

UNOLS Council Meeting

Thursday, September 21, 2000

Room 1235 - National Science Foundation

Arlington, Virginia

Appendices

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Call the Meeting - Bob Knox, Chair of UNOLS, called the meeting of the UNOLS Council to order at 0830 and welcomed everyone to the meeting. Introductions were made around the room and a list of attendees is included as [Appendix I](#).

The meeting followed the agenda attached as [Appendix II](#).

Accept Minutes: The minutes of the June 2000 Council meeting were reviewed prior to approval. Tom Royer questioned whether or not the minutes on page 19 should reflect that in addition to the Fleet Improvement Committee (FIC) and the National Marine Fishery Services (NMFS) the UNOLS Council had endorsed the University of Alaska proposal for design of an ALPHA HELIX replacement. The minutes were based on the fact that FIC and NMFS had sent actual letters of endorsement. No other changes were noted. A motion was made, seconded and passed to approve the minutes as written.

COMMITTEE REPORTS: Bob Knox provided summaries of the written reports submitted by Committee Chairs prior to the meeting. ([Appendix III](#))

DEep Submergence Science Committee (DESSC): The report was summarized with no further discussion.

Arctic Icebreaker Coordinating Committee (AICC): The icebreaking trials and science system testing of the USCGC HEALY was very successful. Jim Swift added that the Teachers Experiencing the Arctic and Antarctic (TEAA) program was one of the best vehicles for bringing the science program to the public that he had ever witnessed because of the participants' perspective as teachers. He also reported that AICC would continue the community meetings at AGU. Lastly, he reported that he plans to step down as Chair and has nominated a replacement to the UNOLS Chair. Jim was thanked for carrying out the successful start up of the committee and completing the science testing.

Research Vessel Technical Enhancement Committee (RVTEC): The upcoming meeting will be held at Lamont-Doherty Earth Observatory (LDEO) on October 18, 19 and 20. RVTEC members participated in the HEALY science trials and felt that they have gone well. John Freitag reported that they will elect a new chair in October and he noted that this would be his last Council meeting. He has enjoyed his time with the Council. Bob Knox thanked John for his service and congratulated him on a job well done.

Research Vessel Operators' Committee (RVOC): Meeting plans and activities during the past year were reviewed. Paul mentioned the efforts by Matt Hawkins (University of Delaware-UDel) and others on developing standard research vessel specifications and designs. He reminded everyone of the UNOLS web site which makes these draft specifications available for review. Paul will also be stepping down from the RVOC and Council and has also enjoyed his time on the Council. Paul was thanked for his many years of service to RVOC and the Council.

Ship Scheduling Committee (SSC): The scheduling report included a review of the increase in demand and the fact that not all projects may be accommodated in the coming year. How to determine which programs will have to be deferred is still to be worked out. Follow-on work to finalize schedules will take place over the next two weeks.

Fleet Improvement Committee (FIC): The FIC report reviewed activities designed to stimulate planning for the replacement of intermediate ships and the workshop held at Oregon State University (OSU) to look at future research facility needs. The sense from the workshop that Bob came away with was that the need for ships would not diminish and may in fact increase despite the development of new technologies.

Agency Reports

National Science Foundation (NSF) - Mike Reeve reported that Mike Purdy would be leaving NSF to go to LDEO at the end of November. Margaret Leinen's office will start a search for his replacement in the next few weeks. August 31st was the deadline after which all proposals must be submitted using Fastlane and this will apply to Facilities proposals due on October 1st.

Mike Reeve also reported on the budget outlook for next year. Copies of his viewgraphs are included as [Appendix IV](#). He presented a graph of the ten-year trends in the Geoscience budgets, including an inflation-adjusted budget that is relatively flat. This year's request to Congress was for about a 17% increase for NSF and within Ocean Sciences the requested increase was 22%. The OCFS request was for a 27% increase. The house version of the NSF appropriation included only a 3% increase while the Senate version was at 10.3%. Out of conference it is expected to end up between 3.5% and 10.5% and probably closer to the Senate mark. (See comments from Terry Schaff of CORE below.)

The FY 2001 budget to Congress included the following areas of ocean science emphasis:

- Earth cycles
- Carbon Cycle
- Water Cycle
- Molecular biology of the ocean
- Sustained time series observations
- Data assimilation and modeling
- Increasing grant size and duration.

FY 2001 OCFS (Facilities) priorities are:

- Continued support of the academic research fleet to meet the needs of NSF sponsored merit reviewed research projects.
- Enhancement of technical and shared use instrumentation support for research projects to reduce financial and management burdens on research project awards for sea-going scientists.

- Continued maintenance and ship-improvement programs to provide a modern and efficiently operated academic research fleet.
- Increased support for quality improvement activities in operations and technical services programs.

Other activities of interest to the ocean science community are:

- The US Oceans Act of 2000, which will establish a 16-member National Ocean Commission to formulate recommendations for a national ocean policy within 18 months.
- The Ocean Exploration Panel appointed by the President is holding a Monterey conference, Turning to the Sea. They are to report back to the president with their recommendations for a national strategy for exploring the oceans within 120 days.
- Preparation of a decadal report on the future of ocean science research. Peter Brewer and Ted Moore will report on their findings next month (10/00).
- *Illuminating the Hidden Planet* This is an OCE sponsored report by the Ocean Studies Board on sea floor observatories. It is available from NSF and the National Academy Press.
- NOPP Oceans.US office US National ocean observations system.

Dolly Dieter additionally reported for NSF on Ship Operations and Shipboard Scientific Support Equipment (SSSE) program activities. She reported that the 2000 budget was slimmer than normal for equipment in order to cover operational costs. To economize, they managed to put together some group purchases under the SSSE program. LDEO made a group purchase of immersion suits for five institutions and UDel is working on a group purchase for research vans using standard specifications. They are still working on some of the details of the specifications and may look at actually purchasing some pooled vans to be shared among all operator institutions.

