

# **UNOLS Council Meeting**

## **Summary Report**

**February 22-23, 2001**

**University of Miami  
Rosenstiel School of Marine and Atmospheric Science  
Miami, FL**

**UNOLS COUNCIL MEETING**  
**Thursday-Friday, February 22-23, 2001**  
**University of Miami**  
**Rosenstiel School of Marine and Atmospheric Science**  
**Miami, Florida**

**Wednesday, February 21, 2001, 5:00 pm**

**Tour of WALTON SMITH** - FIC and Council Meeting Participants were provided a tour of University of Miami's new catamaran, WALTON SMITH.

**Appendices**

- I. Meeting Agenda
- II. Participant List
- III. Committee Reports
- IV. NAVO Report
- V. USCG Report
- VI. Summary of Community Response to Draft Fleet Plan
- VII. Tim Cowles Workshop Presentation
- VIII. Fleet Utilization: 1990-2001
- IX. UNOLS/NAVO Motion
- X. ALPHA HELIX Replacement Plans
- XI. UNOLS 2001 Meeting Calendar
- XII. CMRC Application for UNOLS Membership
- XIII. Proposed Revisions to the UNOLS Charter
- XIV. EWING MCS Upgrades
- XV. Ship Construction/Mid-Life Reports

**Thursday, February 22, 2001 – RSMAS Auditorium**

**Call the Meeting:** Bob Knox, UNOLS Chair, called the meeting to order at 8:30 am and welcomed everyone to the University of Miami, Rosenstiel School of Marine and Atmospheric Science (RSMAS). Bob asked that a moment of silence be observed in remembrance of Joe Mayes, KNORR crewmember, and others who have passed away in the line of duty.

Bob reported that the morning session would be a joint meeting of the UNOLS Council, Fleet Improvement Committee, and Federal Agency Representatives. The meeting agenda is included as *Appendix I*. Introductions were made around the room and a list of attendees is included as *Appendix II*.

**Accept Minutes:** The [minutes of September 2000 Council meeting](#) were approved as written.

**COMMITTEE REPORTS:** Bob Knox provided a brief summary of the UNOLS Committee written reports and opened the floor to a question/answer period. Chairs were offered an opportunity to identify any important issues that need to be addressed further by the Council. The reports are contained in *Appendix III*.

**Deep Submergence Science Committee (DESSC)** – The report focused on the publication of the DESCEND brochure (this is also addressed later in the meeting). The full proceedings of the 1999 DESCEND Workshop have been posted on the UNOLS website. The brochure represents an 8-page executive summary of the workshop. The brochure is being widely distributed throughout the science community and federal agencies.

**Ship Scheduling Committee (SSC)** – The report discussed the difficulties in establishing the 2001 ship schedules. Everyone was thanked for his/her patience throughout the process. Comparisons in utilization between this year and last are provided in the report. The days requested for 2001 are up from 2000 and are spread across all of the ship classes. The Letter of Intent process is being adopted by SSC as their standard practice.

**Research Vessel Operator Committee (RVOC)** – The RVOC report provided a summary of the committee's 2000 annual meeting. Steve Rabalais added that a major current focus of RVOC is ISM and compliance issues.

**Arctic Icebreaker Coordinating Committee (AICC)** – Lisa Clough has replaced Jim Swift as the new AICC Chair. The US Coast Guard (USCG) presented Jim with the Civilian Metal of Service for his efforts over the past 4.5 years as Chair of the committee. A highlight of the past year has been bringing HEALY on line. The science systems testing conducted with the assistance of AICC and RVTEC has gone well. The ship promises to be a significant research asset. The AICC will be transitioning in its role from science systems testing of HEALY to science planning and operations. A final shakedown cruise of the ship is planned on April 23-May 2. Winch operation is a major concern and will be studied carefully during the cruise. The ship will travel from Seattle to San Francisco. This cruise will be a good opportunity to prepare for operations in the Gackle Ridge. The focus of the AICC has broadened to science operation planning for the USCG's other Polar Class vessels.

**Research Vessel Technical Enhancement Committee (RVTEC)** – The report provided information about the 2000 Committee meeting. The meeting included three breakout hands-on sessions that were favorably viewed by the participants. Dale reported that he is actively soliciting ideas for the 2001 meeting hands-on session. Steve Rabalais recommended that the RVTEC/RVOC 2001 meeting include a focused discussion on ISM. The new ISM regulations will impact all personnel associated with ship operations, including crew, technicians, shore support, and the science party. The new regulations come into effect in July 2002.

The Council discussed the potential implications of the new ISM regulations. Bob Knox reported that the new ISM regulations require that operators document any planned operation, then carry out the operations according to the documentation. The University of Washington has begun preparing their documentation. Scientists will be required to submit their cruise plans and procedures prior to the cruise. It is uncertain if the plans will need to be certified. It is also unclear at this time if scientists will be required to go through the three-day STCW training. In the United Kingdom scientists are required to go through the training because they are considered part of the mission of the ship. This is a SOLAS requirement. U.S. scientists who have used the NERC vessels have had to go through the STCW training.

The UNOLS procedures that are being developed are being kept simple. It was recommended that the procedures be generic and be posted on the web so the scientists can be very familiar

with the procedures. Only the large ships (>500 GT) are required to comply by July 2002, but the RVOC has decided that the smaller UNOLS ships should also consider compliance. NOAA is not legally required to comply with the ISM regulations, but they are working to comply. They have developed a plan and their scientists are being trained. An article concerning the new ISM regulations is planned for the next UNOLS Newsletter. Additionally, there will be a site on the UNOLS page that will provide information. Operators who already comply (NERC, etc.) with the ISM regulations will be invited to the RVOC meeting to tell of their experiences.

## **FEDERAL AGENCY REPORTS:**

**Office of Naval Research (ONR)** – Sujata Millick provided the ONR report. There was difficulty in scheduling the 2001 Navy funded programs due to logistical constraints and the high demand for large ships. The Navy's LWAD program contributed to about 30 percent of the Navy's funded programs. This year the total Navy funding for ship operations is \$14.5M to \$15M. Of this total, approximately \$9M represents the ONR portion. In ship replacement news, the University of Delaware has been in touch with ONR's Research and Development program to seek support for fuel cell development. Delaware is considering fuel cells as a propulsion source for CAPE HENLOPEN's replacement. NAVSEA, USCG, and ONR are looking at five ships as potential test platforms for their fuel cell technology. They will select a ship in the next four to five months.

Sujata gave an update on the construction status of AGOR 26. The ship is scheduled to be launched in October 2001. The ship is currently under construction at the American Marine Inc. Photos of the vessel are posted on the ship's website <<http://www.soest.hawaii.edu/agor26/>>. February 9<sup>th</sup> was the ship's keel laying.

**Oceanographer Of the Navy** – Rich Hayes reported that the Oceanographer of the Navy has been named the "Navigator of the Ocean." This has expanded the mission of the Oceanographer. The Navigator of the Navy will establish standards for navigation used by all navy units with a goal of improving safety, efficiency, and interoperability with other DOD systems, allies and the international maritime industry.

**Naval Oceanographic Office (NAVO)** – In 2001, NAVO is planning 295 ship days. The work is distributed geographically in the Gulf of Mexico, South Florida, Onslow Bay, Hawaii, and the Bahamas. Support for this work is approximately \$5M. In 2002, approximately 305 ship days are planned in the same geographical locations. The viewgraphs are included in *Appendix IV*.

**National Science Foundation (NSF)** - Dolly Dieter provided the NSF report. The solicitation for the UNOLS ship inspection program has been advertised. They hope to be able resume the inspections in May. The inspections would begin with the ships that have gone without an inspection the longest. The inspection cycle will be every four years (as opposed to five years). Dolly thanked Fred Rossmann for his efforts in getting the inspection project out to bid. Sujata Millick reported that ONR has been using the Navy's INSURV group for inspection of their AGOR vessels. They would like to explore using the NSF inspection program for the science portion of the ship's inspection.

Linda Goad is now onboard at NSF. She is very busy getting the ship operations proposals processed for 2001. When she completes the proposals, she will turn her attention to the 2002

schedules. Linda will handle the 2002 scheduling and proposals in its entirety. Dolly will work on many of Dick West's projects – ship inspections, equipment proposals, MOSA, etc.

**National Oceanic and Atmospheric Administration (NOAA)** – Beth White provided the NOAA report. The agency has been dealing with the transition of a new Secretary of Commerce. Budget planning has not begun. Beth introduced Paul Moen from NOAA/NOS. In ship news, NOAA recently bought a Navy torpedo vessel to use for coastal work and hydrographic surveys. This vessel may become a replacement for the FERREL. NOAA is studying their smaller vessel operations, after the sinking of one of their small vessels in the Channel Islands. They have inventoried 50 ships over 26 feet. They are taking a hard look at training and safety. They want to make sure that these vessels are operated safely. Lastly, Scott Gudes has been acting as the new Director of NOAA.

**Department of State (DOS)** – Tom Cocke reported that Liz Tirpak is working to develop an on-line clearance request system. They hope that some day PIs will be able to check on the status of their clearances on-line. Tom also reported that this year there are requests for work in both Cuba and Russia. They will be watching their status.

**United States Coast Guard (USCG)** – A written report was provided by the Coast Guard prior to the meeting. It is included as *Appendix V*.

**Long-Range Planning for the UNOLS Fleet** - Bob Knox introduced a discussion on long-range planning for the UNOLS Fleet. The Academic Fleet Review recommended that the agencies develop a long-range plan. The Federal Oceanographic Facilities Committee (FOFC) working group has drafted a discussion paper. The paper, *Charting the Future for the National Academic Research Fleet*, <<http://www.mlml.calstate.edu/unols/fltdisc/>> was released in December 2000 for community response. UNOLS distributed the draft document and solicited comments through an on-line survey. A healthy response of well over 100 surveys was received. These comments offered interesting perspectives. FIC spent much of their meeting (yesterday) examining the surveys and developing a response. The community responses were posted on the UNOLS website at, <http://www.mlml.calstate.edu/unols/fltdisc/responses.html>. Mike Prince reviewed his viewgraphs that summarize the community survey responses to the FOFC paper. They are included as *Appendix VI* and also posted at <<http://www.mlml.calstate.edu/unols/fltdisc/surveyresults/surveyppt/>>. Most responding to the survey were not satisfied with the draft plan. The major points of the summary are as follows:

- Does the plan meet the needs of Marine science? – Community Response, “no.”
- Number of vessels needed compared to the plan – The Community response generally indicated that more ships are needed. Few felt that the FOFC plan was ok as projected.
- Is the distribution of ships in the plan right? – Most indicated that the plan should provide a better distribution for the various classes of vessels.
- Fleet capabilities:
  - Vessel Size – There is concern that as new ships are planned, there is often a trend for them to be larger than their predecessor, the “creep” factor. Many indicated that they did not like the idea of having a larger oceans class ships.
  - Many indicated the need for multi-ship operations.
  - Access to wire time is an issue. There needs to be technology development in this area.
  - The community was divided on the need for additional berthing capacity. It was commented that PIs tend to request what they know they can expect. So in looking at

past trends this should be kept in mind. If the PI had additional choices, how would this have affected their requests?

- More lab and deck space needs to be considered as this directly relates to the number of bunks available. If bunks are added, the corresponding additional lab and deck requirements must also be considered. On regional and intermediate vessels this is a concern. The point to be made is that if you increase bunks you need to add deck and lab space.
- Other vessel capabilities:
  - Heavy weather capability – the community indicated a need for this capability. Additionally, it was pointed out that the limited size of the projected fleet could impact weather windows. Fewer ships would likely dictate operations outside optimum weather windows. Although more capable ships are envisioned, should weather windows be built into the fleet plan? Safety considerations must be addressed.
- Political Comments – The community generally supports open competition for operation of future vessels.
- Comments on lifespan – The Community in general indicated that the lifespan of vessels could be longer.
- Comments on funding – The responses favorably viewed a cautious growth plan.

