FT	91.00	7.00	7.00	19.00	4.00	.00	7.00	6.00	.00	141.00
CAPE HENLOPEN	120 FT	140.00	3.00	.00	10.00	.00	.00	4.00	.00	12.00	169.00
WEATHERBIRD II	115 FT	168.00	.00	.00	.00	.00	.00	.00	.00	9.00	177.00
PELICAN	105 FT	27.00	.00	.00	50.00	64.00	9.00	2.00	8.00	.00	160.00
LAURENTIAN	80 FT	28.00	.00	.00	.00	.00	.00	.00	26.00	.00	54.00
LONGHORN	80 FT	14.00	.00	.00	.00	29.00	.00	.00	30.00	.00	73.00
BLUE FIN	72 FT	72.00	.00	.00	.00	2.00	6.00	3.00	6.00	19.00	108.00
CLIFFORD A. BARNES	65 FT	81.00	6.00	1.00	.00	.00	.00	.00	12.00	.00	100.00
CALANUS	64 FT	65.00	10.00	.00	.00	6.00	.00	8.00	1.00	.00	90.00
TOTALS		3173.50	432.00	37.00	111.50	209.00	21.00	36.00	344.00	166.00	4530.00
PERCENT		70.06	9.54	.82	2.46	4.61	.46	.79	7.59	3.66	100.00

APPENDIX X

UNOLS

FLEET IMPROVEMENT COMMITTEE
1993 - ACTIVITIES

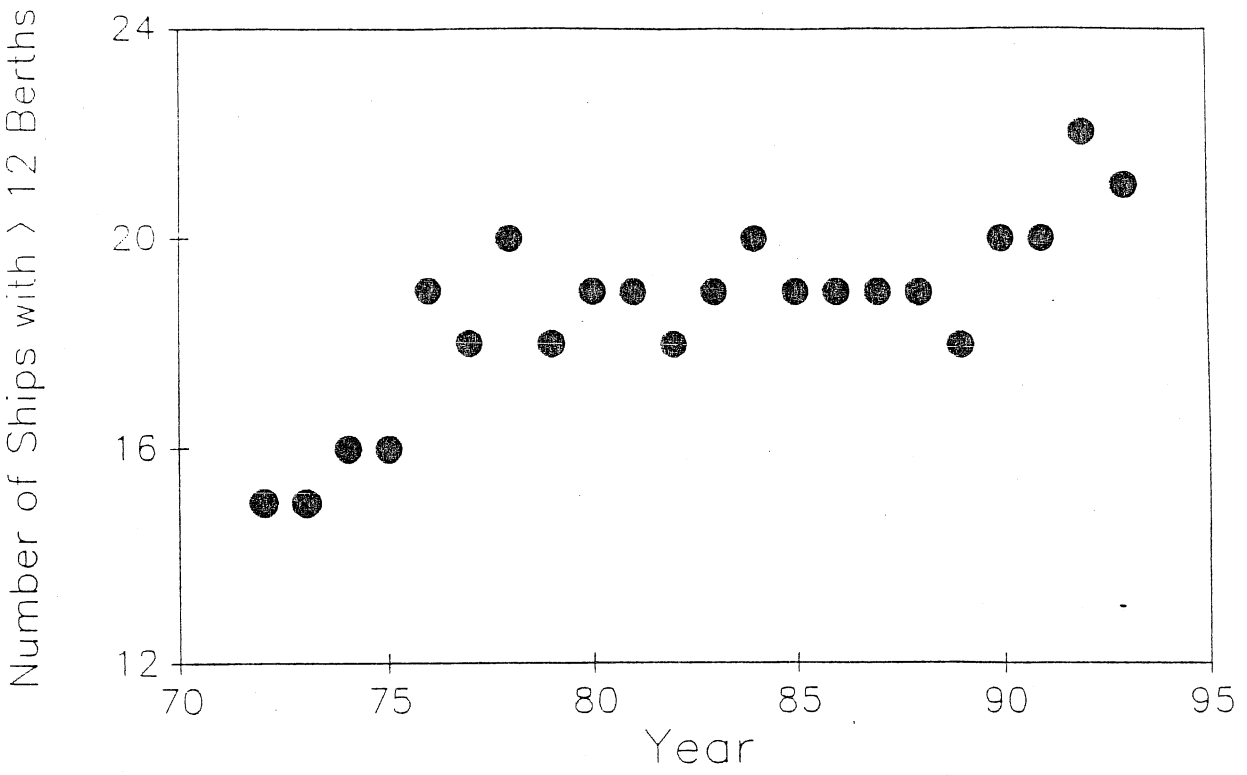
1. Update of fleet improvement plan.

2. Coastal ocean science facilities Workshop.

3. Preliminary design of an Arctic Research Vessel

Membership	FIC
M. Langseth	Lamont.
P. Betzer	F.S.U.
T. Chereskin	Scripps
E. Firing	Hawaii
K. Johnson	Moss Landing
C. Miller	O.S.U.
D. Wright	VIMS

1988	1993	1998
KNORR (245')	KNORR (275)	KNORR
MELVILLE (245)	MELVILLE (275)	MELVILLE
CONRAD (210)	THOMPSON II (274)	THOMPSON II
WASHINGTON (210)	EWING (239)	EWING
THOMPSON I (210)	ATLANTIS II	REVELLE
ATLANTIS II (225)		AGOR 25 (274)
		ARV (340)