NSF has been adding money to the operator budgets specifically targeted at training to be used in the current year. This has gone towards Standards of Training, Certification and Watch keeping (STCW) training as well as other more operational types of training. This is geared towards improving the abilities of the crews and to make improvements to the ship's operations. Additionally, by including the training funds in the regular operations proposals the costs are spread across all users by being included in the day rate.

NSF has funded the design study for the ALPHA HELIX replacement ship to the University of Alaska.

Sandy Shor added that the Technical Services program is also emphasizing training, quality improvement and improvement in technology.

Office of Naval Research (ONR) Tim Pfeiffer gave a brief report on ONR ship time requests and noted that ONR funded operations are up to \$10M. About one half is 6.1 research and the other is half is 6.2 applied research. The AGOR 26 program is continuing in the design stage and has been delayed by four months. Delivery is now expected in early 2002. A written ONR summary report is provided as [Appendix V](#).

National Oceanic and Atmospheric Administration (NOAA) - Beth White reported that NOAA has been struggling with the appropriations process. Bids for the Fisheries Research Vessel (FRV) have been submitted and are being evaluated. Sustainable Seas has been smoothed out and has become an exciting and successful program. The two separate UNOLS Memorandums of Understanding (MOUs) with Oceanic and Atmospheric Research (OAR) and NMFS will be joined under one umbrella MOU that will be reviewed and signed at a later date.

Oceanographer of the Navy (O96) - Pat Dennis reported on recent personnel changes in the Oceanographer's office. The new Deputy to the Oceanographer, RADM Richard West, is Captain Chris

Gunderson. He relieves Captain, now RADM (Selected) Tom Donaldson who will become Commander Naval Meteorology and Oceanography Command (CNMOC) in November. Captain (S) Dan Soper will relieve Captain Houtman as director of the Resources and Requirements Division.

He also summarized the Naval Oceanographic Office's (NAVO) use of the UNOLS fleet over the last four years. During this time the Navy has used 15 ships at 11 institutions and has spent approximately \$25M. This is remarkable in that it is approximately the equivalent of seven ship years of requirements that might not otherwise have been accommodated. The broad range and distribution of the UNOLS fleet has contributed to the success of this program. Future requirements will be determined but funding is always uncertain. In recent years Congress has added the money to the budget to support these needs. The Navy needs this support to continue as an addition to their budget so that it does not affect their ability to fulfill their remaining core needs using NAVO's own deployed fleet of vessels.

Naval Oceanographic Office (NAVO) - Gordon Wilkes further reported for NAVO that 205 ship days were scheduled for this year. Next year 310 days are planned, but it depends on if they can get all of the ship time that has been requested, in particular the large ship operations. Bob Knox has pointed out that all this support by UNOLS has been good, but not perfect. There was one cruise in Onslow bay that will need to be redone since the survey data was not adequate for their needs. There is some room for improvement.

United States Coast Guard (USCG) - Jonathan Berkson reported for the Coast Guard. ([Appendix VI](#)) The success of HEALY testing is the big news. HEALY testing in ice exceeded design criteria. Science equipment performance was very good. The Coast Guard will evaluate what help they will need with technical services. The first HEALY schedule planning meeting was held at NSF and determined the schedule for 2001. Programs will be carried out in the Eastern Arctic with Peter Michael (Univ. of Tulsa) and Jim Bellingham (MBARI). The Michael cruise is a two-ship operation with the POLARSTERN and involves coring and dredging. The Bellingham cruise involves the operation of AUV's from HEALY. These two projects will present different challenges for the HEALY and its crew. The Coast Guard, the Principal Investigators (PI's), AICC and the funding agencies are all working together to help ensure success. Jim Swift added that the POLAR STAR and POLAR SEA are going to benefit from the presence of HEALY and the increased involvement of the Coast Guard and AICC in the science operations of the icebreakers. The Captain of the POLAR SEA took part in the recent AICC meeting and they are anxious to be part of the Coast Guard's increased efforts to serve ocean science in the Arctic.

Department of State - Tom Cocke reported that the Foreign Clearance office has implemented new software to process clearances. Liz Maruzak is now working on the software to process foreign vessels into US waters and port calls of Public Vessels.

Consortium for Oceanographic Research and Education (CORE) - Terry Schaff provided the CORE report. ADM Watkins has submitted his letter of resignation as president of Joint Oceanographic Institutions (JOI) and he also plans to step down as president of CORE. His replacement has been hired at JOI but the CORE position remains open. He will stay on at CORE until a suitable replacement can be found. Terry asked that anyone with recommendations for qualified candidates make those known to CORE.

Bob Winnokur will also leave CORE and become CEO of Earth Satellite Services Corporation on Oct. 15. Pat Dennis will become the Chief of Staff at CORE on that date and will be leaving his positions at ONR and the Oceanographer's office.

Terry also had some comments to make about the current congressional appropriations activity. The Navy appropriation as part of the Department of Defense is one of a few budgets that have been passed and it includes five million dollars added by the Senate and approved by the House for UNOLS support of NAVO. It will continue as long as it is useful to NAVO, is added as an addition to the Navy budget and the oceanographic community continues to ask for it. The input from the community has come through CORE.

The NOAA budget for Data Acquisition was given a \$2 million increase in the Senate budget over the

President,s request to build the NOAA Corps and to increase the days at sea. This money will support programmed pay increases, additions to the NOAA Corps and will cover the increase in fuel costs. The Senate also added \$6.5 million for the acquisition and refurbishment of Navy vessels, approximately \$8 million for the acquisition of the Fisheries Research Vessels and \$8 million for the refurbishment of an existing vessel.

