UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS Council Meeting

Summary Report

February 2-3, 2000

W. Alton Jones Campus
Whispering Pines Conference Center
University of Rhode Island

UNOLS COUNCIL MEETING
2 – 3 February 2000
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Welcome and Introductions – The UNOLS Council met in the Laurel meeting room at the W. Alton Jones Campus Whispering Pines Conference Center of the University of Rhode Island. Bob Knox, UNOLS Chair, called the meeting to order at 0830 on 2 February 2000. The items on the agenda, ***Appendix I***, were addressed in the order as reported below. Participants of the meeting, ***Appendix II***, introduced themselves.

Accept Minutes – The minutes of the September 1999 Council meeting were reviewed. A correction on page 4 was noted to change "Dave" to "Mark" Brzezinski. The minutes were accepted as amended.

Committee Reports – Bob Knox summarized the committee reports that are included as ***Appendix III***.

Arctic Icebreaker Coordinating Committee (AICC) – The AICC has been very busy. HEALY was delivered to the US Coast Guard and will be conducting shakedown cruises out of Pensacola, FL before going to San Juan, PR for warm water trials in February/March. The AICC has held open meetings at AGU (12/99) and TOS (1/00) to provide information to the community as to the capabilities of HEALY and future research operation strategies. HEALY will visit Baltimore for a public relations visit on 22-24 March. The FIC will hold a meeting aboard when the ship transits from Norfolk to Baltimore. As an educational program, science teachers who will be aboard the ship during the cold water trials will also ride from Norfolk to Baltimore. Jack Bash encouraged everyone to visit the ship during the Baltimore in-port period.

DEep Submergence Science Committee (DESSC) – The DESSC report has three parts: DESCEND, December meeting, and terms of reference. Patty noted that the DESCEND

workshop report is being drafted. The steering committee is attempting to organize the report so that it will be a useful document for the agencies and science community. The Terms of Reference have been updated to better reflect the DESSC's new role. Bob encouraged the Council to look over the terms and provide any comments to Patty.

Fleet Improvement Committee (FIC) – The FIC report includes a summary of FIC's November meeting aboard WESTERN FLYER, the status of AGOR 26 and the WHOI SWATH. The report also describes mid-life planning efforts for the regional ships and replacement of CAPE HENLOPEN. It discusses the science mission requirements for the ALPHA HELIX replacement and provides a chapter by chapter review of the Biennial Review.

Research Vessel Operators' Committee (RVOC) – The Committee members have been working on the cooperative agreements for each of their operations. At the last meeting, RVOC spent considerable time on quality improvements and how to define as well as measure excellence. This is an area of high interest. The Research Vessel Safety Standards have been updated and distributed.

Research Vessel Technical Enhancement Committee (RVTEC) - The RVTEC report addressed activities of their 1999 meeting. The meeting included a workshop on NetCDF. There was some discussion on the status of the salary survey. John explained the technicians had very mixed feelings regarding the survey and as a result there was little response to the questionnaire over the past year. There was some discussion by the Council on why this had not received more attention. It was explained that participation by the group has been slow because some felt that it was of little value and could cause problems at their institution. The RVTEC plans to continue the survey for another year.

On a different subject, Jack Bash reported the status of the nuclear submarine as a science platform. The decision has yet to be made as to whether or not the Navy will agree to use a submarine for science. The last of the STURGEON class submarines is nearing retirement age. A decision will need to be made soon.

Tom Royer asked about the status of SeaNet™. It has been slow to get off the ground. The cost is still high for data transmission and the average scientist can't afford to use it for their large data sets. A lot of effort and resources has been put into developing SeaNet™ and it is not being used to its fullest potential. A good use of the system is educational and public outreach. Charlie Flagg indicated another potential use, real-time modeling. Real-time at-sea modeling has a need for two-way communications and the demand is there. It was noted that many scientists don't know SeaNet™ exists. The science community needs to be educated on its capabilities. Mike Reeve said that he will be taking this effort on and SeaNet™ users should provide feedback to him.

Ship Scheduling Committee (SSC) – The SSC report indicated that THOMPSON's schedule still remains unsettled. NSF ship time totals for the large ship use are up in 2000. Overall Navy funding is down in 2000 since NAVO funds dropped from $7.5M to

$3M. CORE made a concerted effort to maintain the NAVO funding at $7.5M, however, had very limited institutional support.

AGENCY REPORTS:

United States Coast Guard – The USCG provided a written report included as *Appendix IV*.

Department of State (DOS) – Tom Cocke gave the report for Department of State. With the addition of Liz Maruschak to the staff things have been going well. State has been plagued with Y2K problems that included the inability to add data to their existing system. NSF has provided funds for an expert to remedy the problems. Post cruise obligations still are running late. Brazil threatened to deny clearance because of late post cruise data. DOS will be heavily involved with the OPSAIL 2000 program that will bring over 200 tall ships into various ports in the US. Tom's office will be handling these requests. To assist Tom in getting a better response for the clearance process it was suggested we identify those institutions doing a good job at reporting and model all operations after them. It was noted that this falls under our excellence area. Perhaps a report card of some sort is needed.

Tom's office has been having problems in upgrading their computer programs. They will be upgrading from a DOS based system to Windows based ACCESS.

Bob Knox brought up the problem of translating post cruise reports. Could this better be done as a group, spreading the tasks among several institutions? Bob encouraged some thought on this issue.

National Oceanic and Atmospheric Administration (NOAA) – CDR Beth White provide the report for NOAA. NOAA is going through a major review that includes a user customer survey. Facilitated all-hands sessions have been conducted to address the items reported on in the surveys. NOAA is now working on the implementation phase of the recommendations.

RON BROWN is in the yard for routine maintenance and to bring the ship to ISM compliance. New NOAA Corps members are in training at Kings Point. The Corps is now staffed at 230, with a goal of increasing to 260 personnel.

NOAA/NMFS – NMFS Administrator, Dr. Penelope Dalton has agreed to the wording of the NMFS/UNOLS MOA. NOAA administrator, Dr. James Baker will sign the MOA when a suitable date can be arranged.

The acquisition process for the new fisheries FRV is on hold. NOAA had been working with NAVSEA in the acquisition project, but as of November, NAVSEA stepped away from the project. NOAA will be taking this effort over. They can use the technical requirements developed by NAVSEA after they have been updated. They hope to have

the bid package out in March. It has been determined that the contract will have to go to a small business which means that yards like Halter Marine are ineligible.

National Science Foundation (NSF) – Dolly gave the report for NSF and noted that their funding for 2000 did not meet the ship operations costs. As a result, they have had to shorten and postpone cruises and reduce rates. Dolly thanked the operators during this and explained that they have been very cooperative. There is little money left over for upgrades in 2000. Mike Reeves reported that the budget problems are a result of the science programs funding too much sea-going science at a time when the budget is flat. A NSF budget for 2001 will be submitted in February. The President's State of the Union address requested $750M new money for NSF. The technician support budget has not been as impacted as the ship operations budget.

Naval Oceanographic Office (NAVO) – Paul Taylor provided the report for NAVO now in the 4th year of operations with UNOLS. This year $3M has been appropriated for UNOLS with six institutions participating. An additional 10 to 15 more ship days may be added in 2000. Paul's viewgraphs are included as ***Appendix V***.

Office of Naval Research (ONR) – The ONR report was provided by Tim Pfeiffer. UNOLS ship support from the Navy was close to last year's level with the exception of the NAVO work. Approximately $18M was spent in 1999 with about $14M expected for 2000.

The AGOR 26 contract was signed with Lockheed Martin. A $9M increase for construction was appropriated by Congress and transferred to NAVSEA. The ship should be ready for delivery in two years. A written ONR report is provided as ***Appendix VI.***

NSF Academic Research Fleet Review – Bob Knox led the discussion on the fleet review. He reviewed the recommendations included on page 3 of the Academic Fleet report. Considerable discussion followed concerning the recommendation that NSF is to develop a long-range upgrade and replacement plan for the fleet.

The National Ocean Research Leadership Council (NORLC) met with the Federal Oceanographic Fleet Coordinating Committee (FOFCC) to address long range needs and utilization issues. FOFCC has taken the first step in developing the plan. The agencies will work together with NSF taking the lead on this item. FOFCC will become the Federal Oceanographic Facilities Committee (FOFC) in reporting to the NORLC

Dolly Dieter responded by reporting that the three lead agencies (NSF, ONR & NOAA) have met a few times to address this topic. They have been working on developing an approach for the plan. This is a challenging problem since it is difficult to figure out what the funding will be in the next couple of years let alone ten years in the future. The three agencies are looking at all of the recent reports that have been put together (Futures, DESCEND, carbon cycling, etc.).

General discussion continued on the details of the NSF review. The subject led into the presentation by Paula-Anderson Findley on enhancing operational/technical support performance.

Enhancing Operational/Technical Support Performance – Paula-Anderson Findley provided a presentation on enhancing performance for the UNOLS Fleet. She has considerable experience in providing seminars on enhancing quality and performance in an organization. Her background in studying various accepted performance enhancing techniques and seminar experience are particularly germane because of her understanding of the oceanographic community including personal experience of sailing aboard UNOLS research vessels as a technician. Paula came prepared, having examined in detail the NSF Fleet Review report. She noted the unique complexity of the oceanographic community organization and explained that efforts for enhancing performance should first review existing programs.

Paula's discussion included a series of viewgraphs which are included as ***Appendix VII***. The presentation was open to Council discussion and questions were encouraged. As a result, the dialog took many directions though out the course of the presentation. These minutes will attempt to reflect the general tone of the conversation.

The discussion began with a quiz. Paula asked that all meeting participants position themselves on a triangle in the area that best describes themselves: relationships, goals or processes. Paula noted that this triangle would be referenced throughout the discussion.

Paula reviewed two quality approaches, International Standards organization/International Safety Management (ISO/ISM) and Total Quality Management (TQM). She reviewed the objectives and purpose of each of these approaches and their differences. If the ISO certification approach is selected, you need to assure that your suppliers are also ISO certified. Both ISO 9002 and ISM are directly related to the marine industry but do not directly address the interaction of the science community to ship operations. She went on to explain the reasons for using an audit process, what gets audited and who gets audited. The consequences for failure for these two approaches are very different. There are experts at NSF in product training who can provide guidance in this area.

Next, Paula addressed the Academic Fleet Review findings and recommendations. She divided the NSF Review into eight elements: utilization, vision, structure, improvement, funding, operations, innovations (new technology) and strategic long range planning. Paula asked the Council "What is the definition of quality?" Responses included value, customer satisfaction, good proposals, meeting standards, pride in workmanship, reliable, excellence, meeting expectations, rewarding. She asked the Council to think about the things that are missing from the report:

- customer satisfaction
- employee satisfaction
- cost drivers

On a related issue, Paula noted that if response to the technician salary survey hasn't been good, this notes a problem. There is a concern about being open. These things need to be addressed.

Paula defined the term "gap analysis." On a scale from very satisfied to unsatisfactory, the gap is the difference between how important you think something is and how satisfied you are with that item. To determine your ranking, a pilot study can be conducted. In the case of UNOLS, it might be a survey where you list the eight report findings and then ask the customer how satisfied they are and how they would rank these items. There was a question on how to approach such a study. Paula indicated that there needs to be a leadership team, then experts can work with the team to define a plan. It is a journey that can take a couple of years. It is major effort. Another question was asked on how to deal with people changeover? The Council is elected. Paula noted that there are always some common threads, there is continuity. Teams are normally small with approximately eight to ten people.

An important item that needs to be decided before initiating a program is whether you wish to seek compliance or excellence. Paula read some of the findings and recommendations from the Fleet Review. Some appear to be compliance items and some appear to be excellence driven. This evolved into a discussion on the post cruise assessment process. The process is not working optimally. It has the appearance of being a one-way street of communication. Is there any accountability? Are the operators, tech groups and scientists working together in the assessment process? How do we integrate all parties and how do we ask the right assessment questions?

Paula indicated that we need to convey the message that making improvements is possible. It was noted that sea-going scientists have their own, unique missions. How do the technician groups strive to meet all these different missions? Steve Rabalais noted that his instructions to the LUMCON technicians are "to make the science party happy." Paula made a chart showing a strategic plan where there are specific goals in the plan and then there are all the different entities that need to meet each of these goals. This would be analogous to the UNOLS model where there are a variety of service related goals that need to be met by operators, technicians, the UNOLS Office and the Council. There was discussion on the mission of UNOLS. There was some debate over the mission with two general opinions:

1. To provide world leadership in ocean sciences, and
2. To provide the best possible facilities to support world leadership in ocean science.

How to define a UNOLS leadership council was asked. A team needs to define the issues, and set expectations.

- We need to define our level of satisfaction.
- We need to select an approach of either compliance or excellence.

The leadership team needs to assure that the approach that will be pursued will provide the methodology needed to reach the defined goals. We need to choose a methodology that works for our needs. We should set expectations and outcomes. Referring back to

the triangle, in order to meet goals, goal-type people, relationship-type people, and process-type people are needed. All points of the goals need to be addressed.

Paula presented the various improvement program options, ISO, ISM, Deming, Baldridge and 6 Sigma. A comparison chart of these options is provided in the viewgraphs. Paula also provided a summary of the total quality management discussion in terms of customer focus, continuous improvement, total involvement, systemic support and measurement.

Afternoon Break

Bob Knox asked that we continue the discussion on fleet excellence of the morning. He indicated that we would need to start at step one with establishing our satisfaction ranking. Perhaps a survey will need to be conducted. There was a question on what is the role of the UNOLS Council in this process. Perhaps this question should be asked of the community in the survey.

It was recommended that each UNOLS operator institution have a ship committee. Each of these committees should strive for excellence. Dennis Hansell noted that the BBSR ship committee is made up of the users, not just BBSR employees.

RVOC has been addressing the issue of ISM compliance. Some ships must comply, while others do not. There is the question of whether all ships should be mandated to comply with ISM. The RVOC has also noted that quality improvements need to be addressed by all parties: technician groups, ship operators and scientists.

Returning to the issue of the Council's role, Bob Knox suggested that the Council as a whole is the right body to determine the program goals. However, there needs to be a smaller, more focussed group to take on the project implementation. Tim Cowles indicated that we need to clearly define our goals. We need a very clear statement of what we want and what is the quality standard. The very first step should be defining the goals.

It was generally agreed that a small group will be appointed and tasked to draft the first steps for striving towards quality of service improvements. They will be asked to chart out feasible first steps that organizations and institutions can take to strive for excellence. This will be circulated to the Council for review. There was some concern about trying to do this by e-mail alone. We need to keep the momentum. There was a suggestion that hiring a professional to assist in this effort might be beneficial.

Bob will draft a tasking statement for the committee and present it to the Council before the meeting adjourns. There was a suggestion to included elected council members, one RVTEC member and one RVOC member on the committee.

Post Cruise Assessment Reporting – Jack Bash reported that no new changes have been made to the assessment form. The form is on the web and should be automated to

electronically collect the information into the database. Jack recommended that we wait until an excellence program is selected before modifying the assessment report.

Tom Shipley indicated that the low community feedback might be a result of the community's impression that the assessment information is not used. We need to collect the data and summarize it in a useful way and follow through on recommendations or problem areas. We need to hear from the community. More work is needed in this area.

UNOLS Biennial Review of Sea Going Oceanographic Facilities – Larry Atkinson, FIC Chair reported that the report is progressing. Input from authors is slowly being submitted. The review outline and material can be viewed at: http://gso.uri.edu/unols/ficcom/AUTHSHIP.HTM This will be a major agenda item at the upcoming FIC meeting in March.

Moorings as a Facility – Dennis Hansell reported he was unable to attend the moorings meeting at NSF in September. Feedback from the meeting did not indicate an immediate need for the establishment of moorings as a facility. However, there is support for the concept. A hero is needed to lead the effort if it is to continue. For the time being no Council action will be taken.

Seismic Acquisition issues and UNOLS Fleet Capabilities – Tom Shipley provided written information that is included as ***Appendix VIII***. Tom co-chaired a meeting with Greg Moore on seismic acquisition on 17-19 October. Approximately 40 people participated.