Number of Ships with > 12 Berths
24
20
16
12
70
75
80
85
90
95
Year

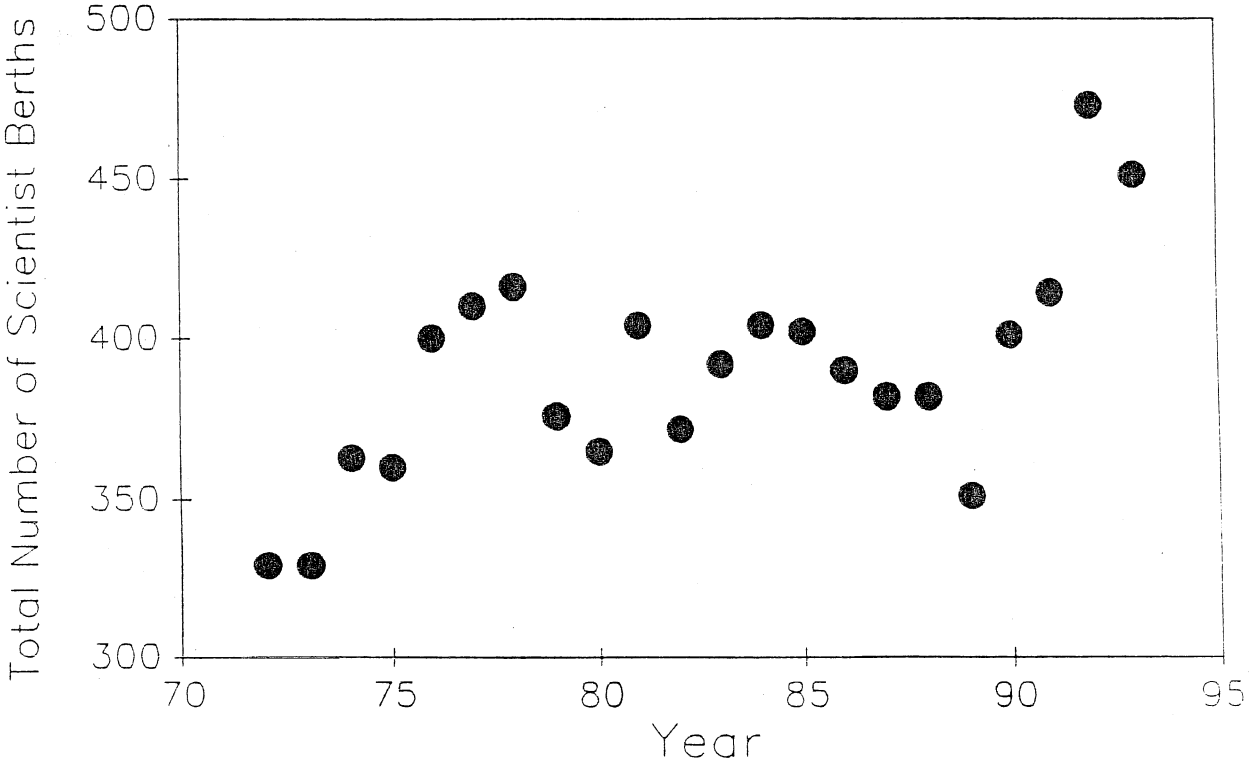

Total Number of Scientist Berths
500
450
400
350
300
70
75
80
85
90
95
Year

Fig. 2

Issue 1. Should the ARV be built?

•*UNOLS and FIC have taken the position that the ARV should be built and enter the UNOLS Fleet if, and only if, sufficient additional funds are obtained by NSF and other agencies (federal and state) to cover the operating costs of the ARV ($8 million/year) and the science, without tapping into the existing funds for* non-ARCTIC *oceanographic programs.*

•*FIC recommends that UNOLS urge one of the Arctic research initiatives, e.g. Arctic System Science, organize a community-wide effort to develop a realistic program for oceanographic research in the Arctic region over the next ten to twenty years, and provide a dispassionate assessment of the facility needs to accomplish the goals of the program.*

APPENDIX XI

RVTEC

Attendance

- ✓ 15 of the 19 UNOLS Operator Institutions
- ✓ Representitives Missing: Alaska, Duke, Skidaway & UT

Organizational Business

- ✓ New Vice Chair: Tim Pfeiffer
- ✓ Approved bylaws for submission to UNOLS

Subcommittee Work

- ✓ Technician/equipment databases
- ✓ Technician exchange/training

Mini-workshops

- ✓ CTDs -- Invited speakers: Bob Millard, Jim Swift
  - Millard to provide post processing/calibration software.
  - Record keeping and traceability, communications, meta data.
  - Added RVTEC member list to WOCE standards mailing list.
- ✓ ADCPs -- Invited speakers: Terri Chereskin, Eric Firing
  - Should be on all the time
  - Clear in-house needs to be established
  - Standard setups
  - 3D GPS systems should become part of installation.

Data Standards

- ✓ CD ROM: ISO 9660
- ✓ Data formats
  - netCDF
  - HDF

SeaNET Presentation

- ✓ Shipboard LANs
  - Install fiber any time you have overheads down
- ✓ Recommendation that all ships in UNOLS fleet be equipped cost containment would therefore be critical

INTERNET FTP site

- ✓ Tech database
- ✓ Equipment database
- ✓ Software
  - netCDF, HDF
  - Millard CTD software

APPENDIX XII

FY 93 PROJECTED DAYS AT SEA

NMFS	1785
NOS	1143
OAR	504
OTHER	31
TOTAL	3463

18 Active Ships

RELENTLESS, TITAN acquired from Navy to join ADVENTUROUS (used for training) and WORTHY for USGS. PEIRCE decommissioned, SURVEYOR on AMLR for 5 years.

MARINE SERVICES BUDGET

FY 1994

Essentially Level Funding - Both Houses

FY 1995

Budget Structure will Follow NOAA Strategic Plan and Support the Following Initiatives:

- Rebuild U. S. Fisheries
- Recovering Protected Species
- Coastal Ecosystems Health
- Modernize Navigation and Positioning Systems
- Implement Seasonal to Interannual Climate Forecasts
- Predict and Assess Decadal-to-Centennial Change

FLEET REPLACEMENT AND MODERNIZATION

FY	FUNDING
1992	$33.2M
1993	$28.5M
1994	$23M-77M

FY 1994

SHIP	ACTIVITY
DELAWARE II	Repair-To-Extend (RTE)
T-AGOS (TITAN)	Conversion
ALBATROSS IV	Major Repair
TOWNSEND CROMWELL	Major Repair
COBB Replacement	Design For Construction
RUDE Replacement	Design For Construction
T-AGOS (RELENTLESS)	Design For Conversion
OCEANOGRAPHER	Design For RTE

APPENDIX XIII

ACADEMIC FLEET OPERATIONS SUPPORT

(1990-1994)

