UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS Council Meeting

Summary Report

Thursday, September 21, 2000

National Science Foundation, Room 1235
4201 Wilson Boulevard
Arlington, VA

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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 Ljunggren mentioned the efforts by Matt Hawkins (University of Delaware-UDel) and others on developing standard research van 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 Winokur 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 the 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 Web site very automatic. The onshore Web site was updated within a half a day and the shipboard, mirrored sited, 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 are 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

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 online 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 a 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 the 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:

➢ 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

➢ 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

➢ 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

➢ 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.

➢ 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

➢ 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.

Brian 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://www.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.

Appendix I

ATTENDEES – UNOLS Council Meeting - September 21, 2000

NAME	ORGANIZ.	PHONE	FAX	E-Mail
Askew, Timothy	HBOI	(561) 465-2400 X262	(561) 465-2116	taskew@hboi.edu
Atkinson, Larry	ODU	(757) 683-4926	(757) 683-5550	atkinson@ccpo.odu.edu
Berkson,Jonathan	USCG	(202) 267-1457	(202) 267-4222	jberkson@comdt.uscg.mil
Cocke, Tom	STATE DEPT.	(202) 647-4935	(202) 647-1106	cockewt@state.gov
Cowles, Timothy	OSU	(541) 737-3966	(541) 737-2064	tjc@oce.orst.edu
Dennis, Pat	ONR/096	(703) 696-2161	(703) 696-2710	dennisp@onr.navy.mil
DeSilva, Annette	UNOLS	(401) 874-6825	(401) 874-6167	office@unols.org
Epp, David	NSF	(703) 292-8580		
Flagg, Charles	BNL	(631) 334-3128	(631) 344-2060	flagg@bml.gov
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Fornari, Daniel	WHOI	(508) 289-2857	(508) 457-2023	dfornari@whoi.edu
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Fryer, Patricia	SOEST/U.H.	(808) 956-3146	(808) 956-3188	pfryer@soest.hawaii.edu
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Hawkins, Matt	UDEL	(302) 645-4341	(302) 645-4006	hawkins@udel.edu
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Ljunggren, Paul	LDEO/RVOC Ch.	(914) 365-8845	(914) 359-6817	pwl@ldeo.columbia.edu
Measures, Chris	SOEST/U.H.	(808) 956-5924	(808) 956-7112	chrism@soest.hawaii.edu
Millick, Sujata	ONR	(703) 696-4530	(703) 696-2710	millics@ono.navy.mil
Pfeiffer, Tim	ONR	(703) 696-6999		Timothy_Pfeiffer@onr.navy.mil
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Prince, Mike	UNOLS	(831) 632-4410	(831) 632-4413	office@unols.org
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Appendix II

8/21/00

Tentative Agenda

UNOLS COUNCIL MEETING

Thursday, September 21, 2000, 8:30 am
National Science Foundation
Arlington, VA

NSF Room 1235

8:30 am Call the Meeting: Bob Knox, UNOLS Chair, will call the meeting to order and provide an opportunity for introductions.

8:40 am Accept Minutes of the June 2000 Council Meeting.

8:45 am COMMITTEE REPORTS: Bob Knox will provide a brief summary of the UNOLS Committee written reports and open the floor to a question/answer period. (Prior to the meeting, Committee Chairs submitted written reports on activities since the June Council meeting.) Chairs will identify any important issues that need to be addressed further by the Council.

9:30 am FEDERAL AGENCY REPORTS: Representatives of the Federal Agencies will be given an opportunity to report on activities of interest to the Council or to bring any issues before the council requiring their input or action.

10:15 am ***Morning Break***

10:30 am Outreach Programs from UNOLS Vessels - Dan Fornari (WHOI) will discuss ways of implementing outreach programs from UNOLS vessels.

11:00 am Clearance Issues - Bob Knox will report on potential clearance problems for 2001 operations in the Far East.

UNOLS ISSUES

11:15 am Quality of Service Initiative (QSI):

Quality Improvement Study - Jeff Ford (Europort Ltd.) will review the findings of his company's study of selected UNOLS operations and will advise UNOLS on its efforts in the areas of safety, risk management, fleet efficiency, the implementation of quality standards and oversight, and certification issues.

12:00 pm ***Lunch***

1:00 pm Quality of Service Initiative (*Continued*):

QSI Committee Report and Discussion - Tim Cowles, committee chair will give a status report on strategies for instituting a Quality of Service Improvement program within the UNOLS fleet. Open discussion will follow.

2:00 pm Long Range Planning for the UNOLS Fleet - Larry Atkinson will review FIC's activities related to fleet planning, such as the FIC's web based document, fltplan.doc, and the article in the July 25th issue of EOS. Agency representatives will discuss the fleet planning process being undertaken by the Federal Oceanographic Facilities Committee (FOFC). Tim Cowles and Larry Atkinson will review the findings and recommendations of their workshop held in August at OSU on fleet planning.

3:00 pm ***Afternoon Break***

3:20 am Discussion on any Ship Scheduling Issues in 2001 - Joe Ustach, Mike Prince and Bob Knox will identify any potential issues related to ship scheduling in 2001.

3:40 pm Nomination Committee Report and Recommendations for Changes to the Nomination Process - The first Council terms of Bob Knox (Chair), Tim Cowles, Barbara Prezelin, and Tom Shipley are expiring in 2000 as well as the second term of Tom Royer (Vice Chair). The nominating committee will present their proposed slate of candidates to the Council and discuss the challenges faced in preparing the slate. Recommendations for changing the nomination process will be discussed.

3:55 pm Application for UNOLS Vessel Status - University of Miami has applied for UNOLS Vessel status for R/V F. G. WALTON SMITH.

4:00 pm Meeting plans and Office Budget - Preliminary review of plans for meetings during 2001 (see calendar below) and recommendations regarding the UNOLS office budget for next year.

4:15 pm Other UNOLS Issues (Items below will be addressed if not already discussed in earlier reports or discussions)

- **Seismic Acquisition Issues and UNOLS Fleet Capabilities** - Follow up on the need for any UNOLS action in this area.
- **ADCP Improvements** —Charlie Flagg will report on any activities to improve the quality and availability of hull mounted ADCPs in the UNOLS fleet.
- **New Ship Construction** - Updates since the June Council meeting on the status of:
    - R/V SAVANNAH construction
    - Replacement plans for CAPE HENLOPEN
    - Regional Ship Replacement Activities
    - ALPHA HELIX Replacement plans
    - WHOI's SWATH construction
    - AGOR 26 construction
    - NOAA FRV

- **SeaNet Update** - An update on the status of SeaNet will be provided.
- **ATV Transfer Plans**.
- **Winch and Wire Symposium** - Report on plans to implement recommendations from the symposium.
- **DESCEND Workshop** - Patty Fryer will provide an update on the report from the DEveloping Submergence SCiencE into the Next Decade, DESCEND workshop along with follow-on plans.
- **UNOLS/NOAA Memorandum of Understanding (MOU) -** Review the status of the draft MOU between NOAA and UNOLS.
- **UNOLS Brochure** - It is now available.

Other business.

Adjourn

2000 Calendar for UNOLS Meetings		
Meeting	Location	Dates
Schedule Review	NSF, Arlington, VA	September 20, 2000 (Wed)
FIC	NSF, Arlington, VA	September 20, 20000 (Wed)
UNOLS Council	NSF, Arlington, VA	September 21, 2000 (Thurs)
UNOLS Annual	NSF, Arlington, VA	September 22, 2000 (Fri)
RVTEC	Palisades, NY (LDEO)	October 18 - 20, 2000 (W-F)
RVOC	Newport, OR (OSU)	October 24 - 26, 2000 (T-Th)
DESSC	San Francisco, CA (AGU)	December 14, 2000 (Thur)

2001 Calendar for UNOLS Meetings		
Meeting	Location	Dates
AICC	NSF, Arlington, VA	Jan - Feb
Council	???	Jan - Feb
FIC	???	Feb - Mar
DESSC	WHOI, MA	June
Council	???	June or July
Ship Scheduling Committee	NSF, Arlington, VA	July
AICC	Seattle, WA	August or September
Schedule Review	NSF, Arlington, VA	September
FIC	NSF, Arlington, VA	September
UNOLS Council	NSF, Arlington, VA	September
UNOLS Annual	NSF, Arlington, VA	September
RVTEC	URI	October
RVOC	URI	October
DESSC	San Francisco, CA (AGU)	December

2001 Major Oceanographic Conferences and Federal Agency Meetings

NOAA - Office of Marine and Aviation Operations Annual Conference	To be Announced	Jan 7-12, 2001
Oceanology	TBD	April 3-5, 2001
NSF OCE/Panels	NSF, Arlington, VA	May 21-25, 2001
AGU Spring Meeting	Boston, MA	May 29-June 2, 2001
MTS - Oceans 2001	Honolulu, HI	Nov 4-7, 2001
NSF OCE/Panels	NSF, Arlington, VA	Nov 12-16, 2001
AGU Fall Meeting	San Francisco, CA	Dec 10-14, 2001

Appendix III

UNOLS Council Meeting

Committee Reports

September 21, 2000

DEep Submergence Science Committee
Arctic Icebreaker Coordianting Committee
Research Vessel Technical Enhancement Committee
Research Vessel Operators' Committee
Ship Scheduling Committee
Fleet Improvement Committee

DEep Submergence Science Committee
Report to UNOLS Council

Patricia Fryer, DESSC Chair

The DEep Submergence Science Committee met in the Carriage House of Woods Hole Oceanographic Institution (WHOI) on May 24-25, 2000. Minutes of the meeting are available at <http://www.unols.org/dessc.desmt005/desmi005.html>. A summary follows:

The DESSC heard the National Deep Submergence Facility (NDSF) Operator's report which included a summary of WHOI operations in 2000, and the announcement that a new pilot was hired this year.

The first day of the meeting was occupied principally with two major reports, the final report of the SEACLIFF engineering study and the report on the upgrades to the National Facility vehicles, science sensors and ATLANTIS.

The SEACLIFF engineering study was reported in detail. The study was to investigate methods for providing the National Facility manned submersible with improved scientific capability and to determine the best utilization of the assets made available with the decommissioning of SEA CLIFF. Five options were examined: (1) An improved ALVIN (2) SEA CLIFF - as is, (3) SEA CLIFF - modified for science, (4) 6000 m ALVIN, or (5) a new design for a 6000 m DSV. The pros and cons of each option were presented and the final recommendation is to build a new 6000 m DSV. The estimated cost would be approximately $15M. Design and construction of a new DSV would take approximately four years and a new sub would be ready before Alvin is scheduled for its next overhaul.