There are emerging technologies in seismic acquisition available to researchers. These include:

- 2D and 3D high resolution
- 2D and 3D deep penetration
- nested scales of surveying
- improved visualization and processing
- 4-C emerging technology

However, there is declining usage of seismic tools due in part to the difficulty in accessing and using existing equipment. The work is expensive to carry out. Tom showed a chart of seismic programs carried out in the US by year beginning in 1974. In recent years there is only about four months of seismic work per year. It is difficult to have a dedicated seismic ship for only four months of work per year.

Present activity levels will not support the underway and planned science programs for the next decade. To achieve the minimum objectives of the estimated science plans over the next decade would require at least 8-fold increase in funding. The MARGINS program will have high requirements. The reality is that the science budgets have been level over the years.

Some recommendations for increasing seismic work include simplifying use, improving quality and enfranchising more scientists. This can be achieved by developing one or more facilities to support two classes of seismic operations. It was also recommended to develop a seismic data archive facility.

Other recommendations included:
- Simplify contracting for specialized commercial technology (this was also a recommendation of the Academic Fleet Review report).
- Promote a multi-national program for long-term contracting of commercial multi-streamer 3-D MCS (in an era of IODP). This is an expensive option and would need to be multinational effort.

The future appears to be in new technology. There is concern that EWING is not current with the technology improvements. This is an important issue that needs to be addressed.

Tom's workshop report will be sent to NSF.

ADCP Discussion – Charlie Flagg led a discussion on shipboard ADCP planning (see ***Appendix IX)***. A user group has raised ADCP issues that need to be addressed. The group would like UNOLS to endorse and to address these concerns.

Some of the recommendations include:
- Establish a pool of equipment that could be shared among users.
- Work with the manufactures to develop a plan for the progression to state of the art systems.
- Come to an agreement on the architecture for a universal data acquisition system.

The user group would like to have a meeting of operators, users and manufacturers and are requesting a UNOLS endorsement for such a meeting. Tim Cowles explained that biology users dictate that every ship has a working ADCP unit. This is a critical item. A discussion followed as to who would fund such a workshop. NSF is the likely candidate however commercial funding should also be pursued.

Bob Knox received an endorsement from the Council in favor of the ADCP meeting. This fits with the goal for quality improvement. The funding issue will need to be resolved.

New Ship Construction:
R/V SAVANNAH – The contract has not been awarded for this ship. Funding shortfalls may require some design changes. The issue remains to be settled by the Georgia State Legislators.

F.G. WALTON SMITH – The catamaran has been delivered to RSMAS and is undergoing shakedown tests. ***Appendix X*** provides a photo and deck lay outs of the ship.

It will be ready for service in the spring. A NSF inspection will be required before it can become a UNOLS vessel.

Regional Ship Planning – Lee Black has been leading an effort in regional ship planning. A group of operators and scientists (who were attending the Winch and Wire Symposium) held a meeting in New Orleans. Another meeting is planned in Baltimore in March where they will also meet with the FIC. Goals of this group include planning for mid-life upgrades of regional ships both in terms of scope and timing. A letter from Lee Black is included as ***Appendix XI***.

WHOI SWATH – The design is completed for this ship, fund raising continues. No major changes since September.

AGOR 26 – The ship construction contract has been signed. The ship should be ready for delivery in 2001.

SEA CLIFF – The SEA CLIFF engineering study is on-going. The project has been held up while WHOI waits for input from one of the contractors.

ATV – The Navy is retaining ownership and control of the vehicle at this time.

February 3, 2000

Quality of Service - Bob Knox began the day with a continuation of the fleet review and enhancement of quality of service discussion from day one. He formed a subcommittee to follow up on action items. Committee members include:

- T. Cowles (chair)
- B. Prezelin
- T. Shipley
- D. Hansell
- J. Freitag
- S. Rabalais

The charge to the subcommittee is provided as ***Appendix XII***.

The group is to work via email and have preliminary findings by 1 May. These findings are to be available prior to the summer Council meeting where further discussion will follow.

Discussion on Ship Scheduling Problems in 2000 - It was noted that this is one of the strongest years in the number of total ship days scheduled. A few problems have been reported. THOMPSON's schedule is still unsettled and will depend on the outcome of tests of the PROD drill. Across the fleet there are still some proposals that need to be negotiated. A small number of funded programs may need to be moved into 2001.

NAVO/Navy Ship Time – The funding for NAVO/UNOLS ship time has always been a congressional initiative rather than an item in the regular budget. The future of this congressional initiative is uncertain. Paul Taylor explained that NAVO has eight ships that are always forward deployed. As a result, the Navy cannot fulfill their requirements off the US coast. UNOLS ships have completed NAVO's gravity work, but there is other work that needs to be conducted that if funded would last for the next five years. NAVO is very satisfied with the service and results provided by the UNOLS vessels. Bob Knox offered to assist in any way to help foster the NAVO programs.

White Paper on Ship Scheduling – Jack Bash has revised the white paper on ship scheduling. There are now links to the Research Vessel Safety Standards, the Safety Training Manual, and to the Department of State. There is a new section describing the UNOLS ship time request web map. More description in the introduction is needed. The Council was instructed to look over the revised paper and pass comments to Jack.

Jack continued with a report on the ship scheduling changes. There is now an online form for posting schedules. It dictates uniformity that allows the capture of scheduling data into a database. All UNOLS schedulers will be asked to use the new web form. The capturing of this data should simplify schedule searches and archiving. Joe Ustach recommended that this on-line schedule form be adapted so that schedulers can use it to submit their "letter of intent" for the summer scheduling meeting.

In the new on-line scheduling system there is a "transit bank". This permits schedulers to indicate those transits that are available for no-cost riders such as students or researchers. There will be another location on the UNOLS web page showing the list of ships that have transit time. It will be up to the schedulers to decide if they want to make available this time for the transit bank. If PIs know about this they might want to take a class along. They could possibly get human resources or education funding.

Beth White added that NOAA has a teachers-at-sea program. There was some discussion on what was considered a research cruise by the Coast Guard with respect to R/V status. In some cases, educational cruises are not considered research.

UNOLS Office transfer – Mike Prince reported on the UNOLS Office transfer status. The office will transfer on 1 May. The new UNOLS Office will be located in the library building of MLML. The office phone number is (831) 632-4410. Consideration has been given to registering the UNOLS domain name. Mike asked the Council's preference for .org or .edu. The Council preferred .edu. Mike indicated that if there were no major cost implications, he would pursue the edu. option. [Since the meeting the UNOLS domain has been registered. The web address for the new office is www.unols.org].

The web page will likely stay at URI for time being. The plan is to build on what is there and not reinvent the system. Every effort will be made to make the transition seamless.

Annette will remain at URI and can still be reached through the current UNOLS telephone numbers and email and postal addresses.

Dolly indicated that the new UNOLS proposal is still being reviewed by the agencies, but should be negotiated by the end of the month.

Bob asked that each of the UNOLS committee Chairs think about how business might be done without having as many meetings. The travel budget is not insignificant. Any way that it can be reduced would be helpful. Also, adequate planning for trips is very helpful in reducing costs.

Patty discussed the strategy of the DESSC planning meeting which is normally held each year in December at the AGU conference in December. This meeting is a good way to reach the MG&G community, but is often not represented by the biologists. She suggested having a DESSC presence at the Ocean Sciences meeting. Mike Reeve reinforced that this is a good idea and that the meeting is well represented by all oceanographers.

MATE program – John Freitag gave the history of the MATE program. It has been predicted that the need for marine technicians in the coming years will greatly increase. Most of these marine technicians will not enter the academic marine tech field. There are needs in private industry and marine recreation. MATE has used the academic marine technicians as a resource in developing their program. MATE has requested to use the UNOLS logo on their literature. RVTEC has worked with MATE in developing job qualifications for the sea-going academic portion of the MATE program. However, this is only a small part of the overall MATE program. The Council came to the consensus that MATE could acknowledge UNOLS' involvement but not use the logo.

Nominating committee – Bob Knox appointed a nominating committee of Charlie. Flagg (Chair), Clare Reimers, and Paul Ljunggren to develop a slate for the Council elections in September.

Charter Clarification – Bob Knox reported that the Charter, as it relates to partial terms of Council and Committee members, is not clear. He will draft a change to the Charter to clarify this shortcoming and pass it to the Council by e-mail for comment.

HEALY Visit to Baltimore – HEALY is scheduled to depart Norfolk, VA in the early morning on 21 March and will arrive in Baltimore, MD that evening. The Fleet Improvement Committee will ride the ship and hold a meeting during the transit. The Shelf-Basin Interaction (SBI) Committee will meet on board the ship the following day. The ship will be available for tours on the 22-24. Thursday will be a day for VIP visitors and formal presentations. AICC will be on hand to discuss Arctic science and display posters. The Coast Guard will provide tours. Jim Swift indicated that the response has been overwhelming regarding science poster contributions.

The AICC has been suggesting that the USCG get assistance from the academic community in regard to marine technicians. The Coast Guard Marine Science Technicians (MST) will serve as the marine technicians aboard HEALY. To train, the

MSTs have been sailing on UNOLS vessels and have attended RVTEC meetings over the past couple of years. One UNOLS institution has submitted a proposal to provide technical support for the HEALY.

The USCG has been very receptive to working with the science community. Capt. Garrett, HEALY's Commanding Officer, is very willing to accommodate scientists.

Break

Winch and Wire Symposium – Jack Bash reported on the winch and wire symposium held at Tulane 30 November and 1 December 1999. It was attended by operators, technicians, scientists, and manufacturers. Scientists representing the four oceanographic disciplines, one operator, and one engineer made up a panel that opened the meeting with a presentation of their respective disciplinary needs. The symposium ended with each of the panelists recapping the symposium with a summary from their respective discipline. Symposium speakers from industry addressed the items identified by the panel. Approximately 80 people attended over two days. If there was any down side, it was attendance by the science community. Those scientists that did attend felt that it was a very useful process.

A draft letter report is being circulated. One of the major discussions had to do with the .322 wire and the safety factors involved. The community varies greatly in how they use this wire with conflicting standards. It was recommended that UNOLS determine an acceptable operating profile and establish a standard across the fleet. Another recommendation of the symposium was to design a new .322 wire with greater strength and more bandwidth. The .680 wire also needs redesign. The symposium recommendations will ask for more UNOLS training in maintenance of wire and operation of winches. A recommendation for better record keeping of wire and winch operations will be made. A final recommendation is for similar meetings every five years. An outcome of the workshop will be an update of the winch and wire manual. This is in progress and should be ready by the end of the year.

A question was asked about the effectiveness of lubrication systems. Today's lubricating systems work well and dramatically increase the life of the wire. Chemical oceanographers, however, will not use the wires that have been lubricated.

DESCEND Workshop – Patty Fryer elaborated on her written report. There is a big issue of access to the sea by submergence scientists. Some scientists must wait many years before having access to a vehicle. It was suggested to use the ROVs and AUVs for work when feasible, such as with time series operations. It was also recognized that there are remote areas that have been very well surveyed and need a deep submarine. One controversial suggestion was to include the HBOI submersible in the national facility so that scientists could have access to these vehicles for the shallow work and free up ALVIN for deep-water work. This issue will be further discussed by DESSC at their summer meeting. The question, "what would be the negative aspects of bringing the HBOI vehicles into the national facility?" was asked. It was indicated that without the

addition of funds, adding HBOI vehicles to the national facility would dilute the funds now available for deep submergence operations. Technical problems may be encountered in designating it a national facility. There are six cruises using HBOI vehicles this year.

Patty presented a draft revision to the DESSC Terms of Reference and asked that the Council consider the proposed revision which is intended to better reflect the current activity of that committee. A motion was passed to accept the revised Terms of Reference with the inclusion of some editorial changes.

UNOLS/NOAA-NMFS MOA – The UNOLS/NMFS MOA has been approved by both UNOLS and NOAA and awaits signatures.

UNOLS/NOAA-OAR MOA – The renewal of the UNOLS/OAR MOA has been approved by both organizations and will be signed by Dr. James Baker.

UNOLS Brochure – The UNOLS brochure is in the final stages of completion and should be out this spring.

Meeting Calendar – The Council discussed the dates and places for the next meeting. Arrangements will be coordinated by email.

Annual Meeting – The Council discussed the dates for the Annual meeting. It was suggested that Margaret Leinen be asked to be the keynote speaker. The UNOLS office will poll the community for the best dates.

The meeting was adjourned at 12:00 noon.

Appendix I

UNOLS COUNCIL MEETING

8:30 a.m., 2-3 February 2000
W. Alton Jones Campus
Whispering Pines Conference Center
University of Rhode Island

Wednesday, February 2, 2000

8:30 am **Call the Meeting:** Bob Knox, UNOLS Chair, will call the meeting to order at 8:30 a.m., February 2, 2000.

8:40 am **Accept Minutes of the September 1999 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 September Council meeting.) Chairs will identify any important issues that need to be addressed further by the Council.

9:45 am **Federal Agency Reports:**

- **Department of State** – Tom Cocke
- **National Oceanic and Atmospheric Administration/ Oceanographic and Atmospheric Research (NOAA/OAR)** - CDR Elizabeth White
- **NOAA/National Marine Fisheries Service** – Jim Meehan
- **National Science Foundation** – Dolly Dieter
- **Naval Oceanographic Office** – Paul Taylor
- **Oceanographer of the Navy**
- **Office of Naval Research** – Sujata Millick

10:15 am **Morning Break**

10:35 am **Continue Agency Reports**

UNOLS ISSUES:

11:00 am **NSF Academic Research Fleet Review Session: Recommendations and Responses** - Bob Knox will introduce a session which will focus on the recommendations of the Academic Fleet Review and identify methods for implementing the recommendations both by the federal agencies and UNOLS community. Committee recommendations include the following:

- The UNOLS system should be retained.
- Launch a significant campaign to upgrade and strengthen the fleet to prepare for increasing technological sophistication and improve future productivity and quality of fleet operations.
- Use a cooperative agreement for support of the UNOLS Office to ensure necessary management oversight.
- Consider a trial including some commercial ship operators as UNOLS non-member operators to provide unique fleet capabilities.

- NSF must accelerate and expand efforts to articulate a broadly based vision for the future of ocean science and technology.
- Federal agencies sponsoring research in oceanography should develop a long-range plan for modernization and composition of the oceanographic research fleet that reaches well into the 21st century.

11:20 am **NSF's Response to the Fleet Review Recommendations** - NSF will provide an update on the fleet review recommendations and any actions taken or planned in respect to the review.

12:00 pm **Lunch**

1:00 pm **Enhancing Operational/Technical Support Performance** - In response to the Fleet Review recommendation to enhance operational/technical support performance, Paula Anderson Findley has been invited to the Council meeting to discuss various potential methods, which might be applicable in meeting the goal. Ms. Anderson-Findley works in the field of corporate programs to enhance quality/excellence and is knowledgeable on several methods such as six sigma, TQM, etc. She is also familiar with the UNOLS Fleet having served as a technician on COLUMBUS ISELIN.

1:45 pm **UNOLS Response to Fleet Review recommendations** -The Council will discuss directions and actions needed to respond to the fleet review. ***Attachment 1*** includes the recommendations of the Academic Fleet Review committee, a copy of the UNOLS Charter, and a copy of *The Academic Research Fleet*. The Council is asked to carefully review the material included in ***Attachment 1*** and be prepared to discuss it at the meeting. Members are asked to answer the question, "What specifically should UNOLS, or the agencies, or the ship operators, or combinations thereof, do to make progress in the direction of the recommendations?"

2:30 pm **Afternoon Break**

2:50 pm **Post Cruise Assessment Reporting** - Jack Bash will report on the subcommittee's activities regarding the development of an electronic database system for collecting and summarizing Post Cruise Assessments.

End Fleet Review Session

Future Fleet and Facility Planning Session

3:10 pm **The UNOLS Biennial Review of Sea Going Oceanographic Facilities** – Larry Atkinson will report on progress on the FIC report, *UNOLS Biennial Review of Sea Going Oceanographic Facilities.*

3:25 pm **Moorings as a Facility** – Dennis Hansell will report on activities since the last meeting regarding the concept of running deep-sea moorings as UNOLS facilities.