**OSU Workshop findings, *Assessment of Future Science Needs in the Context of the Academic Oceanographic Fleet*** – In August 2000 scientists met at Oregon State University (OSU) to discuss science trends and its future requirements for the academic fleet. Tim Cowles (Co-chair of the workshop) provided a summary of the meeting. His viewgraphs are included as ***Appendix VII***. The goals were to provide: a science “needs” framework to inform the fleet renewal process, identify approaches that may be used to address science questions, identify platform capabilities required to meet science needs, and examine the role of vessels and trends in vessel use in the context of other observational platforms. The participants were asked to come prepared with their written needs and vision statement. They then spent a couple of days looking over the visions and finding a way to compile this into a future needs document.

They looked at major science themes. They selected a few diverse themes to examine: better observations in selected environments, interdisciplinary studies, perturbation experiments, and fixed location observations/experiments. SIX science needs were identified:

- Remote observational systems with robust sensor suites. Some of this is already in place (satellites, etc).
- Vessels to provide deployment/recovery/service for moorings, drifters, vehicles.
- Vessels that function as primary observational and experimental platforms. These vessels will have the same needs as those for deployment as well as the capability for undisturbed sampling in/around air-sea interface.
- Vessels that can meet the expanded needs of the marine geology community.
- Global high-bandwidth communication capability.
- Rapid response capability within the oceanographic fleet. As we better understand time/space resolution intermittent events will be observed and attract attention. There is a need to be able to respond. This will affect how we manage the fleet. It implies that excess capacity in the fleet will be available.

Vessel capabilities needed for the future include:

- Acoustically quiet
- Greater stability
- Sheltered, ice free decks for high-latitude work
- Undisturbed sampling of the air-sea interface
- Ice hardened ships
- Clean sampling
- Improved lab space
- Improved sea floor mapping
- High-speed data communications.

The key recommendation of the workshop is that new observational tools will extend the reach of the existing fleet. It will not replace or reduce the fundamental need for ships. These trends will lead to an increase demand for ships. In conclusion, vessel capabilities must be extended to meet the needs of new systems and approaches. The workshop recommended a thorough evaluation of the ship scheduling process and a community evaluation of “general-use” versus “specific-use” vessels in the fleet. Expanded time/space scales of resolution of observations will lead to scientific demand for “event-scale” studies of ocean processes.

Tim opened the floor to questions:

(Q) When will the new observational techniques take place? (A) It is predicted that in about five years the gliders will be in place. In ten years time AUVs will be routine. The AUV experts at the OSU meeting were strong proponents for continued ship use with perhaps increased needs.

(Q) How do you build in the ability to respond to events? (A) This is a struggle dealing with the mechanisms and it comes with a cost. Excess capacity is needed. Placement of the ships is something to consider. This is a non-trivial matter.

**The Neptune Project and Its Implications on Ship Support** - John Delaney provided a report on the Neptune Project, see <<http://www.neptune.washington.edu/>>. Both non-traditional as well as traditional funding will be sought to support a program of this magnitude. If all goes as planned, the NEPTUNE network should be operational in ten years.

John began with a background on the project and its relationship to the study of outer space. The discovery of EUROPA and ice surface has excited NASA with the potential that there may be another ocean in the solar system. NASA has a probe launch planned in 2010. How does this link/relate to oceanography? NASA needs the ability to make remote observations in harsh environments. Remote observation in underwater environments such as plate tectonics can help in the technological developments required by NASA. The Juan de Fuca plate offers a convenient study area with its relatively close proximity to the U.S. John showed a figure of the proposed cable system for interactive observation. He also showed an example of what a node might look like.

The goal of the NEPTUNE project is to establish a network of underwater observatories within the depths of the northeastern Pacific Ocean. NEPTUNE proposes real-time, long-term ocean and earth studies at the scale of a tectonic plate. A feasibility study of the project has been conducted. The study was funded by National Oceanographic Partnership Program (NOPP) and the NEPTUNE Phase I partners. The proposal calls for laying out 3000 km of cable and 31 nodes on the plate. Some of the characteristics of NEPTUNE include:

- Tectonic plate scale
- Huge data capacity
- Real-time data return
- Robust design, high reliability
- Available for 20-30 years.

There are events at the plate scale that have not been observed. Distributed sensors that report back to land are needed. No single group can afford this; it must be a coordinated effort. Some potential benefits of NEPTUNE include a new approach at research, educational and outreach, and digital, high-resolution images that can be beamed back to the classroom in real time. John reviewed the timeline and progress made to date. Neptune is in the system design phase (Phase 2) that entails detailed development that will lead to installation (Phase 3) and operations (Phase 4), perhaps as early as 2005.

John reviewed the benefits of plate scale interactive earth-ocean scale studies. Whenever new technologies have become available for research, new discoveries were made. Some of the benefits and capabilities offered by NEPTUNE will include:

- New technological approaches to research enabling new discoveries.
- Experiments with plate/earth dynamics
- Test bed for solar system experiments
- Studies into the origin of life
- Biochemical studies
- Ocean circulation
- Ocean productivity studies
- Marine mammals
- Greenhouse gas
- Resource formation and distribution
- Hazard recognition
- Education and public outreach – very important!

Some recent progress/events with the NEPTUNE project include:

- The National Science Board (NSB) suggested submitting NEPTUNE as an MRE into the budget.
- Neptune Canada – Canada has expressed an interest in becoming a partner.
- The first two nodes of the NEPTUNE observatory will be installed in Monterey Bay. MBARI will operate the Monterey test nodes, establish the ROV protocols for installing and servicing instruments, integrate AUVs in the cabled observatory infrastructure, and initiate an education program in conjunction with the Monterey Bay Aquarium. Initial funding for the test bed will be provided by the Packard Foundation.
- The Keck Foundation has invited to NEPTUNE to submit a proposal.
- DARPA has expressed interest in the project.

John pointed out some of the issues associated with paradigm shift to observatory research:

- Many types of platforms will be needed to support the observatory operations, not just ships.



- Routine maintenance of the system will be required and support facilities will need to be weather tolerant.
- There will need to be established standards for power and communications.
- There will be needs for agency and international sharing.
- Industry and defense agencies should be involved with the program.
- Public outreach is a key element of the program.

Mike Reeve asked John what the fully operational NEPTUNE system would require in term of the ship needs. John answered that there is no easy answer for quantifying this need at this time. This is an issue for NEPTUNE and they are looking to UNOLS for advice. They envision that a stable vessel will be required and perhaps a SWATH design would be desired. The installation of NEPTUNE is estimated at approximately \$200M.

**FIC Fleet Renewal Activities** - Larry Atkinson thanked the UNOLS Office and FIC's efforts in seeking community response to the draft Long-Range Plan. The FIC's role has been evolving. The committee has been working to send the message out to the community regarding the urgency to begin the Fleet renewal process. Articles have been included in *EOS* and in *Sea Technology's* Soapbox. An *MTS Journal* article is planned in the next issue. FIC spent the previous day reviewing the community comments to the agency draft long-range fleet plan.

Larry reviewed the fleet utilization chart that shows total ship days used from 1990 to 2001 by year. See *Appendix VIII*. In general, the use is showing a trend upwards with 2001 estimating a significant increase in requested ship time. Tim Cowles' summary of the workshop indicated that there will be exciting new science questions that need to be answered. John Delaney's report re-emphasizes this.

The FIC reviewed the FOFC report in detail during their meeting and recorded their comments into the draft. He asked the Council meeting participants how should UNOLS and FIC proceed. In general, the committee felt that the tone of the draft is negative. Also, the paper did not identify science directions and their associated ship needs. There are two options for FIC: 1) they can provide their comments to the draft plan to the FOFC working group, or 2) the FIC to proceed with the development of their own plan.

Bob Knox asked the agency representatives if there would be another draft of the FOFC fleet paper. Can UNOLS contribute? There are some major differences between the view of the community and that of the agencies. Bob reiterated Barry Raleigh's comment that overly conservative planning may be self-fulfilling. Mike Reeve reported that the paper will need to be submitted to NORLC and that it needs to be approved by the agency heads. It would be beneficial if the draft could include the future science directions but also include the budgetary concerns of the agency representatives. There are areas that can be compromised such as retirement/construction timelines. He reminded us that the plan would be continuously reviewed. The number of future ships must be scientifically justified. Mike Reeve and Steve Ramberg both agree that that it would be best if there was one Fleet long-range plan instead of two, one from the agencies and one from UNOLS.

A discussion followed and comments are reported below:

- The fleet long-range plan is for ten years, funding projections of the next couple of years should not constrict it. (Wilf Gardner)
- Assets can control the science by not being available. It takes many years to plan for new ships. (Chris Measures)
- Some of the new science directions being proposed have a strong potential for funding. It will be very challenging to meet the new facility needs required by these directions unless proper planning is addressed. (Terry Whitledge)
- Under capacity of the fleet has been an issue of recent years. This eats into the science funding. (Steve Ramberg)
- We are asking a lot from the FOFC document. We would like to use the document as a tool for acquiring for new facilities. But the plan must also address budgetary concerns. Can these be combined into one document? (Tim Cowles)
- There is not a lot of enthusiasm generated in the current draft FOFC long-range plan. It needs to be enthusiastic and positive about the future. (Mark Brzezinski)
- There is concern regarding implementation of technology upgrades. Technology upgrades need to be considered in the plan. (Dale Chayes)
- Not having facilities severely limits the science. Facility support is a relatively small portion of the total science funding (10-20%?). (Flagg)

Bob Knox suggested that the FIC complete their critique of the FOFC draft paper and provide this to the FOFC working group. Many of the comments from the survey have already been incorporated into the draft by FIC. Larry also noted that there is a lot in the FOFC paper that both the agencies and community agree on. April 27<sup>th</sup> is the next FOFC meeting. UNOLS will try to provide their comments to the working group by early April. A meeting of the working group and a few UNOLS representatives will be scheduled for the second or third week of April (prior to the FOFC meeting) to review the comments. Mike Reeve indicated that he would like to see a section added on science direction. At the same time, they would like to keep the document length to 15 pages. Steve Ramberg asked that UNOLS identify the sections that do not need changes.

**Quality of Service Initiative (QSI)** - Mike Prince reported on the research proposal submitted by Drs. Grabowski and Roberts to study UNOLS in regard to QSI. He began with a little background. UNOLS has been wrestling with ways to implement a quality program. At the June 2000 Council meeting there was a presentation on this topic by Dr. Sam Jelinek, NSF program manager for their Innovation and Organizational Change program. She pointed out that UNOLS is a difficult organization to study in terms of quality improvement. Following the meeting, Sam introduced Mike to Drs. Grabowski and Roberts who were interested in studying UNOLS. Mike reviewed the backgrounds of Drs. Grabowski and Roberts. They have submitted a proposal titled “Collaborative Research on High Reliability Virtual Organizations” to NSF that will be peer reviewed. It is a three-year research proposal to study UNOLS. In January, the Council reviewed the proposal and agreed to serve as a collaborator. Mike briefly reviewed the proposal. Year 1 would be spent on development of a conceptual model. Year 2 would be for data analysis and benchmarking and Year 3 would be to design a quality program.

Mike noted that if the proposal is not awarded, the UNOLS Office as part of their cooperative agreement is still required to implement a quality program. If you look at UNOLS from a single operator perspective, there is a quality program in place. The post cruise assessment process provides a feedback cycle between the operator and the science user. However, there is always

room for improvement. We also need to consider how compliance with ISO9000 will factor into the quality program. Mike reported that UNOLS as a whole is a quality improvement program. Every element: ship, shore, science, committees, Council and UNOLS Office is looking at ways to improve. We need to examine how to make this work better.

