UNOLS NEWS

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Highlights

Message from the Chair…

This is my final newsletter column as UNOLS Chair. Looking back at the last few years and forward at the next several, UNOLS has much to be proud of and much still to do. I can best illustrate this with three selected quotations.

The first is from the NSF Academic Fleet Review of 1999. The National Science Board set in motion a high-level external review of how NSF Ocean Sciences funds research vessel use in support of its programs, to see if the current system should somehow be changed. Many readers of this newsletter participated in parts of this review, through presentations at site visits of the review committee or responses to questionnaires about the strengths and weaknesses of current UNOLS procedures. One of the report findings was:

"The UNOLS system should be retained. The NSF-UNOLS current practices, using institutional operators funded by NSF and other federal agencies with centralized scheduling through UNOLS seems to provide excellent access to the sea for U.S. investigators. To the extent the committee can assess, costs are comparable to or better than government operators, and not evidently different from costs of contracting commercial platforms."

This is not to say that UNOLS is perfect. Improvements in matters ranging from the scheduling system to provision of "standard" technical services on ships were suggested and are being pursued. But the overall worth of the UNOLS system as an effective community-based means to provide high-quality access to the sea for scientists is something of which the organization and those who participate in it can be proud.

The same report contained strong advice to federal agencies on a long-term issue of prime importance - fleet renewal:

"The federal agencies funding research in oceanography should prepare and maintain a long range plan for the modernization and composition of the oceanographic research fleet which reaches well into the 21st century. This will avoid the high cost of obsolescent facilities and provide the Congress with a unified roadmap for out-year allocations for vessels to support oceanographic research."

Such a plan now exists - the Federal Oceanographic Facilities Committee (FOFC) document "Charting the Future for the National Academic Research Fleet" of 2001. UNOLS and many readers played a strong role in critiquing a first draft of this plan. UNOLS now has held two workshops on framing Science Mission Requirements, one for the so-called "Ocean Class" of new vessels envisioned under the plan, and a second workshop dealing with the "Regional Class." The crucial need now is to press ahead expeditiously with a set of specific budget/acquisition items and dates (an agency responsibility), and with sound, science-responsive design

Chair Message- continued from page 1…

efforts as soon as funds can be made available to support these. This is an area in which UNOLS and several of its main committees (FIC, RVOC, RVTEC) should play an important role. It should continue to be a major item on the UNOLS agenda for years to come, since the FOFC Plan extends to 2020.

Finally, the reason for doing all this is captured in the first recommendation of the NSF report "Ocean Sciences at the New Millennium." This report resulted from the very extensive review and forecast of the field by disciplines that was carried out during 1996-1998 and in which some 2000 ocean scientists participated at the four disciplinary workshops or by correspondence. In part that recommendation states:

*"A substantial, well-coordinated, multi-agency fleet replacement plan is needed to maintain United States leadership in sea-going capabilities in the coming decades. Maintaining a modern, well-equipped research fleet is **the** most basic requirement for a healthy and vigorous research program in the ocean sciences." (emphasis added)*

This makes the point that UNOLS, the UNOLS Office, and the mariners, technicians, engineers and scientists who comprise the UNOLS committees and Council do not spend hours and days on problems of fleet vitality and capability in isolation. They do so to ensure the best possible support of seagoing science, now and for the future.

UNOLS - it is an excellent system, with a critically important long-term consideration of fleet renewal before it in addition to daily work, and with its raison d'etre rooted in the fact that the fleet is and will be essential to the science. This is a worthy situation, with much worthy and challenging effort ahead. I wish my successor, and all who come into the organization in future years, every conceivable success in this important work. *By Bob Knox, Council Chair*

UNOLS 2002 ANNUAL MEETING

UNOLS invites the oceanographic community to join in their 2002 Annual Meeting. The meeting will highlight the past year's activities and achievements, as well as plans for the upcoming year. The Federal Oceanographic Facilities Committee (FOFC) has published a Plan for Academic Fleet Renewal. UNOLS working with the Federal Agencies and oceanographic community are focusing on the implementation of this Plan. The Annual Meeting will include reports on these related activities. We are pleased to announce this year's keynote speakers, RADM Jay Cohen and Dr. Rita Colwell, who will discuss their respective agency's Fleet Renewal plans.

Friday – September 27, 2002
National Science Foundation, Room 1235
4201 Wilson Boulevard, Arlington, VA
8:00 a.m. Coffee & Pastries
8:30 a.m. Meeting – Opening Messages

Keynote Speakers
RADM Jay Cohen, Chief of Naval Research
&
Dr. Rita Colwell, Director, National Science Foundation

The meeting agenda will also include presentations and discussions of this year's UNOLS activities and plans for the future. This will include:

- Committee Reports
- Federal Agency and CORE Reports
- UNOLS Fleet Renewal Activities
- Research Vessel Security
- Facilities beyond Ships
- Quality of Service Initiative
- UNOLS Membership Votes
- UNOLS Elections
- Issues Before UNOLS
- 2002/2003 UNOLS Goals and Priorities

The full meeting agenda is posted on the UNOLS website: <http://www.unols.org/annual/anumt209/anuag209.html>

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.

2002 UNOLS Council Elections

Elections will be held at the UNOLS Annual Meeting on 27 September to fill expiring Council terms, including the positions of Chair and Chair-Elect. The election will be held in accordance with the UNOLS Charter of November 15, 2001. UNOLS Nominating Committee members, Curtis Collins (Chair), Bruce Corliss, and Charles Flagg, have assembled a slate of candidates for the positions to be filled.

2002 Council Slate

UNOLS CHAIR (2 year term) – Individual affiliated with any UNOLS Member Institution:

Dr. Tim Cowles	Oregon State University
Dr. Marsh Youngbluth	Harbor Branch Oceanographic Institution

UNOLS Chair-Elect (2 year term) - Individual affiliated with any UNOLS Member Institution:

Dr. David Hebert	University of Rhode Island
Dr. Peter Wiebe	Woods Hole Oceanographic Institution

Operator Representative (3 year term) - from among designated UNOLS Member Operator institutions:

Dr. Garry Karner	Lamont-Doherty Earth Observatory of Columbia University
Dr. John Kelley	University of Alaska at Fairbanks
Dr. Peter Ortner	University of Miami/Atlantic Oceanographic and Meteorological Laboratories

AT-LARGE (3 year term) - Individual affiliated with any UNOLS Member Institution:

Dr. Denis Wiesenburg	University of Southern Mississippi
Dr. Doug Ricketts	University of Minnesota, Large Lakes Observatory
Dr. Toby Garfield	San Francisco State University, Romberg Tiburon Center for Environmental Studies

Information about each of the candidates can be found on the UNOLS website at:
<http://www.unols.org/annual/anumt209/slate02.html>.