3:45 pm **Seismic Acquisition Issues and UNOLS Fleet Capabilities** - Tom Shipley attended an IGPP Seismic Acquisition Workshop where a number of issues related to UNOLS arose, see ***Attachment 2***. Tom will lead a discussion on this topic.

4:15 pm **New Ship Construction** - Updates since the September Council meeting on the status of:

- Skidaway's plans for construction of R/V SAVANNAH
- Miami's construction of F. G. WALTON SMITH (CALANUS replacement)
- Replacement of CAPE HENLOPEN
- Regional Ship Replacement Activities
- ALPHA HELIX Replacement plans
- WHOI's plans to build a SWATH vessel
- AGOR 26 construction

4:50 pm **SEA CLIFF and ATV Report:**
SEA CLIFF - The status of WHOI's DSV SEA CLIFF engineering study will be reported.
ATV – Future plans for ATV will be reported.

End Session on Future Fleet and Facility Planning

Evening Session - An evening session will be conducted during and after dinner to continue discussion on the recommendations of the fleet review report.

Thursday, February 3, 2000

Session on ship scheduling and related issues

8:30 am **Discussion on any ship scheduling problems in 2000** - Bob Knox will identify any potential issues related to ship scheduling in 2000.

9:00 am **NAVO/Navy Ship Time** – The future of NAVO/Navy needs for use of UNOLS ships will be discussed.

9:15 am **White Paper on Ship Scheduling** – Jack Bash will review the latest modifications to the White Paper on ship scheduling.

End of session on scheduling and related issues

9:30 am **UNOLS Office Transfer** – Mike Prince will report plans for the UNOLS Office Transfer.

9:45 am **MATE Knowledge and Skill Guidelines** - The Marine Advanced Technology Education Center (MATE) has developed Knowledge and Skill Guidelines for marine technicians, see ***Attachment 3***. They have asked permission to place the UNOLS Logo on the front cover and acknowledge UNOLS' assistance in developing the guidelines. RVTEC voted in favor of recommending that the UNOLS Council consider MATE's request to use the UNOLS logo and name in their Guidelines.

10:05 am **Nomination Committee Appointments** - The first 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 list of necessary qualifications in accordance with the current Charter is provided in ***Attachment 4***. A list of past

council members is also included in the Attachment. Appointments for this year's nominating committee will be recommended.

10:20 am **UNOLS Charter Clarification** - Modification of the UNOLS Charter is necessary to clarify the procedures for filling unexpired Council terms.

10:30 am **Morning Break**

10:45 am **HEALY Public Relations Visit in Baltimore** - Jack Bash will discuss plans for HEALY's visit to Baltimore on 20-22 March.

11:00 am **Winch and Wire Symposium** – Jack Bash will provide an overview of the Winch and Wire Symposium held in December.

11:15 am **DESCEND Workshop** – Patty Fryer will provide an overview of the DEveloping Submergence SCiencE into the Next Decade, DESCEND workshop. The workshop was held on October 25-27, 1999.

11:30 am **UNOLS/NMFS Memorandum of Understanding (MOU)** – Jack Bash will review the status of the draft MOU between NMFS and UNOLS.

11:40 am **Two-Year Review of the NOAA/OAR and UNOLS MOU** – Review of the UNOLS and NOAA/OAR MOU is required every two years. The status of the MOU readoption by NOAA/OAR will be provided.

11:50 am **UNOLS Brochure** – A status report on the UNOLS brochure update will be provided.

11:55 am **Review meetings calendar (below), and other business.**

- **2000 Annual meeting** - Ways to improve participation will be discussed. Recommendations for Keynote Speaker.

12:15 pm **Adjourn**

Calendar for UNOLS Meetings

MEETING	LOCATION	DATES
FIC	Norfolk to Baltimore (HEALY)	March 19-20, 2000
DESSC	Woods Hole, MA	Spring 2000
SSC	NSF, Arlington, VA	Summer 2000
UNOLS Council	????	Summer
Schedule Review	NSF, Arlington, VA	Sept, 2000
UNOLS Council	NSF, Arlington, VA	Sept, 2000
UNOLS Annual	NSF, Arlington, VA	Sept, 2000
RVTEC	Palisades, NY	Sept, 2000
RVOC	Newport, OR	Fall 2000
DESSC	San Francisco, CA	Dec 2000

Appendix II

UNOLS Council Meeting - Participant List: February 2-3, 2000

Name	Institution/Organizatio	Phone	Fax	E-mail
Alberts, Jon	WHOI	508-289-2277	508-457-2185	jalberts@whoi.edu
Anderson-Findley, Paula	Business Consultant	561-234-2795	561-234-7436	PAFonline@msn.com
Atkinson, Larry	ODU	757-683-4926	757-683-5550	atkinson@ccpo.odu.edu
Avery, David	UNOLS	401-874-6825	401-874-6167	unols@gso.uri.edu
Bash, Jack	UNOLS	401-874-6825	401-874-6167	unols@gso.uri.edu
Calahan, Jim	Vatican Ngmt Group	407-281-4119	401-233-0439	popeyeone@worldnet.att.net
Calder, Jon P.	UMG	207-721-0742	207-729-8291	cjon@jwi.net
Cocke, Tom	Dept of State	202-647-0240	202-647-1106	cockewt@state.gov
Cowles, Tim	OSU	541-737-3969	541-737-2064	tjc@ore.orst.edu
Davidson, Sarah	UNOLS	401-874-6825	401-874-6167	unols@gso.uri.edu
DeSilva, Annette	UNOLS	401-874-6825	401-874-6167	unols@gso.uri.edu
Dieter, Dolly	NSF/OCE	703-306-4577	703-306-0390	edieter@nsf.gov
Flagg, Charles	BNL	613-344-3128	631-344-2060	flagg@bnl.gov
Freitag, John	URI/GSO	401-874-6579	401-874-6518	jfreitag@gso.uri.edu
Fryer, Patricia	U.Hawaii	808-956-3146	808-856-3188	pfryer@soest.hawaii.edu
Hahn, William	URI/GSO	401-874-6574	401-874-6574	bhahn@gso.uri.edu
Hansell, Dennis	BBSR	441-297-1880x21	441-297-8143	dennis@bbsr.edu
Knox, Bob	SIO/UNOLS Chair	858-534-4729	858-535-1817	rknox@ucsd.edu
Meehan, Jim	NMFS	301-713-2363	301-713-1875	James.M.Meehan@noaa.gov
Mooney, Brad	Consultant	703-415-4535		jbradmooney@erols.com
Pfeiffer, Tim	ONR	703-696-6999		Timothy_Pfeiffer@onr.navy.gov
Prezelin, Barbara	UCSB	805-893-????	805-893-2879	barbara@icess.ucsd.edu
Prince, Mike	MLML	831-632-4410	831-633-4580	prince@unols.org
Rabalais, Steve	LUMCON	504-851-2808	504-851-2863	srabalais@limcon.edu
Reeve, Mike	NSF/OCE	703-306-1582		mreeve@nsf.gov
Rossman, Fred	NOAA/OAR	301-713-2465x18	301-713-0163	Frederick.W.Rossmann@noaa.gov
Royer, Tom	Old Dominion U.	757-683-5547	757-683-5550	royer@ccpo.odu.edu
Shipley, Tom	UTIG	512-471-0430		tom@utig.ig.utexas.edu
Swift, Jim	UCSD/SIO	858-534-3387	858-534-7383	jswift@ucsd.edu
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Ustach, Joe	Duke/UNC	252-504-7579	252-504-7651	joeu@duke.edu
White, Beth	NOAA/OMAO	301-713-3435x13	301-713-1541	elizabeth.white@noaa.gov
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Appendix III

UNOLS
Committee Reports

February 2000

Arctic Icebreaker Coordinating Committee
Deep Submergence Science Committee
Fleet Improvement Committee
Research Vessel Operators' Committee
Research Vessel Technical Enhancement Committee
Ship Scheduling Committee

UNOLS Arctic Icebreaker Coordinating Committee

Report to the UNOLS Council
January 22, 2000
James H. Swift, Chair AICC

The UNOLS Arctic Icebreaker Coordinating Committee (AICC) has been busy since the last report to Council in September, including a meeting at NSF Headquarters 11-12 January.

Announcement of the 2000 Arctic Science-of-Opportunity (SOO) cruise was made in late summer 1999 and applications were received. Because nearly all were repeats from last year's cancelled SOO, and it was going to be possible to accommodate the new requests, no compatibility/logistics review was needed from the AICC. Glenn Cota has agreed to be Chief Scientist on the 2000 SOO, expected in the western Arctic in early summer.

An informal AICC meeting was held on 19 October at Old Dominion University, with a focus on AICC-Coast Guard issues and continued efforts to provide a UNOLS-like experience to funded Arctic science users of the Coast Guard icebreakers.

At the NSF Ocean-Atmosphere-Ice Interactions All-Hands meeting in Virginia Beach, 20-22 October, AICC representation was included during a panel discussion on Arctic logistics, with focus on the upcoming western Arctic Shelf-Basin Interactions project and HEALY science planning.

AICC representation was included at the USCGC HEALY Ice Trials Meeting 27-28 October in New Orleans, the final all-hands planning meeting for the tests and trials program. A tour provided a chance to observe that the ship and laboratories looked in nearly final/completed condition.

The AICC hosted a community long-term planning workshop on Arctic icebreaker use at the 1999 Fall AGU meeting. The audience was principally concerned with understanding the planning and scheduling process, and understanding science equipment and technical support. This feedback will be valuable in guiding updates to information for prospective users. An abridged version of the present 'five year rolling plan' for US Arctic icebreaker use has been placed on the UNOLS web site. Another meeting has been arranged at the Ocean Science Meeting in San Antonio 24-28 January.

USCGC HEALY has been delivered to the Coast Guard and is expected to depart New Orleans for warm water testing 'any day now'. Departure is currently ca. two weeks later than scheduled and this may impact future events on the schedule. The AICC is being kept up to date. At last word the Coast Guard continues to anticipate being ready for NSF funded Arctic science in CY2001.

The Coast Guard's plans for a Baltimore public relations visit by HEALY have created excitement. HEALY is presently scheduled to depart Norfolk on 19 March and transit to Baltimore. The UNOLS FIC Committee will ride the ship and hold a meeting aboard. There is

room for other riders for this transit. The ship will be open Monday and Tuesday for activities. A press day is being planned. The Shelf Basin Interaction (SBI) Group is planning to meet aboard on Tuesday. Wednesday (March 22nd) will be the big event with VIPs onboard. Congressional staffers are being invited. AICC members will be on hand in the laboratories along with many posters from the community demonstrating the type of science intended to be carried out from HEALY.

There will be extensive AICC participation in Coast Guard sea trials of HEALY during 2000. The Coast Guard has been working closely with Canada, Denmark and Greenland with respect to the ice breaking and cold water science tests to be conducted in Baffin Bay. The science systems testing team will make the decision as to where it will want to work for science testing. The ship's science systems are ready for testing. Test memos for science testing are now being updated for the final in-ice science systems tests in June, and the AICC is now writing up science objectives for the Phase IV science systems testing. John Freitag has been tasked to provide the committee with his draft objectives adjusting them for realigned of test requirements recently worked out by the AICC. AICC members will be overseeing all science systems testing, and an addition to the test reports all are contributing to an executive report. At the behest of the AICC, member Kelly Falkner submitted a proposal to NSF to support having teachers aboard during the level ice and science systems testing. It is likely to be funded.

The AICC is moving ahead with its role in expeditionary planning. In addition to the at-least-annual town meetings, a five-year rolling plan, including status of each planning idea, will be made available to the community through the UNOLS web site. It is planned that information to be tracked will include planning ideas, proposals submitted, proposals funded and proposals scheduled, with accompanying logistics and user contact information. The funding cycle makes long range planning very difficult. It is particularly difficult to coordinate operations with foreign ships since they commit to a schedule several years in advance. There remain important details to work out but progress is being made on this important AICC and community issue.

Regarding science equipment and technical support on the Coast Guard icebreakers, the AICC is available to do informational reviews for equipment purchases, and notes that the academic community can be of assistance in providing technical support that could help with equipment purchases, equipment maintenance, training and technicians at sea. The committee discussed what process is necessary to make the services available. The Chair will alert the community that one or more institutions should consider submitting technical support proposals to NSF for HEALY services. It will be important that anyone contemplating providing such services work closely with both the Coast Guard and the users.

Seattle was selected as the next meeting place, to be scheduled near commissioning time, expected ca. August 2000.

Report to the UNOLS Council from
The UNOLS DEep Submergence Science Committee
Submitted by Dr. Patricia Fryer

This report consists of three parts:
1. Report of the UNOLS DESCEND Workshop, Oct. 1999
2. Brief report of the DESSC Annual Planning Meeting, Dec. 1999
3. Draft of Revised DESSC Terms of Reference

1. Report of the UNOLS DESCEND Workshop

As part of an overarching effort to define critical scientific research objectives to be attacked in the next decade, and to ensure that the facilities exist to achieve these objectives, NSF, NOAA and ONR funded a UNOLS workshop that took place in late October of 1999. The 117 participants in this workshop addressed the future of multidisciplinary science that utilizes both deep and shallow submergence technologies (see <http://www.gso.uri.edu/unols/descend/descend.htm> for more information). The workshop provided an excellent opportunity for scientists and experts in submersible vehicle and sensor technology to meet and discuss the myriad of issues associated with future science initiatives and the technology that will be needed to address them. The workshop had three objectives: to (1) define the critical scientific research themes for oceanographic and allied sciences that require vehicle and/or observatory systems in the next decade and beyond, to (2) define strategies to ensure that the facilities exist to carry out these objectives, and thus, to (3) help to direct future upgrades of science sensors, sampling techniques, and imaging capabilities of vehicle systems funded by the federal agencies.

Participants in the workshop agreed that one of the most outstanding scientific revelations of the twentieth century is the realization that ocean processes and creation of the Earth's crust within the oceans may determine the livability of our planet in terms of climate, resources, and hazards. Discoveries made with submergence vehicles may enable us to determine even how life itself began on Earth and whether it exists on other worlds. The participants also stressed that the next critical step should be toward discovering the linkages between various phenomena and processes in the oceans and in exploring the interdependencies of these through time. The participants expressed excitement at the knowledge that technological advances in the myriad of oceanographic sensors and vehicle capabilities are escalating at a increasingly rapid pace, and have created enormous potential for opportunities to gain a scope of understanding unprecedented even a decade ago. This new knowledge will build on the unprecedented discoveries in marine sciences over the last several decades; many made possible only through advances in vehicle and sensor technology. With the rapidly escalating advances in technology, the participants agree that the time is ripe to focus efforts on understanding the connections both in terms of interdependency of phenomena at work in the world oceans and their variability through time.

Some of the major recommendations arising from the DESCEND Workshop include a concern that our nation's ability to keep pace with this growing potential is being limited by an inability to gain broad access to the full spectrum of vehicles and tools that currently exist. The future

success of multidisciplinary oceanographic research in realizing the full potential of this burgeoning technology will depend critically on a new, major national investment in facilities and research funding if we are to make new vehicles, sensors and samplers readily available to the academic community. The justification for this investment lies in the certainty that we will make fundamental discoveries concerning the interplay between geological, chemical, and biological phenomena in the world oceans and the effects these processes have on the hydrosphere, atmosphere, ecosystems, and Earth's human population.