Upgrades to the National Facility Vehicles, Science Sensors, and ATLANTIS will include improved high resolution mapping and surveying, installation/service of seafloor observatories, and manipulation and sampling in a more "ALVIN-like" manner. Upgrades planned for each of the vehicles: Jason II, Argo II and DSL-120a were presented. The systems are being modeled to a fairly high degree to determine how their

objectives are being met. WHOI is posting the upgrade design features on their webpage: <http://www.marine.whoi.edu/ships/rovs/upgrades.htm>.

ALVIN Overhaul Plans and Priorities – Dudley Foster reported on plans for ALVIN's overhaul, see *Appendix VI*. He indicated that there are science and system upgrades planned. Dudley reviewed the overhaul timeline. ATLANTIS will be offloaded from the ship on arrival at WHOI in December. The overhaul work will begin on January 2, 2001. The vehicle will be operational by July 1, 2001. There will be a website reporting on the overhaul progress: http://www.marine.whoi.edu/ships/alvin/alvin.htm

Prior to the DESSC meeting, the community was surveyed for input regarding overhaul priorities. Responses from the survey can be found at the URL: <http://gso.uri.edu/unols/dessc/alvinup.htm>.

DESSC heard the report of the R/V ATLANTIS Shipyard Work list in 2001

Agency reports were presented by NSF and ONR.

The new DESSC Terms of Reference were reviewed and revisions were suggested. These revisions have been incorporated and circulated for DESSC review and endorsement.

Summaries of deep submergence activities at other facilities were presented (MBARI, MPL, Navy, and ROPOS).

DESSC discussed the status of the archiving of all deep submergence data in the WHOI archives.

DESSC is concerned that the annual meetings cater too strongly to the Geology & Geophysics community and neglect the biological community because of the tradition of having the annual meeting at AGU. DESSC recommends that every other year the DESSC meeting should coincide with The Ocean Sciences meeting so that more of the biology community can attend. For the time being, DESSC will tentatively plan to hold a meeting at the next AGU and at the Ocean Sciences conference in 2002.

DESSC discussed distribution of data in real time with regard to issues of ownership of data and public news versus use of the data for commercial purposes.

Scheduling of National Facilities assets for 2001 and beyond occupied the remainder of the first day of the meeting. ATLANTIS has a full schedule of 299 days. Joint operations are planned with THOMPSON in July. The ROV is very busy this year. The ALVIN overhaul will be conducted in the first part of 2001. ROV upgrades are planned at the end of 2001.

There are many NDSF requests for 2001 and they are distributed around the world. A map and listing of the requests can be accessed from the DESSC minutes (see URL above). ATLANTIS will be available for non-ALVIN work while ALVIN is in overhaul. Difficulties with the current schedule were discussed and suggestions for mitigation made. Regarding long range planning issues, the DESSC continues to be concerned that

there is no easy way to alert the community regarding making long range planning efforts toward work in remote research areas of interest. It was recommended that the long-range map be posted on the DESSC website. A blast could be sent to the community letting them know that the map is available. This would allow the community to determine the areas of high interest and encourage collaborations.

The second day of the meeting started with a discussion of data sets and archiving. The discussion was complex and is reported more fully in the minutes, but the basic decision is to pursue the archiving issue in concert with various groups that are planning formal workshops on this matter or have already set up archiving standards. It was encouraging to hear that the WHOI archiving procedures was recommended by one such group. The DESSC will follow up on this in the coming year.

Much of the remainder of the meeting was devoted to a detailed discussion of the recommendations of the DESCEND Workshop. A separate report on DESCEND will be given at the UNOLS Council meeting. The Executive summary of the meeting was presented in the UNOLS News 17(2) pp. 8-11.

Report from the UNOLS Arctic Icebreaker Coordinating Committee to the UNOLS Council - September 2000

Since the last report to Council in June the principal AICC activities have been completing the cold water science systems testing on USCGC Healy, attending HEALY's commissioning ceremony in Seattle on 21 August, and holding an AICC meeting on board the ship on 22-23 August.

As noted before, Jack Bash and John Freitag from UNOLS had arranged a cadre of top-flight UNOLS technical specialists to evaluate each primary science system on the ship. The presence of these groups was effective and greatly valued.

Each of the four cold water science systems test legs during May-July 2000 had a focus. The tests emphasized both the "test memo" approach, where a science system was methodically checked out, and also the "science cruise" approach, where equipment was used in the mode expected on a typical research cruise. What made the testing exercise so valuable was the enthusiastic joint participation of the Coast Guard personnel who will be supporting the systems, technical experts from the UNOLS community, and seagoing scientists, including on various legs Kelly Falkner, Jim Swift, Terry Whitledge, Lisa Clough, Larry Lawver, and Garry Brass.

Leg 1 tests included science acoustic equipment (the SeaBeam 2112 swath mapping system, the 150 and 300 kHz ADCPs, and the Bathy2000 and Knudsen bathymetry systems), the XBT system, and the science data network. All of the tests were completed with the exception of testing in the ice. The ice had simply retreated too far north to reach within the allotted time frame. (The acoustics gear was, however, exercised during in the ice during legs 2-4.)

Based on examination of real time data, dramatic improvements in the ship's SeaBeam 2112 system were made since the warm water trials, largely due to recabling and to repositioning the vertical reference unit, and the system now appears to be functional. Potential users of SeaBeam on HEALY can expect to obtain good bathymetric data in moderate seas, at most headings and at reasonable speeds (up to 15 knots) in open waters, and surprisingly good data in ice-covered waters. They can expect to encounter similar data artifacts, reliability and capabilities that have been experienced by the science community on UNOLS vessels.

The 300 kHz ADCP is not presently acquiring water velocities below about 20 m. But the 150 kHz ADCP appears to operate as well as can be expected of a broad band instrument. The Bathy2000 bathymetry system is functional, and the system successfully tracked a pinger to 2000m in moderate seas. The Knudsen bathymetry system functioned well and is readily configured with straightforward controls. It produced clean 12 kHz bottom traces to 4000 m at speeds of 15 knots. The Sippican Mk12 XBT system was tested and worked without problems.

The Healy science data network functions well in many cases, though aspects of the system operation were identified for improvement. In addition, issues regarding maintaining the system, shoreside troubleshooting during missions, expertise on board, and keeping abreast of technological developments are being discussed. The Coast Guard is likely to migrate to the NOAA underway data software used by many UNOLS vessels.

On Leg 2 the uncontaminated seawater system received a careful going over. Seawater supply flow rate and temperature tests were completed at all locations. The thermosalinograph and fluorometer were working. Debugging and fixes improved performance and knowledge of the system. The intake clogs in the ice and adjustments are underway.

MOCNESS tows with the 0.680" conducting cable from the aft A-frame were an unqualified success, beginning with an open water tow, then progressing to a tow in light ice cover, and finally a tow in 80+% ice cover. The ship's bow simply pushed the ice aside. Little ice was ducted into the wake of the ship and so there was never adverse effect on the tow. The MOCNESS and winch systems and deck operations worked very well.

The CTD tests were successful, with a small number of minor problems identified. Steady 30 knot winds did not deter over-the-side operations, with HEALY riding with very little undue motion. In-ice CTD operations did not differ in any significant manner from open water operations. A problem with the outboard sheave for the 0.322" wire was identified and the unit will be modified or replaced for the first field year.

Leg 3 focused on deployment and recovery of an anchor-last scientific mooring in open water, deployment and recovery of an anchor-first a scientific mooring in heavy ice cover, and continued testing of the ship's underway systems, winch control systems, communications, and CCTV. The mooring tests were meant to mimic the complete sequence of events that would occur during real deployments and recoveries, as if they

were separated by months in time; they were a complete success. The UNOLS team led on the first mooring and for the second the ship's company carried out much of the work. The coordination between the bridge, deck crew, MSTs, and science party was very good throughout. The deployments and recoveries were videotaped, with copies made for the ship for training and to assist community evaluation.

Other tests continued. HEALY's biochemistry laboratory is specified to have tight temperature control so that instruments and analyses sensitive to laboratory temperature can be carried out to specification. Several days of logging biochemistry laboratory temperature at 15-minute intervals demonstrated the inability of the installed controller to meet the specifications for this space. Modifications have been recommended so that specifications can be met.

During a test cast to continue scientific evaluation of the winch control system, the ship's company carried out a successful dredge haul in approximately 900 meters of water in a long lead in the ice field, bringing up rocks, mud, and several bottom dwelling organisms.

Testing of the environmental control systems in the climate control chambers continued, imitating use cycles with a schedule of door openings, and with placement of a small heater in one chamber to mimic the thermal load of a person and equipment.

On Leg 4, although there were a few miscellaneous tests to retire, such as those for the science hoist and deck communications system, and a few ongoing tests, such as the climate control chambers and continued evaluation of the science data network and winch control systems, the focus was on evaluating HEALY's coring and dredging capabilities. All parties agreed that HEALY's coring capabilities in open water over the aft A-frame were amply proven during warm water testing, so the emphasis on Leg 4 was on coring over the starboard, and in ice. Associated with this was use of the SeaBeam and 3.5 kHz sub-bottom profiler to survey prospective sites

The first core, with 40 feet of pipe, was launched and recovered without incident, having plunged in to the core head. The entire operation was capably led by the UNOLS groups, who worked out procedures and instructed the Coast Guard personnel. Next a 60 foot core was launched. This operation was led by the Coast Guard personnel, with the academic technical specialists coaching. This went well, triggering and pull-out were excellent, and the corer brought back a nearly full barrel of mud. As the team prepared to do a second 60-foot core, to the surprise and dismay of all it was learned that the fine control the trawl winch requires to work safely with the massive core head was no longer available. Fixes were attempted, to no avail. This problem demonstrated clearly that changes were needed in the winch control system, and there was an immediate effort to guarantee that an improved system will be ready for the 2001 field year. An 80 foot coring rig was prepared, moved to the vertical and then hoisted back up onto the platform. This uncovered a few minor issues with cranes and handling, but these were easily solved. Thus HEALY was proven ready to carry out up to 80 foot cores, the maximum length currently feasible. All coring operations were videotaped.