CORE To Host House Oceans Caucus UNOLS Breakfast

UNOLS Fleet renewal issues are receiving attention at high levels. On September 24, CORE is sponsoring a Capital Hill breakfast with the House Oceans Caucus to discuss recapitalization of the UNOLS academic research fleet. The Federal Oceanographic Facilities Committee (FOFC) report titled, *Charting the Future for the National Academic Research Fleet - A Long Range Plan for Renewal*, will be the primary focus of the discussion. The report is available on the web at < http://www.geo-prose.com/projects/fleet_rpt_1.html>.

Dr. Bob Knox (UNOLS Chair), Dr. Carolyn Thoroughgood (CORE BOG Chair), and Dr. Vera Alexander (University of Alaska) will provide briefings to the Congressional members and staff during the breakfast. CORE President, RADM Richard West, USN (Ret.), will moderate the discussion.

CIRPAS to be Considered as a National Oceanographic Aircraft Facility

On 27 September the UNOLS Membership will be asked to vote on the designation of the Center for Interdisciplinary Remotely-Piloted Aircraft Studies (CIRPAS) as a National Oceanographic Aircraft Facility in accordance with Annex II of the UNOLS Charter.

CIRPAS is a research center at the Naval Postgraduate School, Monterey, California with aircraft owned primarily by the Navy and operated through a contractor, the California Institute of Technology (CALTECH). The facility provides Remotely-Piloted Aircraft (RPA) as well as manned aircraft services to the science, research, test and evaluation communities. CIRPAS also provides an array of meteorological, aerosol and cloud particle sensors, data acquisition systems, calibration and data reduction service. CIRPAS conducts payload integration, reviews flight safety and provides logistical planning and support to research and test projects. CIRPAS flight operations and the maintenance facility are located at Marina Municipal Airport in Monterey County, California. CIRPAS missions are almost entirely over the ocean and have supported several oceanographic and atmospheric research projects in recent years. Activities are managed by the NPS staff based at the CIRPAS facility. Dr. Bob Bluth is the CIRPAS Director, Dr. Haflidi Jonsson is the Chief Scientist and Dr. David Netzer is the Executive Director.

The primary CIRPAS aircraft for oceanographic support is the UV18A 'Twin Otter,' the military version of the DeHavilland DHC-6-300. The *UV-18A* functions as a sensor platform and chase aircraft during UAV flight operations outside of restricted areas. Characteristics of the *UV-18A* include:

- Large Payload Capability (4500 lbs.); Nose, cabin and wing stores
- >4200 W Power Available
- Integrated Data Acquisition System
- Extended Duration Missions with Additional Fuel Tank System
- Wide Speed Range (65-165 KIAS)
- 25,000 ft. Ceiling (Oxygen installed)
- SATCOM communications allowing real-time data and voice transmissions

The proposed ballot measure defines a National Oceanographic Aircraft Facility as an academic organization or institution that operates one or more aircraft in support of oceanographic research or education and that is made available to qualified scientists from any institution with funding for the use of the facility. The purpose is to provide access to aircraft facilities to scientists that do not operate or otherwise have available the required aircraft facilities.

An aircraft facility may be designated a National Oceanographic Aircraft 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 ongoing support by one or more funding agencies. National Oceanographic Aircraft Facilities may be multi- or special-purpose facilities and may be designated for the entire annual operating period or any significant period thereof. Opportunity for review and input from Federal funding agencies other than the owner of a facility should be included as part of the designation process.

As a second ballot measure, the UNOLS Council recommends the establishment of a standing committee under Annex II of the UNOLS charter with responsibility for designated National Oceanographic Aircraft Facilities. This committee will be called the Scientific Committee for Oceanographic Aircraft Research (SCOAR) and will be operated under UNOLS.

This Committee will provide advice and recommendations to facility managers and supporting federal agencies on aspects of operations, sensor development, fleet composition, utilization and data services as appropriate. In addition, SCOAR and the UNOLS Office will provide the ocean science user community with valuable information and advice concerning experiment design, facility usage, scheduling and capabilities. The committee will promote collaborations and cooperation between facility operators, funding agencies and the scientific community to improve the availability, capabilities and quality of aircraft facilities supporting the ocean sciences. By promoting collaboration between the ocean science community, the atmospheric science community and other science communities using aircraft in support of their research the committee will work to improve utilization and capabilities for all of these communities.

The SCOAR will also recommend the designation of aircraft facilities as National Oceanographic Facilities to the UNOLS Council and membership. Initially the Committee will consist of a Chair, four appointed members from the research community and ex-officio members from designated National Oceanographic Aircraft Facilities. Additional members or ex-officio members from other UNOLS standing committees can be appointed by the UNOLS chair in concurrence with the UNOLS Council. The inaugural members of this committee are proposed to be: Carl A. Friehe, Chair (UC Irvine), John M. Bane, Jr. (University of North Carolina), Charles Flagg (Brookhaven National Laboratory), and Daniel D. Riemer (University of Miami). The committee if formed will recommend others.

Ocean Class Science Mission Requirements Workshop

By David Hebert (University of Rhode Island)

Urged by a review of the academic fleet, the Federal agencies, through the Federal Oceanographic Facilities Committee (FOFC) and with input from the academic community (via UNOLS), produced a plan entitled "Charting the Future for the National Academic Research Fleet" available at <http://www.geo-prose.com/projects/fleet_rpt_1.html>. The Plan calls for a fleet that is more capable than at present, but fewer in number. In the plan, four classes of ships (Global, Ocean, Regional and Local) were used to describe the future fleet. The "Ocean Class" ships are to fulfill a critical need in fleet modernization by replacing the aging "Intermediate" ships with vessels of increased endurance, technological capability, and number of science berths. These will be ocean-going vessels but not globally ranging. In the FOFC report, the Ocean Class ship characteristics were stated as: Length=55-70 meters; Endurance=40 days; Range=20000 km; Science Berths=20-25. The first step in the design of a class of ships is to define the "Science Mission Requirements" (SMRs). These SMRs are used to aid development of concept design(s), which lead onto "Preliminary" and "Construction" designs.