2. DESSC Annual Planning Meeting

UNOLS DEep Submergence Science Committee held its annual Planning Meeting in the Moscone Convention Hall, Room 220, San Francisco, CA, on Sunday, December 12, 1999. The full minutes are not yet available, however I present a summary of the meeting below:

The DESSC Chair's Report given by Patty Fryer introduced two new members Dave Mindell (replacing Jim Bellingham) and Joris Gieskes (replacing Bob Collier). (additional information: The terms of Jim Bellingham, Dan Orange and Bob Collier ended in 1999. A call for nominations was distributed from the UNOLS Office and four applications were received. The DESSC reviewed the current membership of the committee in terms of disciplinary balance and institutional representation. They felt it was important that there be a technology/engineer expert on the committee. It was also suggested that SIO should have representation on DESSC. Although the applications received were all fine candidates, they did not match the disciplinary needs required to maintain a balance among the committee. DESSC members made suggestions for replacements and of these Dave Mindell and Joris Gieskes have agreed to serve. Patty discussed planned changes to the DESSC Terms of reference (see the draft below). She reported briefly on the DESCEND Workshop (a discussion session for results of the DESCEND was planned for the afternoon). Patty highlighted the results of the NDSF year - 12 ATLANTIS cruises, 4 cruises for the ROV systems as flyaway components and then introduced reports by PIs who had used the NDSF assets in 1999.

1999 Science Reports - Presentations given by Principal Investigators were all very favorable. Several people did note problems; however, that they hoped would be addressed. Among these were the impact of fuel problems on science, the lack of SeaBeam capability on one cruise and the lack of a back-up board for the computer on one cruise, the sinks on ATLANTIS are a general problem (because particles clog the sinks scientists are forced to do prep work on deck), the issue of small programs with few dives being "taxed" with training dives should be addressed, pull strength of wire for the ROVs is less than the retrieval pull of the instruments, bunk space is limited on complex cruises (this will be a problem as more multi-disciplinary approaches are made to submergence science), the elevators are size-limited for instruments, 24 hour science use brings scientist up against the limit for overtime for ship's crew (day rate problem).

Operations Summary - NDSF vehicle systems summary was reported by the operator (activities since the July meeting were presented). The WHOI work plans for 2000-2001 were addressed including ATLANTIS. Work done and to be done was described and community input for improvements was solicited. The ALVIN Overhaul (2001) was discussed and again community

input for upgrades was solicited. An update on the SEA CLIFF Engineering Study was presented. The Jason upgrade progress so far and timing for activities in 2000-2001 were presented. The operator and the attendees discussed scheduling and coordination with ALVIN overhaul. A brief discussion of out-year planning of funded unscheduled programs was held. The operator presented the Annual Technical Proposal.

The funding Agency representatives gave brief reports.

The DESSC Terms of Reference Revision was discussed (see draft of revised Terms of Reference below).

Fryer gave a report on the UNOLS DESCEND Workshop (see above) and led a discussion of how the results of the Workshop might best be presented. The suggestion to focus on "discovery" as a unifying theme for the report was agreed to as the best. There was a brief discussion of follow-up activities for DESCEND Workshop recommendations. These include a Technology workshop and dissemination plans for the DESCEND document. It was agreed that a short brochure-style document as well as the full report should be prepared. DESSC's role in the follow-up activities was discussed. It was agreed that DESSC would be the best body to provide oversight on follow-up activities.

A suggestion was made that it would be possible to enfranchise more scientists by moving DESSC meetings to Ocean Sciences from the AGU meeting, possibly in alternate years.

The meeting adjourned at 4:30 PM.

3. Draft of revisions to DESSC Terms of Reference

Terms of Reference

DEEP SUBMERGENCE SCIENCE COMMITTEE
Revised: July 13, 1993

INTRODUCTION:

The Terms of Reference for the DEep Submergence Science Committee (DESSC) are herein revised to reflect the evolving role of this committee. The Committee retains its oversight responsibilities in the use of ALVIN and includes oversight of the use of the ROV and AUV assets of the National Deep Submergence Facility. Incumbent in this is fulfilling an ombudsman role for the deep submergence community, insuring maximum participation in the utilization of these deep submergence assets. It is also the responsibility of the DESSC to promote new technology for ALVIN, the ROVs and AUVs and to maintain cutting edge capability for the National Facility.

The DESSC will continue to work with the user community, federal sponsors and the operator of the deep submergence national facility to encourage deep submergence research in traditional

areas and expeditions to remote geographic regions. Additionally, DESSC will also encourage the advancement of cooperative international programs for the enhancement of multidisciplinary submersible science throughout the academic community.

SPECIFIC TASKS FOR THE DEEP SUBMERGENCE SCIENCE COMMITTEE ARE AS FOLLOWS:

1. The UNOLS DEep Submergence Science Committee shall operate pursuant to appointment by UNOLS and in accordance with Annex II to the UNOLS Charter. In addition, each funding agency will be invited to designate an official observer to the Committee.
2. Advise Regarding Proposals for Use of National Facility Assets: Proposals for the use of the National Facility deep submergence assets are regularly submitted for peer review through the three principal funding agencies NSF, ONR and NOAA. DESSC no longer reviews proposals. DESSC will however provide advice regarding optimum use of the assets to maximize operational strategy for the deployment of these assets. Deliberations will consider whether the proposed research might be enhanced by the use of ROVs, AUVs and/or other undersea research tools, or be better accomplished using other manned or unmanned submersibles, perhaps those operated by other countries. The committee will work with agency representatives and staff from the operating institution to develop schedules that will most effectively utilize deep submergence assets.

3. Deep Submergence Assets Planning:

   A. Annual Scheduling. Ship scheduling is based on funded projects and is done in part in consultation with the DESSC at the summer DESSC meeting. A preliminary scheduling discussion is conducted in an open forum for the user community at the winter (Dec. AGU) meeting. At that time the community is provided with an indication of the potential areas in which deep submergence assets could feasibly operate well in advance of proposal submission deadlines.

   B. Global Expeditions: The DESSC will work with the user community, federal sponsors and the operator to determine the feasibility of organizing deep submergence science expeditions to remote geographic regions. DESSC will work with the federal funding agencies to provide timely information regarding funded projects so as to enable potential users to better evaluate the appropriateness of submission of proposals for work in remote areas.

4. Deep Submergence Science Tools: The DESSC will, on a continuing basis, maintain awareness of new scientific tools and the needs of the users for new sensors and equipment to address important scientific questions. DESSC should encourage development and promote acquisition of these tools by the operator or interested scientists, and encourage discussion of mechanisms whereby the supporting agencies can fund these technological developments that are essential to the maintenance of state-of-the-art capabilities for National facility assets. Workshops or special sessions during the Fall AGU meeting, as well as other National Scientific meetings may be required for this task. Technical capability of the deep submergence research assets will be formally reviewed by the DESSC, with the assistance of selected outside experts, at least once every two (2) years.

5. User Concerns: On a yearly basis, the committee will review and assess comments from scientific users of deep submergence assets and identify key areas that warrant attention by the operator and recommend remedial actions as appropriate.

6. Undersea Technology: With regard to undersea technology in the broader sense, the DESSC should monitor and promote the development and application of appropriate new submersible technologies, both manned and unmanned, shallow and deep, for use in undersea scientific research. The DESSC should coordinate their efforts with the science user community, technology developers and facility operators. The DESSC shall advise NSF, ONR, NOAA and other federal agencies on submersible technology, its evolution and applications. Additionally, the committee shall include a representative(s) with expertise in the areas of undersea engineering and technology.

   In carrying out this task the DESSC will need to coordinate its efforts with the Academy of Engineering Marine Board and may need to organize special workshops.

7. Membership/Nomination of DESSC: The DESSC membership shall be comprised of individuals who can represent the various oceanographic disciplines required to advise on the effective use of submersible assets. The UNOLS Chair shall appoint the DESSC members from the nominations made by DESSC. Nominations for candidates to the committee shall be submitted to the DESSC for review. Nominations should include the candidate's vitae. Members of the DESSC will be appointed for three-year terms, staggered so that two or three terms begin each year. Individuals may serve not more than two consecutive terms. The operating institution may designate an ex-officio member(s) in addition to those members appointed by the UNOLS Chair. With the Council's concurrence, standing committees of UNOLS may also designate ex-officio members as appropriate to DESSC.

8. Reports of activities shall be made to UNOLS.

ANNEX II TO THE CHARTER
National Oceanographic Facilities

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

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

3. The purpose of National Oceanographic Facilities is:

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

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

4. In recommending the allocation of facility time, the Review Committee acts primarily on the scientific merit of the proposed research and its compatibility with the individual facility.

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

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

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

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

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

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

Approved and adopted: May 5, 1972, College Station, TX
Readopted: May 17, 1974, Washington, DC
Amended and readopted: May 13, 1977, Washington, DC
Readopted: Oct 21, 1981, Washington, DC
Amended: Oct 26, 1983, Washington, DC
Readopted: May 25, 1984, Washington, DC
Readopted: Oct 23, 1987, Washington, DC
Readopted: Oct 28, 1988, Washington, DC
Readopted: Sep 15, 1989, Washington, DC
Readopted: Sep 14, 1995, Arlington, VA
Revised: July 13, 1999 in draft form

Fleet Improvement Committee Report to the UNOLS Council
February 2000
Submitted by Larry Atkinson

November meeting and a ride on the *WESTERN FLYER* - FIC met on November 9 and 10 in Moss Landing at the Monterey Bay Research Institute. In addition to a dockside tour of WESTERN FLYER on the first day MBARI graciously arranged for us to go offshore to meet FLYER on the second day and ride it back into port. With more SWATHS coming on line in the future it was more than appropriate that FIC actually ride on one. We learned more in a few hours than from days of viewgraphs!

AGOR 26 - FIC continues its occasional oversight role in the design and build of AGOR 26 (the 'Hawaii SWATH'). This has been a good test of a new mode of operation of FIC where we *ad hoc* respond to needs of institutions planning or constructing new ships.

WHOI SWATH - FIC has been kept up to date on the WHOI SWATH developments by Joe Coburn. We have written a letter to WHOI urging them to put the new ship, should it be built, in the UNOLS system.

CAPE HENLOPEN Replacement and other issues regarding regional vessels - FIC is working with Matt Hawkins (U. Del.) and his Delaware Research Vessel Design Committee. Here again FIC is working *ad hoc* to provide community input to institutional efforts to replace ships.

FIC is also coordinating with Lee Back (BBSR) who has formed a group to address the needs of Regional class vessel upgrades and replacements. FIC Chair will stay in contact with Lee and his group.

Alaska Replacement - The Alaska replacement SMR has been delivered to U. Alaska. We will continue to work with Alaska as the process develops. When planning begins FIC will provide appropriate members to be part of the team.

Biennial Review - FIC is creating a WWW based document that will take the place of the five year planning document. The outline of the Review follows along with authors. If you know of someone who might author one of the sections please let me know.

Future Research Requirements – Chairs of NSF Ocean Discipline review committees.
This chapter will summarize the results of the NSF review of the future of ocean science so the following discussion of facilities is in the context of science requirements. It will answer the question "What are the new areas of research that oceanography will study in the coming decades?"

Future Observing Systems –
This chapter would summarize the reality of what we will need in the future with what is possible. Discussion could range from maintenance of ocean observatories to high sea state observations from new hull designs. This chapter will answer the question "What

new observing systems may become available that scientists will want to use?" Of course, we must note that new tools may change the scientific questions that are asked.

General Information on the UNOLS Fleet

State of the Fleet and Trends in Fleet Use- Larry Atkinson (Old Dominion University), Annette DeSilva, Jack Bash and Mike Prince (UNOLS)

What is the state of the fleet and what have been the trends in fleet use? This chapter will present the state of the fleet in terms of size and capability of the ships. The chapter will also look at trends in fleet use including the waxing and waning of large programs, the issue of more bunks per cruise, lab space, and sea state capabilities.

Historical Perspective of Fleet Replacement and Expansion – UNOLS office and past chairs

How did we get to where we are? In the past how did fleet expansions occur? What has caused change in the fleet over time?

New Assets - Chris Measures (University of Hawaii)

This chapter will present the ships that are now in the planning or construction phase. This would include the Hawaii SWATH, SAVANNAH, WHOI coastal SWATH, etc. Because of the nature of the chapter it would require updating regularly.

Specific Topics – New types of vessels

Icebreakers - Jim Swift (Scripps Institution of Oceanography)

This chapter will review the status of ice strengthened hulls for ocean research. Also considered will be: vessel needs in the Arctic and Antarctic, critical issues in research (polynas, etc.).

Seismic Vessels – Paul Ljunggren and John Diebold (Columbia University)

This chapter will review the status and trends in vessels specialized for seismic observations. Special note will be made of the progress made in the petroleum industry.

SWATH Vessels – Joe Coburn (Woods Hole Oceanographic Institution)

SWATH vessels offer the oceanographic community the opportunity to work at sea in higher sea states than previously possible on small vessels. This chapter will review the successes and failures of SWATH vessels. The chapter will educate the reader on the attributes of SWATH designs. The status of SWATH vessels worldwide will be reviewed as well as the future in the US.

Remote Operated Vehicles - Author(s) yet to be identified

Remotely Operated Vehicles present a new way of observing the ocean and place new requirements on the ships for deployment, retrieval and maintenance. This chapter will review ROV technology and the special requirements it places on ships.

Autonomous Underwater Vehicles - Author(s) yet to be identified

Autonomous underwater vehicles present a new way of observing the ocean and place new requirements on the ships for deployment, retrieval and maintenance. This chapter will review AUV technology and the special requirements it places on ships.

Ocean Observatories - Author(s) yet to be identified

The ability to leave instruments at remote undersea locations for months and years is changing the character of oceanography. What are the classes of observatories and what special demands to they put on the research fleet?

Fisheries and Hydrographic Surveying

Fisheries Surveys - Author(s) yet to be identified

NOAA has the responsibility of assessing the state of the nations fisheries stock. NOAA is in the process of developing a new fleet of fisheries survey ships. How will this affect the research fleet and can research fleet be adapted to perform some of the NOAA required surveys?

Hydrographic Surveys – Sam DeBow

Hydrographic surveying used to be done solely by NOAA but is now being contracted out at an ever increasing rate. How is this process affecting the UNOLS fleet and are there any opportunities there?

Technical Issues

New Regulations – Joe Coburn (Woods Hole Oceanographic Institution)

Regulations are ever changing but recent and newly adopted rulings may well make fundamental changes in the way scientists work at sea.

Shore Side and Shipboard Technical Support - John Freitag (University of Rhode Island)

The support of technical experts at research ship home ports and at other institutions has grown to be an expected and valuable part of research ship operations. What have been the trends in this support and what may affect it in the future?

On board ships we have evolved from expecting merely depth and location to CTD's, ADCP's, meteorological and internet communications. What is supported at present and what will be needed in the future? How will these demands affect costs?

RVOC Report
UNOLS Council Meeting
2-3 February 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:

- Dennis Nixon UNOLS Risk Manager discussed Insurance and Liability.
- Dolly Dieter of NSF provided an overview of the Academic Fleet Review.
- Jim Meehan of the National Marine Fisheries Service discussed the status and planned capabilities of the new fisheries research vessel, FRV 40.
- Susan Kubany, Bob Heinmiller and Andy Maffei provided an update on SeaNet.
- Bill Hermann of NOAA gave a presentation on the Shipboard Activities Logging System used on board NOAA vessels.
- Jack Ringelberg and Blake Powell from Jamestown Marine provided an overview of four Computerized Shipboard Maintenance Systems currently available.
- Ken Hughes of Delta Marine International gave a presentation on ozone technology describing its current and potential applications on board ships
- An open discussion was held on the issue of "Quality" as identified in the Academic Fleet Review and what steps, we as a community, can take to address this issue. This is not just an issue for the vessel operators, but an issue to be addressed by operators, technicians, as well as the scientific users.

One issue discussed at the Marine Superintendents Round Table which resulted in a follow up and exchange of email with the NSF related to the Cooperative Agreement used to fund vessel operations. A draft of a revised cooperative agreement was sent out a little over a week before 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 year 2000 meeting of the RVOC will be hosted by Oregon State University at their Marine Facility in Newport, OR from 24-26 October 2000. The University of Rhode Island was selected to host the 2001 meeting. The RVOC and RVTEC are planning a concurrent meeting with some joint sessions for 2001.

All sections of the Small Research Vessel Primer have now been received from the contributing authors. Jack Bash will prepare the introduction and Paul Pelletier of UNH, Dan Schwartz of UW, and Fred Jones of OSU have agreed to review the document.