Enriching the test cruises were teachers from NSF's TEAA program, arranged through the efforts of Kelly Falkner. The AICC could not have been more impressed with the

teachers. Their enthusiasm, energy, and unique perspective helped to bring everyone on board together. More than that, they brought the ice trials and science systems tests to the public - to anyone with an internet connection - with accuracy, breadth, humor, and insight. The AICC urges that anyone wishing a closer look at the tests and trials examine their web sites:

http://tea.rice.edu/tea_kolbfrontpage.html
http://tea.rice.edu/tea_klinkhammerfrontpage.html
http://tea.rice.edu/tea_rosenbergfrontpage.html
http://tea.rice.edu/tea_hindmanfrontpage.html
http://tea.rice.edu/tea_schauerfrontpage.html

While the list of suggested modifications, fixes, and new acquisitions for Healy is long, these belie a longer list of successes. Matters are basically business as usual for a new ship, and the ship will clearly be ready for science support in 2001. Every person who has been aboard comes away impressed with the professionalism, support, interest, and friendliness of the entire ship's company. The AICC will be preparing a report to supplement the test memos. The report will be ready for the public in early 2001, for example as a pdf file on the UNOLS web site.

The AICC stood ready to provide advice to NSF and the Coast Guard during HEALY's scheduling process, which is now nearly completed for 2001. The AICC plans to contact PIs (after they have been notified through official channels) to help them reach key Coast Guard personnel, to help them assess their logistics, personnel, and work plan needs, and to provide feedback to NSF and the Coast Guard about the panoply of logistic considerations that are much clearer to the AICC now that testing is completed.

Healy's commissioning ceremony was August 21st in Seattle. The AICC was there, and held a meeting on board in the science conference room on 22-23 August.

The AICC will assist and advise the Coast Guard regarding scientific equipment and technical support requirements for the 2001 field season, which will include the first "paid science" cruises for the vessel. Due to the yard demands of the post-shakedown warranty period, the ship will not be free until spring, but then is expected to have a busy Arctic science support schedule through late 2001. Future years look busy!

The outlook is positive for NSF's Arctic marine science programs, including both that Healy funding will not eat into science funding at NSF and that OPP Arctic science funding looks healthy. The deadline for OPP Arctic proposals is now the same as for other ocean science programs at NSF. NSF agrees that expeditionary planning will be important for developing cohesive programs. The Arctic Section is working on the question of how to handle equipment upgrades and new equipment needs and has hired an Arctic Research Support and Logistic Manager. It is possible that OPP may adopt practices similar to those in Ocean Sciences, where technical support is shifting over from the research budgets to the technician support budgets.

The Coast Guard plans to continue permitting science participation on a "not to interfere" basis on shakedown cruises in the western Arctic. These "Science Of Opportunity"

(SOO) cruises have been a popular venue for informal data collection, pre-proposal investigations, and instrument tests. The AICC reviews SOO requests for logistical feasibility and compatibility.

Regarding Arctic science proposal submissions, ship costs for use of Healy (and the Polar-class icebreakers) are no longer contained in NSF proposal budgets, but ship use requirements must be clear in accompanying documentation, (for example the "831" form or NSF/OPP's logistical support form for Arctic research).

The AICC is working with UNOLS to maintain a web site containing a rolling five year plan for US Arctic icebreaker use, beginning with conceptual plans and then updated to show proposal submission and status, and, for the lucky few, scheduling. Judging from the large number of ship time requests already generated there is substantial community interest in Arctic icebreaker use.

The AICC can be reached by writing to the Chair (jswift@ucsd.edu) or to the UNOLS Office (office@unols.org).

Report submitted by J. Swift

Committee report from RVTEC to UNOLS Council
21 September 2000

The 2000 RVTEC meeting is scheduled to be held at the Lamont-Doherty Earth Observatory on the 18th, 19th and 20th of October. This year we are planning some changes in the traditional meeting format pursued in past years. It has been suggested that we offer some hands on sessions in various areas of interest to seagoing marine technicians. The idea of such sessions is to open discussion of various procedures and techniques used on various UNOLS vessels which may not be familiar to the rest of the community. The intent is to invite analysis of these techniques in the hopes of promoting interchange of new techniques and analysis of those procedures which could be improved. Plans are underway for sessions involving SeaNetTM protocol, Salinometer techniques and proper termination of electrical conducting deep sea wires.

There are also plans to conduct a discussion session on Data collection and logging and a working group on adaptation of the NOAA SCS logging system. Last year the group initiated a new sub-committee on technician training.

The major effort of RVTEC during the year was the Science testing project carried out in cooperation with the AICC on the new Coast Guard Icebreaker HEALY. Beginning early in the year, a team comprised of RVTEC Engineers and Technicians from a variety of UNOLS institutions participated in the evaluation of the various science instrumentation and data systems included with the HEALY procurement. The Warm Water portion of the testing off Puerto Rico was populated with technical support personnel from University of Washington, Lamont-Doherty, Woods Hole, University of Rhode Island, Oregon State University and University of Hawaii. Continuing later in the year in the Ice trial portion of the testing we added University of Miami, Scripps, University of Texas to

the list. Overall this testing team added a new dimension to the more normal pattern of testing carried out on these vessels and the effort is widely considered to have been successful. The end result of this exercise has been extensive discussions with the Coast Guard on improvements to the science capabilities, many of which are presently being implemented in the Post Shakedown Shipyard Availability, prior to the ship going on line in science operations.

This year saw a broadening of systems and technician interchange between institutions, a goal which will have long term benefits both to the UNOLS fleet and the scientific community. The RVTEC community is fostering much wider communication between the tech support groups at UNOLS operator institutions and disseminating the pool on knowledge to the benefit of all.

Submitted,

John S. Freitag
RVTEC Chair

RVOC Annual Report
UNOLS Council/Annual Meeting
21, 22 September 2000

Submitted by Paul Ljunggren, RVOC Chair

The 1999 RVOC Meeting was hosted by Harbor Branch Oceanographic Institution on 4-6 November in Ft. Pierce, FL. The meeting was attended by approximately 60 representatives from UNOLS institutions, representatives of federal agencies, as well as representatives from the SACLANT Undersea Research Center, Southampton Oceanographic Centre, Netherlands Institute for Sea Research. In addition to presentations from the various operating institutions regarding operational issues, the following topics were presented:

- Insurance and Liability.
- Academic Fleet Review and Quality
- The new fisheries research vessel, FRV 40 for NMFS
- SeaNet
- Computerized Shipboard Maintenance Systems
- Current and potential ozone technology applications on board ships

Following the RVOC meeting there was a dialogue via email with the NSF related to the Cooperative Agreement used to fund vessel operations. A draft of a revised cooperative agreement had been sent out prior to the RVOC Meeting. The use of Cooperative Agreements for funding vessel operations was implemented for 1997. Use of the Cooperative Agreement results in increased reporting requirements for operators and thus

greater accountability. As a result of the dialogue the NSF has taken steps to clarify several of the issues identified during this discussion, while retaining the established reporting requirements.

The new RVOC Safety Standards (revised July 1999) were printed and copies distributed. An index has been added.

In Shipboard Scientific Support Equipment Proposal 2000 two groups of items were funded for acquisition as a group purchase to achieve a volume discount. The first resulted in the purchase of 78 immersion suits for five institutions (LDEO, UMich, OSU, URI, UofAK) . The second involved five institutions (UDEL, SIO, UW, OSU, UT) requesting six portable lab vans.

Of the six vans two were general purpose, three radioisotope, and one was for electronics. NSF requested that standard specifications be developed to allow all vans to be contracted for from one contractor. Matt Hawkins UDEL has been working specifically with the four other institutions requesting vans and the community in general to develop these specifications. Draft specifications have been distributed and can be found on the UNOLS website http://www.unols.org/rvoc/vanspec.html. Technical and regulatory issues are being addressed. A discussion of these van specifications and related issues is planned for the 2000 RVOC Meeting.

Marine Superintendents operating vessels from seven UNOLS institutions met in Baltimore MD on 22-23 March 2000 to discuss future plans for the upgrade and/or replacement of the regional vessels that they operate. Representatives from the UNOLS Fleet Improvement Committee, National Science Foundation, Office of Naval Research, and the UNOLS Office were also present. Topics discussed during this meeting included:

- Impact of Code of Federal Regulations (CFR) and other regulations on regional research vessels. Focus was on tonnage laws and crewing requirements.
- Revision of the 1988 Science Mission Requirements (SMR) for regional research vessels.
- Scope of proposed midlife work to enhance the SMR capabilities of regional research vessels.
- Funding support for midlife work.
- Overview, by individual operators, of proposed midlife refit work for their regional research vessels.
- Three to five year plan for proposed midlife work on regional research vessels.

A work group consisting of two representatives from RVOC and two from RVTEC was established. This group has been working to establish a uniform standard for the maximum workload allowed on UNOLS standard wire/cable. This group consists of Tom Althouse (SIO), Marc Willis (OSU), Rich Findley (RSMAS) and Theo Moniz (WHOI).

All sections of the Small R/V Compendium have been received and reviewed. This collaborative effort covers topics which includes regulatory issues, design & construction, stability, safety, outfitting, insurance and hull forms. The Small Vessel R/V Compendium will be made available on the UNOLS website.

This years RVOC meeting will be hosted by Oregon State University in Newport, Oregon. The meeting is scheduled for 24-26 October. On the meeting agenda are three workshops discussing:

- Areas of concern identified by the UNOLS Quality Control Committee
- Personnel Recruiting and Retention
- ISM and the implementation of a safety management system for R/V's

Both the Chair and Vice Chair of RVOC will have completed two terms in their current positions and a new Chairman and Vice Chairman will be elected at the 2000 RVOC meeting.

Ship Scheduling Committee Report
September 14, 2000

By Joe Ustach, SSC Chair

With the final Scheduling Review slated for September 20, this report is a preliminary analysis of schedules, letters of intent, and talks with schedulers. The overall outlook for 2001 is not as gloomy as it appeared in June. The total number of days requested stands at 5,471. This total does not include one of the small ships that has not yet submitted a letter of intent or a schedule, but it does include HEALY's 93 days, which were not included in the 2000 total. This is almost a 3.9% increase over the total days requested for 2000 (5,268). NAVO has helped lessen the gloom with its proposed $5 million ship operations budget, around $2 million more than in 2000. In all, Navy requests are up by 210 days from 2000. NSF also has increased in total requested days by 660. The 'Other' category has fallen by 662.5 days, to almost negate the NSF increase. However, this category traditionally increases as time goes on and vessels, especially the smaller ones, pick up more cruises.