In February, a steering committee was formed at the UNOLS Fleet Improvement Committee and Council Meetings to develop science mission requirements for the Ocean Class Research Vessels. In addition the Steering Committee was tasked to work with the Office of Naval Research on their "Oceanographic Ship Common Scalable Hull Study" which will take place over the next six months.

As a first step for determining the SMRs for the Ocean Class, the views of the oceanographic community were solicited via a questionnaire on the UNOLS Web page. Well over 50 scientists and ship support personnel, from both operator and non-operator institutions, responded. That input can be found at <http://www.unols.org/fic/ocean/ocean_class.html>. The respondents also indicated whether they would be willing to participate in a workshop to define the SMRs. A meeting to discuss and prepare a draft of the Ocean Class SMRs was held at Salt Lake City on July 23rd and 24th. (As a separate fleet renewal effort, SMRs are being developed for the Regional Class of vessels. A separate workshop was held in Salt Lake City on August 15 and 16 to address these needs.) In attendance at this meeting were various scientists from all disciplines and marine support personnel, representing all geographical regions, a naval architect and representatives from NSF, ONR, NAVSEA, and NMFS.

The primary objective for this meeting was to produce a set of draft SMRs (with ranges of values and priorities) based on the FOFC report, past SMRs and community input. It was very useful to have representatives ranging from the ship operators and ship support staff to the end users of the ship, the scientists, together at this meeting. During the meeting, there was much discussion on the content of the SMRs and the best way to present the scientific needs of the sea-going community in a way that would allow a naval architect to produce a concept later when different specifications are prioritized. As well, it was decided that other items, such as easy access to equipment and maintainability, should be stated in the SMRs since a good working ship is critical to meet the science requirements. Based on the discussions, it was decided that some further research is needed before a SMR is produced to address some questions on how to list useful specifications or to put them into context. The meeting participants will address these items via e-mail before producing a draft SMR. The goal is to have this draft SMR available on the UNOLS web page for community response by mid-October. This response will be incorporated into the document and presented at the fall AGU and other venues with the goal to have the final SMRs approved at the start of 2003.

Regional Class SMR Workshop

The Regional Class SMR Workshop mirrored the activities of the Ocean Class SMR effort. The FOFC ship characteristics for this class were stated as: Length=40-55 meters; Endurance=30 days; Range=15000 km; Science Berths=15-20. At the workshop, regulatory issues relating to the ship size, cost limitations, and region-specific research needs were addressed. To learn the latest information about the Regional Class effort, visit the UNOLS website at: <http://www.unols.org/fic/regional/regional_class.html>.

Research Vessels and Safety Management
~ ISM and the UNOLS Fleet ~

By Captain Morgan Turrell, University of Washington

Background

In response to several highly publicized maritime accidents, the International Maritime Organization (IMO) adopted a set of standards for safe ship management. These standards are part of the Safety of Life at Sea Treaty and are required for vessels over 500 tons. The code was adopted in 1993 and was implemented aboard petroleum vessels and fast ferries first. Other cargo vessels were required to comply by July 1st of 2002.

After investigating several accidents it was determined that a culture of safety was not prevalent in the shipping industry. Using the ISO 9000 series quality management protocols from manufacturing as an example, the IMO developed the International Safety Management (ISM) code as a set of minimum requirements for ships and ship operators. The code has thirteen elements, which ship owners and operators have to address in writing in order to be in compliance. Many elements were already addressed by United States Coast Guard regulations, but ISM is an international mandate. Initially, the implementation of ISM aboard vessels was perceived of as difficult and unwieldy. Now that the final deadline has passed, the next phase of ISM is beginning.

The thirteen elements can best be divided into three components designed to ask the ship owner and operators to submit themselves and their operations to the code. The first six elements identify who owns the ship, what the safety philosophy is in the company and calls for a commitment of resources to implement the code. The next set of elements requires the operator to establish operating procedures, emergency procedures and non-conformity reporting guidelines. The final set submits the organization to an auditing process, which is usually conducted by the classification society. Classification societies historically have surveyed vessels for insurance companies to insure the seaworthiness of the craft. With several manuals, the companies educate their shipboard and shore side management about the code and how the company operates in a safe and environmentally sound manner.

After an initial audit of the organization and each vessel subject to the code, certificates are issued to the Company and the ship. Each year, the company is audited by the classification society to ensure that each element is being adhered to. Every other year, each vessel is audited to ensure compliance. The vessels are also inspected by the Administration of their flag. UNOLS ships are usually inspected by the United States Coast Guard. It is anticipated that many inspections in the future will be streamlined and combined as the law allows in some cases. When ships travel to foreign ports, local inspectors can now audit vessels if it is suspected to be out of compliance. If a ship arrives at a harbor with engine difficulties and malfunctioning radars, it may be as a result of poor management and maintenance and an audit may be conducted. During the audit, if major non-conformities are found, the certificates may be seized. The ship may be asked to undergo a major initial audit, causing considerable delay and expense. Keeping the ship in compliance with the ISM code is critical.

UNOLS and ISM

The operators of the six large research vessels have completed their initial audits and are in compliance. Written procedures will be improved and increased as the fleet encounters different operations. Scientists using UNOLS vessels will be noticing some changes from past practices. As various ships undergo subsequent audits, procedures and ship operations will evolve.

Fortunately, NSF has provided the ship operators with support for their ISM programs and it is believed that the quality and safety aboard UNOLS ships will be improved. Science participation in safety meetings, audits and training will vary initially, but over time procedures will become more standardized. The framework of ISM will be the same and safety requirements will be very similar as you travel from vessel to vessel.

In addition to safety requirements, regulators have now found a way to make other requirements part of the code. Ballast, garbage, and hazardous materials are common areas of scrutiny. Ship operators will be advised of areas of concern and emphasis and will make shipboard procedures and requirements in response to changing safety, environmental and security guidelines. Scientists are encouraged to check with the vessel's operators well before their cruise. Their procedures are now more inflexible and advance preparation for cruises is more significant.

Recent examples of ISM impacts include pre-cruise meetings, additional paperwork and crew list information, repeated safety meetings and drills, and strict adherence to regulations. It is important to realize that the operators have spent time to make their procedures as flexible as

possible. Many of them are available on line for you and your science party to review during the pre-cruise process.

The Future

It is a belief in the maritime community that all commercial vessels will eventually be subject to the ISM code. RVOC has addressed the possibility that the intermediate and small vessels in the UNOLS fleet will need to meet the code. In many cases, it will take a few months to get a vessel ready for compliance. Operators of the larger vessels will have an advantage since they will already possess a shore side certificate, or Document of Compliance.