This year the NSF budget was attached to the Treasury funding bill so that it could be approved earlier than normal. This action was defeated yesterday (9/20/00) and the budget is still up in the air. The minimum that NSF will get is a 7% increase and could go as high as 12%. It depends on how high it gets placed in the President,s priorities. There is an increase in the number of Congressmen that are pushing to double the NSF budget in the next five years. To date 43 members of the Senate have signed a letter to support this goal. This might even lead to a higher increase for this year.

There is an earmark in the Senate budget of approximately \$1M for the design and model testing of the ALPHA HELIX replacement.

Beth White amplified on the increases in the NOAA budget. The one million dollars were added to NOS and NMFS data acquisition budgets for increased fuel costs and salary increases.

Tim Pfeiffer added that although they were not happy to lose Pat Dennis from the ONR staff, he was pleased with Pat's new position at CORE and the benefit that it would have to everyone.

Bob Knox followed up on the value of the NAVO use of the UNOLS fleet and that it needs to continue as a plus up to the Navy budget. This requires that members of the oceanographic community make a clear case for this with Congress.

Terry mentioned that this issue did not come up at the CORE board meeting this past spring and this was a surprise. In this year, the fact that this issue was not raised and was not on the list of CORE priorities did not affect the outcome. This may not be the case in the future and it is important that the Deans and representatives to the CORE board are aware of the NAVO support need and that it is on the priority list. The setting of CORE priorities takes place during the March CORE Board meeting.

Larry Atkinson asked about the Navy's nuclear research submarine NR 1 and its potential replacement, NR 2. Pat Dennis and Dan Fornari gave some background on where the Navy is going with this. NR1 is due for refueling or decommissioning by 2012 and the Navy is considering the replacement option. A meeting co-chaired by Dick Pittenger with scientific participation was held, as the Navy considers the operational Navy's needs as well as the needs for oceanographic science. There is a lot of interest from Arctic researchers. Info on NR1 is available on the web at:

<http://www.chinfo.navy.mil/navpalib/factfile/ships/ship-nr1.html>

Public Outreach Programs from UNOLS Vessels - Bob Knox introduced Dan Fornari of Woods Hole Oceanographic Institution (WHOI) who gave a presentation on the Dive and Discover program.

Dan began by reporting briefly on High Resolution Gravimeters that are available from WHOI with support from NAVO and NSF.

The Dive and Discover program was funded through a proposal submitted by Dr. Susan Humphris and Dan Fornari to the Awards for Geosciences Education (AFGE) program at NSF with cost sharing from WHOI. Lisa Rom is a contact person for this program in Ocean Sciences. This type of program answers the need to provide the public with good information on at-sea research activities being funded with public dollars. www.divediscover.whoi.edu is the web address for the program.

Some of the criteria for the program was that it had to be real time, it had to be stimulating with good graphics and it had to be clear for the lay audience. The writing was targeted at the middle school level to make it appropriate for a broad audience. This is not always easy for scientists and therefore it is helpful to engage professional writers or educators at this level.

Dive and Discover is web-based expeditions to the seafloor. Susan and Dan have plans to conduct this program on a variety of cruises over the next couple of years with three cruises this year and three cruises next year. Dan reviewed the structure of the pages. Currently the pages cannot be printed directly from the browser because of the type of HTML code used to make the pages load quickly. They are working on ways to get around this such as making PDF files available for printing and use as classroom resource materials.

The structure of the web site was designed to let students go to various levels. There are dive logs, a calendar, descriptions and specifications for the ship, background information and in depth information about the details of the research. Every day they sent back a slide show of five to seven photos that were posted to the web site. Another important feature was interviews with crewmembers, technicians and scientists. Dan emphasized the importance of the input from the marine crews. It allowed kids to learn about sea-going professions, which was a very positive asset. The whole program had the additional benefit of involving the ship's crew and their families in the research and day-to-day life taking place on the cruise.

The Webmaster is developing template pages that could be used by other vessels when they are completed for similar outreach web pages. By the end of next year they should be able to provide the code that forms the framework for the Dive and Discover pages.

How successful were they? With more than 490,000 hits on their web page they feel that they were very successful. What made this system possible is the SeaNet program. There has been 500 megabytes of data transferred from UNOLS vessels with SeaNet and about 80% of this has been from Dive and Discover. [Appendix VII](#)

Dan opened the floor to questions. He was asked what the level of effort was for this project while at sea. Dan's effort was around two hours a day with an assistant and three hours when on his own. A lot of this could be delegated. The level of effort for the HTML programmer is around four hours per day depending on the complexity of the material being sent. SeaNet and shipboard technicians made all the links and updates of the website very automatic. The onshore website was updated within a half a day and the shipboard, mirrored site, was updated within 24 hours.

Costs involved transmission charges which averaged \$3-\$4K/cruise for satellite costs using SeaNet. The compiled pages were sent back to the ship so that the site could be mirrored on board ship. With an on board HTML processor the web pages could be created at the ship and then transferred in one direction only. There is also the potential for classroom interaction in real time through SeaNet but this would get expensive. Real time chats with students is possible, but this has been done with phone links.

One of the key differences between this program and the Jason Project is that it is not scripted. It is basic research with an educational outreach component. They were well engaged in Massachusetts, Louisiana and California. They worked through the NSF education programs in reaching schools. Susan took the lead on this. A question was asked if there were any teachers involved in the project? There were no teachers on board, but last summer and fall the system was beta tested with the help of teachers. They have received a lot of feedback. There is a whole group of people in adult education programs that this appeals to.

Doing something like this requires an enormous amount of energy. Not every scientist will want to participate but the goal should be for every operator to have the capability should scientists want to take part in this type of outreach.

Jim Swift mentioned that the Teachers Experiencing Antarctic or Arctic (TEAA) program on the HEALY was very successful because the teachers were on board and wrote the text that was sent ashore with pictures for their web sites. This took the workload off the science party.

Dan emphasized that the technical support on the ships is quite capable and can handle the technical aspects of this effort.