The large ships show a 229 day increase in days requested (136 without HEALY). All of the large ships, except HEALY, BROWN, and ATLANTIS show greater than 90% of NSF's optimal operating days (300). There is a problem in the west coast with scheduling all the work requested. Much depends upon the LWAD Korean schedule. I hope this will be worked out at the Sept. 20 meeting.

The intermediate ships show little increase in days from 2000. The total requested in 2000 was 1007 and for 2001 the number is 1072. All vessels except GYRE and EDWIN LINK show greater than 74% of NSF's optimal operating days (275). GYRE has a history of increasing the number of days on her schedule as time progresses. LINK is looking at a lay-up for 2001.

The regional/coastal vessels also show a small increase in total requested days for 2000. The number of days requested in 2001 is 1482 and in 2000, it was 1408. All vessels in this category have greater than 50% of NSF's optimal operating days (180) scheduled. This class of ships also has a history of increasing the number of days scheduled as time progresses.

In the final class, the small ships, there is a decline of 165.5 days from 2000. Much of this decline is due to URRACA not submitting a schedule, as yet. Except for URRACA and BARNES, all of these ships have greater than 75% of NSF's optimal operating days (110) scheduled for 2001. These ships, too, historically show an increase in ship days as the year moves on.

Fleet Improvement Committee
Report to the UNOLS Council
September 2000

The Fleet Improvement Committee (FIC) is actively trying to provide information about the state of the fleet to the community at large. To that end they have improved the web site containing FIC activities <http://www.unols.org/fic/>, they have published a 'Letter to the Community' in EOS (July 25, 2000, 81(30):334) and they are planning a letter in Sea Technology.

The letter in EOS was meant to focus people's attention on the immediate need for fleet planning. To do that FIC highlighted a figure showing what the future fleet would look like if no replacements occur. With in 5-10 years we will have less ship days available than we predict will be needed. The EOS letter refers to the UNOLS web site <www.unols.org/fic/planning/fltplan.htm> for additional documentation on the fleet and its utilization. This site is being upgraded to include more information on trends in the fleet. The online information now includes plots of the following:

- Historical use of the fleet ship size
- Historical number of bunks used on ships
- Projections of the fleet composition with assumptions about retirement schedules

Also, because of the renewed interest in ship construction, all UNOLS Science Mission Requirements (SMRs) have been posted on-line. The SMRs on-line include the following:

- Large High-endurance, General-purpose Oceanographic Research Ship
- Large Medium-endurance, General-purpose Oceanographic Research Ship
- Large High-performance, General-purpose Oceanographic Research Ship, Small Waterplane Area Twin Hull (SWATH)
- Intermediate General-purpose Oceanographic Research Ship
- Intermediate General-purpose Oceanographic Research Ship, Small Waterplane Area Twin Hull (SWATH)
- Intermediate Ice-Capable General-purpose Oceanographic Research Ship
- Small General-purpose Oceanographic Research Ship
- Small General-purpose Oceanographic Research Ship, Small Waterplane Area Twin Hull (SWATH)
- Manned Spar Buoy (FLIP)
- Intermediate, Ice-Strengthened, General Purpose, and Fisheries Oceanography R/V

In other activities, several members of FIC participated in a workshop at Oregon State University in August. The purpose of the workshop was to address how future science needs might change requirements of the fleet. The increased use of AUV's for example may require ships to have sophisticated AUV deployment and recovery systems. Interestingly all perceived developments in the field require very high bandwidth communications 24 hours a day.

FIC's next meeting is scheduled for September 20, 2000. The agenda for the meeting is posted at http://www.unols.org/fic/ficmt009/ficag009.htm.

Appendix IV

NSF BUDGET – FY 2001

	Overall	Research and Related
House -	4.3%	5.7 %
Senate -	10.3%	9.7%

Information Technology Res.	$125M (+$35M)
Biocomplexity	$25M (+$25M)
Nanoscience/technology	$125M
Major Research Equipment	$109M (+$15.6)

"The Committee recommends that NSF begin the design and model testing of a vessel to replace the R/V Alpha Helix and provides $1.0 M for this purpose"

The US Oceans Act of 2000

(will establish a 16-member National Ocean Commission to formulate recommendations for a national ocean policy within 18 months)

The Ocean Exploration Panel

(to report back to the President within 120 days (October) on a national strategy for exploring the oceans)

A Decadal Report on the Future of Ocean Science Research

(NSF/OCE, Peter Brewer/Ted Moore led)

Illuminating the Hidden Planet

(OCE sponsored OSB report on deep sea observatories)

NOPP OCEANS.US Office

(US National Ocean Observations System)

GEO Budget

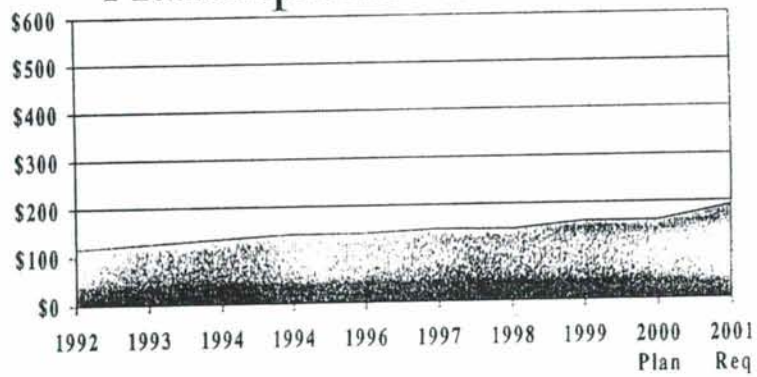
GEO Budget Breakdown in Millions of Dollars	FY 2000 Current Plan	FY 2001 Request	Change Amount	Change Percent
Atmospheric Sciences	164.81	194.01	29.20	17.7%
Atmospheric Sciences Research Support	*95.96*	*118.26*	*22.30*	*23.2%*
National Center for Atmospheric Research	*68.85*	*75.75*	*6.90*	*10.0%*
Earth Sciences	101.66	118.51	16.85	16.6%
Earth Sciences Project Support	*65.91*	*78.00*	*12.09*	*18.3%*
Instrumentation and Facilities	*26.95*	*31.00*	*4.05*	*15.0%*
Continental Dynamics	*8.80*	*9.51*	*0.71*	*8.1%*
Ocean Sciences	221.33	270.48	49.15	22.2%
Ocean Sciences Research Support	*125.00*	*153.70*	*28.70*	*23.0%*
Oceanographic Centers and Facilities	*49.33*	*62.78*	*13.45*	*27.3%*
Ocean Drilling Program	*47.00*	*54.00*	*7.00*	*14.9%*
Total, GEO	**$487.80**	**$583.00**	**$95.20**	**19.5%**

Geo

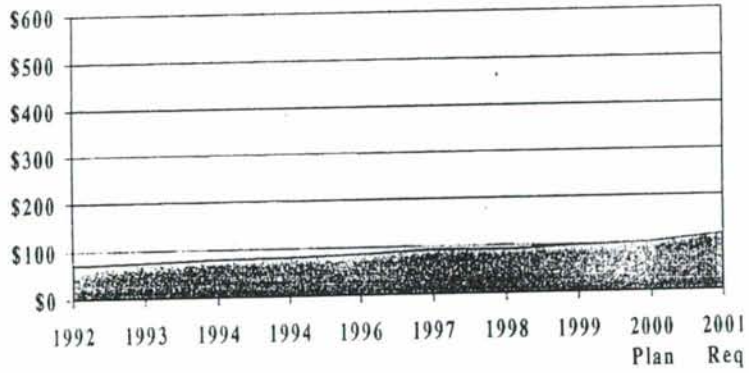
Ten-year Funding History by Division

Millions of Dollars

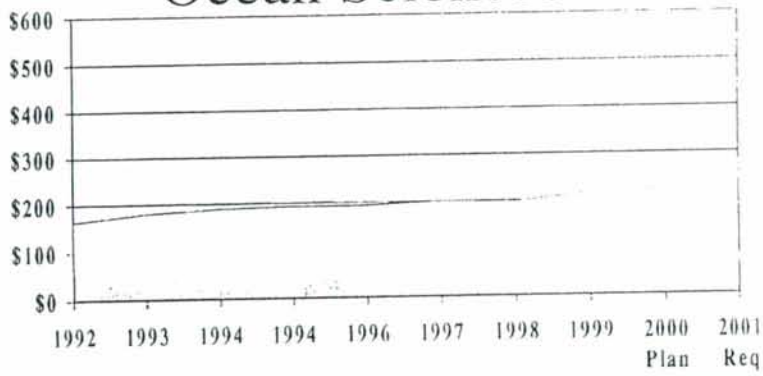
Atmospheric Sciences



Earth Sciences



Ocean Sciences

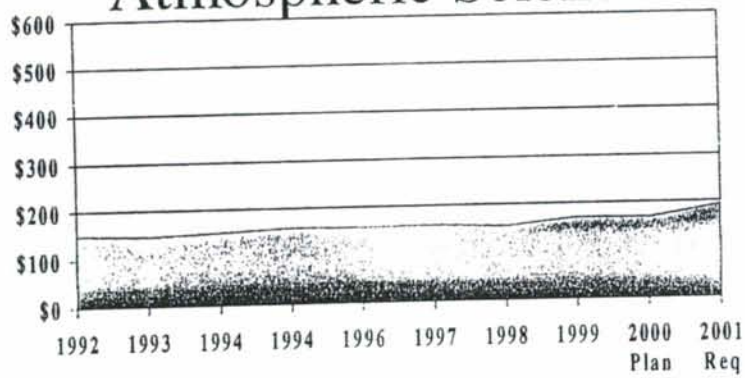


Geo

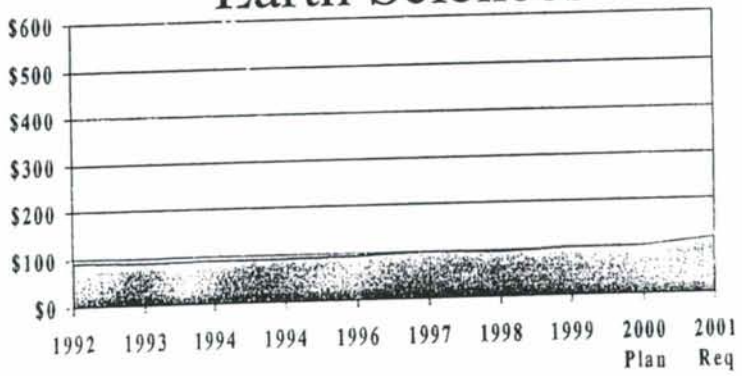
Ten-year Funding History by Division

Millions of Constant FY 2001 Dollars

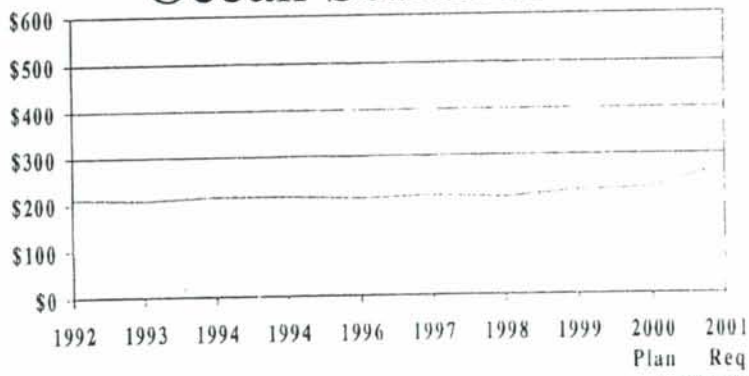
Atmospheric Sciences



Earth Sciences



Ocean Sciences



Appendix V

ONR REPORT – 21 September 2000

UNOLS Council and UNOLS Annual Meetings:

Shiptime:

In CY 2001, the Navy will sponsor approximately $17.5M of UNOLS shiptime. This includes $11.5 of ONR funded shiptime, $5M of NAVO, and $1M of NRL. The ONR projects are roughly equally divided between 6.1 and 6.2 accounts. CY01 aircraft requests are not all in yet however, CY00 aircraft support through CIRPAS was $800K. FLIP is scheduled for 84 operational days in 01 including a deployment to Hawaii to support the HOME project.

We have continued to support equipment purchases through our Research Instrumentation Program, and in CY 00 we funded SIO for a replacement multibeam system. We funded a total of $700K for ship and equipment upgrades and modifications on Thompson, Revelle, Atlantis, and FLIP. Major projectes include replacing Thompson's berthing vans with staterooms and reducing bow thruster noise.

Clearances: Dependent on outcome of State Dept. meeting, and scheduling meetings.

Fleet Plan:

We continue working with NSF and NOAA on the fleet plan. It is anticipated that a first version of the plan will be available for community comment sometime in Oct/Nov(??), after it has been presented to the FOFC.

FOFC:
The FOFCC met for the last time on June 22, and voted to align itself with NORLC. The new group name Federal Oceanographic Facilities Committee will be chaired by Dr. Margaret Leinen.

AGOR 26 Status:

The vessel design is proceeding and we anticipate that the vessel will be available for science operations in the second quarter of 2002.

However, the design phase has continued for a longer period than Navsea had anticipated. We have just been informed by Navsea that the delivery date for the vessel will slip by 4 months. Current delivery is estimated for January 2002. The shipyard begins the construction in January 2001.

Some technical areas that have taken longer to resolve than originally anticipated are; ABS approval of the structural midship section and haunch areas, vendor selections by Lockheed Martin for motors and HVAC. Both these areas held up the completion of the detail design drawings, which in turn has delayed the start of the construction.

Overall, we find that the IPT (Integrated Process Team) is working very well. Instead of quarterly/monthly interactions with the contractor, the government is involved on a weekly basis and the entire team works towards resolution of the issues.

A full report of the design status was given at the FIC meeting held on September 20.

Deep Submergence:

ATV:
Admiral Konetzni (COMSUBPAC) has made a final decision on the disposition of ATV. A MOA has been negotiated between COMSUBPAC, SIO/MPL, and HURL for operations of the ATV. ATV goes to HURL for the first two years of the MOA agreement, then it transfers to SIO. It is anticipated that having the ATV in Hawaii will allow its use by PMRF and the academic community.

NR1 Replacement:
Recently, we were invited to a meeting discussing the possible science requirements for a replacement for the submarine NR1. There is a movement afoot within the Navy to consider replacement of the current NR1, which is due for refueling or decommissioning in 2012. At this point NAVSEA is working on developing operational Navy, and oceanographic science requirements for the design.

SEACLIFF:
ONR continues to work with NAVSUP to obtain the spare parts in their inventory. At the last UNOLS meeting, we updated that NAVSUP had not yet agreed to transfer the parts at no cost....They have now, and we are attempting to determine the transfer timeframe and process.

Staff Actions:

Pat Dennis who has supported ONR and N096 will be leaving in October for a position at CORE. We intend to look for a replacement in the near future.

Tim Pfeiffer has re-enlisted for another hitch.

Appendix VI

UNOLS COUNCIL MEETING
Coast Guard Agency Report
21 September 2000

USCGC HEALY Update

After delivery on 9 November 99 by Litton-Avondale Industries, HEALY underwent a period of fitting-out availability and propulsion system repairs. The ship departed New Orleans on 26 January 2000 to conduct machinery, hull and science suite testing. Initial warm water trials were completed in March. Ice trials were conducted from April to June in Baffin Bay in the eastern Arctic. HEALY performed well, with icebreaking performance exceeding design requirements of 3.0 kts through 4.5 ft of ice. The maximum thickness of unbroken level ice encountered was 5.5 ft, which HEALY transited at a continuous speed of 2.6 kts. Ice ridges of 45 ft were broken through in 3 rams. HEALY transited the Northwest Passage in July, and arrived at Seattle on 9 August. The ship was commissioned on 21 August. HEALY is now in Todd Shipyard undergoing warranty repairs. The ship is scheduled to depart in May 2001 for the eastern Arctic and its initial science mission.

Science systems performances are nicely summarized in the Arctic Icebreaker Coordinating Committee report to the UNOLS Council for this meeting. Members of the AICC and RVTEC have been major players in the planning and conducting the science systems testing. The Coast Guard is highly appreciative of their efforts.

POLAR Class Update

POLAR SEA completed a "Reliability Improvement Project" yard availability in Todd Shipyards, Seattle and is conducting shakedown and training cruises. The ship will depart for the Antarctic and Operation Deep Freeze 2001 on 4 November 2000 and will return in early April 2001. POLAR SEA is scheduled for a two-month science mission in the Western Arctic in July and August of 2001.

POLAR STAR completed the five-month Operation Deep Freeze Antarctic deployment and returned to Seattle in April 2000. The ship sailed for a western Arctic science cruise on 21 July and returned to Seattle on 21 September. POLAR STAR is scheduled to go into dockside availability for repairs from October 2000 to February 2001. The ship will then sail for the St. Lawrence Island Polynya Project (SLIP 2001), which is scheduled for March - April 2001. POLAR STAR will go into drydock during the period May - July 2001.

Science Mission Planning

The first planning meeting for HEALY's 2001 missions was held at the National Science Foundation (NSF) on 13 June. The meeting was attended by representatives of the Coast Guard and NSF. The initial schedule for HEALY involves a marine geology and geophysics project in the Gakkel Ridge and a long range AUV development project north of Svalbard.

The Coast Guard Pacific Area Office has added a position to its Icebreaker Science Liaison staff to handle coordination of science logistics for HEALY cruises. The position has been filled with the hiring of Mr. Dave Forcucci, who comes to the Coast Guard from NOAA's Atlantic Oceanographic & Meteorological Laboratory.

Appendix VII

Dive and Discover:
http://www.divediscover.whoi.edu

Web-Based Expeditions to the Seafloor

Objective:

Through near, real-time, web-based links to scientists at sea:

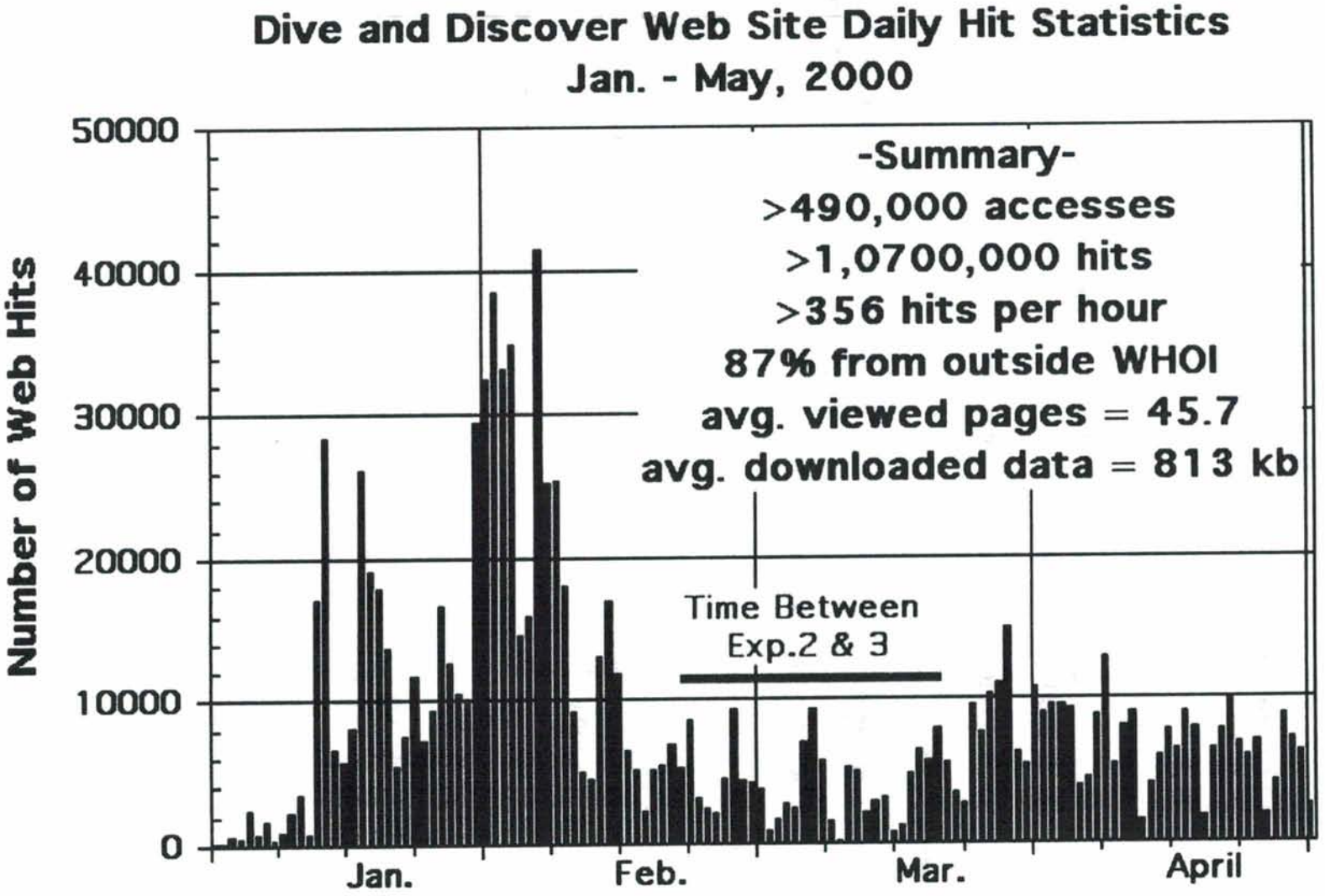
- Provide a stimulating learning environment as students share and participate in exploration of the deep ocean.
- Promote a better understanding of ocean sciences by the general public.