The new RVOC Safety Standards have been printed and distributed. If copies were not received the UNOLS office should be contacted to request copies.

RVTEC Report to UNOLS Council for Winter UNOLS meeting

The RVTEC annual meeting was hosted by the University of Texas Marine Science Institute in Port Aransas, TX from 20 to 22 October.

The meeting opened with introductions and reading of the minutes. Reports were heard from the Federal funding agencies and the activities of other UNOLS committees for the remainder of the morning.

There followed a report on the status of the SeaNet project and a discussion led by Dale Chayes of LDEO. SeaNet installations have been completed on five UNOLS vessels in a variety of classes. There is still some question of how SeaNet will ultimately be utilized by the fleet. At the present, aside from some specific experimental uses involving SEAS educational program and the Jason Project for three shore-side web sites and a shore based investigator, the majority of traffic is still e-mail related. There is still a question of how charging and billing will be worked out and it is hoped by many operators that this function could be handled centrally, greatly reducing the present mish mash of charging and billing that various operators are using. There are many science related projects and uses for the SeaNet concept and there appear to be funding opportunities available for many of these projects.

Bob Gauer of CODA Technologies gave a presentation of the various software and processing options available in the expanding marketplace of shallow sediment profiling and swath mapping Sonar systems becoming available. The presentation looked at the various options available and highlighted the questions we as users should be asking the vendors.

Sandy Shor, NSF, reported on the status of the fleet review report and its potential impact on UNOLS technical service organizations.

The majority of the second day was spent on an interactive presentation of NetCDF and its application to the UNOLS fleet. RVTEC has been wrestling with the question of data product commonality since the FIC made a recommendation for a move in that direction about three years ago. The move has been made toward a common media, the CDROM, and has been largely successful. This effort is aimed at the commonality of data product and the inclusion of metadata in what is disseminated by UNOLS vessels. The feedback to date indicates that movement is finally beginning to occur in this direction. Dale Chayes, LDEO, agreed to lead a sub-committee to address common issues and stimulate communication between technical support groups as they progress to NetCDF. In a related issue, several institutions have requested copies of NOAA SCS data logging software. RVTEC is acting as a clearinghouse for the distribution and tech support for SCS and will convene a users group in conjunction with next years meeting should there be sufficient interest in adopting the system on UNOLS vessels.

There were two presentations by representatives of science programs, briefing RVTEC about relevant aspects of their projects. Shawn Smith from FSU gave details on the utilization of Meteorological data, completeness of data sets and the impact on the larger picture. Brian Guest of Woods Hole Oceanographic Institution briefed the group on ARGO, a global array of floats to map ocean circulation, which is in the ramp up stage and likely to be implemented from UNOLS

vessels. Dale Chayes gave an update on the SICEX submarine program and its implications for future research in the Arctic.

There were technical presentations led by Rich Findley. Rich had a rep from Lab-View, who produce data logging and display software and showed various applications using the "smart" Keithley modules Rich introduced at last year's meeting.

There followed a discussion of the MATE program which is discussed in a separate document.

On the final day the salary survey issue was revisited and it was basically decided to table the survey until new interest resurfaces at a later date.

Elections were held for Vice Chair. The nominating committee reported one candidate, Tony Amos, the incumbent. After requesting nominations from the floor a motion was made to retain Tony in the position. The motion passed without dissent.

The meeting location was set for next year at Lamont-Doherty in Palisades, NY to allow some participants desiring to attend the INMARTECH 2000 in the Netherlands to combine both events in one trip.

In other RVTEC activity, the role of coordination in HEALY trials is progressing and active participation will begin with the Warm Water Trials set for mid February. Nearly all parties participating are under contract and prepared to depart. As has been stated previously, the goal of the ice trials is to test the major scientific systems under conditions which simulate as closely as possible the conditions of an actual science program.

Submitted,

John S. Freitag
RVTEC Chair

UNOLS Ship Scheduling Committee Report

Submitted by Joe Ustach

The major problems still to be resolved for CY 2000 center around the THOMPSON's schedule. It hinges on the success or failure of the PROD Drill trial cruise(s). Dan Schwartz has three cruise scenarios available depending upon the success or failure of the trials. The results of these trials will also affect KNORR's schedule, because the ship has a 19 day PROD cruise scheduled in July. In addition, there are still at least four conflicts among PI's wanting the same brief weather window on Juan de Fuca, as well as continuing conflicts over the same Endeavor seamount station utilization by ALVIN, JASON, THOMPSON, ATLANTIS, and SONNE. Dan is hoping to get some resolutions at the Ocean Sciences Meetings this week. I hope to bring word of them to the Council Meeting. With that said and assuming a successful Prod Drill trial, the total days scheduled for CY 2000 is similar to those in CY 1999: 5321 in 2000 vs. 5243 in 1999. On the East/Gulf Coasts, OCEANUS will have open periods at the beginning and end of the year.

All schedulers that Dan and I contacted want to continue with the Letter of Intent concept. The only complaint about last year's attempt was that all thought the Letter was too complex, that it called for too much information. What is the least amount of information that the funding agencies need that should be included in these letters? A second area of concern is what's going to happen to NAVO in the future. Since that is already on the agenda, that should be covered.

Appendix IV

UNOLS COUNCIL MEETING
Coast Guard Agency Report
2 February 2000

USCGC HEALY Update

Litton-Avondale Industries conducted builder's sea trials in the Gulf of Mexico with HEALY on 23-30 August and preliminary acceptance trials on 11-13 October. HEALY was delivered on 9 November 99 and, after a period of fitting-out availability and repairs, departed New Orleans on 26 January 2000. Machinery/hull and science trials are planned for mid-January to June 99. The members of the AICC and RVTEC have been major players in the planning of these tests and the Coast Guard is highly appreciative of their efforts. HEALY's schedule has been adjusted so that the Baltimore port call 19-23 March is on track. The ice trials are planned for an area near Baffin Island in the eastern Arctic. After completion of the trials, HEALY will return to Seattle by transiting the Northwest Passage. The formal commissioning will take place in September 2000. HEALY's first unrestricted science cruise is scheduled for early spring of 2001.

POLAR Class Update

POLAR SEA completed Operation Deep Freeze in the Antarctic in early November 1998. Upon completion of that 5-month deployment, the ship transited to the Arctic for a spring mission near St. Lawrence Island in April 99. POLAR SEA is now undergoing a "Reliability Improvement Project" yard availability in Todd Shipyards, Seattle. It is anticipated that this work will be completed in April 2000 and that the ship will be available for a Science of Opportunity cruise during mid-June to late July.

POLAR STAR completed major repairs to the centerline shaft and deployed for Antarctic in mid-November, and is presently conduction operations for the Deep Freeze 2000. It is scheduled to return to Seattle in April 2000 and, following an in-port period for voyage repairs, will sail on a three-month Arctic mission from early July to late September. The Coast Guard is seeking interest for dedicated science support for this deployment.

Appendix V

UNOLS/NAVOCEANO [redacted]

Paul Taylor
Naval Oceanographic Office

Utilization of Academic F

1997	1998	1999	2000
Ship Days 373	Ship Days 431	Ship Days 451	Ship Days 200
Funds 7.5M	Funds 7.3M	Funds 7.4M	Funds 3.0M
Ships 6.4M	Ships 6.6M	Ships 6.1M	Ships 2.0M
Other 1.1M	Other 0.7M	Other 1.3M	Other 1.0M
Institutions 8	Institutions 6	Institutions 6	Institutions 6
Ships 9	Ships 8	Ships 8	Ships 6

Planned Ship Employment

ENDEAVOR	SWATH BATHYMETRY	NARRAGANSET BAY
HATTERAS	ACOUSTIC SURVEY PHYS. OCEANOG.	E.C. SHALLOW WATER TEST RANGE E. COAST US
PELICAN	No. Gulf Mex Littoral	GULF OF MEXICO
W. SMITH	SWATH BATHYMETRY	SOUTH FLORIDA TEST RANGE
LONGHORN	SIDE SCAN SURVEY	W. GULF OF MEXICO
NEW HORIZON	GEOPHYSICAL SURVEY ACOUSTIC SURVEY	W.C. SHALLOW WATER TEST RANGE W.C. SHALLOW WATER TEST RANGE

CY 2000 SHIP SCHEDUL

NAVOCEANO UNOLS CY2000 SHIPS SCHEDULE

SHIPS	2000											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PELICAN	1/27 2/12			5/2 5/16				8/30 9/13			12/2 12/16	
ENDEAVOR		2/15 3/8										
UMIAMI CATAMARAN			3/2 3/21									
CAPE HATTERAS				3/24 4/8				8/21 9/5				
NEW HORIZON				3/29 4/2 4/15 4/23						11/1 11/15		
LONGHORN				3/16 4/16								

Appendix VI

AGOR 26 Status Update:

The contract for Phase II was awarded on 10/27/99 to Lockheed Martin, Launching Systems, Baltimore MD. The construction yard will be Atlantic Marine Inc. in Jacksonville FL.

Other subs to LM:
Guido Perla and Associates – Detail Design
Electronic Design Inc. – Propulsion System Integrator, Ship Electronics
Noise Control Engineering – Noise Control issues
Propeller design – To be selected.

Their primary goal in the first six months is to complete a detail design, get ABS approval on structural approach, complete model testing for powering, maneuvering, and control fins settings. The tests will be done in San Diego at (forget basin name).

AMI plans to construct the vessel in a modular fashion. The have already begun the ordering of long lead time items, and plan to "lay the keel" (or keels in this case) early August. Once they start the actual construction process, they will have the ship launched in 9 months. The delivery date for the vessel is September of 01. Then the ship begins its 9 month warranty period.

In general, the team (primary members – LM baltimore/san jose, AMI, GPA, 2 government reps, other special item members as needed (eg. Simrad, propeller, etc.) appears to be working very well. In doing the 804 process (versus SCN), Navsea believes that we have put 80% of the ship acquisition funds towards the construction, versus 60% in the case of the AGOR 24.

Appendix VII

Enhancing Operational/Technical Support Performance

Prepared by:

Paula Anderson-Findley

Email: PAFonline@msn.com

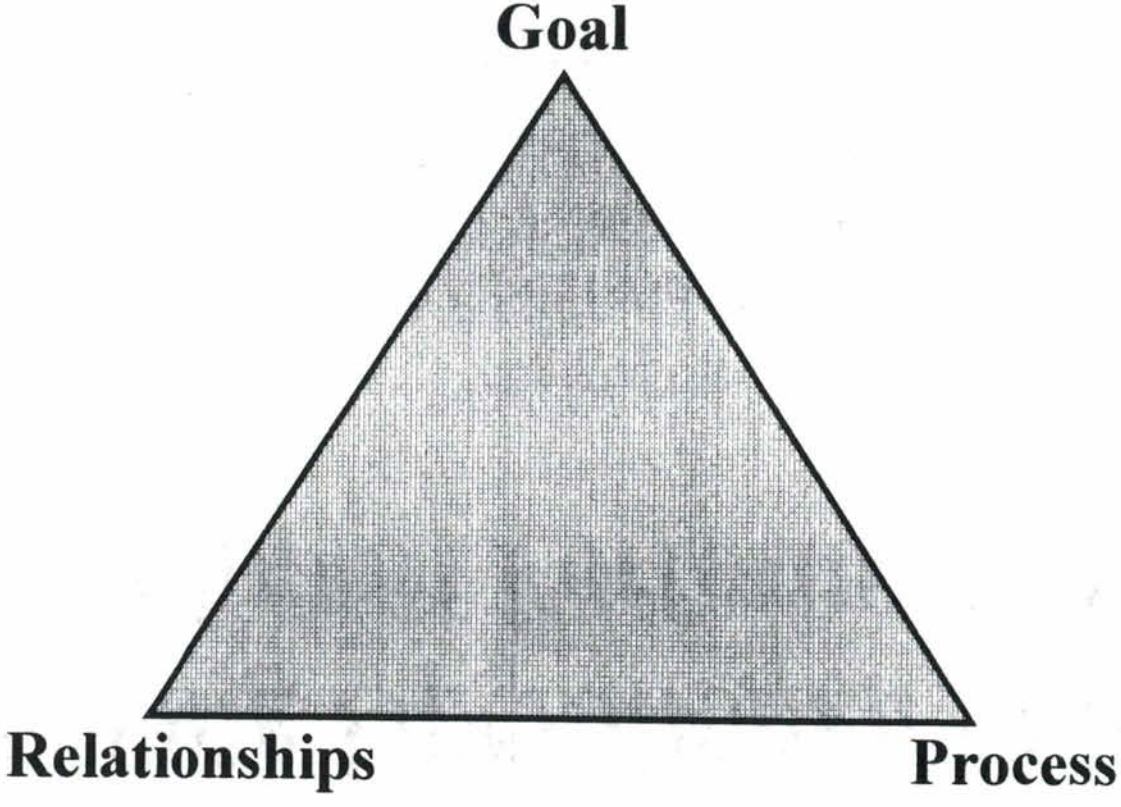
Phone: (561) 234-2795

Prepared for:

UNOLS Council Meeting

2-3 February 2000

Where Are You?



Quality Approaches

	ISO/ISM	TQM
Stands For	International Standards Organization/ International Safety Management	Total Quality Management
Applicable	World Wide	Organizational Wide
Objective(s)	To insure you have a quality system that is in conformance with your standard of registration (e.g. ISO-9001, -9002, -9003).	To ask customers what they want; determine measurements; complete work in the shortest possible time; measure systems, not behavior; make sure everyone feels like stakeholder.
Purpose	To meet customer needs and to produce a consistent product of known quality (not necessarily high).	To continuously improve product and service quality and increase customer satisfaction by restructuring traditional mgmt practices.