Brian Taylor commented that the ODP program has been doing this sort of public outreach from the drill ship for a number of years.

Research Vessel Clearance Issues - Bob Knox reported on the resolution of some sensitive clearance issues with regards to the ASIA-EX program. The use of a Taiwan Research Vessel will relieve some of the potential problems in the South China Sea and clearances in the East China Sea will probably proceed as in the past with Japanese and Chinese approvals.

Another clearance issue surrounds the planned cruises for the Littoral Warfare and Air Defense Command (LWAD). LWAD clearance issues for next year involve work in the Exclusive Economic Zone (EEZ) of Japanese waters. This was reviewed at the State Department on September 20 and it was determined that in this case there is very little probability of problems from Japan if any UNOLS vessels take part in this exercise with out a research vessel clearance. By no means does this mean that a routine policy has been established and that each case in the future must be evaluated from scratch on its individual merits.

Quality Improvement Study - Report by Jeff Ford of Europort, Ltd

Bob Knox introduced the topic and Mr. Ford. [Appendix VIII](#) contains a copy of Jeff Ford's viewgraphs. Mr. Ford and his company conducted a brief, one-week survey with site visits of three UNOLS ship operators. These were WHOI, the University of Rhode Island (URI) and UDel. This survey was the basis for his report on quality and safety management programs for the UNOLS fleet. They looked at quality management, fleet efficiency, and measures to reduce fleet downtime. The report is a draft and they would appreciate any comments. He reviewed the major key issues. All of the staff that they met with were fully committed to quality but have some areas where improvements and additional work is needed.

Key issues:

- Prove it you must document what you do.
- International Ship Management (ISM) Code compliance and timing
- STCW it is all about training.
- Culture change no blame, team culture, continuous improvement.
- Raising the Profile of ship operations within operating institutions.

PROVE IT Ship operators must explain what they do and they must define this process. Everyone on the staff must know how to do this. This involves planning and establishing targets. They must have performance measures for monitoring their progress. It is about more than meeting their targets. They must prove this they must produce and use the procedures.

ISM Code Accountability, compliance and timing. Ship owners will retain certain legal responsibilities. This is a liability issue. The ship operators must be accountable. There is no way to pass the buck and all must fully understand the documented safety management. Compliance is required this will involve ABS as an external auditor. Ship operators must identify future risks. How do operators deal with new science equipment? Timing time to comply with the ISM Code is rapidly running out. The required Safety Management Systems must be tested, audited and approved by July 2002. No ship over 500 tons will be allowed to go to sea unless they are in compliance. A Sea Technology article indicated that the US academic research ships are at 30% compliance now. This will impact the large ships (>500 GRT). Smaller research vessels may be affected in the future.

STCW The international convention on Standards of Training, Certification and Watchkeeping can apply to operators, technical support staff, and scientists. At NERC in the U.K., U.S. scientists were required to complete STCW basic safety training before being able to join a research cruise. They had to take a 3-day course. Is this going to apply to US operations? In the UK scientists are not allowed to operate winches

and are more limited in the type of work they do on deck.

Culture change A culture change will be needed in the way we do things. Culture is what is audited, not just the documentation. Changes are required. It takes time, effort and resources. In the UK that took four years to achieve. They had three ships and are now down to two. Jeff asked how we would deal with change management in the UNOLS fleet?

Profile Where does ship operations fit in the organizational structure of the parent institution? Sometimes ship operations are just considered to be part of the support facilities within an institution. This means that the safe operations of the research vessels and compliance with ISM may not get the level of attention necessary for compliance.

Training issue Training needs must be reviewed as a group and individually. It applies to every ship in the fleet. Every manager needs to be aware of the implementations. The development of a national database of technical skills is recommended.

In summary there is an opportunity for operators to prove to themselves and others that they have the capability to provide a superior service and facility. Benefits will come in time and be very beneficial to the system. It can result in better insurance premiums and help to reduce the risk of insurance claims.

Jeff thanked Bob for the opportunity to speak. He hopes his talk will spark action. Bob opened the floor for discussion.

Question from Tom Shipley: Tom stated that most of the presentation was about safety but wanted to know how that applied to a broader description of quality. How does this affect productivity if we add a lot of bureaucratic overhead? Jeff stated that it is very important to keep the requirements simple and straightforward so that you don't go over the top with bureaucracy. By simply creating a "culture" of quality management, morale and productivity goes up.

Barbara Prezelin asked if an organization does a self-assessment and finds a range of areas that need to be addressed, "how do they prioritize these issues? Jeff responded that there should be a high priority on involving the staff so that they take ownership in the process. This will also help to prioritize the areas that need to be worked on.

Bob asked about the heterogeneous nature of the U.S. scientists when it comes to certifying the training and qualifications of scientists. Jeff responded that creating a standardized approach to achieving standards and procedures that can then be localized would be the best approach because the key elements will be similar and you would only need to deal with individual differences.

Bob asked how the NERC organization deals with making sure that new scientists are trained in STCW. The answer is through pre-cruise planning and by sending them to a certified school locally.

Dan Schwartz reported that at the University of Washington (UW) there are an increasing number of scientists that will be working on foreign vessels. These people are starting to be required to complete the basic STCW maritime safety training.

Sandy Shor asked if Jeff had reviewed the UNOLS safety record. Jeff mentioned that he did not have the time, but they were aware that UNOLS had an excellent record. This is not the issue under ISM. The issue is that regulations require you to prove that you have a culture and system in place and that you are following it. This is then audited and certified.

Charlie Flagg asked about how the roles of technicians could clearly be defined and documented since there is such diversity in their work. Several people responded that you would want to be careful to define things broadly and simply so that you did not create unmanageable levels of bureaucracy.

Larry Atkinson was concerned about the one ship operation how does the small operator deal with this? Dan indicated that it has resulted in a realignment of responsibilities to some extent. It is a work in

action. UW is in the process of actively training their internal auditors. This is a difficult process when the ship is busy. Another resource for single ship operators is other nearby ship operators. In the case of UW, the Washington State Ferry System operators have been a helpful resource.