**Statement in Favor of Future NAVO/UNOLS Work** - Bob Knox read the UNOLS motion regarding NAVO ship use. The motion is included as *Appendix IX*. ***The Council vote to approve the motion in favor of future NAVO/UNOLS work.***

**DESCEND Follow-on Activities** - Annette DeSilva reported on plans for follow-on activities for the DEveloping Submergence SCience into the Next Decade, (DESCEND) workshop. The entire proceedings of the DESCEND workshop have been posted on the UNOLS website along with the executive summary at <<http://www.unols.org/dessc/descend/descend.htm>>. Additionally, the executive summary of the workshop has been published as an eight-page brochure. The full proceedings report is approximately 100 pages long and printing and postage costs would have been very high. Additionally, it was felt that a relatively small brochure would be an effective way to summarize the results and recommendations of the workshop. 4000 copies of the brochure were printed. The brochure was released days before the December DESSC meeting and was available at the Fall AGU meeting.

The workshop makes six recommendations:

1. Develop new sensors and tools.
2. Accelerate the development of AUVs.
3. Construct a new, state of the art, deep diving (>6000m) occupied submersible.
4. Plan for a new, robust deep-diving ROV (>7000m).
5. Increase access to submergence vehicles and tools.
6. Convene a submergence technology meeting.

We have been compiling addresses for distribution of the brochure. We would like to broadly reach the submergence community (both shallow and deep). The RIDGE office, Margins Office, NURP Hawaii and Western Pacific Office, and NURP North Atlantic and Great Lakes Office have all shared their address lists with us. This has brought our address list to over 3700 addresses. Additionally, the CORE Office is providing us with addresses of those Congressional/political representatives who have an interest in the oceans.

As a preliminary step for a follow-on technology workshop, plans are underway to hold an evening “brainstorming” session at the Oceanology Conference in April. The conference is expected to be attended by technology experts as well as scientists. Jim Bellingham has agreed to chair the session. It will provide an opportunity to get input from both the users and designers of systems. [Note: The meeting was held on April 4, 2001. The meeting summary report is posted on the UNOLS website at: <http://www.unols.org/dessc/descend/followon/april04.htm>.] Planning for a full multi-day technology workshop will continue. Once a plan is developed, a proposal to support the technology workshop will be submitted.

**Outreach Programs from UNOLS Vessels** - Mike Prince reported on the recently created UNOLS webpage that provides a listing of outreach programs, <http://www.unols.org/outreach.html>. The webpage provides links to various outreach programs that take place on UNOLS ships. On a related topic, it was reported that there are plans to increase the number of UNOLS ships equipped SeaNet. SeaNet is a useful tool in establishing real time links between ship and shore for outreach activities. A SeaNet on-line newsletter is now available.

**Permit and Permission Resources-** Bob Knox opened a discussion on the role of UNOLS in obtaining permits for research aboard UNOLS vessels. The UNOLS website now includes a page listing permit and permission resources: <http://www.unols.org/ssc/permits/permits.html>. Uses of acoustic equipment from ships now often require special permits. NSF has indicated that it is the responsibility of the operators and PI to obtain required permits for certain types of operations. Steve Ramberg indicated that ONR feels that the responsibility ultimately resides with the sponsoring agency. Of particular concern are acoustic operations that are restricted by the Marine Mammal Act and others. The Acts are poorly written, making it difficult for the regulators to enforce and interpret. The Navy is exploring the feasibility of obtaining some kind or kinds of "blanket" permits that would cover certain types of acoustic operations. The status of this effort is unknown. A blanket permission of some sort is desired so that individual PIs and operators will not have to apply on a case-by-case instance. To obtain permission, it must be proved that the operations will not cause harm to mammals. NOAA needs to get permits to go into their own sanctuaries. There is concern that the acoustic restrictions may some day impact XBT operations and ADCP use. Inside sanctuaries these types of operations are not permitted. Paul Moen also noted that the sanctuary requirements change from site to site. Paul Taylor also noted that each state has their individual requirements.

Mike Prince reported that the Permits web page is a series of links to information about the various Acts, but it would be beneficial if the page could also provide guidance on how to determine when a permit is required. Any suggestions on how to improve that page would be helpful. Tom Cocke stated that he couldn't find anything on the web page that shows the Navy areas where collection of multibeam data is restricted. Paul Taylor offered to provide some information on these links.

**UNOLS/NOAA Memorandum of Understanding (MOU)** – The draft MOU between NOAA and UNOLS has been in review at NOAA. The draft was intended to combine the OAR MOU with the NMFS MOU. The NOAA lawyers have not been able to approve the draft that they currently hold. Beth White indicated that it appears that the draft may need to be rewritten from scratch.

**ALPHA HELIX Replacement Plans** – Terry Whitedge provided a report on the ALPHA HELIX replacement plans. The concept design for the vessel is 80 percent complete. They are ready for an advisory meeting to obtain outside feedback. The Glosten Associates has been hired as the Naval architect. The design length is 210 feet and is being designed as a general-purpose vessel. It will be acoustically quiet and have a fishing capability. Woods Hole Oceanographic Institution (WHOI) has joined as a partner in the design process. They hope to make this a generic design.

Terry presented the ship's design characteristics. His viewgraphs are included as *Appendix X*. The maximum speed is 14 knots. The ice capability is .9m of icebreaking at 2 knots. This represents the marginal ice zone. Operational areas include year round operations south of the Bering Strait, limited Chukchi Sea operations depending on the time of year, and severely limited operations north of Alaska and Beaufort Sea. Terry presented the conceptual general arrangements and hull wire frame models. Joe Coburn added that WHOI is very pleased to be working with Alaska and Glosten on this project. They feel that they will be able to get a good general-purpose vessel design that will be able to work in the eastern high latitude.

Discussion of the design followed:

- Dolly Dieter asked how University of Alaska plans to get community comments on the design. Terry indicated that he would like to get comments through FIC and UNOLS.
- Dale Chayes recommended that Alaska consider potential bubble sweep-down problems if they plan to install a multibeam system in the future. Another feature to consider during the design phase is connectivity and antennae location.
- Charlie Flagg asked if the vessel is being designed to be sea friendly. Joe and Terry emphasized that this is high on the design's priority list. The ship design is very beamy.

**Meeting Plans and Office Budget** – Mike Prince reported on the 2001 calendar <http://www.unols.org/2001.html> (*Appendix XI*). It is unclear if the summer Council meeting will be a full meeting or just the Executive Committee. Mike noted that we have been staying within the travel budget and still conducting the business that needs to be conducted. Bob Knox suggested that the summer meeting be a working type meeting with no formal reports. Additionally, agency representatives would not be required to attend the June meeting. It was suggested that video conferencing options be explored. The full council would meet in September. There would be no agency report at the September Council meeting; instead it would be given at just the Annual Meeting.

**Application for UNOLS membership** - The Caribbean Marine Research Center (CMRC), National Undersea Research Center <http://www.cmrc.org>, has applied for UNOLS Membership. Their application is attached as *Appendix XII*. Their membership application was reviewed and discussed. Bob Knox raised the issue of whether or not CMRC meets the membership criteria of UNOLS. As a NURP center, they fund and support research. They provide a field laboratory for students. The Council was interested in additional information about the center and the role of their 12 scientists. Mike indicated that he will obtain additional information and that we can readdress this topic tomorrow.

On a related issue, it was suggested that the UNOLS membership application form might need to be revised to request additional information. It was also suggested that the membership criteria be tightened before the membership application is revised.

**Recommendations for Changes to the Nomination Process** - Bob Knox reviewed the proposed changes to the UNOLS Charter (See *Appendix XIII*). The revision contains recommended changes to accomplish the goal of creating a rotation from Vice-Chair to Chair to

Immediate Past Chair (IPC). It is hoped that the revision will enhance our ability to recruit good candidates for Vice-Chair and Chair in the future. The terms of each position would be three years. The revision is in response to the difficulty in recruiting candidates for the Chair position in the last election. In the last election, there were good candidates, but they had no experience on the Council. The other proposed revision is to clearly define the procedure for run-off elections.

General discussion followed regarding the Chair election process. There was some concern that the terms for each position (V-Chair, Chair, IPC) were too long and that perhaps the terms should each be two years long. It was suggested that the role of the Past Chair be clearly defined. It was suggested that the Past Chair is a good position for assigning special projects. The issue of impeachment procedures was also raised. Brad Mooney recommended that we look at the charter of the National Academy of Engineers. They added impeachment procedures to their charter. The discussion was tabled and will be readdressed during tomorrow's session.

***A motion was made and seconded to accept the method of run-off voting as drafted in the revised charter. The Council voted in favor of the motion. The proposed revision will go before the membership at the Annual Meeting.***

**Appointments to the Nominating Committee** - The first terms of Tom Lee and Charlie Flagg are expiring in 2001. Bob will appoint a committee for this year's nominating process.

**Council Member Nominations** - Dennis Hansell has moved from Bermuda Biological Research Station to the University of Miami. The UNOLS Charter states that there can only be one elected Council member per institution. Tom Lee of the University of Miami currently holds a seat on the Council. Tom has agreed to step down, allowing Dennis to remain on the Council. ***A motion was made and seconded to leave Tom Lee's Council position open until the Annual Meeting in September at which time the membership will vote on a replacement. The Council voted in favor of the motion.***

**Before closing the meeting for the day, Tom Lee made a final remark regarding the draft long-range plan.** He recommended that the long-range plan address all UNOLS vessels including the smaller UNOLS ships. They play an important role in local and coastal research.

**Day One - Adjourn**

### **Friday, February 23, 2001 - Map Room**

**Appointments to the Executive Committee** - Bob Knox appointed Wilf Gardner to the UNOLS Executive Committee. He replaces Paul Ljunggren, past RVOC Chair. Wilf has agreed to serve.

**Nominating committee** – Bob nominated the following individuals to serve on the 2001 Nominating Committee: Denis Wiesenburg, Chair; Dennis Hansell, and Curt Collins.

**CMRC Membership Application (revisited)** - Mike Prince provided additional information on CMRC. They have a total staff of nine in their Florida center, five Bahamian laborers, and additional staff in the Caribbean. The center funds and reviews research. They maintain a field

station. The Council still felt that additional information was needed to review the CMRC application. It was suggested that specific questions be asked:

- Why do you want to become a UNOLS member?
- How do you meet UNOLS membership criteria?

Bob recommended that this application be tabled until additional information is provided.

**Long-Range Fleet Planning** – The long-range fleet planning discussion from Day One was revisited. John Delaney suggested that in the next nine months, UNOLS convene a group to address what is needed in terms of facilities. The group should address future science plans and the facilities needed to carry out these plans. There is a need for intellectual planning. There are many factors to consider; such as, new technologies, support for observatories, moorings, etc. There will always be a tension between the dreamers and the practical people. This opened the group to a lively discussion. The following text reflects the questions, comments and suggestions made:

- UNOLS has done a very good job at entraining the community, but we have had a difficult time entraining the engineers, the people who actually design the systems. (Chayes)
- We should examine NEPTUNE to estimate what the ship needs will be. (Collins)
- We need to be visionary in our planning. Futuristic thinking is needed. The high tech engineers must be a part of the planning process. (Ustach)
- Observatories and future research will require high data flow. Archiving data is extremely important and planning for this must begin now. (Delaney)
- The Oceanographic community must be proactive in approaching NASA for research and technology development support. (Delaney)
- This might be a tasking for the Ocean Studies Board. (Knox)
- Whoever takes on this project needs to be committed for the long-term. The study group needs to include ship operators as well as scientists. (Atkinson)
- Perhaps we should look for assistance from NASA in terms of facility planning. They are good long-term planners. (Delaney)
- This seems to fall under the tasking of FIC. (Collins)
- Before the summer meeting FIC could contact some of the groups who have been involved with long-range planning; such as, NASA and the Neptune Office. (Atkinson)
- Management of future facilities must also be considered. FOFC is tasked to address not only ships. What is the role of UNOLS? (Prince)
- How is UNOLS going to evolve to meet future facility needs? (Cowles)
- The UNOLS Charter indicated that UNOLS represents facilities, not just ships. Do we need to reshape UNOLS committees and add staff? (Knox)
- The FOFC plan indicated that observatories would reduce the need for ships. The science community strongly disagrees. The need for handling event response needs to be addressed. (Flagg)
- Perhaps the name of the Fleet Improvement Committee should be changed to the Facility Improvement Committee. (Gardner)
- For new facilities such as observatories, information/data will be available in real time. We have a tremendous opportunity for public outreach activity. This is a very important element for future facility planning. (Delaney)

*As an action item, it was recommended that FIC talk to NASA representatives to get feedback on how they have successfully carried out long-range planning. We may need to consider*

expanding the role of the FIC. This is a serious topic. Agency representatives will need to be engaged in the process. John Delaney concluded the discussion by recommending that if UNOLS decides to expand the role of FIC and take on the responsibility of future facility planning, a grand announcement should be made and spread community wide. We should raise the community awareness of FIC's new role.