Ultimate Goal:

- The conceptual approach we develop will have broad application for ocean-going marine scientists, and will allow them to use similar techniques to promote ocean science education and public outreach in the future.

Strategy:

- Develop a web site for middle school (grades 6-8) and the general public to provide near real-time, daily access to deep submergence and oceanographic research conducted using the facilities of the Woods Hole Oceanographic Institution (WHOI).
- Test and refine this web site during four NSF-funded, multi-disciplinary field programs that will take place over the next two years (1999-2001) in the Pacific and Indian Oceans.
- Provide access to our web site through computer links in selected museums and aquaria throughout the country.


Dive and Discover Web Site Daily Hit Statistics
Jan. - May, 2000
Number of Web Hits
50000
40000
30000
20000
10000
0
Jan.
Feb.
Mar.
April
-Summary-
>490,000 accesses
>1,0700,000 hits
>356 hits per hour
87% from outside WHOI
avg. viewed pages = 45.7
avg. downloaded data = 813 kb
Time Between
Exp.2 & 3

Appendix VIII

UNOLS - The Quality Management Improvement Process

UNOLS - The Need for 'Change'

"Change - the only Constant"

Upheavals in the Shipping Industry

Your July 2002 Target

How to respond?

Quality Management Systems

- ✓Competitive World!
- ✓NOT about Putting out Fires!
- ✓NOT about Cost-Cutting!

Quality - What is it?

- ✓ Being able to 'More than' Deliver!
- ✓ Doing the 'right thing'!
  - – first time!
  - – every time!
- ✓ 'Knowing' your Customer!
- ✓ 'Meeting' His Needs!
- ✓ An attitude of Mind - Service!

The UNOLS Customers?

- ✓ Who are they?
  - Federal Funding Agencies
  - Others?
- ✓ Scientists - The Users

D.Q.M.S. - A System

- ✓ **S**tructure
- ✓ **S**tudy
- ✓ **S**upport
- ✓ **S**tart!

D.Q.M.S. - A Culture!

- ✓ **L**eadership!
- ✓ **I**nvolvement!
- ✓ **P**erformance!
- ✓ **S**uccessful Delivery!

Managing the Change

- ✓**NOT** Just Documentation!
- ✓**NOT** Just Certification!
- ✓**MORE** about Planning!
- ✓**MORE** about 'Finding Out'!

International Safety Management

- ✓ **A**ccountability!
- ✓ **C**ompliance!
- ✓ **T**iming!

I.S.M. Code - The Facts

- ✓ **M**anagement
- ✓ **P**revention of Accidents
- ✓ **S**afety of Life
- ✓ **P**ollution Prevention

I.S.M. Code - The Process

- ✓ **D**evelop Policies and Procedures!
- ✓ **A**pply them!
- ✓ **A**udit them!
- ✓ **R**efine them!

I.S.M.- The Certification Process

- ✓ **Identify** Internal Management Process
- ✓ **Verify** Compliance
- ✓ **Issue** Compliance Certificate
- ✓ **Review**

Certification - How to get it!

- ✓**Easiest Route** - ISO 9002 QMS!
- ✓**Easy Route** - Classification Society Q.M.S!
- ✓**More Difficult Route** - No prior Q.M.S!

Marine Safety - Who Decides?

- ✓UK Experience:-
  - – Marine Safety Agency
  - – Voluntary Certification Process
  - – Mandatory Compliance
- ✓The U.S. Experience

ISM and UNOLS

- ✓ **A**ccountability!
- ✓ **C**ompliance!
- ✓ **T**iming!

ISM and UNOLS

- ✓Research Vessels Safety Standards
- ✓Ship Management - 'Core Business'?
- ✓A Common UNOLS Approach?

ISM and UNOLS

- ✓Resource Implications?
- ✓Management Information Implications?
- ✓Ship Operating Instructions?

Suggested Actions:-

- ✓ Accountability?
- ✓ Standardised Documentation?
- ✓ Central Project Team?
- ✓ Timing?

Available Benefits:-

- ✓ 'Best Practice'
- ✓ Better Planning (Business Plans)
- ✓ Better Ship and Staff Utilisation
- ✓ Better Performance

In Summary - (I)

✓'Quality Matters!'

✓'Cultures' develop over time!

✓Leadership & Teamwork Count!

✓Management Systems need Resources!

In Summary (II)

✓Quality & Safety?

- **Prove it!**
  - **To Yourself!**
  - **To Others!**

✓Benefits Will Come:-

- **In Time**
- **After 'Action Plan for Change'**

Ideas for 'Change Action Plan'

- ✓ Establish Change Project Team (with Budget)
- ✓ Develop Standard Policies & Procedures
- ✓ Apply these throughout
- ✓ Develop new Business Plans
- ✓ Provide better Management Information
- ✓ Investigate E-Commerce benefits
- ✓ Establish Skills Database
- ✓ Encourage new Opportunities

Appendix IX

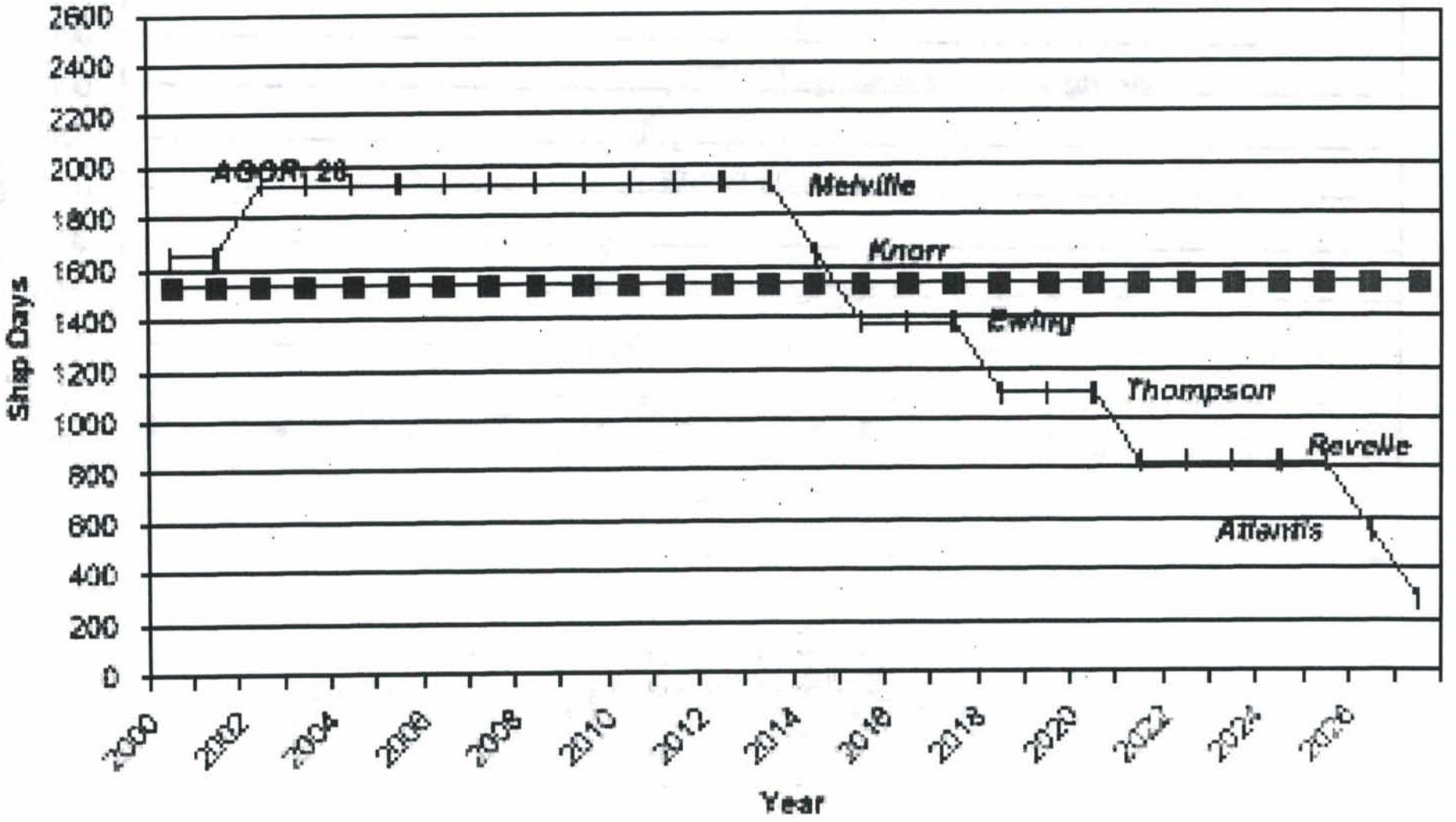
Other FIC Activities

- Watching:
  - SWATH developments: WHOI, UH. If these are effective sea going activities may change drastically.
  - Regional/Sub-regional ships: all th 50 - 110 ft ships coming on line around the US.
  - NR-1 and NR-2 planning. Provide science input as requested.
- SMR's - Will be done only when really needed.