Paul Ljunggren said that LDEO had established with ABS a deadline of February 2002 to be ready for auditing their Safety Management System and it is going to be challenging to meet that deadline. RVOC will be considering whether or not to recommend having the entire fleet meet the requirements of ISM.

Tom Lee wanted to know if Jeff had a chance to review the post cruise assessment form? Jeff felt that this form fell short of providing the operators with the material needed for continuous improvement. Jeff indicated that the master's reports provide more information. Jeff was looking at this from an operations point of view. Mike Prince commented that the information that Jeff was recommending be collected seems to just analyze operational statistics. The post cruise assessment is to analyze the effectiveness of science operations. Jeff indicated that his list at the end of the report is designed to indicate what operations actually occurred. In any event, decisions would need to be made about what type of data should be collected to evaluate the effectiveness of operations.

Bob thanked Jeff for his efforts and report.

Quality of Service Discussion - Tim Cowles introduced the discussion with a review of what we have been doing to date in trying to define what the Quality Issue is for UNOLS. He discussed the Newsletter article (*UNOLS News*, Vol 17, No.2) and the web site. He then asked the Council what other actions they thought we need to take as a community. There was still a certain amount of uncertainty about what the true definition of the problem is and how we can best determine the focus of our efforts. There was a desire to have better data about where the community sees the need for improvements. Also of concern was the fear that efforts to achieve compliance with ISM and other regulatory mandates such as STCW would run contrary to the goals of improving service to science. Achieving a cultural change oriented to continuous quality improvement was also seen as a large challenge.

Bob Knox noted that the fleet review made it clear that science user comments and feedback need to be addressed. Charlie Flagg suggested that safe, efficient operations do not always result in science satisfaction. Mike Prince said that the question is "how do we merge the two compliance and support of science so that we achieve both goals?"

Tim Cowles stated that the science crew and the ship's staff are members of the same team. The team focus must exist from cruise planning to the execution of the cruise. But this still does not define the issue. How do we get data on the problem?

Patty Fryer suggested that we might need to have personal contact with the PI's by someone trying to assess the success of the cruise and the need for changes. That person could have a questionnaire to follow and would give the PI or scientist a chance to respond in detail. If the person doing this survey was another scientist it could be even more useful.

At their meeting the previous day, the Fleet Improvement Committee (FIC) prepared the following statement regarding the need to get input from a larger group than just the Chief Scientists:

"A better system of feedback from participants in scientific expeditions on UNOLS vessels is desirable. This would enable the operating institutions to assess the success or failures of the science programs that are related to vessel capabilities, outfitting or operations. The current reporting process that involves only the chief scientist does not always assess the problems or accomplishments that were encountered on a cruise. A possible remedy to this problem would be at least a questionnaire given to all cruise participants to request their post cruise responses to problems encountered. Electronic versions of the questionnaire could be resident on the shipboard information/data collection system."

Chris Measures elaborated that everyone needs to have an opportunity to reply, even the crew. Annette passed on a suggestion from Dan Fornari that there be an on-board suggestion form and/or an electronic suggestion box. Bob added that this should be structured in some way so that it can be easily compiled

and transmitted. Larry recommended that we use a test bed one ship. Bob Knox offered the possibility of using one or more SIO ships. FIC can work with SIO on this. Chris argued not to do this on-line but rather to hand it out in paper at the start of the cruise.

Mike Prince stated that getting feedback is just one aspect of a Quality Improvement program. Cultural changes are also needed. What is our strategic plan? Feedback is part of the overall plan. The fact that we can't get feedback indicates that we need a cultural change. A quality improvement program needs to be blessed at all levels. Everyone needs to be onboard.

There was a suggestion to add a couple of scientists as members to the RVOC and on RVTEC. The chair of UNOLS attends whenever possible and there are usually scientists from the host institution that attend, but they do not necessarily participate as if they were part of the group. How you formalize this and fund it is another issue.

Mike Prince and Sandy Shor have talked to Sam Jelinek of the NSF Innovation and Organizational Change program. She is contacting a list of people who may be interested in cooperating with UNOLS on a research project related to our Quality of Service initiative. Tim Cowles said that after looking at the Total Quality Management (TQM) literature he feels that it would be best if experts took this on. Tom Lee recommended that we hire an expert consultant to take this on and develop a quality plan. They could help with the survey activity.

Brian Taylor thought that there are a number of operators present at the meeting that could take on this issue of feedback. There is no reason why each operator could not take this on. Linda Goad stated that she has been taking courses in Six-Sigma and in her opinion we are trying to sample too much it should be more random. Others felt that a larger pool of responses would increase anonymity and could result in better feedback.

Barbara Prezelin urged that we get the Scripps Institution of Oceanography (SIO) crews involved in a trial survey system and emphasize the importance of it. Bob Knox asked if should we take the assessment forms and post them for everyone to respond? Should we revise the form? There are still several questions about how to proceed.

Tim Cowles emphasized that a total quality management system needs to be developed. It needs to be more than just a post cruise assessment form. Bob Knox mentioned that this is a major issue for RVOC and that he and Tim Cowles will be in attendance. Sandy Shor commented that he did not see this issue on the RVTEC agenda. John Freitag is adding it. Bob Knox and Mike Prince will be at the RVTEC meeting and will address the technicians about this initiative.

Long Range Fleet Planning and FIC - Larry Atkinson reviewed FIC activities and how they relate to long range fleet planning. See [Appendix IX](#) for his view graphs, which include the trend lines for the potential retirement of UNOLS vessels.

Some of the things that FIC is watching are the development, construction and operation of SWATH vessels. If these prove to be effective platforms then there could be dramatic impacts on sea going activities. Larry joked that you might be able to do oceanography without getting seasick.