**Charter Revision** – The discussion on the Charter revision regarding Chair elections was revisited. *A motion was made and seconded to change the term-lengths of the Vice-Chair, Chair and IPC positions from three years each to two years each. The motion passed.* There was a brief discussion on the addition of an impeachment clause. All agreed that it doesn't seem to be needed. Instead, a statement will be added indicating that the Council will review and re-affirm the position of the Vice-Chair and Chair. It was also recommended that the "Vice-Chair" be retitled as the "Chair-Elect." Mike Prince will recirculate a final draft with the recommended revisions. The proposed changes will be sent to the membership for endorsement at the September Annual Meeting.

**Discussion on any Ship Scheduling Issues** – Bob Knox reported on the efforts to produce a letter explaining the problems associated with the ship scheduling process in 2001. There will be a long version of the letter and a short version for distribution. The letter has gone through a number of iterations. The agencies are not able to sign on to the letter as a result of legal issues. The latest revision of the letter is almost ready. The short version will be published in the UNOLS newsletter. It explains the difficulties trying to accommodate things like the LWAD program, ROV logistical constraints, and weather windows.

**Clearance Issues** - Bob Knox reported that there are no major clearance issues. Problems with operations in the Sea of Japan have been resolved. KNORR operations are going well at the entrance of the Red Sea. They are working around heavy shipping lines. Piracy concerns are also an issue, but the operations are going well.

**Winch and Wire Update** - Mike Prince reported on follow-on activities from the Winch and Wire symposium. Jack Bash has been working on the update to the Winch and Wire handbook (yellow book) and hopes to have it ready by late spring. There have been some roadblocks in getting the electronic version of the original manual. Jack is still trying to get updates to some of the chapters from the authors.

The wire subcommittee looking at safe working loads is making some progress. They have been in touch with NERC. NERC has provided them with information on the safe working loads that they are using, as well as a copy of their request to Lloyds of London regarding safe working loads. This information will feed into the efforts of Jon Alberts to develop a next generation cable. Jon will need other information such as the types of equipment that will be put over the ship's side. Can this equipment be supported by the UNOLS .322 wire? Is a different type of wire needed and preferred? Representatives from the wire industry will need to be consulted. Ultimately, the wire information and safe working loads will need to be put into the cruise planning manuals.

**Seismic Acquisition Issues and UNOLS Fleet Capabilities** - The US academic MCS community has recommended that the EWING's MCS capability be enhanced in several ways. Information on the recommendations can be found at: <http://www.ldeo.columbia.edu>



[/Ewing/3dmcs/3dmcs.html](#)> (see *Appendix XIV*). There was nothing further to report at this time.

**New Ship Construction** – Written reports for ship upgrades, construction projects, and mid-life refit plans were submitted for THOMPSON, URI and OSU, AGOR 26, PELICAN, CAPE HENLOPEN, and EWING. These reports are included as *Appendix XV*. Additionally, some ship reports were provided during the meeting:

- R/V SAVANNAH construction – The ship is scheduled to be operational July 1, 2001.
- Replacement plans for CAPE HENLOPEN – University of Delaware is progressing with their plans.
- Regional Ship Replacement Activities – No report.
- WHOI's SWATH construction – Joe Coburn reported that a construction contract for WHOI's SWATH vessel has not been awarded. Construction is estimated to take sixteen months once awarded. The ship will be named R/V MONTGOMERY. The decision to make this a UNOLS vessel has not been finalized.
- AGOR 26 construction – A report was provided earlier in the meeting by Sujata. The ship is in the scheduling system, but the decision of actually when it will be available for science resides with the Navy. January 2002 is the scheduled delivery date. The ship will then go through a shakedown period for a couple of months, followed by the transit to Hawaii.
- NOAA FRV – Jim Meehan reported that Halter Marine Inc. was awarded the construction contract for the NOAA FRV on January 3rd. Over the next few months they will generate a detailed design. The ship will be home ported in Kodiak, Alaska. It is expected to be available in the early 2004. NOAA is overseeing construction.

**ATV Plans** - Bob Knox reported on plans for the future operation of ATV. The Navy has signed an agreement SIO and U. Hawaii for joint operation of ATV. The agreement is contingent on a successful MOU between the two institutions for operation. They hope to have it eventually become another asset for the submergence community.

**Review Action Items** – The UNOLS Office will circulate any actions to the appropriate people. Mike asked that if anyone has suggestions for the summer agenda to please contact the UNOLS Office. We will circulate the meeting dates by e-mail.

*The meeting was adjourned at 11:00 am.*

# Appendix I

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**Tour of R/V WALTON SMITH  
Wednesday, February 21, 2001, 5:00 pm  
FIC and Council Meeting Participants are Welcome**

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**UNOLS COUNCIL MEETING  
Thursday-Friday, February 22-23, 2001, 8:30 am  
Miami, Florida**

**Thursday, February 22, 2001 - Auditorium**

**The morning session will be a joint meeting of the UNOLS Council, Fleet Improvement Committee, and Federal Agency Representatives.**

**0830 Call the Meeting:** Bob Knox, UNOLS Chair, will call the meeting to order and provide an opportunity for introductions. A moment of silence will be observed in remembrance of the KNORR crewmember's passing.

**0840 Accept Minutes** of September 2000 Council meeting.

**0845 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. To view the reports, click on agenda item.) Chairs will identify any important issues that need to be addressed further by the Council.

**0915 FEDERAL AGENCY and CORE REPORTS:** Representatives of the Federal Agencies and CORE will be given an opportunity to report on activities of interest to the Council or to bring any issues before the Council requiring their input or action.

**0935 Long-Range Planning for the UNOLS Fleet** - Bob Knox will introduce a discussion on long-range planning for the UNOLS Fleet. The discussion will address:

- The FOFC draft discussion paper, *Charting the Future for the National Academic Research Fleet*, <http://www.mlml.calstate.edu/unols/fltdisc/>
- Appraisal of community responses and comments on FOFC paper, <http://www.mlml.calstate.edu/unols/fltdisc/responses.html>
- OSU Workshop findings, *Assessment of Future Science Needs in the Context of the Academic Oceanographic Fleet*, <http://www.unols.org/fic/biennial/futship.pdf>
- Draft Report: *Ocean Sciences at the New Millennium*, [http://www.joss.ucar.edu/joss\\_psg/publications/decadal/](http://www.joss.ucar.edu/joss_psg/publications/decadal/)

- The Neptune Project <<http://www.neptune.washington.edu/>> and Its Implications on Ship Support - John Delaney
- FIC Fleet Renewal Activities

### **1015 Break**

### **1030 Long-Range Planning Discussion (Continued)**

### **1230 Lunch Break**

**1330 Quality of Service Initiative (QSI)** - Mike Prince will report on the research proposal submitted by Drs. Grabowski and Roberts to study UNOLS in regard to QSI. Plans for the next step will be open for discussion.

**1430 Break** (Please note: The schedule of agenda items between 1030 and 1430 may be adjusted to meet the schedules of meeting participants.)

**1445 Statement in Favor of Future NAVO/UNOLS Work** - Bob Knox will open a discussion on the UNOLS motion regarding NAVO ship use. A vote to approve the motion in favor of future NAVO/UNOLS Work will be conducted. The draft motion is appended to this agenda.

**1500 DESCEND Follow-on Activities** - Annette DeSilva will report on plans for follow-on activities for the DEveloping Submergence SCience into the Next Decade, (DESCEND) workshop. The executive summary of the workshop can be viewed at <http://www.unols.org/dessc/descend/descend.htm>.

**1510 Outreach Programs from UNOLS Vessels** - Mike Prince will report on the recently created website that provides a listing of outreach programs, <http://www.unols.org/outreach.html>.

**1525 Permit and Permission Resources** - Bob Knox will open a discussion on the role of UNOLS in obtaining permits for research aboard UNOLS vessels. A website has been created listing some of the permit requirements: <http://www.unols.org/ssc/permits/permits.html>.

**1540 Meeting plans and Office Budget** - Mike Prince will review the 2001/2002 meeting calendar <http://www.unols.org/2001.html> and the UNOLS office budget for next year. He will report on activities for the past nine months.

**1555 Application for UNOLS membership** - The Caribbean Marine Research Center, National Undersea Research Center <http://www.cmrc.org>, has applied for UNOLS Membership. A review and discussion of their membership application is planned.

**1615 Recommendations for Changes to the Nomination Process** - Bob Knox will review proposed changes to the UNOLS charter.

**1635 Appointments to the Nominating Committee** - The first terms of Tom Lee and Charlie Flagg are expiring in 2001. Appointments for this year's nominating committee will be recommended.

**1645 Council Member Nominations** - Dennis Hansell has moved from Bermuda Biological Research Station to University of Miami. His position on the Council needs to be filled. The Council will recommend candidates to fill this position. Candidate vitae from the September Council elections can be viewed at:  
<http://www.unols.org/annual/anumt009/slate00.html>.

**1700 Day One - Adjourn**

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**Evening Social Hour ~ 5:30 pm ~ The Commons Room**

**This will be a combined affair with University of Miami students and alumni.**

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**Friday, February 23, 2001 - Dean's Conference Room**

**0830 Long-Range Fleet Planning** - Bob Knox will revisit the discussion from Day One regarding long-range fleet planning. Future activities, strategies and tasking will be discussed. A process and timeline for delivering community advice to FOFC need to be established.

**0930 Discussion on any Ship Scheduling Issues**

**0950 Clearance Issues** - Bob Knox will report on any outstanding clearance issues.

**1000 Winch and Wire Update** - Mike Prince will report on follow-on activities from the Winch and Wire symposium.

**1015 Break**

**1035 Appointments to the Executive Committee** - Bob Knox will recommend a candidate for the UNOLS executive committee to replace Paul Ljunggren, past RVOC Chair.

**1045 Seismic Acquisition Issues and UNOLS Fleet Capabilities** - The US academic MCS community has recommended that the EWING's MCS capability be enhanced in several ways. Information on the recommendations can be found at:  
<<http://www.ldeo.columbia.edu/Ewing/3dmcs/3dmcs.html>>. Any follow up for UNOLS action in this area will be reported.

**1055 UNOLS/NOAA Memorandum of Understanding (MOU)** - Bob Knox will review the status of the draft MOU between NOAA and UNOLS.