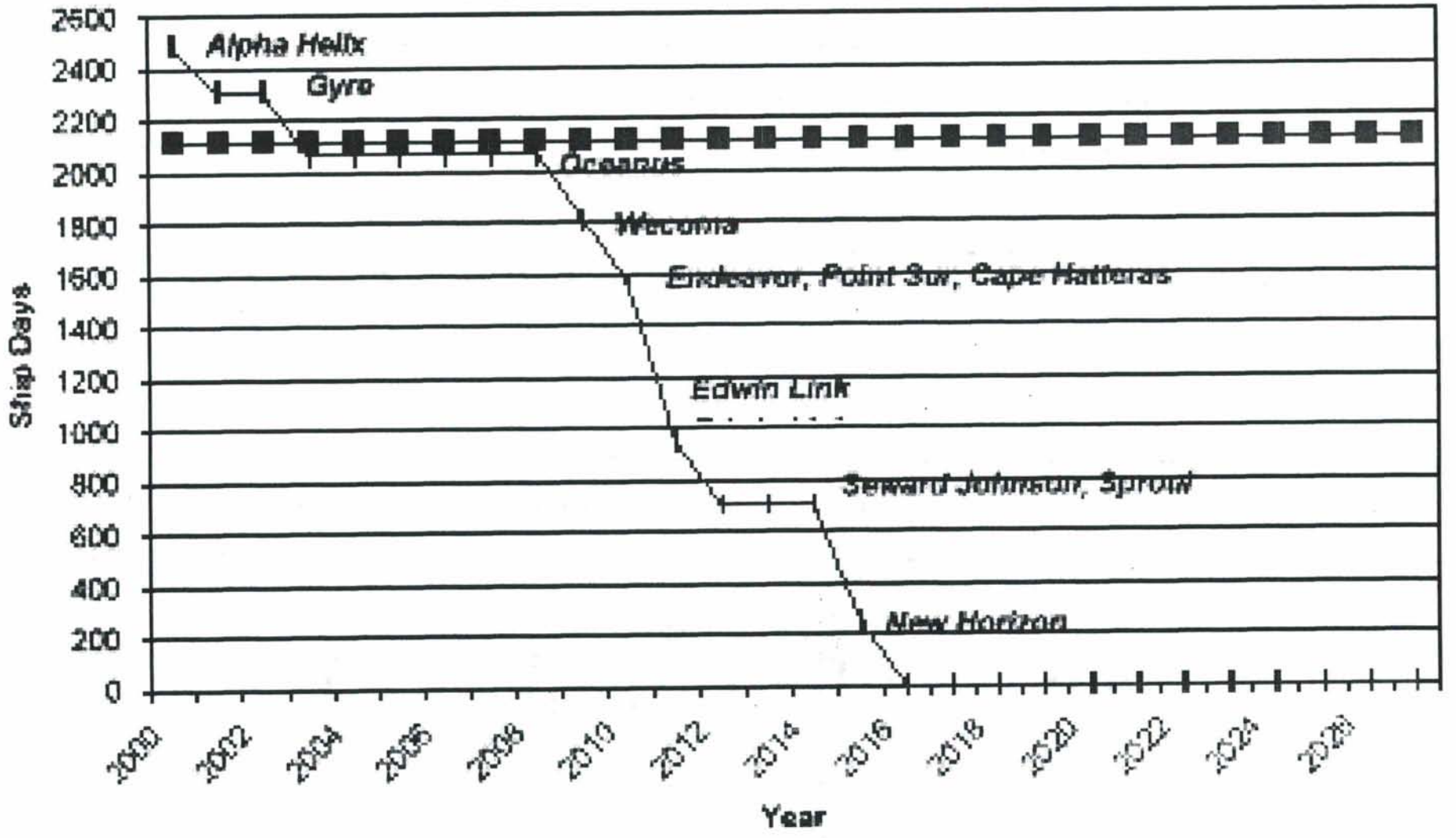
Future of the Fleet

Time lines of layups

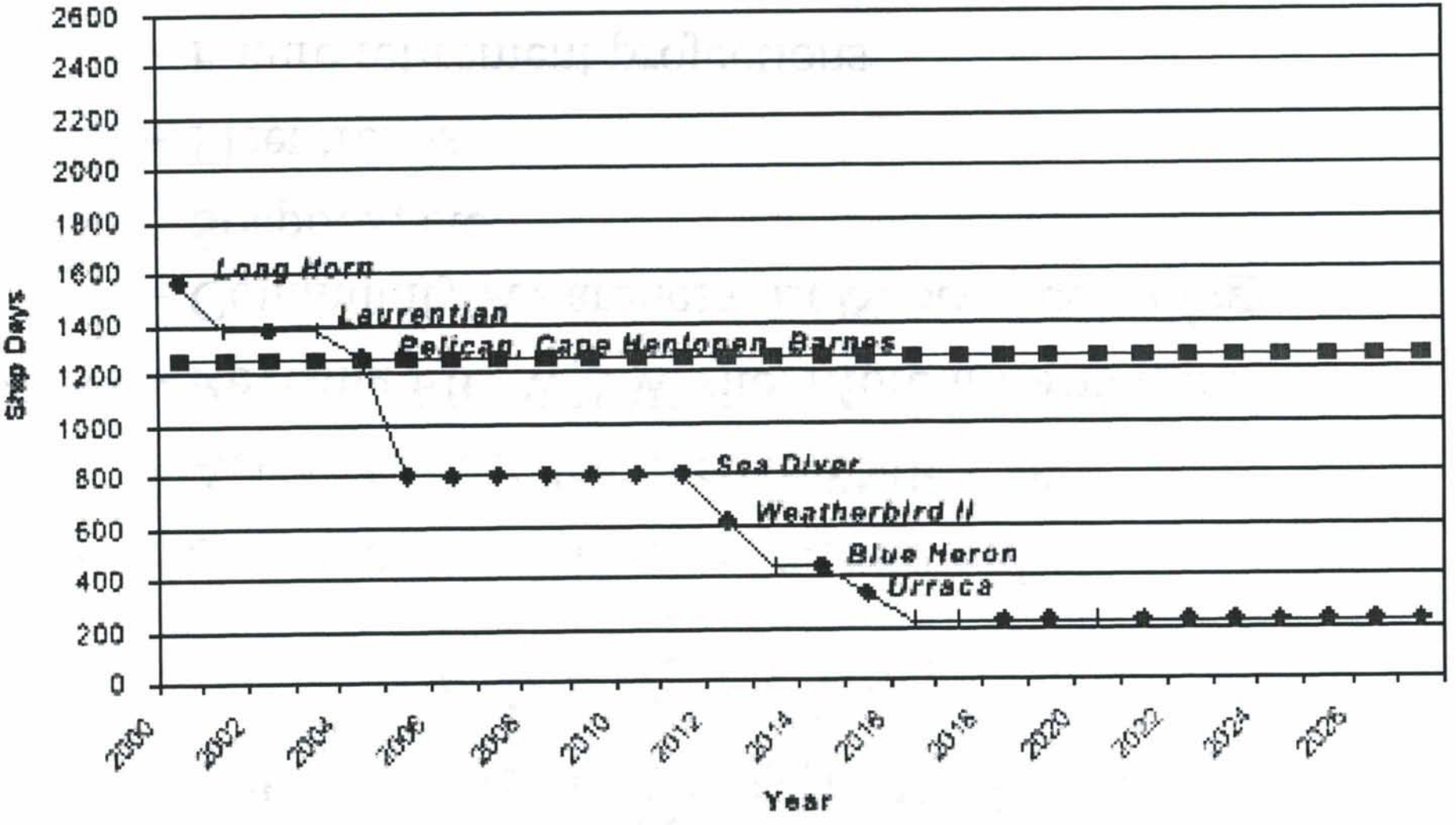
Global/ Expeditionary



Intermediate/Regional



Local/NearShore



Long Range Planning for the UNOLS Fleet

- FIC Activities relevant to renewal
  - Access to past documents: SMR's, etc.
  - Revising FIC WWW site. More information.
  - Community Awareness: *EOS*, *Sea Technology* Soapbox, etc.
  - Fleet trends
  - Future retirement projections

Fleet Renewal (Replacement) Plan

- Purpose - Renewal plan with rationale. Provide basis for informed debate and decision making.
- Process
  - Announce to community our intent to do this. Survey community for opinions.
  - Information needs:
    - Constraints on replacement: Crew size costs, inspections, automation savings.
    - Usage projections by size and region.
    - Large ship trends (will it keep growing)
    - Impact of growing 'sub regional' fleet
  - February 2001 locked door session to write it. (Prior to UNOLS Council).

More considerations

- Science Requirements
- Design Requirements
- Replacement
  - rates
  - types
- Acquisition methods
- Operator selection methods
- Technical upgrades
- Methodology to determine lifetime, refits, critical items.

Appendix X

Workshop Goals

- 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 role of vessels and trends in vessel use in context of other observational platforms

Major Science Themes (as examples)

- Better Observations in Selected Environments
  - Coastal Oceans
  - Ice-edge, ice-covered
  - High-latitude Open Ocean
  - Sea floor: mapping, spreading centers, sediments
  - Air-Sea Interactions
  - Benthic Boundary Layers

Major Science Themes (as examples)

- Interdisciplinary Studies
  - Expeditionary Scale Research
  - Mesoscale/Finescale/High Resolution (time and space)
  - Biodiversity
  - Coupled observation-modeling systems
- Perturbation Experiments
  - Natural and/or Deliberate
- Fixed Location Observations/Experiments
  - Long time series

Scientific needs (observational and experimental) of ocean science over the next two decades require the implementation of:

Remote observational systems with robust sensor suites (limited to a few variables)

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

(this is already moving quickly to meet the needs of the next two decades)

Science Needs, continued

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)

Science Needs, continued

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)

Science Needs, continued

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 needed here)

Science Needs, continued

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 – already in progress)

Science Needs, continued

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)

Expected Trends/Implications

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

Appendix XI

To: UNOLS Council
From: 2000 Nomination Committee (Flagg, Ljunggren, and Reimers)
Subject: Proposed changes to the UNOLS Charter to facilitate the smooth transition of the Chair position and to facilitate the election of qualified individuals.

Background

The nomination committee, with the help of the UNOLS office, has solicited nominations from the UNOLS membership for the open Chair, Vice Chair, and Council positions. From the nominations, a slate of candidates for election at the 2000 Annual Meeting has been assembled and forwarded to member institutions. The process has been considerably more arduous than we would have guessed at the outset. The nomination committee and UNOLS secretaries have discussed amongst ourselves the difficulties in getting candidates for the Chair and Vice Chair positions. It appears to us that there is a clear reluctance in the community to step forward for these position which we do not think is entirely attributable to the workload of suitably experienced individuals. From these discussions comes the suggestion we adopt a scheme similar to that used by the oceanographic associations and establish a 'Chair-Elect' position. After 2 or 3 years, the Chair-Elect would, upon confirmation, automatically become the new Chair upon the election of another Chair-Elect. It is also suggested that we establish a post of "Chair- Emeritus" who could provide sage advice as needed. This approach would address a number of issues. First, it does not pitch a new and perhaps less experienced person immediately into the position of reacting to the funding agencies, running meetings, and giving testimony. Second, by providing this apprenticeship period, we can nominate people who we think have the stature to make good advocates for UNOLS and the oceanographic community even if they don't have a long background in UNOLS. Thirdly, it is less likely that we would encounter such a reluctance on the part of the community to be nominated for the Chair position. And lastly, at the time of election there would be a real election and put-up condidates would not be needed to meet the letter of the UNOLS Charter for at least two candidates for each position.