FIC will monitor and stay involved with the planning for Regional and Local ships coming on line in the future. This includes the CAPE HENLOPEN, ALPHA HELIX and BLUE FIN replacements and the activities of the Regional Ship Operators group being led by Lee Black at Bermuda Biological Research Station (BBRS).

FIC will keep track of the planning process for potential replacement of the Navy's NR1 research submarine.

FIC will be monitoring and considering the need for revisions to the Science Mission Requirements (SMR). All of the currently existing SMRs are posted on the UNOLS/FIC web page. Most of these SMRs were produced in the late 1980's and could probably stand updating. This process will probably take place

as needed and may be initiated by institutions, regional groups or other partnerships that are planning on vessel replacements. An example is the CAPE HENLOPEN replacement committee at the University of Delaware that has taken the existing SMRs and has used them as the basis for developing an SMR that meets their particular need. This SMR will be posted for the use of others.

The FIC page will be reorganized to improve the flow of information to the community regarding their activities and to encourage feedback.

Larry then discussed how these FIC activities are relevant to the fleet renewal process. As mentioned above, they are reviewing and ensuring access to past documents such as fleet plans and SMRs. They are taking steps to improve the information available through the web page and other venues. FIC has taken steps to increase community awareness of the need for fleet renewal and planning. This includes an article in EOS and a "Soapbox" article in Sea Technology. These articles coupled with the FIC web page focuses the communities' attention on fleet usage trends and the projected future retirement of UNOLS vessels.

FIC will work on what they will call a Fleet Renewal Plan rather than a replacement plan. The purpose will be to provide a plan with a rationale that will be the basis for informed debate and decision making. The process will include announcing to the community the intent to do this and then survey them for opinions and input.

FIC has some information needs to develop this plan. They will need more information on the constraints affecting design of replacement vessels such as crew size costs, inspections, regulations and savings from automation. They will also be looking at usage projections by size vessel and region, the overall trend for large ship use and the impact of the growing fleet of local vessels.

FIC currently plans to spend time in a "locked door" session at the February meeting to get the writing done. The locked door refers to keeping people in, not out of the room. Some other considerations include science requirements, design requirements, the rates and types of vessel replacements, acquisition methods, operator selection methods, technical upgrades and the methodologies to determine lifetime, refits and critical items for research vessels.

These are the activities that FIC plans to do in the next few months. They will try to look out 10 to 20 years. Science directions will weigh into this. FIC has looked at the futures reports, but didn't get much out of them. There was a need for a more in depth look at these reports and this is what the workshop at Oregon State was able to make some progress on.

Tim Cowles reported on the NSF Workshop to Address Future Scientific Needs in Oceanography in the Context of Academic Fleet Capabilities.

Tim's report is outlined in [Appendix X](#) and includes the following goals for the workshop.

- Provide science "needs framework to inform the vessel replacement process
- Identify approaches that may be used to address science questions over next two decades
- Identify platform capabilities required to meet science needs
- Examine the role of vessels and trends in vessel use in context of other observational platforms

The workshop participants tried to look out as far as possible and project needs for the next two decades. Major science themes were identified as a framework for looking at facility needs. A key example would be the need for better observations in selected environments such as the coastal oceans, ice-edge and ice-covered areas, in high-latitude open ocean, on the sea floor (mapping, spreading centers, sediments), at the air-sea interaction and in benthic boundary layers. There were also several areas of interdisciplinary studies including expeditionary scale research, mesoscale/finescale/high resolution (time and space) studies, biodiversity, and coupled observation-modeling systems. Others include natural and/or deliberate

perturbation experiments and fixed location observations/experiments and long time series studies.

These areas of scientific observation and experimentation will have the following types of needs:

Ø Remote observational systems with robust sensor suites (limited to a few variables). This is already moving quickly to meet the needs of the next two decades.

- Satellites (color, temp, winds, currents, etc)
- Long-term moorings
- Drifting (single depth and vertically cycling) platforms
- Autonomous vehicles

Ø Vessels to provide deployment/recovery/service for moorings, drifters, & vehicles.

- Improved capabilities for handling untethered objects
- Acoustically quiet
- Improved heavy weather capabilities
- Increased use of AUVs, ROVs and submersibles
- Some new vessel construction probably needed here

Ø Vessels that function as primary observational and experimental platforms

- Improved capabilities for handling untethered objects
- Acoustically quiet
- Improved heavy weather capabilities
- Undisturbed sampling in/around air-sea interface
- Increased use of AUVs, ROVs and submersibles
- Some new vessel construction probably needed here

Ø Vessels that can meet the expanded needs of the marine geology community

- Increased coring capacity (expanded site survey needs)
- Sea flooring mapping
- Seismic systems
- Increased use of AUVs, ROVs and submersibles
- Some new vessel construction is needed here.

Ø Global high-bandwidth communication capability (transition from cell phones to Internet)

- Between remote sensor suites and land-based or ship-based laboratories

- Vessel-vessel and vessel-laboratory data communications
- Commercial technological advances can be moved quickly into ocean science this is already in progress
- Ø Rapid response capability within the oceanographic fleet (5 yrs out?)
- Have vessels/remote systems that are available to respond to "events detected by observational program
- Implies excess capacity will be available
- Places a new set of challenges on ship scheduling system

Tim finished by summarizing some expected trends and their implications.

- New observational tools (AUVs, etc) extend the reach of the fleet they will not replace nor reduce the fleet.
- We may need sets of specialized vessels general purpose vessels cannot meet all the expected science needs.
- Expanded time/space scales of resolution for observations will lead to science demand for "event-scale studies of ocean processes particularly as coupled models lead to better predictions/forecasts.

FOFC Long-Range Plan - Mike Reeve gave a brief report on the long-range fleet planning process that the Federal Agencies are engaged in. This is being done primarily by a subset of the Federal Oceanographic Facilities Committee (FOFC) that includes NSF, ONR and NOAA.