UNOLS TOTALS	ACTUAL 1991	ESTIMATE 1992	ESTIMATE 1993	PROJECTED 1994
NSF	26,179	35,664	30,869	33,953
ONR	5,211	4,061	7,248	3,362
NOAA	2,490	4,199	3,415	1,681
OTHER	3,129	3,140	2,388	5,095
INST	2,117	2,089	2,200	2,075
	$39,126	$49,153	$46,120	$46,166

* **Data Sources**
  - o 1991 - 1993 NSF Ship Operations Proposals (1993)
  - o 1994 UNOLS Scheduling Estimates (Sept. 1993)

ACADEMIC FLEET OPERATIONS SUPPORT

(by SHIP CLASS - 1993)

	LARGE	INTER	REGION	LOCAL	HBOI	TOTAL	SHARE
NSF	15,903	8,773	4,977	982	234	30,869	66.90%
ONR	3,004	3,815	352	77	0	7,248	15.70%
NOAA	494	1,276	75	439	1,131	3,415	7.40%
OTHER	480	335	1,077	356	140	2,388	5.20%
INST	710	456	267	120	647	2,200	4.80%
	$ 20,591	$ 14,655	$ 6,748	$ 1,974	$ 2,152	$ 46,120	
Percent	44.60%	31.80%	14.60%	4.30%	4.70%		
Averages	$ 4.1 M	$ 2.0 M	$ 1.1M	$0.3M	$1.1M		
	266 days	200 days	173 days	123 days	138 DAYS		
	($15,470)	($9,700)	($6,460)	($2,680)	($7,800)		

1993/1994 FIELD PROJECT SUPPORT
(REQUIRED PROJECTS FOR 100% OPERATIONS)

	Estimated use in 1993	Available time in 1994	Project Increases for full use-1994
Large Ships			
• Global	1331 days	1400 days	5.2%
Intermediates			
• West Coast	827 days	743 days	-10.2%
• East/Gulf	573 days	1013 days	76.8%
Regional/Open Ocean			
• West Coast	364 days	430 days	18.1%
• East Coast	226 days	230 days	1.8%
Regional			
• S. California	132 days	200 days	51.5%
• Chesapeake Bay	164 days	200 days	22.0%
• Bermuda	151 days	200 days	32.4%
Local			
• Local	737 days	960 days	30.3%
JSL/ROV			
• Submersibles	276 days	360 days	30.4%
Totals	4781 days	5736 days	20.0%

OCEAN SCIENCES DIVISION

	FY 1992	FY 1993	Estimated FY 1994
Ocean Sciences Division	$177.5 M	$ 177.7 M	$ 187.4 M
Ocean Sciences Research	90.0 M	93.3 M	98.4 M
Ocean Drilling Program	36.3 M	36.3 M	38.7 M
Oceanographic Facilities	51.2 M	48.1 M	50.3 M

OCEANOGRAPHIC FACILITIES DETAIL

Operations			
Ship Operations	31.1 M*	29.4 M*	32.4 M
ALVIN, Aircraft, etc.	0.9 M	1.4 M	1.5 M
Marine Techs	4.3 M	4.2 M	4.6 M
	$ 36.3 M	$ 35.0 M	$ 38.5 M
Infrastructure			
Science Instruments	1.7 M	1.3 M	2.0 M
Shipboard Equipment	2.8 M	2.1 M	2.5 M
Ships, Upgrades	2.9 M	7.2 M	3.3 M
UNOLS, Misc.	0.6 M	0.5 M	0.7 M
	$ 8.0 M	$ 11.1 M	$ 8.5 M
Technology, Centers, Reserves			
Technology Development	4.4 M	-	-
AMS Center	1.2 M	1.0 M	1.5 M
Cross Directorate/Reserves	1.3 M	1.0 M	1.8 M
	$ 6.9 M	$ 2.0 M	$ 3.3 M

*Plus $1.6 M from ODP (1992 and 1993), $1.5 M (1994)

UNOLS Annual Meeting - 1993
(NSF Report)

Capital Facilities

1993
- Preliminary design Arctic Research Vessel
- Mid-life refit of ENDEAVOR, start OCEANUS and WECOMA
- Final amortization payment for EWING

1994
- Postpone acquisition of Arctic Research Vessel
- Complete OCEANUS and WECOMA mid-life refits
- Acquisition of title to EWING

Operations

1993
- ENDEAVOR out-of-service; VICKERS stops operation
- Operator concerns re. maintenance support
- NSF concerns re. ship crew compensation levels for several institutions

1994
- OCEANUS out-of-service
- Major Indian Ocean programs begin (WOCE, JGOFS, ONR Arabian Sea, RIDGE)
- Changing support base -- NSF, Other

UNOLS ANNUAL MEETING - 1993
(NSF REPORT)

Long-Range Plans

1995 and beyond

- Acquisition of Arctic Research Vessel
- Respond to updated UNOLS Fleet Improvement Plan
- Review/update NSF requirements analysis
- Retire ATLANTIS II and refit KNORR for DSF operations

Management

1994 and beyond

- Increased interagency/international coordination
- Continued constrained total fleet operations funds
- Coastal and Arctic facilities requirement
- Large ship operations -- costs and number
- Role of intermediate ship

APPENDIX XIV

PURPOSE:

To consider national needs for field research facilities in support of interdisciplinary coastal & estuarine marine science

TYPES OF COASTAL RESEARCH REQUIREMENTS

SYNOPTIC OBSERVATIONS

TIME SERIES MEASUREMENTS

MULTIDISCIPLINARY STUDIES

INFORMATION MANAGEMENT AND COMMUNICATION

TYPES OF FACILITIES

LARGE SHIPS

SMALL SHIPS AND BOATS

AIRCRAFT, SATELLITES, MOORINGS, AND FIXED PLATFORMS

FIELD AND SHIPBOARD INSTRUMENTATION

Tuesday Afternoon, 23 February

B1 Large Ships *Huntington Rm.*	*B2 Aircraft Etc.* *Carmel Bay Rm.*	*B3 Small Ships* *Richmond Rm.*	*B4 Instrumentation* *Warwick Rm.*
P. Betzer (Chr.)	G.Geernaert (Chr.)	E.Durbin (Chr.)	R.Sternberg (Chr.)
R. Jahnke (Rap.)	J.Acker (Rap.)	R. Geyer (Rap.)	M.Patterson (Rap.)
K.Kaulum	K.Brink	N.Marcus	J.Grassle
L.Jendro	T.Moore	M.Prince	E.Urban
C.Nittrouer	J.Costlow	C.Simenstad	A.Devol
M.Langseth	C.Mason	J.Olney	M.Scranton
D.Dieter	P.Biscaye	L.Sanford	C.Sancetta
D.Boesch	D.Atwood	G.Taghon	J.Brubaker
M.Dagg	C.Mooers	W.Ahrmsbrack	P.Donaghay
T.Royer	C.Wirick	L.Duguay	F.Bohlen
M.Mulhern	W.Boicourt	R.Geyer	C.Flagg
M.Eschelman	J.Hain	J.Van Leer	B.Butman
R.Pittenger	G.Saunders	R.West	R.Lai
C.Yentsch	R.Lambert	S.Kuehl	D.Wright
R.Dinsmore	B.McGregor	C.Olsen	D.Jay
	T.Church	R.Jones	