**1105 New Ship Construction** - Bob Knox will updates the Council on new construction activities.

- R/V SAVANNAH construction
- Replacement plans for CAPE HENLOPEN
- Regional Ship Replacement Activities
- ALPHA HELIX Replacement plans
- WHOI's SWATH construction
- AGOR 26 construction
- NOAA FRV

**1120 ATV Plans** - Bob Knox will report on plans for future operation of ATV.

**1130 Review Action Items**

**1145 Other business**

*Adjourn*

## Appendix II

## COUNCIL MEETING – RSMAS – FEB 22-23, 2001

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# Appendix III

**COMMITTEE REPORTS**  
**UNOLS Council Meeting**  
**February 2001**

**DEep Submergence Science Committee**  
**Ship Scheduling Committee**  
**Research Vessel Operators' Committee**  
**Arctic Icebreaker Coordinating Committee**  
**Research Vessel Technical Enhancement Committee**

## **DEep Submergence Science Committee Report**

### **By Patty Fryer**

The DESSC and the Steering Committee of the DESCEND (DEveloping Submergence SCienceE for the Next Decade) Workshop (held in October of 1999) finalized the text for proceedings of the UNOLS supported Workshop and posted these to the UNOLS Web site in their entirety in the Fall. The Proceedings are too long, however, to be of immediate use for publicizing the key findings and recommendations of the meeting. Text for an 8-page glossy brochure was put together by the steering committee and DESSC. With expert editorial, drafting, and artistic assistance from WHOI, the brochure was published in December and distributed at the Fall 2001 DESSC meeting. The brochure represents the executive summary of the UNOLS supported DESCEND. It also incorporates critical parallel efforts that took place subsequent to the Workshop. The "Key Recommendations" in this brochure represent the future needs of submergence science in the US community, as we face a decade of high expectations and the potential for monumental discoveries in the oceans.

The Brochure will be mailed to members of the scientific communities who use submergence assets and tools and will also be forwarded to members of congressional staff offices, the Ocean Caucus, funding agencies and others. We are encouraging recipients within the submergence community, to use the brochure as a basis for efforts to help educate the rest of the scientific community, various federal funding agencies, congressional offices, and the new administration in Washington with regard to the vast potential that exists for research in submergence science. As a community, we need to make these educational efforts ourselves whenever the opportunity arises. Additional materials and information regarding the Workshop is available at the UNOLS web site <<http://www.unols.org/dessc/descend/descend.htm>>, from the UNOLS office or can be obtained by contacting the DEep Submergence Science Committee <<http://www.unols.org/dessc/>>.

DESSC is here to help you help the community of submergence science researchers and those who support us to achieve the exciting potential outlined in the research priorities of the DESCEND Workshop. A follow-up meeting to pursue the technological developments recommended by the Workshop participants will be organized for the near future.

**Ship Scheduling Committee Report**  
**February 2001**  
*By Joe Ustach*

After multiple attempts and much consternation, the 2001 ships' schedules are as set as they will be. Special thanks go to the West Coast schedulers, UNOLS Office, ROV scheduler, Agency Program Officers, and especially the affected scientists for the hard work and flexibility to fit most of the science into workable schedules. Much of the problems stemmed from not enough days, ROV's, and ships to satisfy everyone. Part of the problem was an increase in requested ship time. The total number of days requested for 2001 (as of Feb. 9) is 5,945. In 2000, the total number of ship days was 5,053. The increase in ship time in 2001 is spread among all categories of vessels: In Class I and II, the increase was 365 days; in Class III, 118 days; in Class IV, 264 days; and in the small vessels, 145 days. These increases are also spread among the funding agencies, with NSF showing a 735-day increase in requested time and the Navy having a 164-day increase. The 'Other' category shows a 7-day decrease from 2000. The percent utilization reflects the increase. Class I and II ships show a potential 99.3% utilization, (with a range of 107.3 – 34.0%) vs. an actual 84.1% utilization (98.7 – 57.7) in 2000. Class III ships show a 69.9% rate (98.5% - 0%) in 2001 vs. 62.8% (68.4 – 41.5); Class IV show 101.2% (148.9 – 83.9) vs. 84.9%(140.6 – 46.1); and the small ships have a 116.4% (193.6 – 67.3) rate vs. 94.4% (176.4 – 67.3) in 2000. The calculations in 2001 include data from HEALY while the 2000 calculations did not. The Class III ships reflect the lay up of EDWIN LINK for 2001.

CY 2001 ended the 2-year trial period for the Letter of Intent process of beginning the scheduling scheme. Almost all responses I received from schedulers with regard to the Letter of Intent concept were positive and in favor of it. Therefore, we will adopt it as SOP for the SSC. In fact, there already is one letter of intent submitted for CY 2002.

**RVOC Report to Council**  
**23 February 2001**  
**Steve Rabalais**

The 2000 RVOC meeting was hosted by Oregon State University at the Hatfield Marine Science Center on 24-26 October. Present were operators, funding agency representatives, and others representing U.S. and foreign organizations involved in the operation of oceanographic research platforms. The latter group included, The Canadian Defence Research Establishment, Southampton Oceanography Centre (UK), Commonwealth Scientific & Industrial Research Organisation (Australia), SACLANT Undersea Research Center (NATO), Glosthen Associates, Military Sealift Command, Netherlands Institute for Sea Research, and Sea Education Association.

A brief overview of pertinent meeting topics follows:

- The Safety Committee will begin reviewing the RVOC Training Manual with the intention of evaluating its potential for serving as the required training document for STCW and ISM certification.
- Chris Gobey representing SACLANT gave a brief summary of their effort to interface ISM into the science component on their vessels. Formal procedures are being developed for the operation of every piece of science equipment coming on their ships. The process will take about 6 months and will involve the development of Safe Operating Procedures (SOP) for all installed and transient science equipment on their vessels. In addition to developing SOPs for science equipment, all ship personnel have gone through Risk Assessment Training.
- Dr Andrew Forbes with the Commonwealth Scientific & Industrial Research Organisation in Hobart, Tasmania, and Major Michel Caron with the Canadian Defense Establishment, introduced us to their organizations and give a brief review of the capabilities of their research vessels.
- Hervey Andrew, Vice President of Marsh Marine and Energy spoke on the status of maritime insurance and warned that premiums will be increasing in the near future. Operators were encouraged to work with their brokers so they understand our efforts to reduce the risks of operating the fleet.
- A number of organizations including, University of Alaska, Florida Institute of Oceanography, University of Delaware, WHOI, Skidaway, and Sea Education Association presented plans for building new vessels at their institutions or reviewed progress on vessels already under construction.

On the second day the meeting broke into 3 working groups, ISM Work Group, Personnel Recruitment and Retention Work Group, and Quality of Service Work Group. They met for about 2 hours after which the Chair of each group summarized their discussions.

Tom Smith, University of Alaska, reported on the ISM Group activities. The UNOLS Chair and representatives from NSF and ONR were asked to comment. Each felt that ISM would eventually be required of all our vessel's but were willing to abide by the RVOC

recommendation concerning implementation for vessel's not required to do so under current regulation. The need for scientists to be aware of the impact of ISM on their projects and the need for the RVTECH to be included in the development of ISM scientific procedures and standards were both addressed. A list of recommendations were presented for consideration by the RVOC:

- All operators should implement ISM but no time limit should be set for small operator implementation.
- Formal standards should not be developed, however, the large RVOC Institutes should make their ISM documentation, etc. available for use by other Institutes. It was felt that good cooperation and communications between all RVOC members during ISM implementation would produce a close de facto standard.
- Institutes involved in developing ISM believe consultants would not be effective in producing a usable ISM but all felt that conducting an assessment audit by ABS was a very useful first step toward ISM implementation.
- RVOC should keep in touch with RVTECH concerning ISM implementation. Tom Smith was tasked with contacting the RVTECH committee on this matter.
- UNOLS should develop a home page for ISM to ease the intra-Institute communications concerning their implementation progress
- Any quality management system implemented by UNOLS should reinforce and not be separate from ISM. A separate QM system is not wanted.
- An effort needs to occur to impress on scientists that ISM will affect them. A short message in the UNOLS newsletter was suggested as an initial effort.
- The following position was developed for presentation at the RVOC business meeting, " The RVOC recommends and supports the goals of the ISM code and accordingly urges its adoption by all UNOLS operators as soon as practical."

Paul Ljunggren, Lamont Doherty Earth Observatory, chaired the Personnel Recruitment and Retention Group. They identified a number of issues contributing to the problems of attracting and retaining qualified crew. Examples included a declining personnel pool, the strong economy makes it difficult to offer competitive salaries, training costs implemented by STCW act as a deterrent to entry-level people, etc. The group recommended solutions that included: improving living conditions on the ship, offering apprenticeship programs like MATE, and create an ad hoc committee to work on the problem.

Steve Rabalais, LUMCON, chaired the Quality of Service Group. The group made numerous recommendations that they felt would improve the quality of service provided by the fleet. Members agreed that a successful quality program would affect crew retention and have a positive impact on operating costs. It is important that everyone in the organization, from the top down, buy into the effort and that customer satisfaction be viewed by all as a very important component of the program. Suggestions for improvements to Cruise Assessment Form included: a brief description, on the form, of how the information will be used, and an improved efforts to make sure that all scientists on the ship, not just the chief scientists, have access to the form. Feed back to the science community on what UNOLS is doing to improve quality is needed.

The 2001 meeting will be held in Rhode Island, in conjunction with RVTEC. Steve Rabalais and Tim Askew were chosen as the new Chair and Vice Chair. An ad hoc Personnel Committee was formed to address questions raised about crew recruitment and training. Matt Hawkins has completed a salary review of small ships and Steve Rabalais will be attending the Ship Operations Cooperative Program meeting in March to explore the possibility of RVOC becoming a member.



**Report from UNOLS Arctic Icebreaker Coordinating Committee  
to UNOLS Council – February 2001**  
*Report submitted by L. Clough*

Since September 2000 AICC activities have been transitional; we've transitioned from oversight of science testing on HEALY to helping to facilitate paying missions on the Coast Guard icebreakers, and we've had a transition of personnel- Jim Swift has stepped down as chair (but remains a committee member) and Lisa Clough has been named the new AICC chair. Joe Coburn has completed his AICC membership, and Dan Schwartz has agreed to attend AICC meetings as an *ex-officio* RVOC representative. Dale Chayes will be filling a similar *ex-officio* role for RVTEC. With the open slot left by Joe Coburn, expiration of Dan Lubin's term in September 2001, and a request for an early replacement by Glenn Cota, the AICC will have three seats to fill by September 2001.

All three USCG icebreakers will be involved in science missions this summer- the POLAR STAR will be supporting NSF funded science off St. Lawrence Island beginning in March, the HEALY will be supporting two NSF funded missions in the eastern Arctic Ocean beginning in July, and the POLAR SEA will be supporting science of opportunity in July and August in the western arctic- predominantly the Chukchi Sea with a potential entry into Russian waters. The AICC last met January 25 and 26, 2001 to discuss planning for these missions, as well as several other topics.

The meeting began with presentation of the Coast Guard Distinguished Public Service Award to Jim Swift. This is the highest award the Coast Guard can give to a civilian unless there is a lifesaving event, which was just about the only thing Jim did not have to do during his chairmanship! The award recognizes Jim's truly outstanding work over the last 4.5 years.

The AICC then received an update on UNOLS activities, including the ARRV (Arctic Regional Research Vessel) from FIC and AICC member Terry Whitledge. It is anticipated that the AICC will play a role in oversight of the ARRV if requested, and we look to be included in updates on the ARRV in the future.

The outlook remains positive for NSF's Arctic marine science programs. In addition to the SBI initiative, a new multi-agency initiative, SEARCH, looks promising. NSF has requested that AICC consider mechanisms by which underway data can be collected as CG icebreakers work in remote areas. Responsibility for quality control of the data, and personnel issues for the USCG were discussed, and AICC will continue to work with NSF and other UNOLS groups to more clearly define needs and realities of the underway data issue.

For the first time we had a second agency reporting at an AICC meeting. Tom Murray updated the AICC on a potential arctic initiative by NOAA under the Ocean Exploration Initiative. It is anticipated that the initiative will be known as ISARB (International Survey of Arctic Ridges and Basins). At the present time no funds are available for the proposed arctic work.