They have met and held a one and a half-day retreat to start work on the plan. They have been waiting for Tim's report and other information. They hope to have a draft report ready for the FOFC meeting in November. They will take whatever guidance they get from FOFC and share this guidance and draft report with FIC. This would be part of their plan to get broad community distribution for comment. They will refine the plan and get approval from FOFC for presentation to the National Oceanographic Research Leadership Council (NORLC) in the spring.

Larry's view is that FIC would proceed in a parallel fashion over the next six months and that their efforts can be merged not too far down the line. There followed a discussion on the capabilities presented in Tim's report. Tim noted that the workshop re-emphasized the need for planning and probably for more ships, not less. Patty mentioned the pervasive theme that interdisciplinary work needs to be carried out in the future and this should be considered in planning future vessels. Tim talked about the continuing need to capture large volumes of water used to develop and calibrate new sensors. Tom Lee asked if the need for high-speed vessels was considered.

Jeff Ford mentioned that business looks at financial return when considering new assets. There was some discussion about how the research fleet was the opposite problem.

Chris measures mentioned that ship construction was a low frequency activity and science funding is a high frequency activity. He asked how much excess capacity you would need to keep the high frequency work in line with the low frequency of ship construction and replacement?

Discussion on ship scheduling issues in 2001 - There is more ship time for large ships in 2001 than last year with some of it work deferred from previous years. The schedules for the large ships, particularly in the Pacific have not yet been settled. It is not as large a problem with the smaller and intermediate vessels, some of which still have weak schedules. One ship, EDWIN LINK, is planned to be in lay-up next year. At the scheduling meeting on the previous day, it was not possible to resolve all the issues and arrive at final schedules.

Brain Taylor asked how the scheduling process worked. In particular, he wanted to know if there was full participation in the September meeting. Bob Knox indicated that although we would have liked to have had more closure earlier in the year, this was simply not possible this year. Scheduling assets such as the ROVs, and coordinating multi-ship cruises was confounded by changing requirements and unknown funding status for some major cruises.

There was a discussion regarding whether or not the September meeting should be open to all schedulers or some subset. Sandy Shor indicated that there is still a perception from the community that these things are done behind closed doors. Brian suggested that we make it mandatory that large ship operators attend. Bob indicated that these are points well taken and the process will continue to be examined for improvements. He also plans to put out a letter to the community to highlight some of the complexities and challenges of the scheduling process.

Nominating committee - Bob introduced the subject of elections to be held at tomorrow's annual meeting and noted that there are a number of terms coming to an end. Bob recognized the efforts of the outgoing council members, Tom Royer, Barbara Prezelin, Paul Ljunggren, John Freitag, and Jim Swift for their service on UNOLS Committees and the Council.

The nominating committee, chaired by Charles Flagg, has looked at the nomination process and is recommending changes to the election process for Chair of UNOLS ([Appendix XI](#)). There were many nominations for the general council slots and they have put together a slate with three candidates for each open position. For Vice-Chair there were initially no nominations but in the end they were able to nominate two qualified candidates. In the case of the Chair, the committee was unable to find any candidates other than the incumbent. There was more than one widely published call for nominations and the committee made calls to all UNOLS representatives. Several suggested nominees were contacted, but none were willing to stand for election. Some said that they didn't want to run against Bob Knox, whom they felt was doing a good job. The point was also made that it was essential that candidates for Chair need to have a familiarity with UNOLS activities. The role of Chair requires an extensive knowledge of UNOLS and the issues before it. The recommended change is to move to a process similar to that used by several of the Scientific Societies such as AGU and MTS. This would involve changing the Vice-Chair position to a Chair-Elect who would move up to the position of Chair after two or three years. We could also institute a Chair-Emeritus position to retain the expertise of this person for another term. This process would encourage well-qualified, highly respected scientists to serve in a leadership role for UNOLS even if they had not previously been on the Council. This process would make the election for Chair-Elect (Vice-Chair) a real contest each two or three years and would eliminate the need to find a candidate to run against an incumbent UNOLS Chair.

Barbara Prezelin asked if there would be any mechanism to challenge the ascension of the Chair-Elect to Chair. She also questioned whether or not the Emeritus Chair should be a voting member of the Council.

There was a discussion on the length of terms. MTS uses two-year terms and has an honorary two additional years for the past chair. The recommendation was for three-year terms, but this could mean as much as a nine-year obligation, although the last three would be somewhat voluntary.

Bob Knox recommended that he work with the nominating committee and the UNOLS Office on the correct wording for a change to the charter incorporating the recommended change. This recommended change would be reviewed by the Council and then presented to the UNOLS membership.

As noted above there will be three candidates on the ballot for each of the open Council positions. Because a majority is required to determine a winner there exists a distinct possibility that one or more run-off elections will be needed. Bob Knox reviewed a suggested run-off procedure whereby UNOLS representatives would rank order their choices for Council candidates. If there were a need for a run-off in any race the ballots cast for the third place candidate would be counted according to the second ranked candidate on those ballots. Everyone agreed to present this as the recommended process at the annual meeting.

WALTON SMITH application for UNOLS vessel status - Bob Knox read the findings from the report

of inspection on the WALTON SMITH, which found the vessel in compliance with UNOLS standards. A motion was made, seconded and approved to make the WALTON SMITH a UNOLS Vessel.