SUMMARY OF NEEDS

- More effective data transmission
- Higher resolution data collection capability
- Increased ability to operate inshore in heavy weather
- Increased ability for simultaneous sampling
- Aircraft, satellites must be used in coordinated program along with vessels
- Scientific need for vessels that can accomodate groups of 20 or more scientists
- Interdisciplinary ship with the ability to work in shallow water (< 7 m)
- Standard set of routinely acquired data from all vessels
- Enhanced communication/data transfer links
- Regional pools of shared equipment
- Access to larger vessels to support multidisciplinary teams
- Ability to service very dense station spacing
- Quick-response vessels needed to service moorings
- Ability to support multiple wires from anchored vessel
- Ability to maintain 3-point mooring for prolonged periods

4
1
A

General capabilities expected of vessels of this class include:

Multiple wire deployment
3 point moorings and dynamic positioning
mooring deployments up to 5,000 lbs
high resolution bathymetry and sidescan
underway sampling--flow through system
ADCP
sea-soar capability
coring capability (e.g., vibracore)
best available communication
high-quality data acquisition

Specific Vessel Concepts

Three different vessel concepts were presented that fit within this vessel class. They include a SWATH vessel for use in the Gulf of Maine, a catamaran for use in Florida, and a shallow-draft vessel.

The SWATH vessel optimizes seakeeping ability for winter use in the Gulf of Maine. It sacrifices in payload, and it is more complex and power-hungry than other vessels of the same size.

The catamaran optimizes speed and yachtiness. It features an innovative spar for gear deployment. It is somewhat limited in deck space and payload.

The shallow draft vessel has the attribute of very shallow water operations (less than 2 m). It is strengthened to permit grounding. The shallow draft and flat bottom would make it unkind in a seaway.

Criterion	Gulf of Maine	Mid-Atlantic Bight	South Coast	West Coast	Alaska
Day Rate	< $3,000	"	"	"	"
Endurance	1-3 weeks	"	"	"	"
Science party	12-20	"	"	"	"
Draft	4 m	1.5 - 3 m	1.5 - 3	1.5 -3	4 - 5
Range	600 mi	650 mi	1200 mi	1200 mi	2400 mi
Speed	10 - 12 kts	10 -12	12 -15	10 -12	10 - 12
Seakeeping underway	sea state 5 - 6	5 - 6	5 - 6	5 - 6	5 - 6
Seakeeping on station	5 - 6	3 - 5	3 - 5	3 - 5	3 - 5
Ice strength	yes	yes	no	no	yes
Ice loading	yes	no	no	no	yes
Deck working area	800 - 1000	"	"	"	"
lab space	300 - 600	"	"	"	"

VESSEL-SPECIFIC RECOMMENDATIONS

- Large ships should be available to coastal community
- New generation of shallow draft vessels needed
- Increased sea-keeping ability for coastal vessels
- Ability to support multi-wire operations
- Increased ability to launch AUV's, ROV's, moorings, etc.
- Modified water-sampling techniques via flow-through intakes, towed systems
- Vessels should be capable of 3-point anchoring in depths < 100 m
- Improve links to shore-based communications for data transfer
- New generation small coastal vessels ($\sim$ 30 m) needed

NON-VESSEL RECOMMENDATIONS

- Educate coastal community on new platforms and instruments
- Develop better algorithms for analysis of satellite data
- Develop comprehensive data archive and index
- Develop better shore-based data acquisition systems
- Establish regional or national pools of shared, expensive equipment
- Establish regional or national shore-based facilities for instrument calibrations, technician training, computer applications, etc.

APPENDIX XV

DRAFT # 4, 9/4/93

Chartering non-institutional vessels by UNOLS institutions

When a UNOLS institution charters a vessel not operated by that institution for marine research the guidelines given in chapter 17 of the UNOLS Research Vessel Safety Standards must be followed. When federal funding for ship support from NSF, ONR and other agencies are involved then it is mandatory that the vessel be physically examined prior to chartering to verify the vessel's safety, material condition and crew competency in accordance with the UNOLS Research Vessel Safety Standards. This process should take place as early as possible so that any necessary corrections can be made in a timely manner. If possible, potential vessels should be inspected as soon as they are tentatively scheduled. Waiting until the last minute puts an undo hardship on everyone involved. The Principal Investigator, institution contracting office and institution marine office all have a responsibility to ensure that only vessels that are safe and suitable for a project are chartered.

Inspected vessels that possess a current U.S. Coast Guard, SOLAS or U.S. Navy INSERV inspection certificate have been physically inspected by competent marine personnel and such inspections may be used to satisfy the Chapter 17 UNOLS Research Vessel Safety Standard's Inspection. Certain large projects or those involving international co-operation may require a contract inspection by a team such as the NSF/ABSTECH team. Small vessels, carrying less than six scientists, that possess a current U.S. Coast Guard safety inspection performed under the Federal Boating Safety Act of 1971 or the Commercial Fishing Industry Vessel Safety Act of 1988 may also satisfy this inspection requirement if these safety requirement are considered sufficient for the expected area of operation and mission by the chartering institution's marine staff.