The ships and operators are noticing that streamlining maritime regulations has made sense. Operators and RVOC will probably move to standardize the shipboard procedures as more vessels are required to be compliant. Current procedures will be modified and improved. The basic framework is in place and smaller operators will have good reference material and experience to call upon.

The scientific community and users of UNOLS vessels can be assured that the operators of ISM compliant ships will continually improve their safe management. The ISM code is in place but will undoubtedly increase in scope and operators will be there to make the necessary changes. The goal of clean and safe science will always be the basis of future improvements and input from the scientific community is welcomed.

COMMITTEE NEWS and ACTIVITIES

DEep Submergence Science Committee News

By Patricia Fryer, DESSC Chair

Full minutes of the spring meeting of the DESSC will be soon available on the UNOLS web site. The following summary presents the main topics of discussion at the meeting.

The Spring DESSC Meeting was held the first week of May at WHOI. The day before the DESSC meeting the Shallow-water Submergence Science Committee (SSSC) (an ad hoc UNOLS subcommittee) met to discuss organizing the shallow-water community toward addressing several issues of critical interest to that group. A report on the deliberations of the SSSC was presented at the DESSC meeting. The SSSC identified key scientific themes for shallow submergence research, catalogued the assets that are currently available to the community, noted critical facilities/technology needs, reviewed the processes for access/funding of shallow submergence facilities and identified shortcomings with the process, and considered mechanisms for increasing the funding base for submergence science. The minutes of the meeting will soon be available on the UNOLS web site.

Roughly half the funded programs using the National Deep Submergence Facility (NDSF) vehicles involve marine biological research. DESSC is working with the biology community to provide researchers with opportunities to interact with one another and to provide feedback to the operator. DESSC convened two special sessions at the ASLO/AGU meeting in Honolulu in February. These were well attended. Marine biologists serving on the DESSC will convene special sessions at future ASLO meetings and DESSC efforts are underway to hold future DESSC meetings at ASLO venues.

Various members of the committee presented operational summaries of other deep submergence facilities. These facilities include MBARI, MPL, the US Navy, NURP (Centers and Ocean Exploration), The ROPOS facility, Scripps and U. Hawaii (ATV), and HBOI. Summaries of these operational activities are presented as appendices to the DESSC minutes.

Representatives from the funding agencies (including NSF, ONR and NOAA) and UNOLS gave reports on the activities and status of funding for deep submergence science as well as reports on general UNOLS efforts.

As announced at the Winter DESSC meeting last December, Dan Fornari has elected to step down as chief Scientist for the NDFS and efforts are underway to find a replacement. The task is not an easy one and fortunately, Dan has agreed to continue to serve as long as needed to find and transition with a replacement. As part of a periodic assessment of major groups within WHOI, an ad hoc committee has been set up to review WHOI Marine Operations and the NDSF. Its focus is to evaluate ship and related operations and how they interface with ship users from all institutions and to suggest ways in which operations can be improved. Committee members are: Fred Sayles (Chair), Susan Humphris, Meg Tivey, Bob Weller, and Dana Yoerger. They welcome input from any ship users.

The National Facility operators presented a summary of the NDSF operations that included continuing efforts related to the ALVIN overhaul and the R/V ATLANTIS. The NDSF reported that it has updated its website with new features. The updates and a new web content management system were introduced. A status report on the archiving of all deep submergence data in the WHOI archives was presented. The status of WHOI revenues for deep submergence visual data was reviewed

Upgrades to the Jason 2 and DSL-120 systems were discussed and the propulsion system for Jason 2 was demonstrated by the DSOG at the WHOI pier. The Jason 2 system was recently successfully field tested from R/V Atlantis on the Juan de Fuca Ridge (see http://robotics.me.jhu.edu/~llw/gallery/jason_2.html). It will be performing its first scientific mission shortly.

DESSC solicits suggestions from the community regarding requests for upgrades to science sensors and operational capabilities of NDSF vehicles.

The ALVIN submersible is nearing four decades of operation and the NDSF has been funded to perform a new design study for a replacement of ALVIN. The NDSF has convened a New Alvin Design Advisory Committee (NADAC) to provide input regarding the science and operational considerations for the replacement for ALVIN. DESSC began a discussion of the relative merits of occupied versus remotely controlled vehicles for submergence research. After the meeting the chair drafted a statement of support for occupied vehicles based on input from DESSC and the community. This document was forwarded to the ocean commission and the Chair made a public comment at the May meeting of the Ocean Commission in Honolulu. Discussions among various members of the scientific community regarding the depth capability of the replacement vehicle followed the DESSC meeting. DESSC responded to these with the document entitled "Maintaining Progress Toward a Replacement for the Alvin Submersible," which is presented on page 9. This document was also forwarded to the Ocean Commission as a public statement in connection with the July meeting in Boston, although it has not yet been uploaded to the Ocean Commission website. DESSC is preparing a white paper on the scientific justification for use of a 6000+ capability occupied submersible that will be presented to the funding agencies soon.

Scheduling issues related to the NDSF were discussed at the Spring DESSC meeting and DESSC/UNOLS deep submergence funded programs were listed. DESSC reviewed planning letters and website postings, identifying funded programs in order to construct a straw-man schedule for 2003. A long-range planning discussion included issues of science/logistical constraints and how various vehicle requests should be coordinated. DESSC discussed future global deep submergence initiatives in the various fields of expertise of the committee members. Each member prepared and discussed the status of future research interests in various global areas, including the Western Pacific, South Pacific, South Atlantic, Indian Ocean, and the Arctic, and discussed possible new mechanisms for future funding of deep submergence science. DESSC reviewed past utilization trends in order to better predict the future directions of the research supported by the NDSF.

DESSC discussed plans for the NOAA/NASA-sponsored Link Symposium that was held in late May at the Kennedy Space Flight Center. As part of follow-up efforts to the DESCEND workshop, DESSC helped develop a program of technical breakout sessions for the Link Symposium. The objective for the breakout sessions was to develop an inventory of existing technologies, define needed technologies for support of submergence science in the future, and to initiate mechanisms by which development of these technologies might be funded. A report of the Link Symposium will be published in the Marine Technology Society Journal in the near future. The outcomes of the Symposium will be to provide the submergence community with a web-based inventory of submergence technologies (on the UNOLS Web site) that will be open for continuing updates and long-term jointly sponsored (NOAA/NASA) funding for prioritized technology advancement.