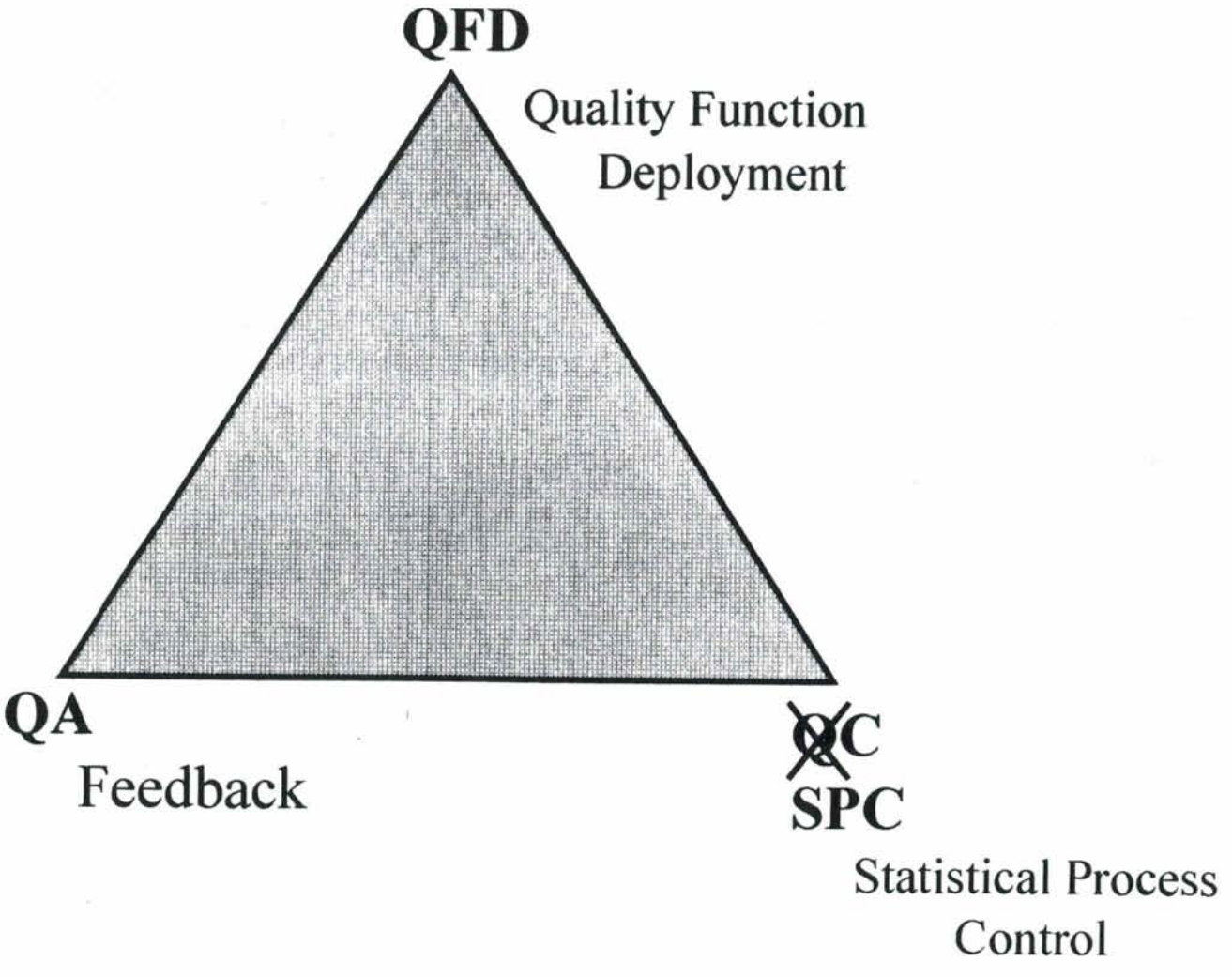
Quality Approaches (continued)

	ISO/ISM	TQM
Stands For	International Standards Organization/ International Safety Management	Total Quality Management
Reason for Using an Audit Process	Voluntary: Decision of the company. NOTE: ISM mandated for some.	Voluntary: Decision of the company.
What Gets Audited?	Objective evidence that system conforms to requirements.	Audits occur only as submitting evidence of TQM processes to Malcolm Baldridge or other regional award.
Who Gets Audited?	People who do the work (not the escort).	People who do the work

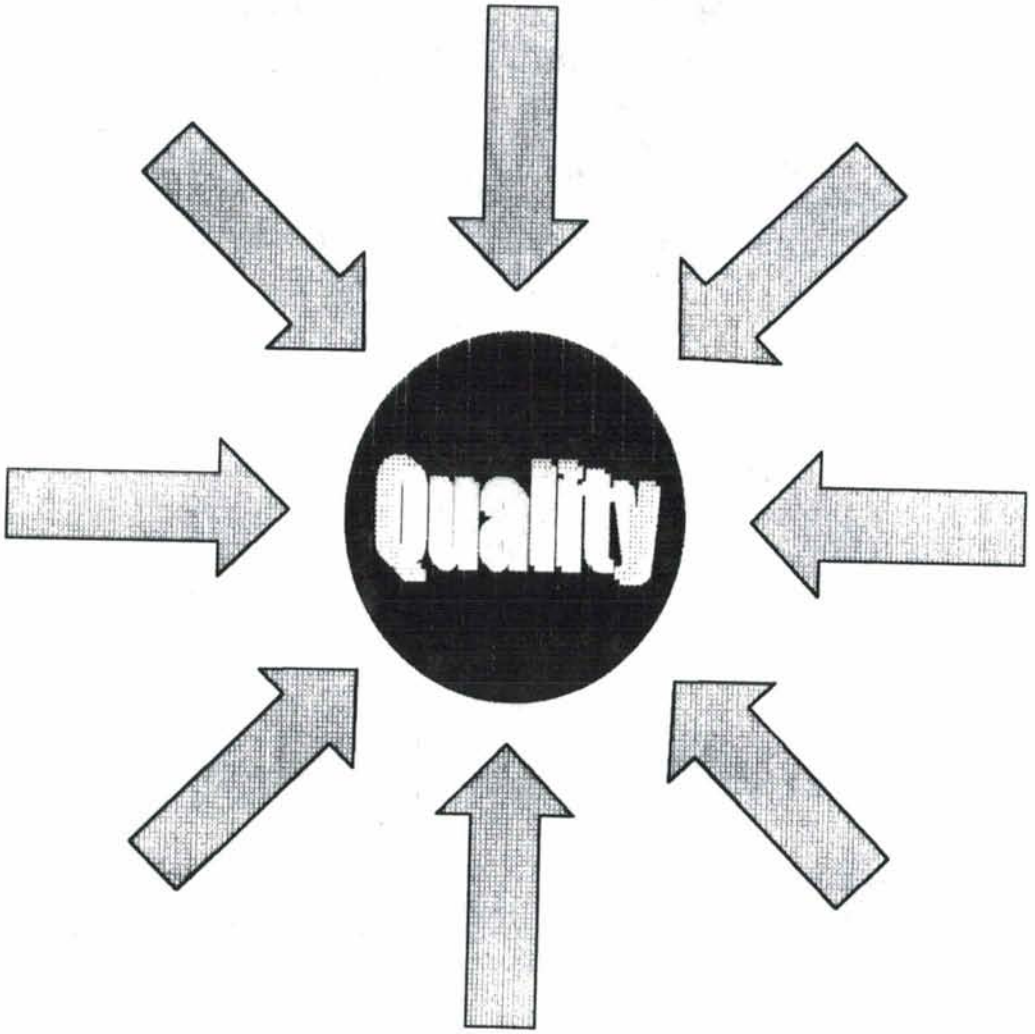
Quality Approaches (continued)

	ISO/ISM	TQM
Stands For	International Standards Organization/ International Safety Management	Total Quality Management
Consequences for Failure	Possible loss of registration; loss of marketing value. (ISM- enforcement action such as seizure, recall or removal of product/service; criminal and civil penalties.	Loss of corporate self-esteem for failing to live up to potential.

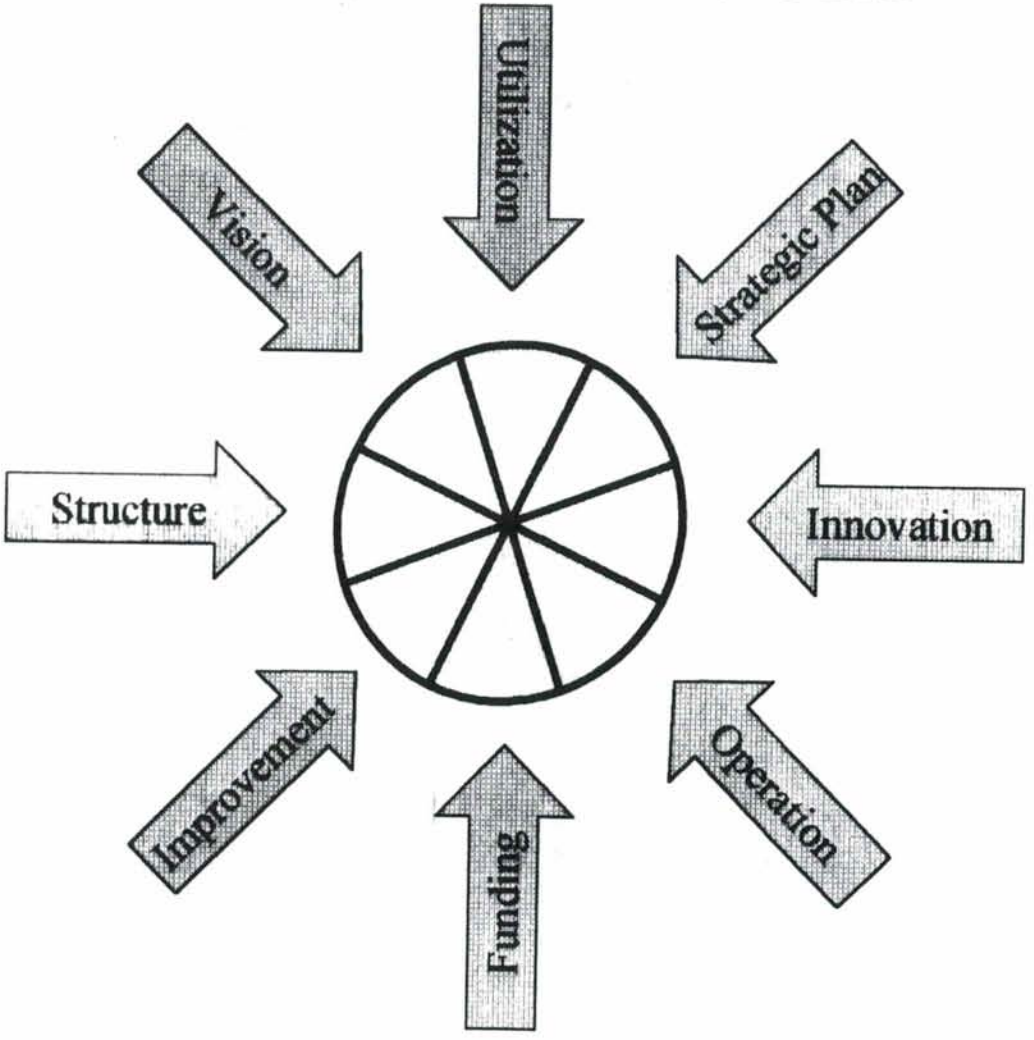
Quality Triangle



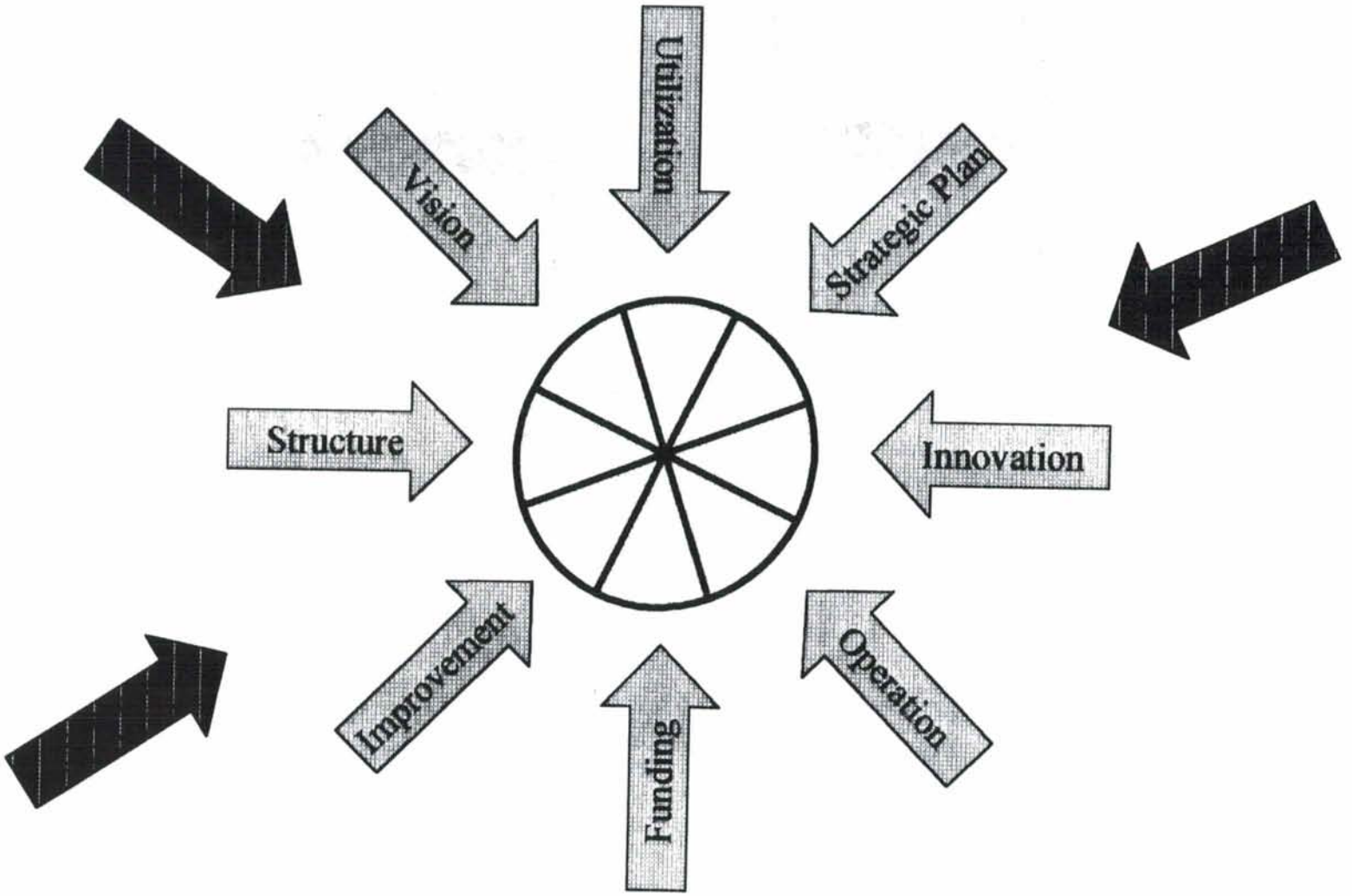
Your Definition of Quality



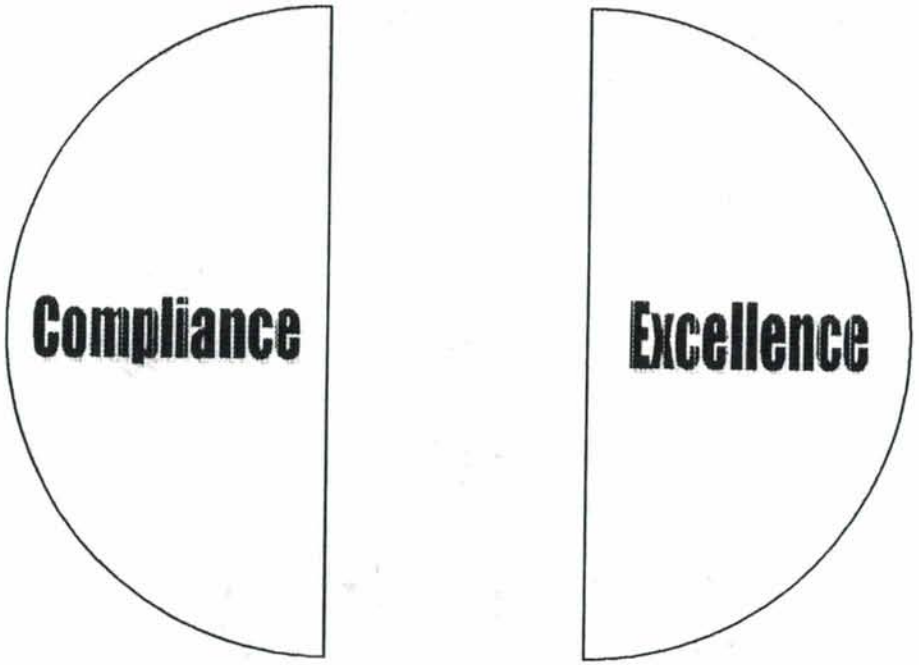
Fleet Review Findings & Recommendations



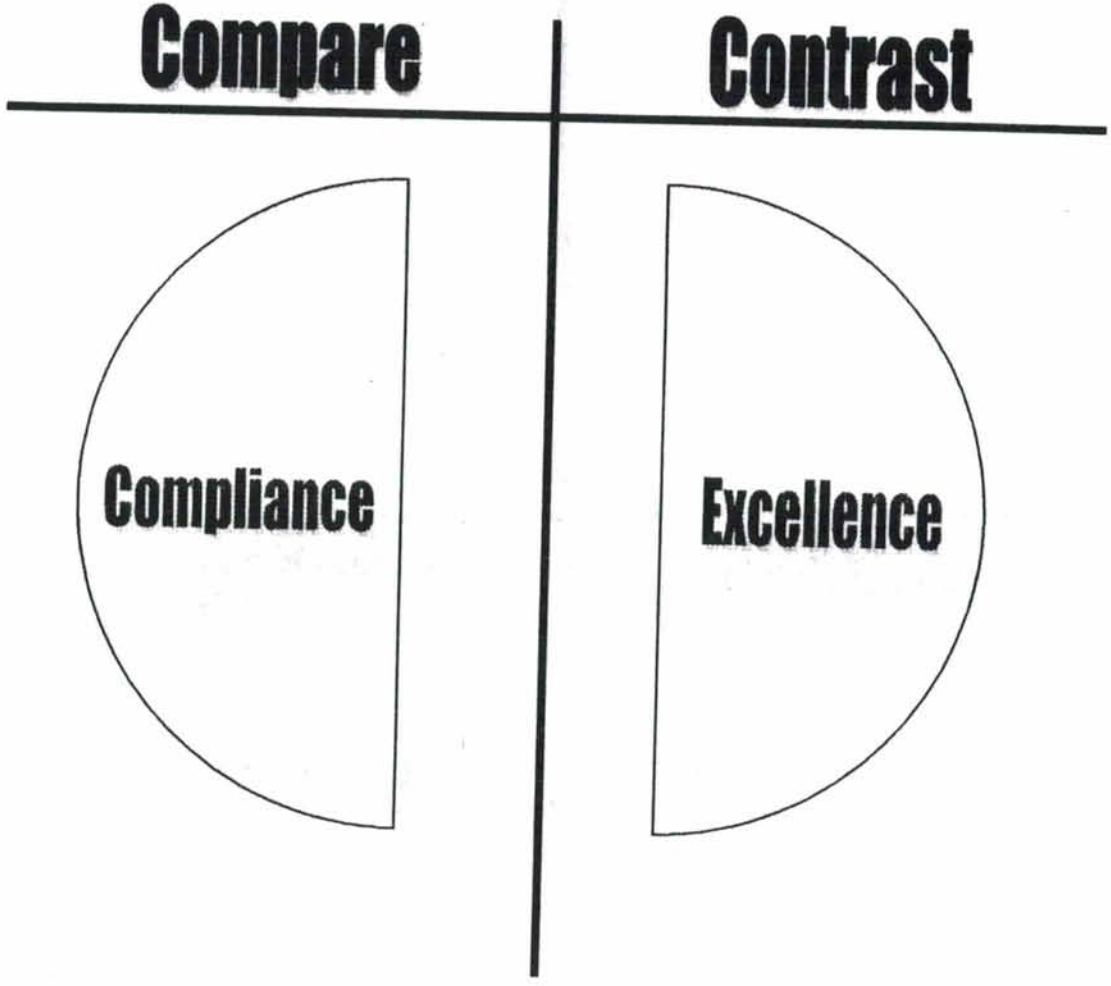
What Else?