Any other non-inspected vessel that fails to meet the above criteria, should be physically inspected by the chartering institution's Marine Superintendent (or equivalent) or other competent marine personnel such as another member of the marine staff, a marine surveyor, marine architect, etc. that the marine superintendent might designate. The purpose of this inspection is to insure the proposed vessel meets UNOLS Research Vessel Safety Standards and is otherwise suited for the intended purpose. Attached is a set of guidelines to be used in conducting these inspections. Discrepancies should be corrected prior to entering into a charter agreement and vessels that do not meet the standards should not be chartered.

Draft #4 9/4/93

Guidelines for Inspection of Chartered, Non UNOLS Vessels per Chapter 17 of UNOLS R/V Safety Standards

Check each category listed below as appropriate for the charter mission and operating area. Ensure necessary equipment is aboard and operates properly.

Bridge and Navigation Equipment:
_____Compass, deviation table posted
_____Auto pilot
_____LORAN/GPS/TRANSIT/OMEGA
_____Depth Sounder
_____Radar
_____Navigation Lights, task lights, day shapes, signal flags.
_____Ships Bell
_____Whistle or Sound Device
_____Emergency Alarm
_____Pyrotechnics Expiration Date Not Exceeded?_____
_____Navigational Charts and Publications

Communications Equipment:
_____Radios, VHF and/or SSB
_____INMARSAT or Teletype
_____Cellular Phone
_____Emergency Radio with backup battery or power
_____EPIRBs, battery expiration date

Documentation:
_____Check terms of Charter Agreement
_____Ensure vessel can be legally chartered based on certificate of inspection, letter of designation or limitation of charter to less than 6 persons.
_____Ensure documentation, ownership, inspection certificate, load line certificate and stability letter are current and appropriate for planned mission.
_____Ensure Master's license is current and appropriate for vessel being chartered or that the operator is otherwise qualified for the mission.
_____Ensure crew size and credentials are appropriate for charter's mission.
_____Ensure appropriate insurance coverage is in effect for charter duration.

Life Saving Equipment:
_____PFDs, properly marked, good condition, accessible to passengers.
_____Immersion Suits
_____Inflatable Life Rafts Inspection Date Current?_____
_____Lifering Buoys
_____Rescue Boats

Fire Fighting Equipment:
_____Fixed and Portable Fire Extinguishers Inspection Dates Current?_____
_____Smoke and Fire Detectors
_____Fire Stations and Hoses
_____Self Contained Breathing Apparatus
_____Fire and Damage Control Locker
_____Emergency Stations Bill
_____Remote shut downs for Galley stove, other equipment

Draft #4, 9/4/93

Guidelines for Inspection of Chartered, Non UNOLS Vessels per Chapter 17 of UNOLS R/V Safety Standards

Exterior Decks and Equipment:

_____Anchors and Associated Equipment
_____Watertight Doors and Hatches
_____Freeing Ports
_____Loose equipment, gear properly stored
_____Through hulls, sea valves, etc.
_____Deck Vents
_____Cargo and Weight Handling Equipment (Safe Work Load posted & tested)
_____Deck Surfaces Non-Skid
_____Life Lines and Safety Chains
_____Deck lighting, adequate
_____Condition of small boats and motors
_____Proper storage of gasoline

Engineering:

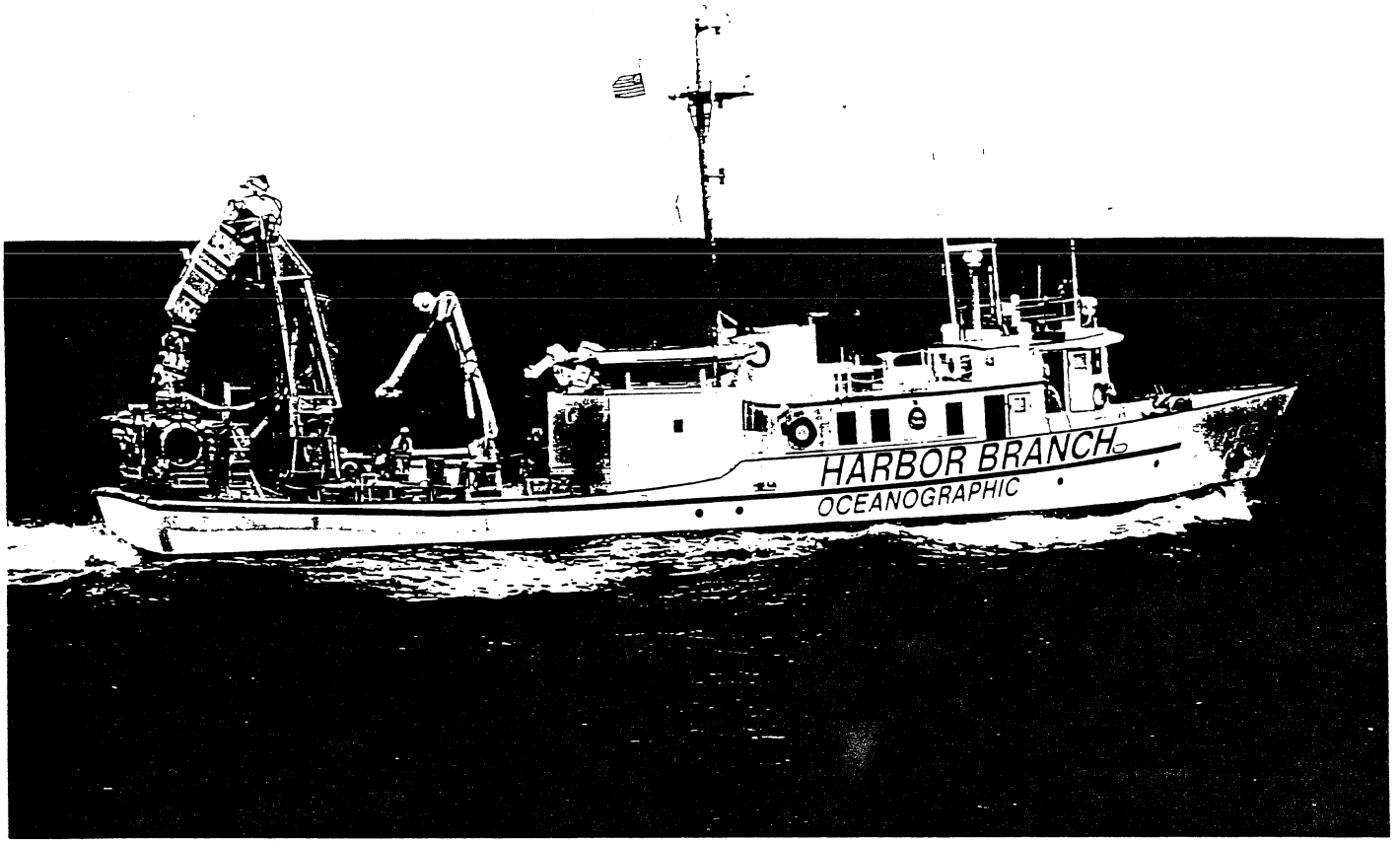
_____Gas Engines - Check flame arrestor, vents, gas hoses and no sparking devices in bilges.
_____Diesel Engines - Check oil and exhaust leaks, starting system, maintenance and hours since last overhaul.
_____Inspect overall cleanliness and condition of engine spaces.
_____Inspect batteries, battery box ventilation and emergency power sources.
_____Check emergency lights.
_____Check bilge and ballast systems and pumps.
_____Check fueling system and pumps.
_____Check refrigeration systems.
_____Check fire pump.
_____Check engine room fire suppression capability.
_____Check all manifolds for saltwater, fuel, etc.
_____Check condition of switchboards, wiring and auxiliary generators.
_____Check belts, other exposed moving parts for condition and shrouds
_____Alarms, oil pressure, water temp, high bilge water, fire