DESSC discussed several mechanisms by which it plans to extend awareness of opportunities for new scientific discovery utilizing the NDSF assets and tools with respect to researchers in fields not traditionally heavily involved in submergence research. The fields discussed at the May meeting included marine archeology and educational outreach. The outreach activities that DESSC focused on included progress on the new IMAX movie and efforts to coordinate its release with outreach activities by marine science institutions in various parts of the country where it will be released later in the year, educational programs of various sorts, a lectureship program in collaboration with RIDGE2000, and a new Discovery Science Channel series on submergence science efforts that is being coordinated with help from the UNOLS office.

DESSC discussed plans for the Winter Meeting for 2002 to be held in San Francisco on December 5th and replacement of two DESSC members who are rotating off the committee (Marv Lilley and Joris Gieskes). Election of replacements for these two are underway and recommendations from the DESSC will be forwarded to the UNOLS Council for their consideration at their meeting in September.

Maintaining Progress Toward a Replacement for the Alvin Submersible

A Recommendation from the Deep Submergence Science Committee

Patty Fryer (Chair), Timothy Shank, Marvin Lilley, Bob Embley, Anna-Louise Reysenbach, Bill Ryan, Joris Gieskes, David Mindell, Mark Chaffey, and ex-officio members Dick Pittenger, Dan Fornari, and Shirley A. Pomponi

The DEep Submergence Science Committee (DESSC) of the University National Oceanographic Laboratories System (UNOLS) supports the efforts of the National Deep Submergence Facility (NDSF) to design and build a replacement for the Alvin submersible. Alvin has evolved to its current configuration in over 37 years of operations. This submersible provides the US academic community with a very effective and essential, routine capability to access the deep ocean and seafloor. The design has proven extremely versatile and useful for a wide variety of scientific field programs at depths up to the current 4500m capability[1]. The many discoveries and scientific articles made possible through the use of Alvin are well documented in the lay and scientific literature[2]. Numerous upgrades to Alvin operational and science systems have improved the capabilities of the submersible, particularly over the last decade as advances in submergence technology have escalated. However, the original physical configuration and some of the operational sub-systems and components have become difficult to maintain and are the limiting factors in the NDSF's ability to improve the submersible. A new vehicle is a critical need.

A design study for replacement of the Alvin submersible that will lead to a set of functional, technical specifications required to bid on and build a new research submersible has been funded by two of the agencies that support the NDSF (NSF and NOAA). This effort is the outgrowth of a continuum of community-wide discussions and workshops regarding the future needs of the US deep submergence science community that began in 1997.

The new submersible design, as requested by the research community in the various planning documents[3], specifies improvements in many aspects of the vehicle. These include:

- Greater speed
- Improved science sensors and tools
- Improved maneuverability
- Increased power for propulsion and payload
- Greater endurance and improved ergonomics (longer dive time, especially when being used to maximum depth capability)
- Better visibility and lighting
- Improved navigation
- Improved safety systems
- Improved manipulation ability
- Greater external sample storage and increased science payload
- Better communications
- Improved data collection, logging and interface capability to science instruments
- Comprehensive engineering, operational, and science-utilization documentation
- Depth capability to 6500-7000m (depending on technical feasibility and cost-benefit analysis)

The new submersible, with its improved systems and greater depth capability will access 99% of the ocean's depths. The new design will continue to permit operation of the new Alvin submersible by a single pilot on a routine (daily) basis, with two science observers on each dive. All the above improvements would be possible while maintaining deployment capability from the existing support ship with no major modifications to the ship design, or submersible launch-recovery system.

The DESSC recommends and supports a new Alvin. It will continue working with the NDSF and the New Alvin Design Advisory Committee, toward achieving the engineering and science systems design specifications as currently being developed by the NDSF. DESSC is unanimous in its support of this effort and that the NDSF receive appropriate federal funding so that the initiative can move forward on a timely basis. Currently, the time frame envisioned for completion of the design specifications, construction and availability of the new submersible to the marine science community is on the order of 4 to 5 years. It is the opinion of the DESSC that any delays to the current plan will be extremely counterproductive to the progress of deep submergence science in the US, and that every effort should be made to implement this plan.

Although the DESSC realizes that there is interest in accessing depths greater than ~6500-7000m for scientific research, it stresses that there is a critical need to maintain the excellent existing capabilities to conduct experiments at the range of depths where the majority of current Alvin users have research interests (~1000-4500m). The DESSC does not support a plan to build an occupied submersible with full-ocean depth (11,000 m) capability.

The DESSC has been active in supporting and fostering Remotely Operated Vehicle and Autonomous Underwater Vehicle technology and believes that those vehicle systems offer the most promise to effectively and efficiently conduct scientific research in the deepest ocean. It will continue to maintain aggressive support and campaign for continued development of ROV and AUV systems to benefit oceanographic research at all depths. Ultimately, the needs of the US academic research community will best be served by a broad spectrum of vehicle and ship facilities to access the deep ocean and seafloor. This diversity of oceanographic research infrastructure is essential to maintaining US leadership in the ocean sciences in the 21st century.

1. See http://www.whoi.edu/marops/vehicles/alvin/index.html for basic information about Alvin and its equipment.
2. For a list of publications from research using the Alvin submersible, the reader is referred to the following web address where a compilation is kept up to date: <http://www.whoi.edu/marops/vehicles/alvin/index.html>.
3. Listing of reports of previous workshops and meetings that relate to the need for submersible facilities to support US oceanographic science:
   - DESCEND Workshop: <http://www.gso.uri.edu/unols/descend/descend.htm>
   - NSF Physical Oceanography Futures Workshop: http://www.joss.ucar.edu/joss_psg/project/oce_workshop/apropos/
   - NSF Chemical Oceanography Futures Workshop: <http://www.joss.ucar.edu/joss_psg/project/oce_workshop/focus/>
   - NSF Biological Oceanography Futures Workshop: <http://www.joss.ucar.edu/joss_psg/project/oce_workshop/oeuvre/>
   - The Life in Extreme Environments (LExEn) initiative (NSF) Report: <http://www2.ocean.washington.edu/lexen/>
   - NSF Marine geology and Geophysics Futures report FUMAGES: <http://www.joi-odp.org/FUMAGES/FUMAGES.html> and <http://www.joss.ucar.edu/joss_psg/project/oce_workshop/fumages>
   - "A National Initiative to Observe the Oceans." A white paper endorsed by the Consortium for Oceanographic Research and Education (CORE) that describes a balanced, science-based implementation strategy for integrating a system of long-term, interdisciplinary ocean observations
   - The Global Abyss: An assessment of deep submergence science in the United States, UNOLS Office, Univ. of Rhode Island, Narragansett, RI, 1994

Fleet Improvement Committee News

By Larry Atkinson, FIC Chair

The replacement of the academic fleet is and will occupy the activities of the Fleet Improvement Committee for the foreseeable future since this is a twenty-year process at best. In the past months the oceanographic community has become much more involved in the process with the formation of two steering committees: the Ocean Class and the Regional Class Steering Committees. Their creation has shown that our community can and will get involved in this lengthy process.