Utilization
Vision
Strategic Plan
Structure
Innovation
Improvement
Funding
Operation

What Do You Want?



Decision Criteria



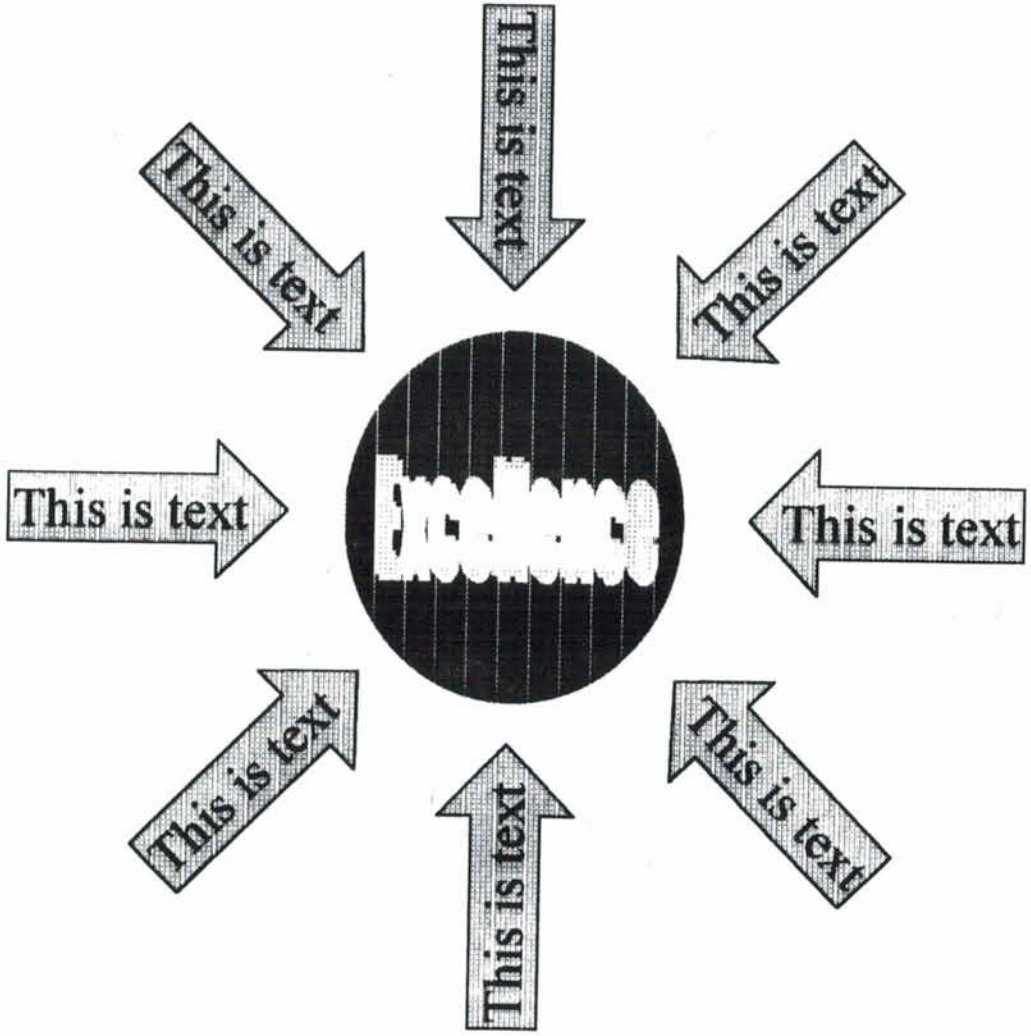
Decision Criteria

Compare	Contrast

Options

Parameter	ISO	ISM	Deming	Baldridge	6 Sigma
Measurement/Compliance	38%		14%	19%	Raised industry standards for accept-able quality parts
Customer Focus	9%		6%	16%	
Continuous Improvement	16%		17%	16%	
Total Involvement	16%		34%	29%	
Systemic Support	22%		29%	19%	
More Information	www.asq.com				

Your Definition of Excellence



Setting Expectations & Outcomes

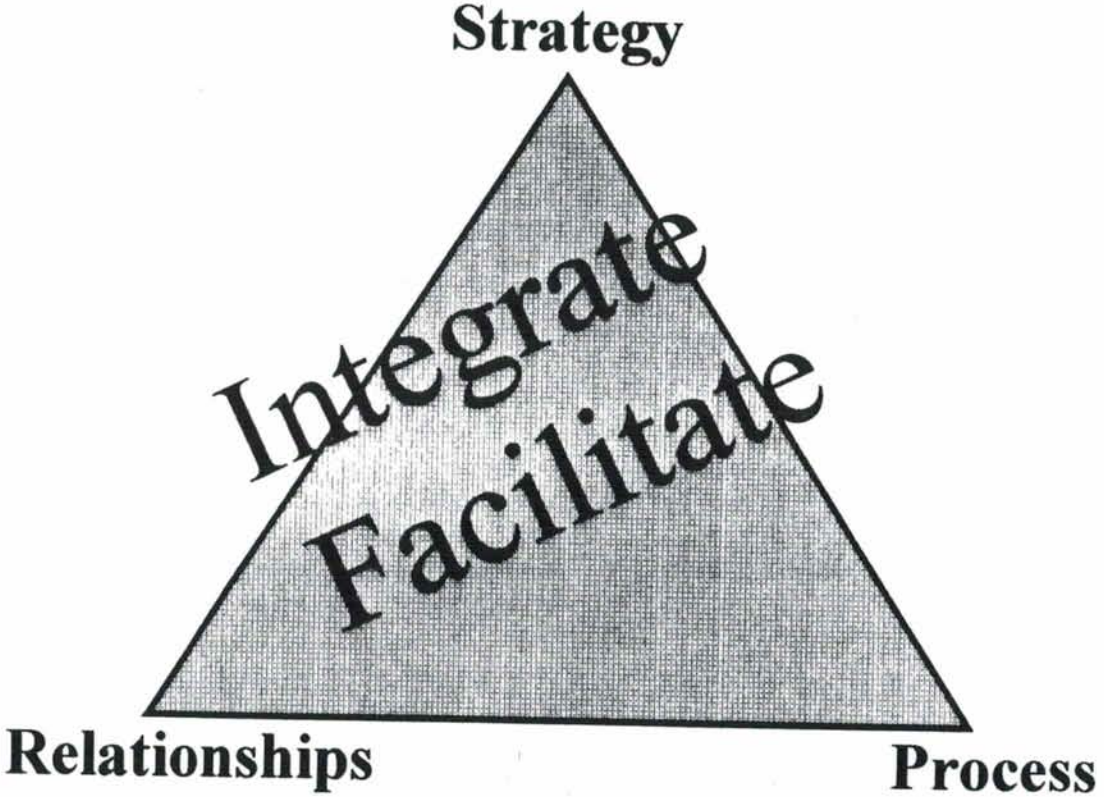
TQM Summary

Expectations	What people may see	What people may hear	What people may feel
Customer Focus	People collaborating with the customer- at the same table; socializing - people in dialogue, etc.	What do you want? Expect? Need? May I help you in getting what you want?	Friendly, trusting, open, receptive, flexible, etc.
Continuous Improvement	Teams and people using plan-do-check-act steps to improve processes; people using a quality improvement problem solving method every day.	This time we can… I have an idea to do this better.	Rhythm of repetitive cycle as a reflex to situations—flexible, adaptable, etc.
Total Involvement	Measurements of #'s of ideas, employee surveys, open sharing of ideas in memos and meetings.	I have something to add. Let me do that.	Connected to the whole organization; insightful; comfortable with speaking up.

TQM Summary (continued)

Expectations	What people may see	What people may hear	What people may feel
Systemic Support	Widely shared organization charts; flow of processes documented, and teams set up to streamline them; highest business priorities supported with resources.	Let's put the resources here. Thinking ahead, we'll need that skill here in the process.	Connected to the whole organization, calm, confident, resourceful.
Measurement	Business goals, $, and quality.	We met our goals. Next year our new goal is an incremental improvement based on changing business requirements.	Excitement, determination, receptive.

Your Options…
Elements for Success



Appendix VIII

ATTACHMENT 2

Seismic Acquisition Issues

Below is an e-mail message from Tom Shipley to Bob Knox regarding seismic acquisition issues:

****

Dear Bob,

I have an agenda item for the next UNOLS meeting. I just had a Seismic Acquisition Workshop at IGPP where a number of issues related to UNOLS.

I would like 20-30 minutes if possible to review some issues:

For example:

1. How should standards of quality and deliverables for seismic programs be set (both seismic and navigation, including the EWING and other single channel digital operations)?

2. EWING refit opportunities, multi-streamers(?); move to an AGOR 24(?).

3. How will PI's access commercially available high resolution systems and 3-D systems (e.g., the Academic Fleet Review)? There are some problems here with different 'flavors' of what otherwise appear to be similar systems. It is not going to be a big help to 'certify' contractors if they don't have the most appropriate equipment. You may already have figured out a response to the AFR.

4. What seismic capabilities will be needed when the EWING retires in the next 10-15 years? The next decade will probably see a move away from surface towed cables to bottom cables which will open the opportunity to a ship with modest cable laying technology. Right now industry is working in 300 m water depth and planning on 3000 m soon. So called 4-C technology (3-component plus hydrophone) with long cables perhaps 10's of km long will be deployed in deep water.

Regards, Tom Shipley.

1 Seismic Reflection Workshop:

Acquisition needs for the next decade

17-19 October 1999

Tom Shipley and Greg Moore, conveners

2 Seismic methods are tools for subsurface:

- geometrical relationships
  - stratigraphy and structure
- correlation to outcrops and bore holes
- characterization of physical properties

3 Major technological advances increasingly available to researchers

- 2-D and 3-D high resolution
- 2-D and 3-D deep penetration
- nested scales of surveying
- improved visualization and processing
- 4-C emerging technology

4 Yet declining usage

- due in part to the difficulty in using existing equipment
- lack of easy access to data collected by other investigators
- funding levels remain stagnet

5 Annual surveying

- UNOLS seismic usage (months/year)
  - 3 long-offset multichannel (~ 900 k/yr)
  - 2 short-offset multichannel (portable, ~200 k/yr))
  - 2 digital single channel (~100 k/yr)
- Incremental costs about $1.2 M per year
  - does not include ship costs or PI science costs

6 Significant truths

- present activity levels will not support the underway and planned

science programs for the next decade

- to achieve the minimum objectives of the established science plans over the next decade would require at least a 8-fold increase

7 Recommendations:

simplify use, improve quality and enfranchise more scientists

- Develop one or more 'facilities' to support two classes of seismic operations:
  - Portable 2-D and 3-D single channel seismic (SCS) and multichannel seismic (MCS) acquisition
  - Large UNOLS single-ship 2-D and some 3-D seismic acquisition
    - should solve many present short-comings by incorporating coherent community-based input to facilities operations and improvement paths
- Develop a seismic data archive 'facility'

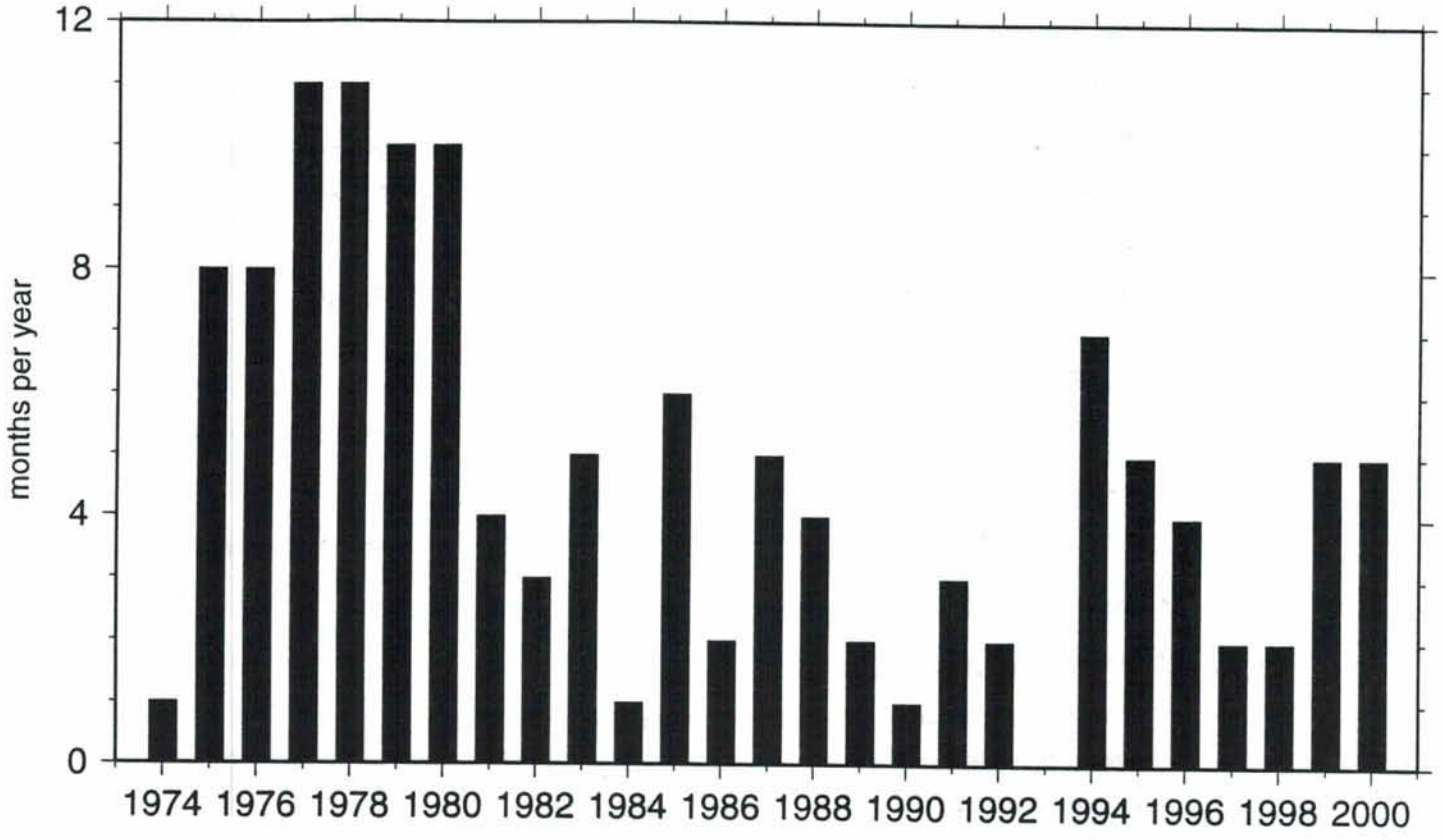
8 Other Recommendations

- Simplify contracting for specialized commercial technology
- Promote a multi-national program for long-term contracting of commercial multi-streamer 3-D MCS (in an era of IODP)
  - Major cost savings accrue with 6-month or longer contracts

9 Other Recommendations

- Ewing Refit Opportunities
  - multi-streamer, multi-source capabilities
- UNOLS seismic-capable vessel and retirement of the R/V Ewing in 2010-2015
  - single or multi-purpose
    - transits, coordination, cost-structure
  - towed surface cables
  - bottom cables

Multichannel Seismic Programs in the U.S.