Miscellaneous:

_____First Aid Kits and Medical Supplies
_____Damage Control Equipment
_____Emergency Steering
_____General Appearance and Cleanliness
_____Oil Pollution Placard and other required notices are posted.
_____Sanitary System Operations
_____Assess vessel's overall stability.
_____Assess vessel's overall ability to perform charter mission. Include laboratory and deck space, berthing and feeding capability, scientific equipment and winches, etc.
_____Ensure the operator plans to file a float plan (cruise plan) with a sailing list of all POB's, communications plan and loss communications procedures.

APPENDIX XVI

R/V SEA DIVER



R/V SEA DIVER is a 113-foot veteran of archaeological and oceanographic voyages. Designed by famed inventor Edwin A. Link and built in 1959, with a steel double-hull, she has a full range of 5,000 miles and accommodates 18. Twin 3406 Cat. engines give her a cruising speed of 10 knots. A bow thruster provides increased maneuverability. Extensive modifications completed in 1993, including extending the stern 14 feet with the option of installing a 5 ton A-frame or a 10 ton articulating crane for launch and recovery of submersibles, give the vessel much greater versatility.

R/V SEA DIVER is the smallest of three Harbor Branch owned research vessels that are operated by experienced personnel, expert at launch and recovery procedures, and supported by in-house ocean engineers.

Typical applications of R/V SEA DIVER include manned unmanned submersible support, towed systems support, surface oceanography and hydrographic applications, deployment and retrieval of moored devices, and diving support with optional recompression chamber.

Length Overall	113 feet	Fuel Consumption	36 gal./hour normal cruise
Length between perpendiculars	102.5 feet	Potable Water	3,200 Gal. with Reverse Osmosis Unit
Beam, Overall	23 feet	Galley Messing	6
Draft	8 feet 6 inches	Speed	10 knots
Displacement, w/ gear	188.66 Short Tons	Range	5000 nautical miles
Gross Tonnage	174.6 Registered Tons	Year Built	1959
Fuel Capacity	10,500 Gal.	Year Converted	1992

HARBOR BRANCH HAS A SPECIAL FLEET TO MEET YOUR NEEDS

Owned and Operated by Harbor Branch Oceanographic Institution, Inc.
Contact Director, Marine Operations – 407-465-2400 ext. 262/271
FAX – 407-465-2116

Classification:
American Bureau of Shipping Hull and Machinery

Normal Complement:
6 ship's crew
12 other (including sub crew, if required)

Berthing Accommodations:
18 air conditioned berths

Propulsion:
(2) 3406-TA Cat. Diesels 1800 rpm) 375 shp each

Generators:
(2) GM 471 Diesel Generators, 75 kw. each
440, 208 & 110 VAC 3-phase

Navigation Equipment:
Compasses:
Sperry Magnetic Compass
Sperry Mark 37 Gyrocompass with 2 repeaters
Sperry Auto-Pilot
Radars:
Furuno Color 1411 with North-Up capability
Furuno b/w 8050D with North-Up capability
Lorans:
(2) Northstar 800X GPS with 820 Processor and Magnavox MX200 GPS

Acoustical Systems:
Straza ATM 504-14 Underwater Telephone
Trackpoint II Tracking System

Communication Equipment:
JRC 45A SATCOM
(2) VHFs
(3) ICOM hand held VHFs
SEA 222 single-side band
Furuno/Skanti-TRP 8258S SSB Transceiver
NECODE-Encoder/Decoder Model 321 AR

Sounding Equipment:
Data Marine Digital 1000'
SIMRAD EQ50

Miscellaneous:
Aldin Faxmate II Weather Facsimile Recorder
Aldin Navtek receiver AE900
Simrad L 1550 VHF auto-digital direction finder

Deck Equipment:
Deck hydraulic cargo crane – 1-ton capacity
Articulating crane – 10-ton capacity
A-frame – 5-ton capacity
Aft Quarter Capstans (2)
Anchor windlass, 2 wildcats
Avon Rigid Hull Inflatable – 17 ft.; 50 h.p. outboard
Boston Whaler – 13 ft.; 30 h.p. outboard

Laboratories:
Wet/Dry Lab (16' x 12'), Portable
(1) Refrigerator
(2) Freezers
Fume Hood
Fresh water/sea water
UPS-Sola 320 watt capacity
Environmental Lab (8' x 8'), Portable
A/C compressor

Compressor room with dive locker
(2) Mako high-pressure air compressors (5000 psi)
(1) Haskell gas-transfer pump (O_2)
(2) Delmonox air filters
(1) High Pressure Air Bank (6000 cu. ft.)
(1) High Pressure Oxygen Bank (6000 cu. ft.)