In keeping with our science advocacy role, and in conjunction with our transition to facilitating science on Coast Guard icebreakers, the AICC received reports from several individuals involved with logistic aspects of icebreakers both in the Arctic and the Antarctic. Vernon Asper from ARVOC (the Antarctic equivalent of AICC) had several useful suggestions including how the Antarctic vessels handle underway data collection and how ARVOC has been able to interact with paying customers by various means including formal post-cruise phone conversations. Terry Tucker (CRREL) updated us on HEALY's performance during ice trials; the data have not yet been officially released, but the bottom line is HEALY exceeded her icebreaking requirements. Commander Bob Kaylor (USCG Polar Operation Division) presented a brief on the capabilities of the Coast Guard helicopters available on all icebreaker missions. The helos are a valuable science asset but they do sometimes impact over the side science operations. There will be a subgroup that will move towards standardizing what constitutes acceptable over the side deployment of science gear during launch and recovery of the helicopters.

The Coast Guard continues to support training of the MSTs (marine science or safety technicians) on board UNOLS ships prior to science deployments. The CG is also paying for the MSTs to obtain training for on-board equipment including SeaBeam and TeraScan. In general, the CG is working towards implementing the same science systems on all three of the Coast Guard icebreakers. The AICC was able to tour the POLAR STAR and get a feel first-hand for the changes being made to the Polar class vessels. In addition to working towards having the same science equipment available on each icebreaker, the same data networks and communications capabilities are being implemented over the long term. The Polar class vessels want it to be known that HEALY is not the only arctic research vessel available to the science community.

The AICC was also able to investigate many of the upgrades to HEALY, several of which were the direct result of science testing that took place this summer. Both the meteorological and computer labs have been enlarged. The science conference room received several upgrades to improve quality of life issues. Aft winches and cranes have been or will be moved to provide more working space on the aft decks. Perhaps most importantly, major changes are planned for the winch control system prior to funded science on HEALY this summer.

There will be a final series of shakedown cruises for the HEALY during April and March of this year. While the focus of these cruises will be to get the ship ready for the types of science planned in 2001 (primarily dredging on the Nansen-Gakkel Ridge and testing of an AUV), Jack Bash and John Freitag will be lining up a team of UNOLS technicians to specifically evaluate the winch modifications, the SeaBeam system, and the switch of the ship's science data network to NOAA provided software. These evaluations will be contained in the science testing reports that will be completed by the AICC under the direction of Jim Swift over the next few months. As it stands now, the only science system that will not be working for the planned trips in 2001 is the 300 kHz ADCP. The AICC will need to explore possible strategies for replacing the ADCP, and will seek community feedback for long-range ADCP requirements.

The Coast Guard plans to continue permitting science participation on a "not to interfere" basis on shakedown cruises in the western Arctic. These "Science Of Opportunity" (SOO) cruises have been a popular venue for informal data collection, pre-proposal investigations, and instrument tests. For the first time there may be too many requests to be supported, although it appears that all requests can be accommodated if the cruise is broken down into two segments, SOO as usual, and then a cruise into Russian waters to support potential establishment of a long-term environmental observatory in Chukotka (Russia). No science sampling is planned for the trip in Russian waters. The AICC will be reviewing the SOO requests for logistic feasibility, and potential compatibility with other SOO requests.

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

To help facilitate planning, the CG will be providing a cruise planning manual on their website. The AICC is currently providing feedback on the manual, and it anticipated that the manual will be on line by the end of February. We anticipate that the planning guide will be a living document, and will look to provide links to science equipment evaluations on the site as well.

Finally the Coast Guard is anticipating several personnel changes over the next few months. CAPT Dave Visneski will be taking over as CO on HEALY this summer- Dave has quite a bit of icebreaking experience, and will be participating in several short trips on HEALY prior to assuming CO duties. CAPT Jeff Garrett will be moving on to PACAREA, and his responsibilities will include continuing contacts with the icebreakers. CMDR Joe Bodensadt will be replacing CMDR George Dupree as the icebreaker contact in Coast Guard headquarters.

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

**RVTEC report prior to February 2001 UNOLS council meeting.**  
**By Dale Chayes**

RVTEC held its 2000 annual meeting at Lamont in October. Attendance exceeded expectations and there were some problems with lunch on the first day. We will do a better job of predicting attendance at future meetings.

We had breakout hands-on sessions on SeaNet, 0.322 wire termination and salinometer operation during the meeting. The breakout sessions were judged a success and breakout sessions will be included in the 2001 meeting at URI. Discussions are underway on the topics and leaders.

The 2001 meeting at URI will also overlap with the RVOC meeting and some joint sessions are planned.

RVTEC has initiated a "training" web page that is in its formative stages.

The list server has been sporadically active as is usual.

# Appendix IV

# UNOLS/NAVOCEANO

UNOLS Council Meeting February 2001



**Gordon Wilkes/Paul Taylor**  
**Naval Oceanographic Office**

# CY2001



- **295 Ship Days**
- **No. Gulf of Mexico Littoral Initiative - LUMCON**
- **South Florida Test Range - UMiami**
- **Onslow Bay - Duke**
- **SCORE Range - Scripps**
- **COMINWARCOM Western Gulf of Mexico - UTEX**
- **CenCal Physical Oceanography - NPGS/SIO**
- **Hawaiian Islands Bathymetry - SIO**
- **Bahamas/East Coast Florida PhysO- UMiami**
- **No. Florida Shallow Water Acoustics - HBOI**
- **No. Gulf of Mexico Mine Warfare Support - HBOI**

# CY2002 Plans



- **305 Ship Days (to Date)**
- **Hawaii - Bathymetric Surveys 45 Days**
- **SCORE - Acoustic Surveys 45 Days**
- **West Coast - PhysO Surveys 45 Days**
- **Northern GoMex - NGLI 30 Days**
- **Western GoMex - Mine Warfare Support 30 Days**
- **East Coast - PhysO Surveys 45 Days**
- **South Florida Test Range - GeoAcoustics 20 Days**
- **Florida East Coast - PhysO 30 Days**
- **NAVOCEANO NW Coast - 15 Days**



# Appendix V

## **UNOLS COUNCIL MEETING**

### **Coast Guard Agency Report**

**22-23 February 2001**

#### **USCGC HEALY Update**

After completing Ice and Science Trials, HEALY transited the Northwest Passage in July, arrived in Seattle on 9 August, and was commissioned on 21 August. The vessel has been undergoing warranty repairs - first at Todd Shipyards and now dockside at the Coast Guard Integrated Support Command in Seattle. HEALY is scheduled to conduct science systems testing in April-May and then depart for science missions in the Eastern Arctic on 12 June and return on 12 December.

#### **POLAR Class Update**

POLAR SEA completed a "Reliability Improvement Project" yard availability in Todd Shipyards, Seattle and then departed for the Antarctic and Operation Deep Freeze 2001 on 4 November 2000. The ship is schedule to return to Seattle in early April 2001 and then prepare for a two-month science mission in the Western Arctic in July and August of 2001.

POLAR STAR completed the five-month Operation Deep Freeze Antarctic deployment and returned to Seattle in April 2000. The ship sailed for a western Arctic science cruise on 21 July and returned to Seattle on 21 September. POLAR STAR went into dockside availability for repairs from October 2000 to February 2001. On 6 March , the ship will then sail for the St. Lawrence Island Polynya Project (SLIP 2001), which is scheduled for March - April 2001. POLAR STAR will go into drydock during the period May - July 2001 and then prepare to depart for Operation Deep Freeze in November 2001.

#### **Award to Jim Swift**

On January 25<sup>th</sup> the Coast Guard presented Dr. James H. Swift of Scripps Institution of Oceanography its top civilian award: the Distinguished Public Service Award. Dr. Swift was honored during a Seattle, Washington ceremony held on the USCGC HEALY. CAPT Jeffrey M. Garrett, Commanding Officer of the HEALY, conferred the award on behalf of the Coast Guard in recognition of Dr. Swift's outstanding support of the Coast Guard and the scientific community while serving as founding Chairman UNOLS Arctic Icebreaker Coordination Committee (AICC) from September 1996 to December 2000.