Draft Proposed Charter Changes

4 a. The UNOLS organizations shall include a Chair-Emeritus, an elected Chair and Chair-Elect, ...

4 bb. The Chair-Emeritus position is a voluntary position occupied by the last former Chair and whose role is to insure continuity and provide advice on issues before UNOLS to the Chair as needed or requested.

4 c. The Chair-Elect supports the Chair in ....

4 e. 2nd para
The Executive Committee consists of the UNOLS Chair, Chair-Elect and ...

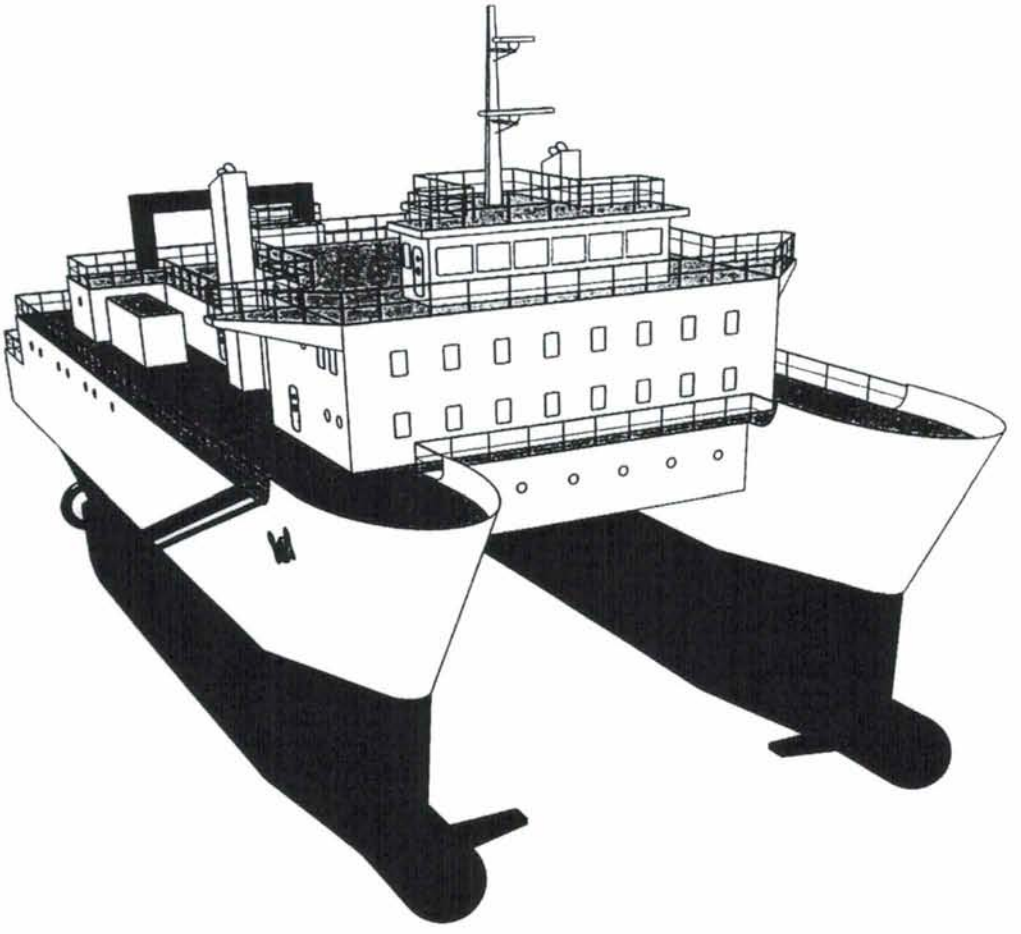
5. b The UNOLS Chair and Chair-Elect shall be elected from among candidates affiliated with any UNOLS member institution. The term of office shall be three (?) years. Upon confirmation by the membership at the Annual Meeting, the Chair-Elect will assume the duties of Chair at the end of the three (?) year term, and a new Chair-Elect will be elected. At the conclusion of their term, the Chair will automatically be appointed to the post of Chair-Emeritus.

Appendix XII

AGOR 26

Dimensions: 186' x 88'
Full load draft: 25'
Displacment: 2556 LT
Mission load: 100 LT

Accommodations: 48
Science party: 30+
Range: 10,000 miles
Survey speed: 12 kts



Lab space: 2762 sq ft
Work deck: 4460 sq ft
.680 fiber (traction w.)
CTD system

Simrad EM120 (1°x2°)
Simrad EM1002
ADCP Sontek 125 kHz
Dynam. Posn. HPR418

Appendix XIII

Date: Mon, 18 Sep 2000 13:13:25 -0400 (EDT)
From: "Andrew R. Maffei" <arm@whoi.edu>

SeaNet Status Report - September 2000

Since 1998 SeaNet has supported relatively high speed Internet service for five UNOLS vessels (Atlantis, EWING, MELVILLE, Pelican, and Seward Johnson). A sixth ship, the KNORR, has recently been added to SeaNet (at WHOI's expense). The SeaNet system is used by scientific projects that need Internet access to/from research vessels. A table of usage during 1999 and 2000, by ship, is found at the end of this article.

Present examples of SeaNet use have included both ship-shore and ship-ship scientific collaboration between scientists, education and public outreach support via mirrored ship to shore websites, electronic mail support, satellite imagery delivery, delivery of video and other large files to/from ships/shore and provision of full Internet access for computers on shipboard LANs to/from shore.

Some operators have made SeaNet a normal part of their daily operations. Others offer it as a special service for scientists requiring it. SeaNet staff members have worked closely with some individual scientists and science liaisons in planning the use of SeaNet in support of science.

The SeaNet project recently received an NSF award to cover operations expenses through August 2001. Goals for the coming year include adding at least three more vessels into the SeaNet network, improving and increasing communications with both the scientific users and the ship operators about what SeaNet is and how it can be used, providing an alternative email delivery system for those operators interested in using it, and helping UNOLS/NSF to determine the best direction for providing Internet access for research vessels beyond August 2001.

Plans for meeting these goals include identifying new operators interested in joining SeaNet and installing SeaNet systems on their vessels, publishing a short and regular newsletter about how SeaNet is being used in the community including tips for operators, providing an upgrade to the existing SeaNet software which includes a SeaNet-oriented email package for use by operators (if they wish) as an alternative in providing shipboard email, and providing a shore side website that can be used by operators to monitor SeaNet usage by their vessels.

There will be some changes for this next year of SeaNet service. In an effort to keep costs lower, three organizations (Omnet, Inc, the Naval Postgraduate School, and Joint Oceanographic Institutions) that were part

of our original NOPP grant are no longer formally included as part of the SeaNet effort. WHOI and LDEO will continue providing SeaNet development/operations support. Ellen Kappel, who once worked for JOI, continues to participate via Geo-Prose. There has been a subsequent shifts in responsibilities.

One change is that Omnet no longer bills for SeaNet services. Instead, operators are billed directly for INMARSAT costs by providers such as COMSAT and STATION-12. SeaNet's website has been enhanced to provide operators with a password-protected account that they can use to access real-time estimates of their SeaNet usage and tools to help bill back scientists for their use of SeaNet.

Another change will be a shift in some of the responsibilities and costs related to SeaNet installations and ongoing support. Under the original NOPP funding almost all installation, maintenance, and shore side support costs were covered by the SeaNet project.

Under the new funding arrangement interested operators are asked to pay for SeaNet-compatible SATCOM equipment and installation, SeaNet installation-related travel expenses, and any shipboard logistics support for SeaNet equipment installation. They are also asked to provide shipboard technical support during ongoing shipboard operations.

For its part, SeaNet will continue to provides participating SeaNet users with a knowledgeable staff running a shore side operations and support center from 8-5 (EDT) at WHOI with backup support and installation and hardware maintenance support by LDEO. Science liason, some project coordination activities, and web-support services are provided by GeoProse.

SeaNet will also pay for the installation of equipment (notebook PC and router) and software (for the next three vessels), integration with the SATCOM system, system testing and a training session in an agreed upon port.

The SeaNet staff is available to work together with operator science liaisons to support scientists to take advantage of SeaNet capabilities on their ships.

Our hopes are that in the long term a more traditional Internet Service Provider (ISP) (or perhaps INMARSAT service provider) might be found to meet specialized support and accounting needs of the oceanographic research fleet at a reasonable cost. In the meantime, the SeaNet project continues to offer these services and keep an eye on emerging wireless network technologies and services that can be used

by our ships.

1999 SeaNet BHSD Usage Summary per Ship

SCN	Entries	Int	Batch	Elapsed	Bytes
ATL-SCN	223	7	216	08:38:16	81.4MB
EWI-SCN	202	43	159	17:25:03	125.4MB
MEL-SCN	20	4	16	00:34:40	6.0MB
PEL-SCN	202	34	168	07:54:44	61.6MB
SEW-SCN	326	9	317	07:13:48	22.2MB

Total: 973 Transmissions, 97 Interactive, 876 Batch, 296.6MB

2000 YTD as of 05/30/2000 SeaNet BHSD Usage Summary per Ship

SCN	Entries	Int	Batch	Elapsed	Bytes
ATL-SCN	396	24	372	21:22:48	227.7MB
EWI-SCN	108	31	77	05:39:00	30.5MB
MEL-SCN	129	2	127	15:13:21	140.3MB
PEL-SCN	167	77	90	07:46:10	48.6MB
SEW-SCN	823	1	822	22:56:20	50.0MB
KNR-SCN	53	9	44	00:58:14	3.9MB

Total: 1676 Transmissions, 144 Interactive, 1532 Batch, 501.0MB

Note: Bytes listed in the above tables are the actual compressed data bytes transferred over the Inmarsat BHSD communication link. The number of bytes of user-level data transferred (uncompressed) would be considerably higher.

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Email: amaffei@whoi.edu