Optional Equipment:
Winches:
SEA • MAC Model 3540 EHCLWR
Towing, trawling, coring with optional 14 conductor slipring, drum capacity up to 5,000 feet of .625 wire.
SMATCO Model HCSR-2-100 Hydraulic Storage Reel/Tow Winch; capacity up to 5,300 feet of 2" wire
Recompression Chamber:
48" double lock; weight-7000 lbs; steel; working pressure-190 psi
60" double lock; weight-5600 lbs; aluminum; working pressure-100 psi
Note: These recompression chambers can be installed when necessary to support scuba operations.

APPENDIX XVII

ANNEX II
TO THE CHARTER

National Oceanographic Facilities

1. **In addition to regular institutional UNOLS facilities, there may be identified National Oceanographic Facilities,** defined as those facilities, specialized and otherwise, that are made available for the use of qualified scientists from any institution and the use of which shall be recommended by a UNOLS Review Committee.

2. **A research vessel or other research facility may be designated** a National Oceanographic Facility upon the approval of the UNOLS membership after review by the UNOLS Council, with the concurrence of the owner and operator of the facility and with reasonable assurance of support. National Oceanographic Facilities may be multi- or special-purpose facilities and may be designated for the entire annual operating period or any significant period thereof.

3. **The purpose of National Oceanographic Facilities is:**

   - To provide oceanographic vessel and other facility support to scientists who do not operate or have available the required facilities.

   - To provide for the support and use in academic research of specialized and unique facilities.

4. **An oversight committee** for each facility is established for the purpose of:

   a. Considering proposals for use of the asset,
   b. Recommending programs to be scheduled,
   c. Assessing the needs of the user community and
   d. Making appropriate recommendations for improvements of the facility.

The Chair and members of the Committee are appointed by the UNOLS Chair, from nominations made by the Committee, and in consultation with the UNOLS Council. Members serve for terms of three years on a rotating basis, for no more than two consecutive terms. Each institution operating a National Oceanographic Facility may designate an ex-officio member(s) in addition to those members appointed by UNOLS. With the Council's concurrence, standing committees of UNOLS may also designate ex-officio members as appropriate to the oversight committee.

5. **In recommending the allocation of facility time,** the oversight committee acts primarily on the logistical factors of the proposed research and its appropriate usage of the individual facility.

6. **Operational scheduling of the facility is the function of the operating institution.** The time frame for scheduling generally is in accordance with Annex I of the UNOLS Charter.

7. **Information and announcements** advertising the availability of a National Oceanographic Facility are a joint function of the operating institution and the UNOLS Office.

8. **Receipt, acknowledgment, collating and structuring of requests** for facility use will be the function of the operating institution in consultation with the UNOLS Office.

9. **An annual report** on the use of each National Oceanographic Facility is prepared by the appropriate institution in cooperation with the Review Committee and the UNOLS Office.

10. **Requests for funding** the operation of the facility are the responsibility of the operating institution.

11. **If a National Oceanographic Facility ceases to meet the criteria** above, especially with respect to being specialized or unique, recommendation may be made by the UNOLS Council to the funding agencies that such designation be discontinued. Each National Oceanographic Facility is reviewed by the UNOLS Council at least once each three years.

Approved and adopted:	May 5, 1972, College Station, TX
Readopted:	May 17, 1974, Washington, DC
Amended and readopted:	May 13, 1977, Washington, DC
Readopted:	Oct 21, 1981, Washington, DC
Amended:	Oct 26, 1983, Washington, DC
Readopted:	May 25, 1984, Washington, DC
Readopted:	Oct 23, 1987, Washington, DC
Readopted:	Oct 28, 1988, Washington, DC
Readopted:	Sep 15, 1989, Washington, DC
Readopted:	Sep 30, 1993, Washington, DC

ANNEX IV
TO THE CHARTER

Fleet Improvement Committee

1. Introduction. One UNOLS objective is to assess the match between facilities to support academic oceanographic research and the oceanographic research program needs, and then to make recommendations for replacing, modifying or improving the number and mix of facilities. It has long been recognized that maintenance of a fleet of modern, capable research vessels is essential to the outstanding success of the U.S. program in academic oceanographic research. A Fleet Improvement Committee (FIC), is established to address this UNOLS objective.

2. Purpose. The Fleet Improvement Committee works to assure the continuing excellence of the UNOLS fleet, to improve the capability and effectiveness of individual ships and to assure that the number, mix and overall capability of ships in the UNOLS fleet match the science requirements of academic oceanography in the U.S. To this purpose, the Committee maintains the currency of a dynamic **UNOLS Fleet Improvement Plan.** The plan, updated periodically, includes:

- Assessment of the number and mix of ship capabilities needed in the UNOLS fleet,

- Development of science mission requirements for all size/capability-classes of research ships,

- Definition of roles and the need for innovative research platforms,

- Consideration of means for acquiring the needed vessels, including new construction, modification to existing UNOLS ships, conversions, private acquisition and leasing,

- Development of conceptual or preliminary plans for ships to fill the needs identified, and

- Development of a schedule for improvement and replacement of vessels so as to assure continuing fleet excellence.

The Fleet Improvement Committee will serve as a liaison **and planning activity as well as an information source** for federal agency representatives concerning long range planning, and funding for design, construction or renovation of vessels for the UNOLS fleet.

3. Organization. The Chair and seven additional members of the Fleet Improvement Committee are appointed by the UNOLS Chair with recommendations from the UNOLS Council, from UNOLS institutions. Those appointed should be experienced in ship operations and from institutions which are either operators or users of UNOLS research vessels. The Chair and at least three other members will be from UNOLS operator institutions, at least two members will be from institutions other than operators, and two members may be from any UNOLS institution. The FIC Chair is, ex-officio, a member of the UNOLS Council. Terms for all members are three years, for no more than two consecutive terms.

Demands on the Fleet Improvement Committee may be intense, and the development of ship plans may require significant financial management. With the approval of the UNOLS Chair and UNOLS Council, the FIC may arrange for staff and financial support for their activities. Proposals and grants for such support may be through the UNOLS Office or a UNOLS institution, as appropriate.