I mention these committees because it is very important that all people involved with the ships get involved. To that end both committees have very active and informative web sites: <http://www.unols.org/fic/ocean/ocean_class.html> and <http://www.unols.org/fic/regional/regional_class.html>. Please go over these sites occasionally to see what is new. There is always an opportunity to comment or attend a meeting. Or, contact the leaders of the SMR Steering Committees.

The process we go through to build ships starts with the development of science mission requirements (SMRs). You can go on the UNOLS web sites and see SMRs from past fleet renewal efforts < http://www.unols.org/fic/#smrs>. We are now in a new SMR process for the Ocean and Regional Class vessels. Those classes are being addressed first since the vessels they will replace are among the oldest in the fleet. Some may ask why we have these two apparently new classes of ships. They are really just new versions of the ship classes that included OCEANUS and ENDEAVOR for example and the CAPE HATTERAS and POINT SUR. An Ocean Class SMR workshop was held in July and a Regional Class SMR workshop was held in August. Material pertaining to these workshops is available on the web sites listed above. An article about the Ocean Class Workshop is included on page 5.

As the University of Hawaii brings the newest UNOLS vessel, KILO MOANA, into service, UNOLS will initiate a process of assuring we get adequate reviews of the ship during its first year of operations. Since the KILO MOANA is the first general ocean research SWATH in the fleet it is important that we receive thorough assessments of its capabilities: the pros and cons of SWATHs. To that end UNOLS is creating an enhanced survey to assure that scientists who use KILO MOANA get an opportunity to express their thoughts on its scientific utility.

Research Vessel Technical Enhancement Committee

By Dale Chayes, RVTEC Chair

RVTEC provided significant input to the Science Mission Requirements development via the FIC web site in preparation for the Ocean Class and Regional Class science mission requirements workshops. I came away from the Ocean Class Workshop with the view that we got off to a good start and that we have to continue to push these efforts forward for the long haul. I also note that two RVTEC "graduates" were active participants in their roles as agency representatives. The Regional Class workshop was held on 15-16 August. Although no active RVTEC members were present, a recent member, Rich Muller (now Marine Superintendent at Moss Landing Marine Labs), attended the meeting.

Looking forward to future events, we have the UNOLS Council (September 26), INMARTECH2002 (October 7-11), and the RVTEC Annual meeting (November 12-14). Details about the INMARTECH2002 Meeting are provided in a separate article on this page.

The University of Hawaii will host this year's RVTEC Annual Meeting. The agenda is under development. Major topics for discussion will likely include: Quality of Service, Post Cruise Assessment, STCW and ISM, Vessel Planning, Next Generation Wire Design and Networking/Communications. A variety of breakout session items are also being considered. As details of the meeting mature they will be posted on the UNOLS website at http://www.unols.org/rvtec/rvtmt211/rvtag211.html. As an inside note to RVTEC, one important event associated with the annual meeting will be the unofficial presentation of the unofficial RVTEC "Map to Dinner" (perhaps we can arrange an autographed copy?) at the retirement roast of one of our highly successful alums.

In other activities, the new improved Post Cruise Assessment Form is on the street. I believe that it is a substantial improvement over the previous version. Mike Prince and I have been collaborating on a proposal that will help move forward development of next generation wires and winches. Perhaps we will see some progress on this front in the fall. The effort to implement the first concrete steps along the way to defining basic levels of service in the fleet as part of the overall quality of service effort is moving forward, but not as fast as we would like.

INMARTECH 2002

October 7-11, 2002

The 2002 International Marine Technicians Workshop INMARTECH2002 is to be held in Yokosuka, Japan, from 7 to 11 October 2002. The purpose of INMARTECH is to provide a forum for international exchange of knowledge among marine science technical support personnel and to improve equipment performance during scientific cruises on research vessels. INMARTECH2002 is hosted by Japan Marine Science and Technology Center (JAMSTEC) and supported by the International research Ship Operators Meeting (ISOM).

INMARTECH2002 is the fourth biannual INMARTECH workshop. The first workshop was held in 1996 in Southampton, UK, the second in 1998 at the Scripps Institution of Oceanography in San Diego, California, USA, and the third in 2000 at the Netherlands Institute for Sea Research (NIOZ) on the island of Texel, the Netherlands. This year's program in Japan includes presentations on the following subjects:

Oceanographic Observation technology:
- Instrumentation, methodologies, new technologies

Meteorological Observations:
- Instrumentation, platforms, satellite and in-situ measurements

Geophysical Observation Technology:
- Echo sounding, gravity & geomagnetic measurements, seismic surveys,
- narrow & broad band seismometers,
- sea-floor electro-magnetic measurements
- Sampling Technology

Instrument and Vehicle Handling & Operations:
- Submersibles, ROVs and AUVs
- Long-term monitoring instrumentation
- Ship operational technology

Data Management:
- Collection, logging, display & distribution - hardware & software
- Quality assurance
- Data products and dissemination

For further information on the program and registration, please see the following JAMSTEC Web page or E-mail <inmartech2002@jamstec.go.jp>.

<http://www.jamstec.go.jp/jamstec-e/whatsnew/inmartech2002/index.html>.

UNOLS Arctic Icebreaker Coordinating Committee News

By Lisa Clough

Summer marks a quiet time for the AICC, and non-stop scientific work for the U.S. Coast Guard (USCG) icebreakers, their crews, and all the science parties deployed. Currently, both HEALY and POLAR STAR are working overtime in the Arctic waters of the Bering, Beaufort, and Chukchi Seas. HEALY began her fieldwork in late April/ early May, and doesn't return to her homeport of Seattle until this fall. POLAR STAR reached the Arctic Ocean in July, and won't complete her science missions until the end of September.

HEALY is supporting two different science missions this summer: 1) the SBI project (Shelf-Basin Interactions: see http://utk-biogw.bio.utk.edu/SBI.nsf for project information, daily updates, and several additional links) and 2) a coring survey designed to provide high resolution records of sea level and climate in the region since the Last Glacial Maximum. Each project is split into two separate cruises, so HEALY will complete four separate science legs during summer/fall 2002.