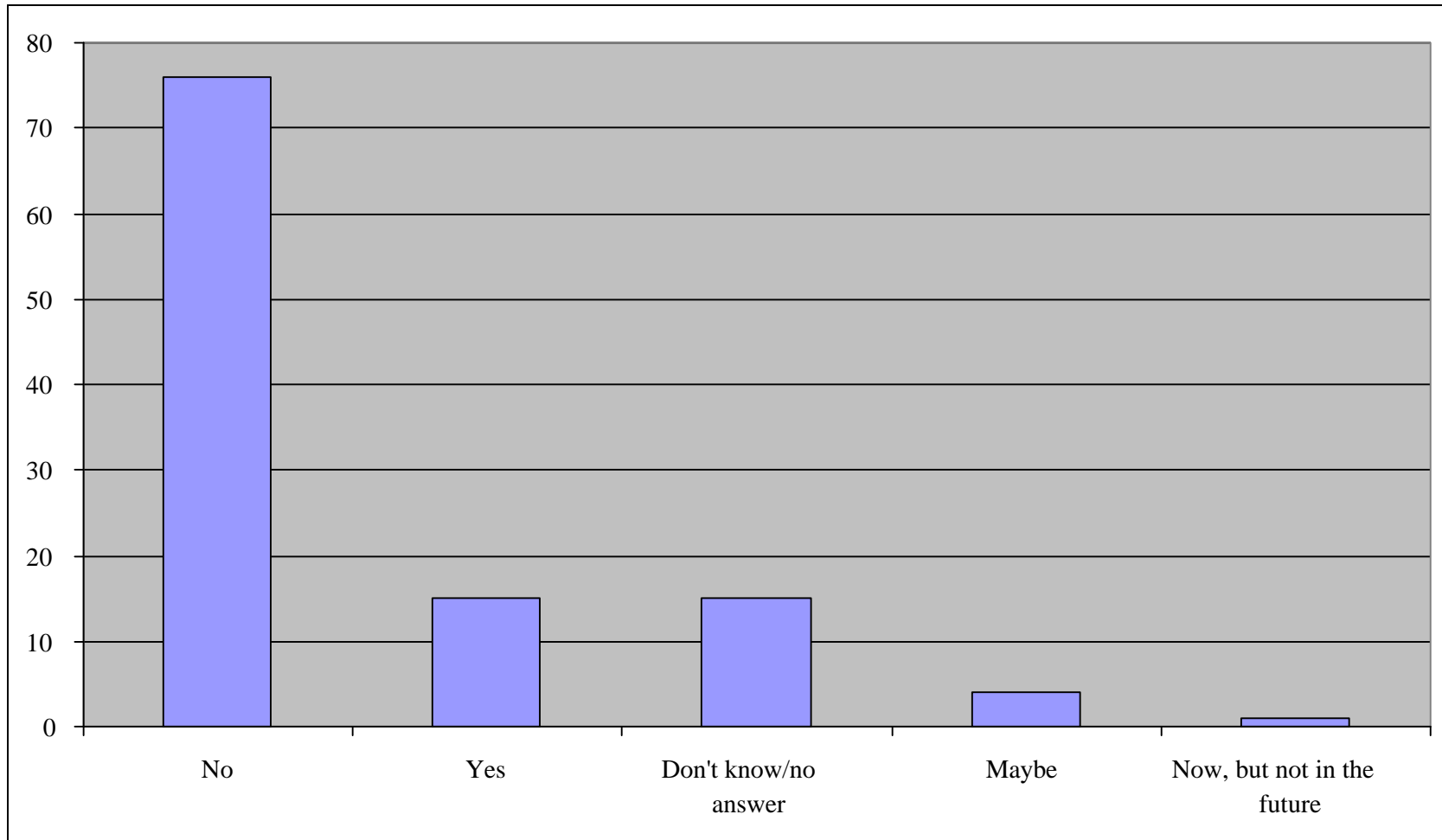
# Appendix VI

# Respondents

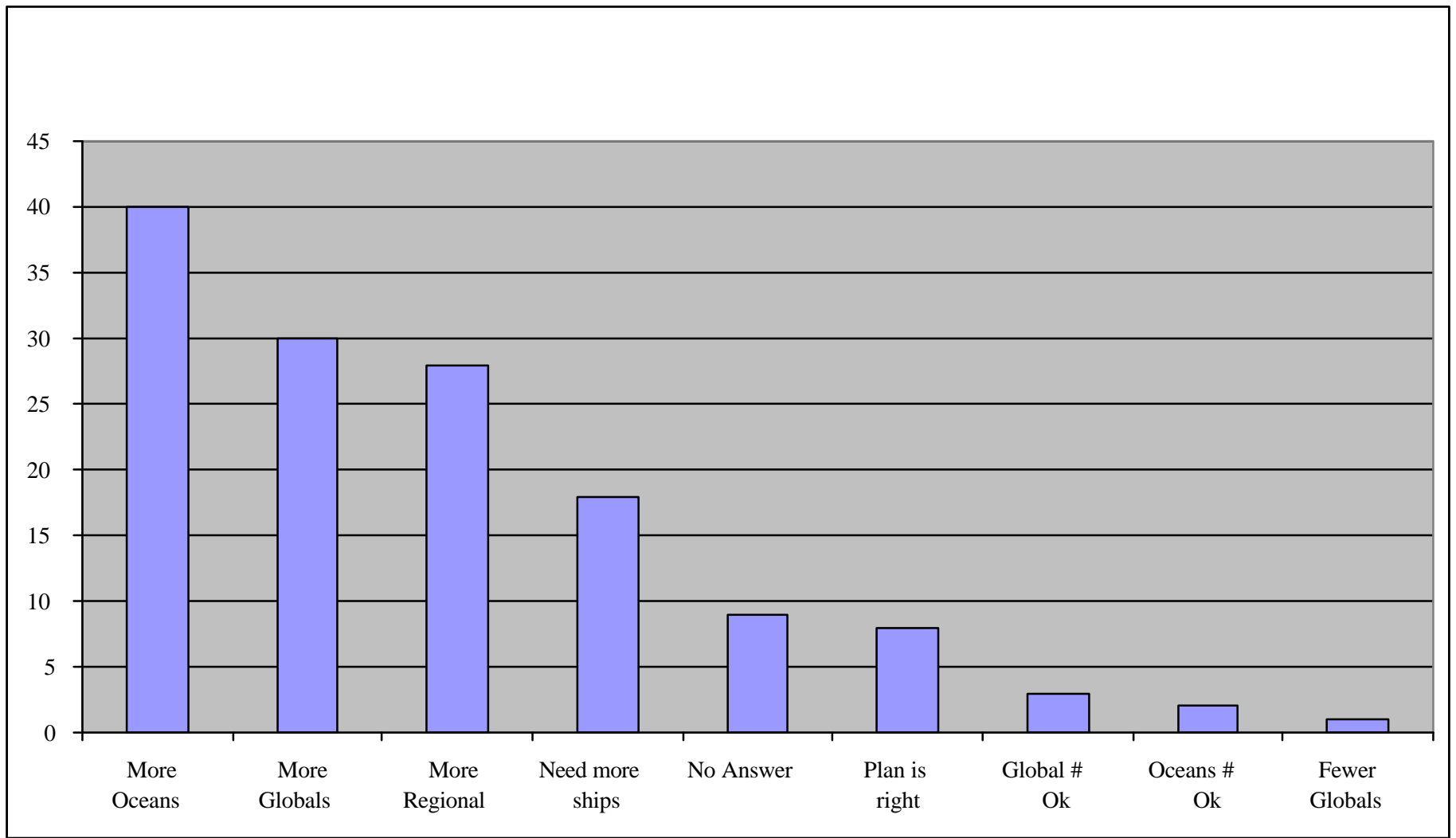
Count of Inst	
Inst	Total
URI	21
ANON	21
WHOI	17
SIO	12
OSU	7
UW	6
UH	4
ODU	3
UT	2
LDEO	2
HBOI	2
Brown	2
UDEL	1
UCSC	1
UCIrvine	1
UAF	1
TAMU	1
Skidaway	1
RSMAS	1
NPS	1
NOAA/PMEL	1
MBARI	1
LUMCON	1
BBSR	1
Grand Total	111

Count of Position	
Position	Total
Admin/Dean	7
Grad Student	3
Operator/Technican	10
Seagoing Scientist/PI/Ch. Sci	91
Grand Total	111

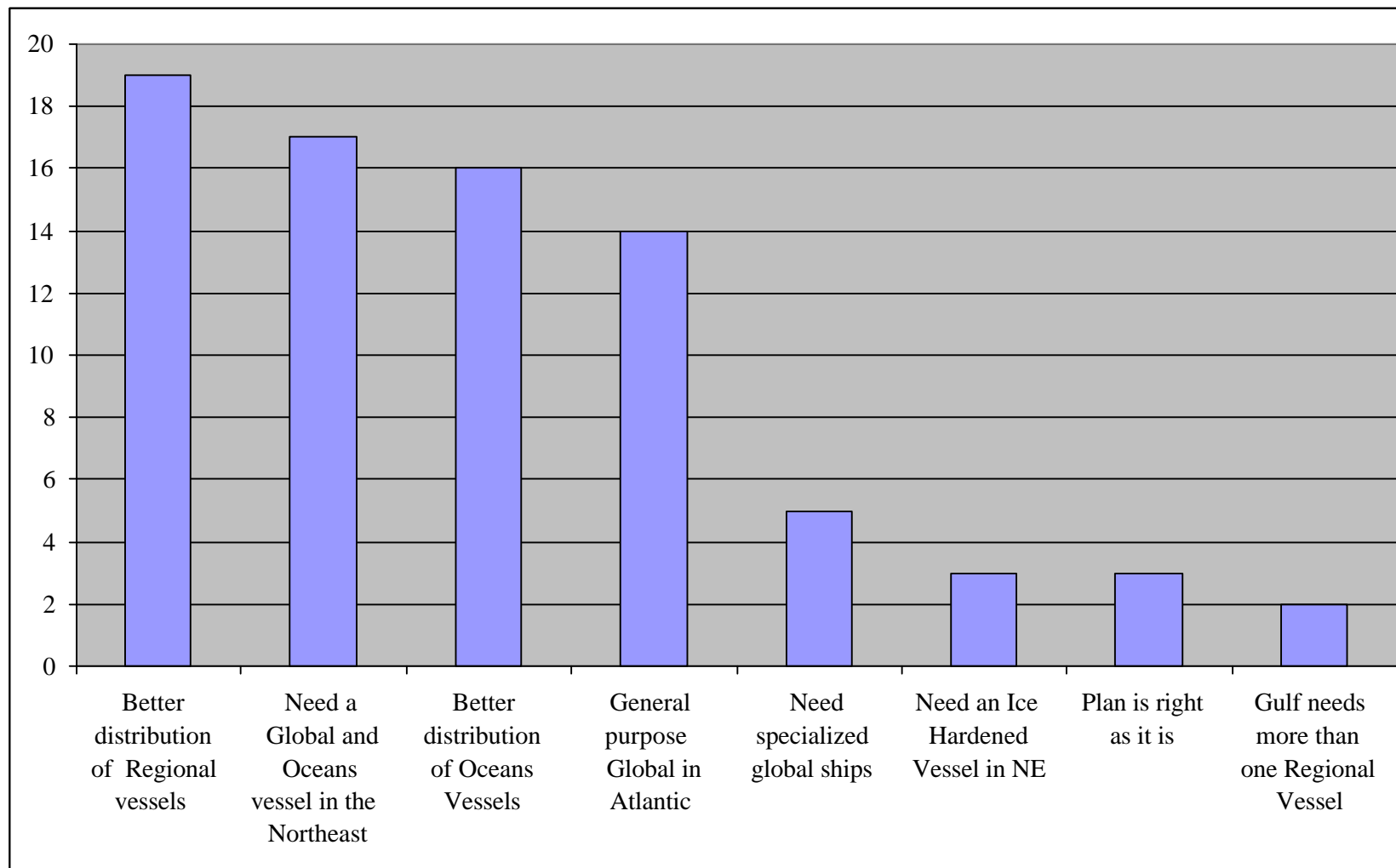
# Does the Plan meet the needs of Marine Science



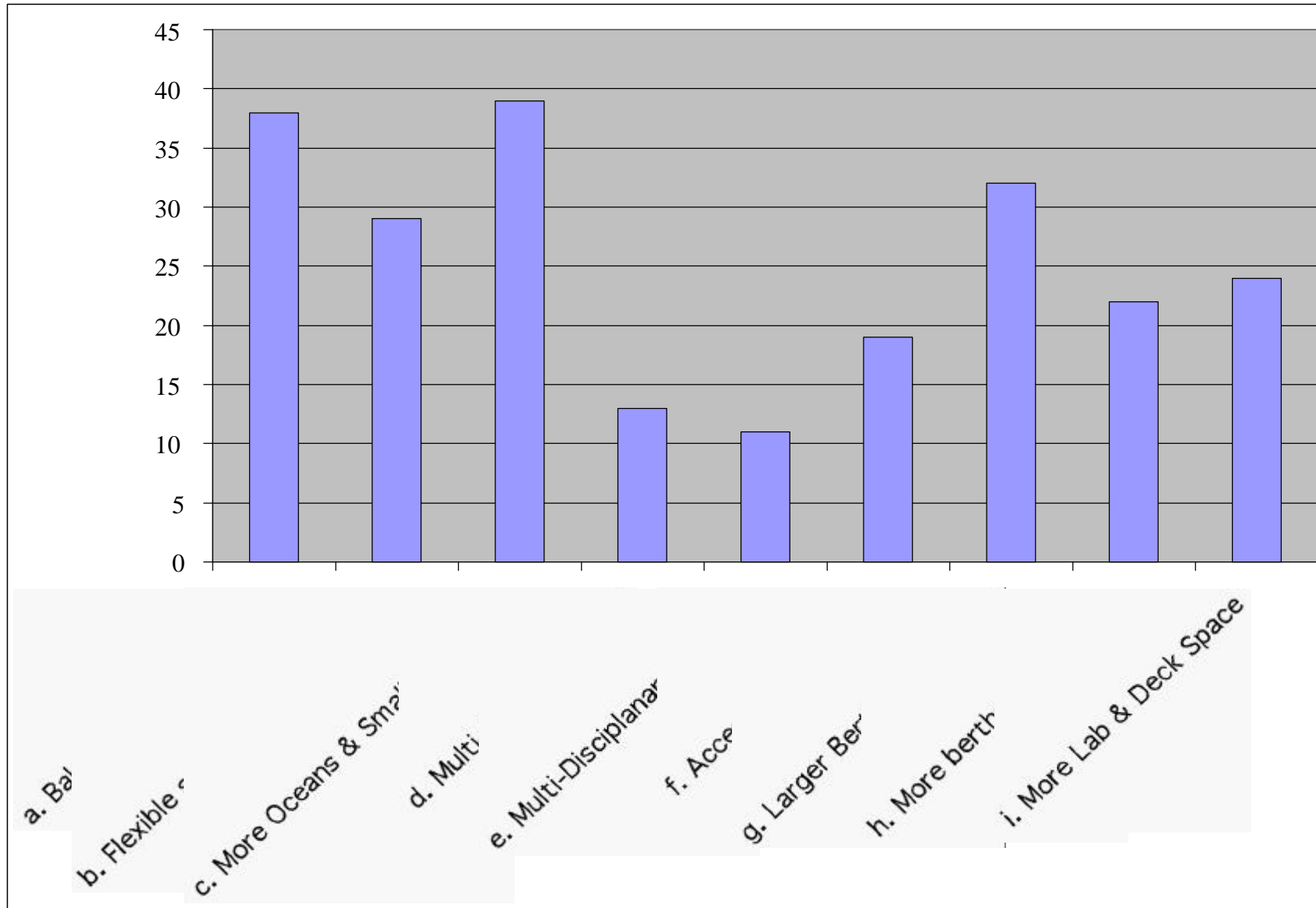
# #'s of vessels needed compared to the plan