Adopted:	Oct 28, 1988, Washington, DC
Readopted:	Sep 15, 1989, Washington, DC
Readopted:	Sep 30, 1993, Washington, DC

APPENDIX XVIII

ANNEX V
TO THE CHARTER

RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE

A. Purpose

1. The purpose of the Research Vessel Technical Enhancement Committee shall be to promote the scientific productivity of research programs that make use of research vessels and oceanographic facilities and to foster activities that will lead to enhanced technical support for sea-going scientific programs.

B. Membership

1. Membership in the RVTEC shall be extended to UNOLS member institutions.

2. Participation shall be open to technical and scientific personnel at UNOLS and non-UNOLS organizations.

C. Representation

1. Each institutional UNOLS representative may designate a representative to RVTEC.

2. RVTEC will meet at least once per year.

3. The place and time of the next RVTEC annual meeting will be designated at the close of the previous RVTEC meeting.

4. Each member institution shall be notified of the next annual meeting by the Vice Chairperson of the Committee at least 90 days prior to the next annual meeting.

5. Each UNOLS member institution shall be entitled to one vote on matters at RVTEC meetings. However, matters may be submitted for vote by the Chairperson at other times. These matters will be voted on by mail or electronic mail, and votes will be collected for a period of two weeks.

6. A simple majority of the UNOLS operator institutions must be represented to establish a quorum.

D. Officers

1. The Research Vessel Technical Enhancement Committee shall have a Chairperson and a Vice Chairperson. The Chairperson and Vice Chairperson will be elected by majority vote at the Annual Meeting and subject to confirmation by the UNOLS Chair. Their terms of office shall be two years. The Chairperson and Vice Chairperson shall be elected in alternate years.

2. The Chairperson shall represent the Committee in all matters stipulated in the purpose of these bylaws and in all matters deemed necessary in the interest of the Committee. The

Chairperson shall implement the programs enumerated by the Committee and shall conduct the Annual Meeting and whatever special meetings are deemed necessary by the Chairperson or the members.

3. The Vice Chairperson, who shall function as Chair in the absence of the Chair, shall be responsible for recording the business of the Committee and for dissemination of information through a newsletter or other media as stipulated in these bylaws to all members of the Committee.

4. If the Chairperson or Vice Chairperson are unable to fulfill their duties of office, the Chairperson shall appoint a successor to act with authority until the succeeding Annual Meeting.

E. Working Groups and Panels

1. Upon the recommendation of the Chairperson, and with a majority vote of the Committee, various working groups and panels, as necessary to the work of the Committee, may be constituted. The duration of action of such working groups and panels shall be stipulated at the time of inception.

F. Meetings

1. A general meeting of the Committee shall be held at least once yearly. The Chairperson shall preside over this Annual Meeting. The business of this meeting shall encompass reports of any active working groups and panels, and discussions of project and actions of the Committee. Research Scientists and others from the marine community may also be included on the agenda. Workshops for projects of general concern are encouraged.

2. Passage of projects and actions shall be by vote, in accordance with the voting procedures set forth in Section C, REPRESENTATION, paragraph 5.

3. The various working groups and panels shall each meet at least once yearly.

G. Finances

1. UNOLS will provide limited funding for the Committee to include the following:

   a. Travel expenses for the Chairperson and Vice Chairperson for meetings once a year;

   b. Travel expenses for the Chairperson to attend UNOLS Meetings;

   c. Meeting facilities, when required;

   d. Travel and meeting expenses for panels, workshops, or the Annual Meeting when appropriate.

Adopted: Oct 1, 1993, Washington, DC.

APPENDIX XIX

OCTOBER, 1993

UNOLS COUNCIL ELECTIONS

The UNOLS Nominating Committee has assembled the following slate of candidates for the UNOLS Council positions to be filled at the Annual Meeting. This election will be held in accordance with the UNOLS Charter as readopted September 1992. The current membership of the Council and a UNOLS Directory are attached.

Nominations are invited from the floor during the Annual Meeting. Such nominations may be made only by designated representatives of UNOLS institutions, and must be accompanied by the nominee's concurrence and qualifications. The nominee must meet the requirements of the UNOLS Council position he/she is nominated to fill.

UNOLS COUNCIL SLATE

COUNCIL MEMBER (3 year term) - representative from UNOLS Operator Member Institution:

Robert Knox	Scripps, University of California, San Diego
Thomas Royer	University of Alaska

COUNCIL MEMBER (3 year term) - individual affiliated with any UNOLS Member Institution:

David Karl	University of Hawaii
Nancy Marcus	Florida State University

VITAE

Robert Knox

Associate Director, SIO Ship Operations and Marine Technical Support
Research Oceanographer, Physical Oceanography Research Division, Scripps Institution of Oceanography, University of California, San Diego
Physical Oceanography; Global and equatorial ocean circulation and acoustic remote sensing.

Thomas Royer

Professor of Marine Science, Institute of Marine Science, University of Alaska
Physical Oceanography; Circulation of North Pacific Ocean and Air/Sea Interactions.

David Karl

Professor of Oceanography, Department of Oceanography, SOEST, University of Hawaii
Biological Oceanography; Bio-geochemical cycling, Marine microbiology and Ecology of deep-sea hydrothermal vents.

Nancy Marcus

Professor of Oceanography, Department of Oceanography, Florida State University
Director of FSU Marine Laboratory
Biological Oceanography; Ecology of Zooplankton

UNOLS COUNCIL

1992-1993

Member	Term
G.W. Brass, U/Miami, Chair	10/90-10/94
P. Betzer, U/So Fl, V-Chair	10/90-10/94
D.E. Hayes, L-DEO	10/91-10/94
R. Janke, Skidaway	10/91-10/94
D.M. Karl, U/Hawaii	10/90-10/93
R. Knox, SIO	10/91-10/93
C.A. Nittrouer, SUNY Stony Brook	10/91-10/94
R. Pittenger, WHOI	09/92-09/95
R. Wall, U/Maine	09/92-09/95
R. Findley, U/Miami, ex-officio	10/92-10/9X RVTEC CH
P.J. Fox, URI, ex-officio	07/92- 10/9X DESSC CH
M.G. Langseth, L-DEO, ex-officio	10/90-10/9X FIC CH
K.P. Palfrey, OSU, ex-officio	10/90-10/9X SSC CH
M. Prince, MLML, ex-officio	10/88-10/9X RVOC CH

Terms Expiring:

Robert Knox
David Karl