POLAR STAR is also supporting two separate science missions. Her first mission is part of the SBI project listed above (see http://www.whoi.edu/arcticedge/ for the specifics), and her second mission is focused on the physical oceanography of the Chukchi Borderlands region (see http://psc.apl.washington.edu/HLD/CBL/CBL.html).

As for the committee itself, we had our last full meeting in Seattle in January. A subset of the AICC then participated in a second Seattle meeting in April to formally review the science testing documents from the shakedown cruises which took place in 2000. We'll be adding to that list as we gather feedback from this summer's icebreaker cruises via both the UNOLS post-cruise assessment forms, and our debrief meetings described in the last UNOLS newsletter. With so many science missions, we'll have plenty to discuss at our upcoming meeting scheduled for 23 and 24 September at NSF. We will also be hosting a town hall meeting at AGU on the evening of 6 December. Discussion topics already identified for our September meeting include use of radiation on the icebreakers, and the logistics of swapping out science crews in places like Nome and Barrow. Our September meeting will be the first for new committee member, Hedy Edmonds. We want to thank retiring AICC member Kelly Falkner for all the hard work she put in as one of the inaugural AICC members.

A few final items: first, the AICC was represented at the recent Alaska Region Research Vessel (ARRV) meeting held in DC in June. As the current plans for the ARRV include moderate icebreaking capabilities, we feel the AICC can contribute to the planning and operation of the new Alaska vessel. Also, at our January meeting (the minutes from which will be online soon at the UNOLS website) we decided to formally distill our meeting minutes into a series of three "to-do" lists, one for the AICC, one for NSF, and one for the CG. My hope is to start off each subsequent AICC meeting with the AICC list from last meeting up on the screen, this should keep us honest about all the work we've said we would be able to do in a six-month time period.

The AICC can be reached by writing to the Chair (CLOUGHL@MAIL.ECU.EDU) or to the UNOLS Office (office@unols.org).

Research Vessel Operators' Committee Meeting 2002

By Steve Rabalais

The 2002 Research Vessel Operators Committee Meeting will be co-sponsored by Moss Landing Marine Laboratories (MLML) and The Monterrey Bay Aquarium Research Institute (MBARI). The first day of the meeting, October 15, will be held at MLML. Agenda items for the first day include welcoming remarks from MLML representatives, Kenneth Coale, Director, and Rich Muller, Marine Superintendent and MBARI representatives Marcia McNutt, Director and Steve Etchemendy, Marine Superintendent. Updates on RVOC group purchases, proposal sharing activities by RVOC members, and a recap and evaluation of last years joint RVOC/RVTEC meeting will follow. The standard agenda including Agency, Committee and Liaisons Reports with a report on the activities of the new Van Standards and Inventory Committee, chaired by Matt Hawkins, University of Delaware, will fill out the remainder of the morning activities.

Special Reports will follow in the afternoon of the first day. As in the past, the Special Reports will play a major role in the 2002 agenda. During this section,

representatives from foreign countries will provide information on activities at their institutions and U.S. operators will give updates on new vessels in the fleet and upgrades and major modifications to existing vessels. In addition, agency representatives, UNOLS representatives and ad hoc RVOC working groups will discuss various topics, including updates on efforts to establish standards for winches and wire rope in the UNOLS fleet, progress with the NSF Ship Inspection Program, and a review of crew salaries on large and intermediate UNOLS vessels. The 2nd day will wrap up with a presentation by Dennis Nixon on last year's activities relative to fleet insurance and a review of 2002 maritime case history.

Six major presentations are planned for the second day of the meeting:

- Dr. Thomas Dobie of the University of New Orleans National Biodynamics Laboratory will address the group on his work with ship design and its affect on crew and passengers. His presentation will include a brief overview of motion sickness, its roots and how ship design can aid in reducing the incidence of sickness aboard ship.
- Recent developments in combating the risk of terrorism in US waters and abroad will then be discussed by Dan Schwartz, University of Washington and Charles Dragonette, Office of Naval Intelligence.
- Various Class I/II UNOLS operators will present their progress with ISM compliance on larger UNOLS vessels, and provide information gleaned from their experience for small vessel operators planning for volunteer compliance on their vessels.
- Representatives from Jamestown Marine Services will cover their experiences as the NSF contractor for the UNOLS Ship Inspection Program.
- Woody Sutherland, Scripps Institution of Oceanography, will present a review and discussion of recent experiences with radioisotopes on UNOLS vessels. The RVTEC will also discuss problem arising from the use of isotopes on UNOLS vessels at their meeting in November 2002 and it is anticipated that information gathered from both groups may help to address some of the issues surrounding the use of isotopes at sea.
- CDR T. J. Edwards, USPHS will discuss NOAA's effort to establish medical standards for scientists embarking on NOAA vessels and establish when a condition should be considered debilitating, and how this should affect individual's incorporation into the science party aboard ship.

A RVOC Business Meeting is scheduled for the third and final day of the meeting.

New Post Cruise Assessment Form Goes On-Line

In late July, UNOLS introduced a new on-line UNOLS Post Cruise Assessment Form. Cruise assessments are part of a program to evaluate how well vessels and personnel of the academic research fleet are supporting the scientific objectives of the research community, and to identify areas that may need better support or guidance to improve the success of future projects. Information provided in this form is applied in a variety of ways. Ship operator institutions, ship's crew, and technical support personnel use the information to make improvements to equipment and procedures on their vessels. The UNOLS Office used the feedback to track the overall performance of the academic research fleet. Funding agencies use the information to assess areas that require more attention. The form will also be useful to the individual making the assessment. It will allow constructive suggestions for improvement that will benefit future research projects for yourself and your colleagues and to let ship operators know what they are doing well.

The cruise Principle Investigator/Chief Scientist, the ship Captain, and the Marine Technician should complete the form. Comments from other members of the science party and cruise participants are also welcome. The Post Cruise Assessment form is posted on the UNOLS website at: <http://www.gso.uri.edu/unols/pcarform.htm>.

UPDATE -- SeaNet: Extending the Internet to the UNOLS Fleet

Contributed by Ellen Kappel and Andy Maffei

The SeaNet project has reached maturity, with six ships in the UNOLS fleet making regular use of the system now, and one portable system available for use on other vessels. We have introduced many new and useful features over the past couple of years, and continue to upgrade software to improve service and reliability. We have led several training sessions, which seemed to have been well received by all who attended. The SeaNet group is always looking into and testing new communications options for the fleet, which would bring Internet services to sea at the lowest cost (and with the best possible service). Below are some recent SeaNet highlights.