Meeting Plans and Office Budget - Mike Prince introduced the subject and how this relates to the charter party agreement (CPA) and the office budget. The original draft of the CPA strictly specified the number of meetings however the charter specifies that there would be a meeting in conjunction with the annual meeting and two others for the Council. The final version of the charter is less strict but still includes a clause requiring the Office to work towards reducing the number of meetings by using alternative means when possible for conducting UNOLS business. Barbara indicated that meetings are necessary and very good for communications and it would be hard to replace them. It was suggested that the agency representatives not always be required to attend the meetings. There was also a suggestion to have the meetings in less expensive areas. Many felt that it is a good idea to have the meetings moved around to different locations. One of the benefits of seeing other institutions is giving them a chance to see how UNOLS conducts its business. We need to consider carefully how we conduct our business. The agenda before UNOLS should drive the meetings but we still need to consider the budget ramifications and time commitments necessary to conduct our meetings. It would also be helpful to set dates early in the process. After the Council and the committees have considered their needs for next year the office will need some specific dates and meeting requirements in order to plan the proposed budget.

Bob Knox let everyone know about Ken Palfrey's passing and that flowers were sent on behalf of the community by the UNOLS office.

Seismic issues - Tom Shipley has reported on these issues in past meetings and indicated they are considering an EOS and Sea Technology article. There were recommendations to develop one or more "facilities" for seismic data acquisition and there may be movement on this in the future. No UNOLS action is needed at right now but we will be kept informed.

Acoustic Doppler Current Profiler (ADCP) Charlie Flagg reported that there would be a phased array demonstration unit at URI that will be compared to the existing narrow band unit. Within the last month, Tom Rossby has been on the OCEANUS where he ran the narrow band and phased array ADCP's simultaneously. Frank Herr from ONR will be involved. John Freitag reported that the manufacturer (RDI) no longer supported the narrow band ADCP. Most people feel that the phased array will be the replacement. URI will get their instrument by the middle of next month. The narrow band will be modified by RDI so the two can run sequentially during the testing. They had hoped to have it analyzed before this time, but it was not possible. This should help to determine if the phased array would be a viable replacement for the narrow band ADCP. Sandy expects about five or six requests this year for phased array systems. Since these are \$100k each that is about all that can be supported at this time. Also, Robert Pinkel's sonar is being tested on REVELLE. On AGOR 26, the Navy has selected the Sontec system.

Ship updates:

SAVANNAH (Skidaway) - The ship was designed by Rodney E. Lay & Assoc. of Jacksonville, Florida and is now under construction at the Washburn & Doughty Shipyard of East Booth Bay, Maine. The yard is expected to complete their contract by July 1, 2001 at which time the ship will be sailed to Skidaway Institute of Oceanography (SkIO) in Savannah. The science labs will then be finished out and much equipment and electronics will be moved over from the R/V BLUE FIN. This work will be completed by SkIO staff with hopes of having the ship up and operational by the fall of 2001. Presently the Washburn & Doughty Shipyard is working a double crew on the R/V SAVANNAH and is ahead of schedule with much of the steel work completed, the engines are set on their beds and the generators are also set in place. If this pace continues, they may be a couple of months ahead of the schedule. The estimated cost of the ship now stands at \$ 3.4 million. Basic specifications are:

- LOA 91' 6"
- Beam 27'

- Draft 8'
- Horsepower 900
- Gross Tonnage ~300
- Cruise speed 12 knots
- Main Engines two Caterpillar model 3406E 450 hp @ 1800rpm
- Bow Thruster a 16" American Bow Thruster TRAC Series with 65hp - hydraulic motor

CAPE HENLOPEN replacement - The comments on the Preliminary Science Mission Requirements (SMR,s) have been received from FIC and have been incorporated in the final SMR,s without difficulty. The Delaware Research Vessel Committee (DRVC) has provided their comments. Delaware plans to finalize the SMR,s and begin development of the concept design in October and have it completed by late spring 2001 (April-May).

ALPHA HELIX replacement - Officially called the Alaska Regional Research Vessel (ARRV). They have recently held a preliminary design meeting and are working on the concept design. The hope is to have the concept design completed in the spring and then begin preliminary design. There is no modeling budgeted now. They are being funded for work on the preliminary design. WHOI is involved, as this may be a model for future intermediate vessels.

WHOI SWATH - The money is available to build the vessel. The concept design is on the web and the project is moving forward.

AGOR 26 - Brian Taylor showed the artist's rendition of the ship and reported that the science party would be between 30-32. Delivery has slipped to 26 January 2002, which will be followed by one month of mission trials. Science operations will probably begin in the 2nd quarter of 2002. [Appendix XII](#) shows a concept design.

SeaNet update - Sandy Shor reported that funding has been provided for another year and includes support for at least three new SeaNet installations. Hardware will have to be provided through funding directly to the operators or by using existing communications equipment. The operational group supporting SEANET has been reduced and no longer includes a commercial service provider. [Appendix XIII](#).

Winch and Wire Update - Jack is in the process of getting comments back from the authors for the revision of the Winch and Wire Manual. He hopes to have it done by the end of the year. There is a working group consisting of Rich Findley, Tom Althouse, Paul Ljunggren and Theo Moniz to work on establishing a maximum safe working load for UNOLS wires. Jon Alberts is starting a parallel effort to establish new specifications for a larger conducting cable. To some extent the criteria for maximum safe working load will have to be completed in order to finalize the specifications for a new wire. In the meantime we can work on defining what will be at the end of the cable.

DESCEND Workshop - Patty reported that the DESCEND page is up on the UNOLS web site <<http://archive.unols.org/dessc/descend/descend.htm>>. There is so much information that it is not cost effective to print everything in hard copy. There will be a glossy brochure summarizing the results of the workshop. She also plans to approach the agencies for support to conduct a follow-up technical session.

UNOLS/NOAA MOU - Bob Knox reported that he will sign the MOU with the National Marine Fisheries Service (NMFS) and that this MOU and the one with OAR will be merged into one umbrella MOU to be signed at a later date.

UNOLS Brochure - UNOLS Brochure has been completed. Copies have been sent to all UNOLS institutions and additional copies are available from the UNOLS Office.

The meeting was adjourned just prior to 5:00 p.m. A reception was held at 6:00 p.m. for UNOLS representatives arriving for the Annual meeting.