	IG	FM	TW	RC	V	ME
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1978	5		2	4		
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1980		3	2	0	5	
1981		4		0		
1982		1		2		
1983		1		4		
1984		1		0		
1985		1		5		
1986		1		1		
1987		5		1		
1988				4		
1989				2		
1990						1
1991						3
1992						2
1993						0
1994						7
1995						5
1996						4
1997						2
1998						2
1999						5
2000						5

Appendix IX

Shipboard Acoustic Doppler Current Profilers, the Maintenance of Aging Hardware and Planning for Future Systems

Current Situation -

The majority of the current suite of ADCPs on US ships consists of RD Instruments narrow band 150 kHz units. There is a small but growing number of RD Instruments broad band instruments as well, generally on some of the smaller or more recently equipped vessels. There are also a few ADCPs deployed on ships of opportunity with more of these are planned for the future. The heavy users of shipboard ADCPs include relatively few investigators on the WOCE, JGOFS, GLOBEC, STACS and CALCOFI programs. These users have extensive experience and form the base upon which the rest of the user community relies for guidance and software. The result has been a defacto standard for the collection and processing of shipboard ADCP data that has facilitated both the collection and exchange of data. However, this community relies almost exclusively on RD Instruments narrow band ADCPs and their attendant and antiquated software and hardware. The shipboard systems are getting old at the same time that RD Instruments is no longer willing/able to supply replacement parts, especially some of the electronics boards. The systems are at risk now and will be increasingly so in the future. Replacement costs are on the order of $75,000 per unit.

Future Direction -

There are a number of forces at work that will impact the future of shipboard ADCPs. There is continued development of the hardware with RD Instruments developing first the broadband and now, the phased array ADCPs. There are also other manufacturers developing ADCPs of similar or alternate design. These systems are being developed, for the most part, without organized input from the user community as to the type and quality of the data or the manner and flexibility of the data collection. In addition, manufacturers are developing their own software for data acquisition. No standard data format exists for any of the existing or contemplated acqusition software.

Proposed Solution -

The shipboard ADCP user community would like to convene a meeting that would include scientists, manufacturers, ship operators and funding agency representatives to discuss the situation. This would be a successor meeting to that held a decade ago prior to WOCE. The following, representative set of issues would be addressed:

- The maintenance of the current suite of instruments and the establishment of a pool of hard to get replacement parts
- The development of a plan for the orderly progression to state of the art systems and what the capabilities of those systems should be
- An agreement on the architecture of a standard data acquisition system that would be developed which would be flexible enough to accommodate all existing and future systems

Charles N. Flagg, Brookhaven National Laboratory, Upton, NY 11973. E-mail:flagg@bnl.gov

Appendix X

UNIVERSITY OF Miami

January 25, 2000

Mr. Jack Bash
UNOLS
University of Rhode Island
Graduate School of Oceanography
South Ferry Road
Narragansett, RI 02882

Hi Jack:

Here are two overheads of our Research Catamaran just after launching on December 15 at Eastern Shipyards Panama City. The vessel's name is "F.G. Walton Smith". Everything is going as planned. First sea trials revealed that she is quiet, fast and very maneuverable.

We get the keys on January 31 and run her back to Miami by February 5. That is the reason I am not able to attend the Council Meeting. Could you please show these overheads during the meeting at a propitious moment in the agenda?

Thanks for your help.

Sincerely

Tom

Tom Lee
Research Professor

Rosenstiel School of Marine and Atmospheric Science
Division of Meteorology and Physical Oceanography
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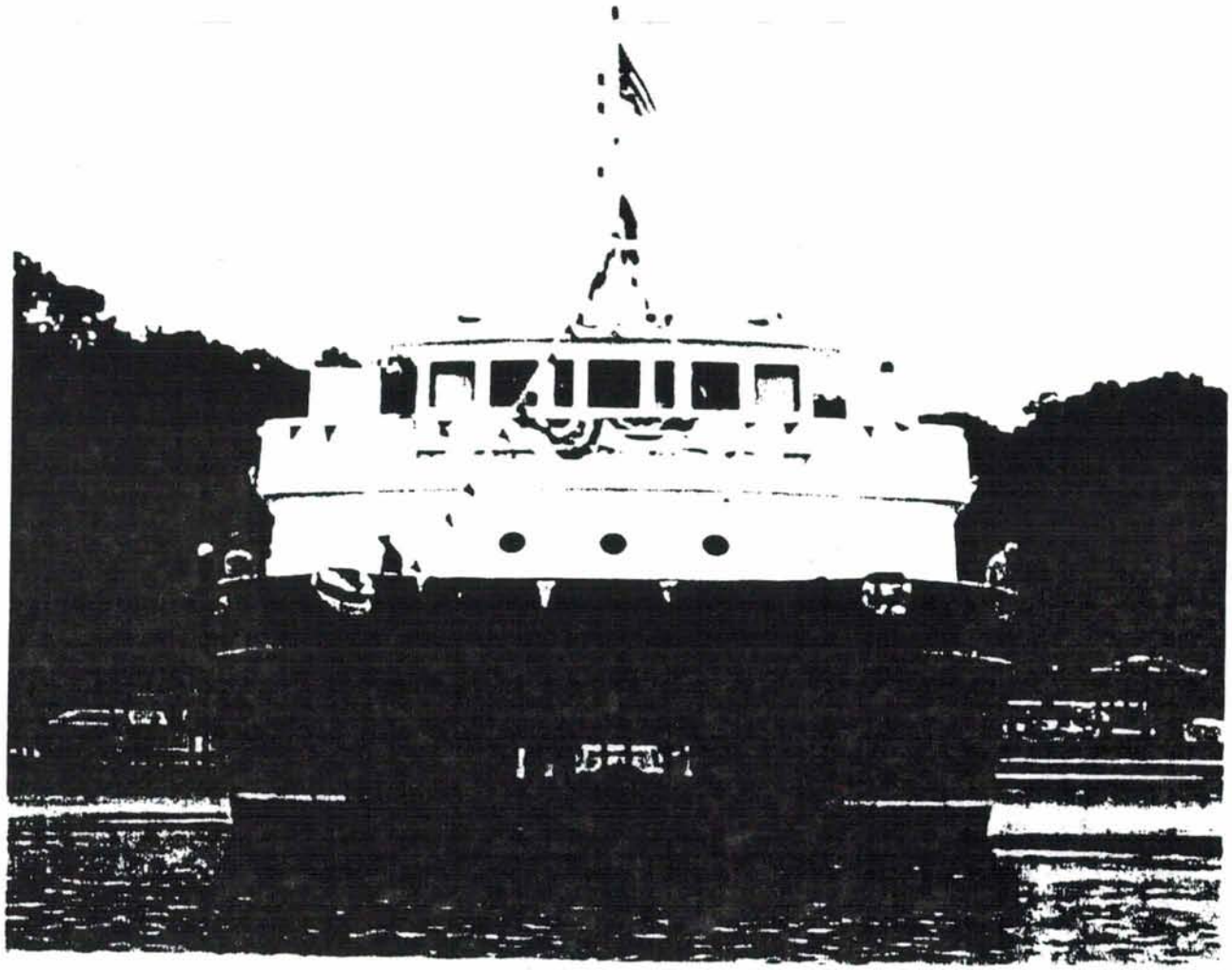

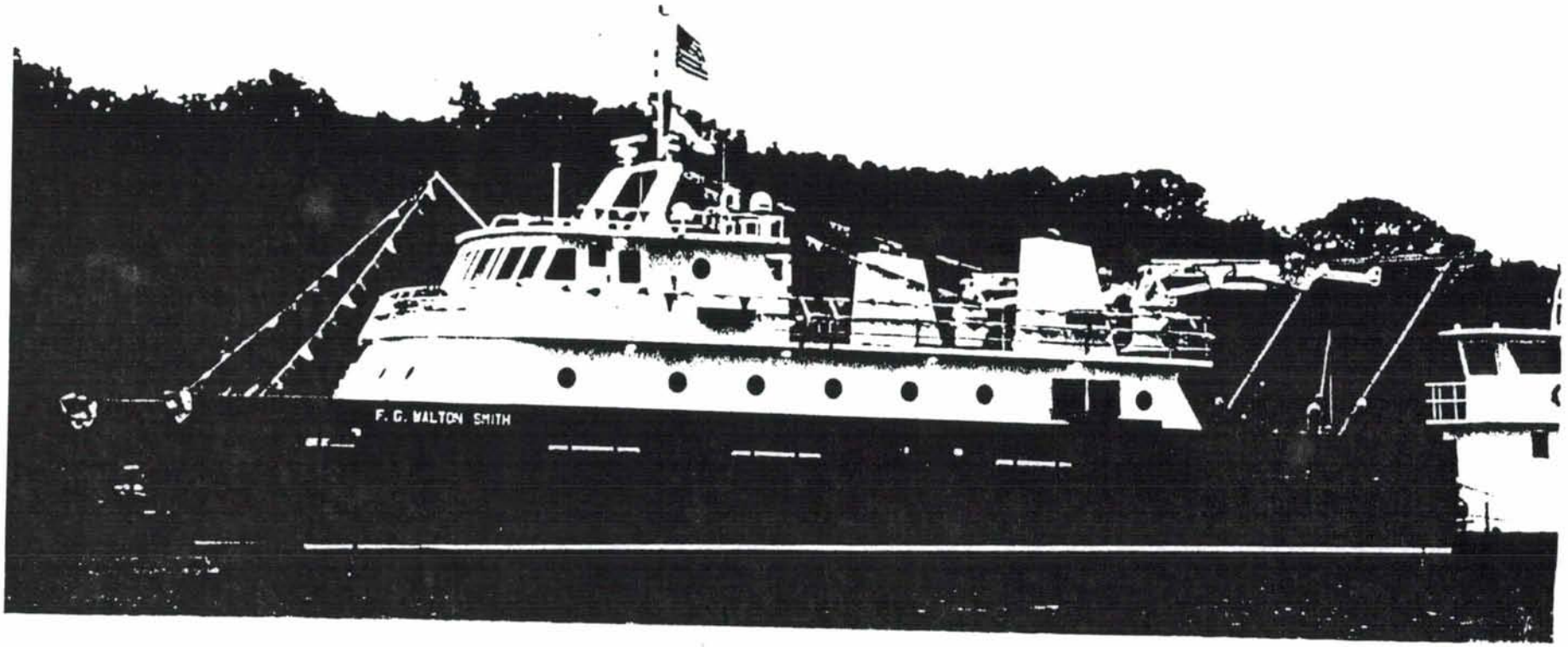
F. C. WALTON SMITH

Appendix XI

27JAN00

Larry Atkinson
Center for Coastal Physical Oceanography
Department of Ocean, Earth and Atmospheric Sciences
Old Dominion University
Norfolk, VA 23529

Dear Larry,

The first meeting of the Regional Research Vessel Group (RRVG) was held during the UNOLS sponsored Wire and Winch Symposium in New Orleans on 30NOV99. As you know there are nine vessels of this class in the UNOLS fleet:

	Length	Year Built	Owner
CAPE HATTERAS	135'	1981	NSF
POINT SUR	135'	1981	NSF
ALPHA HELIX	133'	1966	NSF
CAPE HENLOPEN	125'	1976	U of Delaware
ROBERT G. SPROUL	125'	1981	SIO
WEATHERBIRD II	115'	1982	BBSR
SEA DIVER	113'	1959	HBOI
PELICAN	105'	1985	LUMCON
LONGHORN	105'	1971	U of Texas

All of the vessels were represented with the exception of the ALPHA HELIX. The meeting also included scientists and marine technicians as well as representatives from the UNOLS office. The focus of this group is to work together in planning the mid-life refits of the five vessels under 20 years of age and to help the process of replacing the four older vessels in this fleet. We hope future meetings of this group will be viewed as a community forum for ship operators, scientists and funding agencies.

Here is a list of the attendees:

BBSR	Lee Black, Marine Superintendent Rod Johnson, BATS Program Manager Lee Ellett, Marine Technician
DUKE	Larry Morris, Asst. Marine Superintendent Tim Shaw, Marine Technician
HBOI	Tim Askew, Marine Superintendent
LUMCON	Steve Rabalais, Asst. Director
MLML	Mike Prince, Marine Superintendent
MBARI	Ken Johnson, Chemical Oceanographer
SIO	Tom Althouse, Marine Superintendent Ron Cimer, Resident Technician

U. of Delaware	Tim Deering, Marine Technician
UNOLS	Annette DeSilva, Asst. Executive Secretary Jack Bash, Executive Secretary
UT	Noe Cantu, Senior Captain
WHOI	Dutch Wegman, Port Engineer Jon Alberts, Marine Operations Coordinator

The topics of discussion included the Science Mission Requirement (SMR) established by the Fleet Improvement Committee (FIC) for these vessels, standardizing vessel capabilities, useful life of these vessels, scope of refit work to be done, improving scientific involvement in planning, funding sources and time-lines for this work. We also agreed that while final planning would be done on an individual basis much of the general planning could be accomplished using a community forum. While the discussions were good there was just not enough time to go into detail on any of these topics.

The consensus was that another meeting to continue this effort would be of great help. Our hope is that it could coincide with the spring meeting, in Baltimore, of the UNOLS Fleet Improvement Committee. The presence of FIC members would certainly enhance this forum. Travel cost would be minimized as Baltimore would be convenient for many of the members of the RRVG and some would already be in town for the FIC meeting.

Please let me know what you think.

Cheers,

Lee Black

Cc: T. Althouse, T. Askew, J. Bash, N. Cantu, J. Coburn, A. DeSilva, E. Dieter, M. Hawkins, K. Johnson, Q. Lewis, P. Ljunggren, M. Prince, S. Rabalais, T. Smith

Appendix XII

Subcommittee To Initiate Council Actions Regarding Quality-Of-Service Improvements

Tasking

1. Review discussions/materials of the Council meeting and of the Academic Fleet Review.

2. Propose next steps that UNOLS might take, or that UNOLS might exhort member institutions to take, to improve quality of service. Examples (not exclusive list)
    - "gap" analysis
    - The Shipley Gap re assessments
    - Developing common standards of equipment/capability/service to be expected on UNOLS ships.

3. Communications through e-mail/phone correspondences
4. White paper to Council by 1 May
5. Council item for summer meeting

Subcommittee:
Tim Cowles (Chair)
Barbara Prezelin
Tom Shipley
Dennis Hansell
John Freitag
Steve Rabalais

Ex-officio:
Bob Knox
Tom Royer