SeaNet Web. SeaNet redesigned its home page (www.seanet.int) earlier this year to make it more user-friendly. Among the new features, there is now a page called "Your Cruise," which should help people get started using SeaNet. Contacts, ship status, and operations information are all now more easily found.

Cmail. This year, SeaNet's cmail has been introduced on most ships with SeaNet units. The software is a modified version of the cmail software package that WHOI has been running on its ships for several years (developed by Jim Akens, Ken Feldman, and others). A web-based administrative front end has been added to the software and integrated into the SeaNet software. User accounting software has been added as well. SeaNet's philosophy has been to offer the software to those who want to try it out, but not to require it for SeaNet. Those who have tried it seem to like it.

Video-conferencing. SeaNet has successfully demonstrated video-conferencing between scientists onboard R/V ATLANTIS and a group of reporters attending a press conference at the spring AGU meeting. Shipboard scientists were interviewed by reporters about their research during the Galápagos Rift 2002 Expedition to the original "Rose Garden" site after 25 years. The video-conference was performed using standard NetMeeting software -- one notebook computer onboard the ship and another installed on an Internet link at the AGU conference. Though the images on the screen were smaller than most commercial video-conferencing systems (mostly because of the low bandwidth available), the inexpensive system showed that video-conference over the Internet could add another dimension to reporting on shipboard activities during a cruise. An application note for those interested in doing this themselves can be found at <http://www.seanet.int/operations/ops_apps_notes.html>. Please be sure to call SeaNet Operations for help in setting it up.

Monitoring Daily Connections. The SeaNet Project has developed monitoring software that will inform individual institutions of their SeaNet system usage. The reports are generated daily for those ships that made connections over the prior day. They are disseminated by email. Institutions interested in receiving these reports should contact Scott McCue (smccue@whoi.edu 508-289-3462) with a list of people and email addresses to whom a report should be sent.

SeaNet billing. The accounting page on www.seanet.int has been updated to better match the estimated BHSD costs with the actual costs for Comsat and other providers (go to http://www.seanet.int/operations/ops_accounting.html). Within the accounting report you will find that a call setup-time parameter has been added to the Rate-ID. This call setup-time can be adjusted for different providers and/or customized for individual ship operators. Should the billing institutions find that their call setup-time needs to be modified; they should contact the SeaNet support staff at seanet-support@seanet.int.

Future. The SeaNet group is currently working on proposals for ongoing support of SeaNet operations. The plans are to replace the current SeaNet computer installations with smaller and more compact notebook computers. In addition, we hope to add satellite terminals with INMARSAT F77 high-speed data features such as the Thrane and Thrane CapSat F77 as supported SeaNet equipment. Lamont-Doherty Earth Observatory (LDEO) has also been investigating the use of a new "always-on" service provided with the F77 service called MPDS and is also investigating the development of a new graphical user interface for the SeaNet software.

Science E&O sites. Some science education and outreach projects have recently taken advantage of SeaNet's capabilities. For example, NOAA scientists, including Dr. Craig McLean, have been using SeaNet's datapipes on the R/V SEWARD JOHNSON. Shipboard scientists are currently giving daily updates of the current cruise (Islands in the Stream 2002: Exploring Underwater Oases) at http://www.oceanexplorer.noaa.gov. Also check out the Dive and Discover site at http://www.divediscover.whoi.edu for exciting cruise information that is updated regularly during cruises using SeaNet datapipes.

The SeaNet project continues to help shipboard investigators use Internet services from UNOLS vessels. We are always interested in hearing about users' specific research needs and supporting investigators' use of SeaNet capabilities. Please contact us at seanet-support@seanet.int or 508/289-3700, or check out our web site at http://www.seanet.int for more information on SeaNet capabilities, or for help in getting started.

In Memoriam

On Sunday, July 21st, Gordon Wilkes from the Naval Oceanographic Office passed away. Gordon worked with UNOLS to help form a partnership between our two organizations. He was very helpful in developing the successful support of NAVO missions by UNOLS. This program would not have worked as well with out Gordon's steady and reasonable approach.

People in the News

John Freitag has taken a position as Program Manager for Research Facilities at the Office of Naval Research. John moves to ONR from the University of Rhode Island where he headed their Technical Services group.

UNOLS Activities at the Fall AGU Meeting San Francisco, CA

Thursday, December 5, 2002

DEep Submergence Science Committee Annual Planning Meeting

The submergence science community is invited to attend.

The meeting location and agenda will be posted on the UNOLS Website when available: <http://www.unols.org/dessc/>

Friday, December 6, 2002

Arctic Icebreaker Coordinating Committee Town Hall Meeting

The meeting location and agenda are to be determined and will be posted on the UNOLS website: <http://www.unols.org>.

December 7-10, 2002

UNOLS Booth at Fall AGU

UNOLS will have a booth at this year's Fall AGU Meeting in San Francisco, CA. The booth will feature UNOLS activities related to Fleet Renewal. Drafted Science Mission Requirements (SMRs) for future vessels will be available for community review and feedback at the booth. Please visit and share your thoughts.

Additional information will be posted on the UNOLS Website:
<http://www.unols.org>

2002 UNOLS CALENDAR OF MEETINGS			
Meeting	**Start Date**	**End Date**	**Location/notes**
AICC	Sep 23	Sep 24	NSF, Arlington, VA
Scheduling	Sep 25		NSF, Arlington, VA
FIC	Sep 25		NSF, Arlington, VA
Council	Sep 26		NSF, Arlington, VA
UNOLS	Sep 27		NSF, Arlington, VA
RVTEC	Oct	Nov	University of Hawaii
INMARTECH 2002	Oct 07	Oct 11	JAMSTEC, Japan
RVOC	Oct 15	Oct 17	Moss Landing (MLML & MBARI)
MTS Oceans 02	Oct 29	Oct 31	Biloxi, MI, MTS Oceans 2002 Mtg.
DESSC	Dec 05		AGU Fall Meeting, San Francisco
AICC – Town Hall	Dec 06		AGU Fall Meeting, San Francisco
UNOLS Booth	Dec 07	Dec 10	AGU Fall Meeting, San Francisco

I would like to thank all who contributed information and articles for this issue of the Newsletter. Articles are always welcome and encouraged. Copy can be submitted via mail, FAX or e-mail.

Thank you, Annette DeSilva - Editor, UNOLS News

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