# Is the distribution of ships in the plan right?

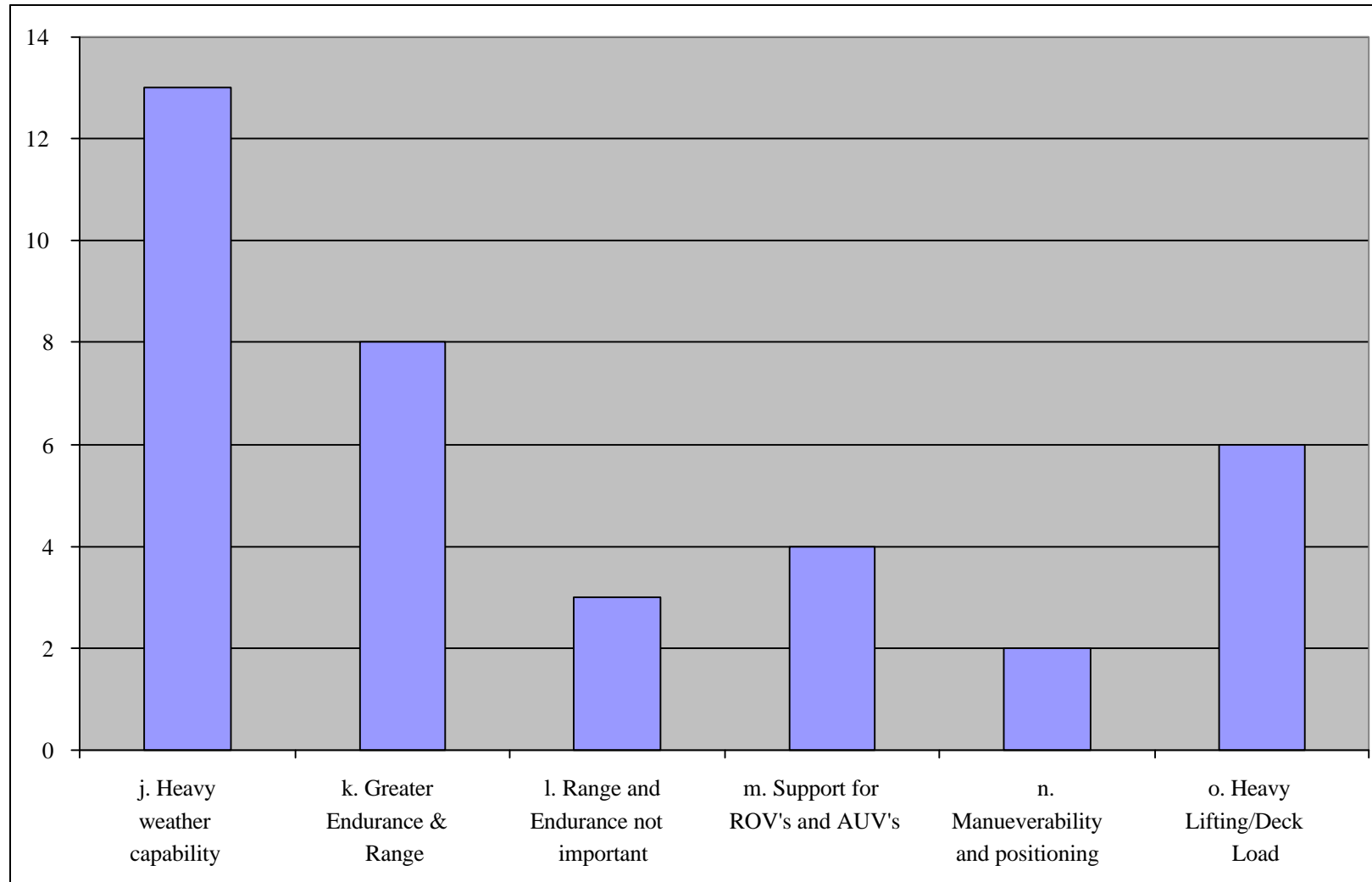


# Fleet Capabilities

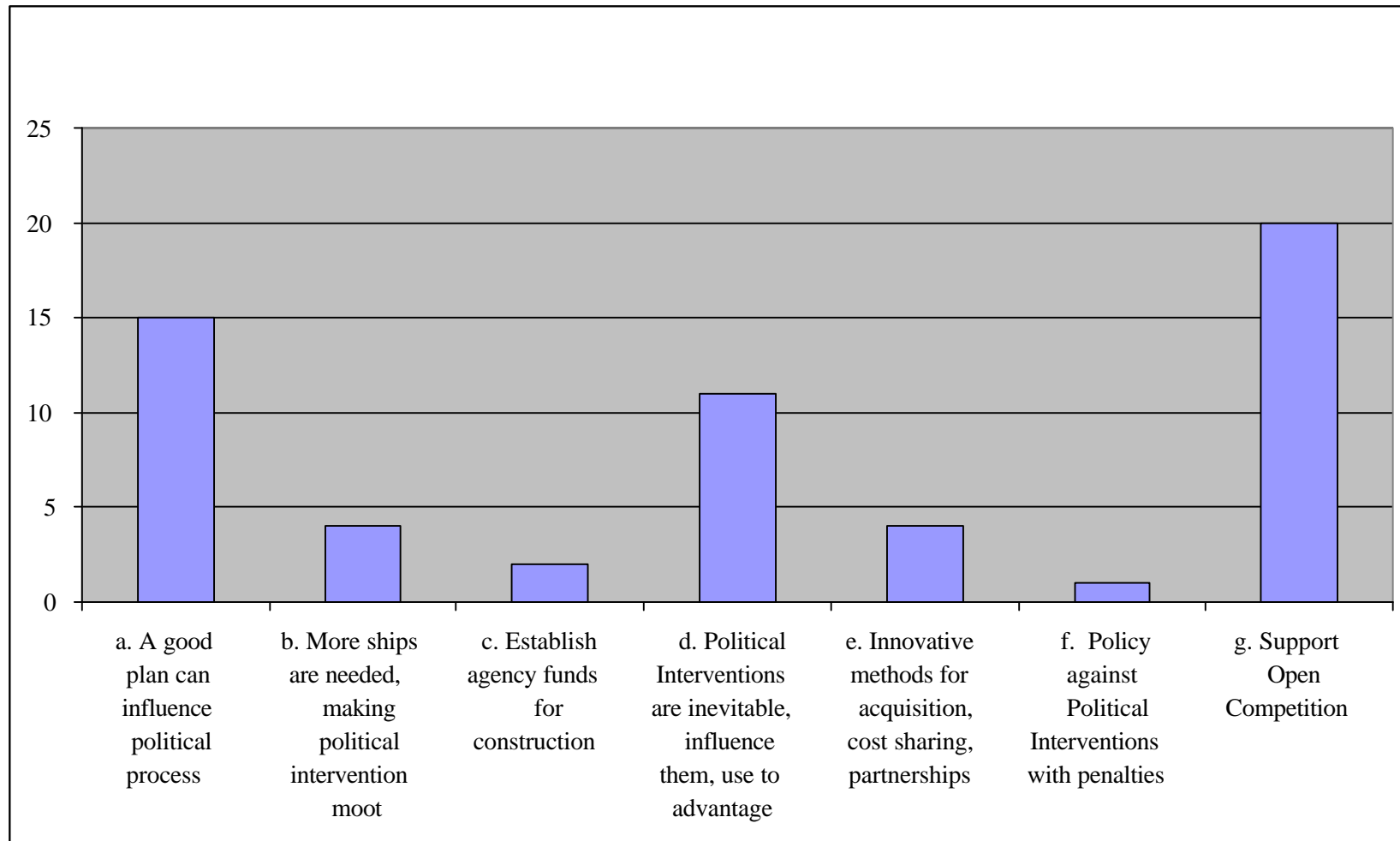




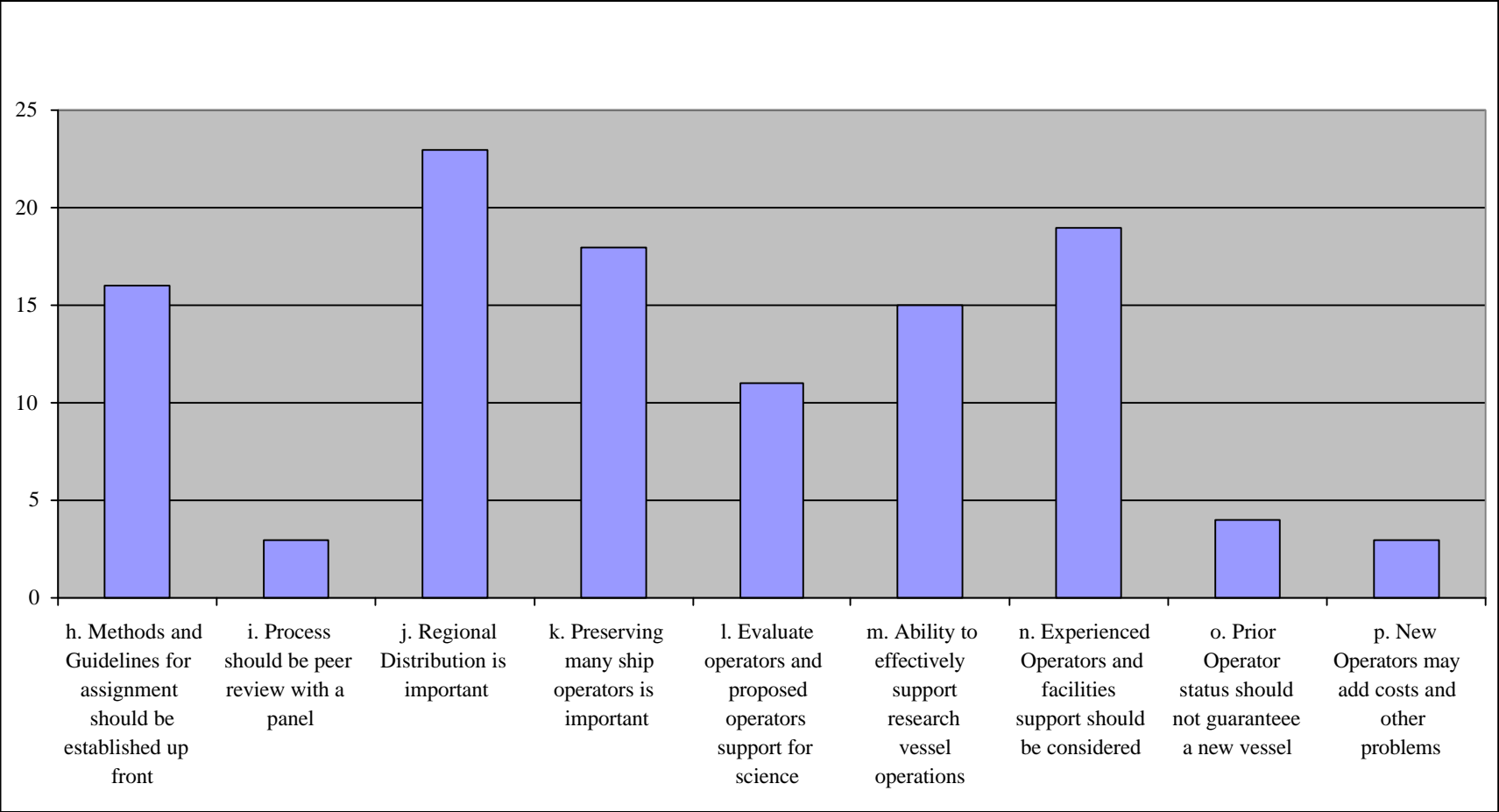
# Other Vessel Capabilities



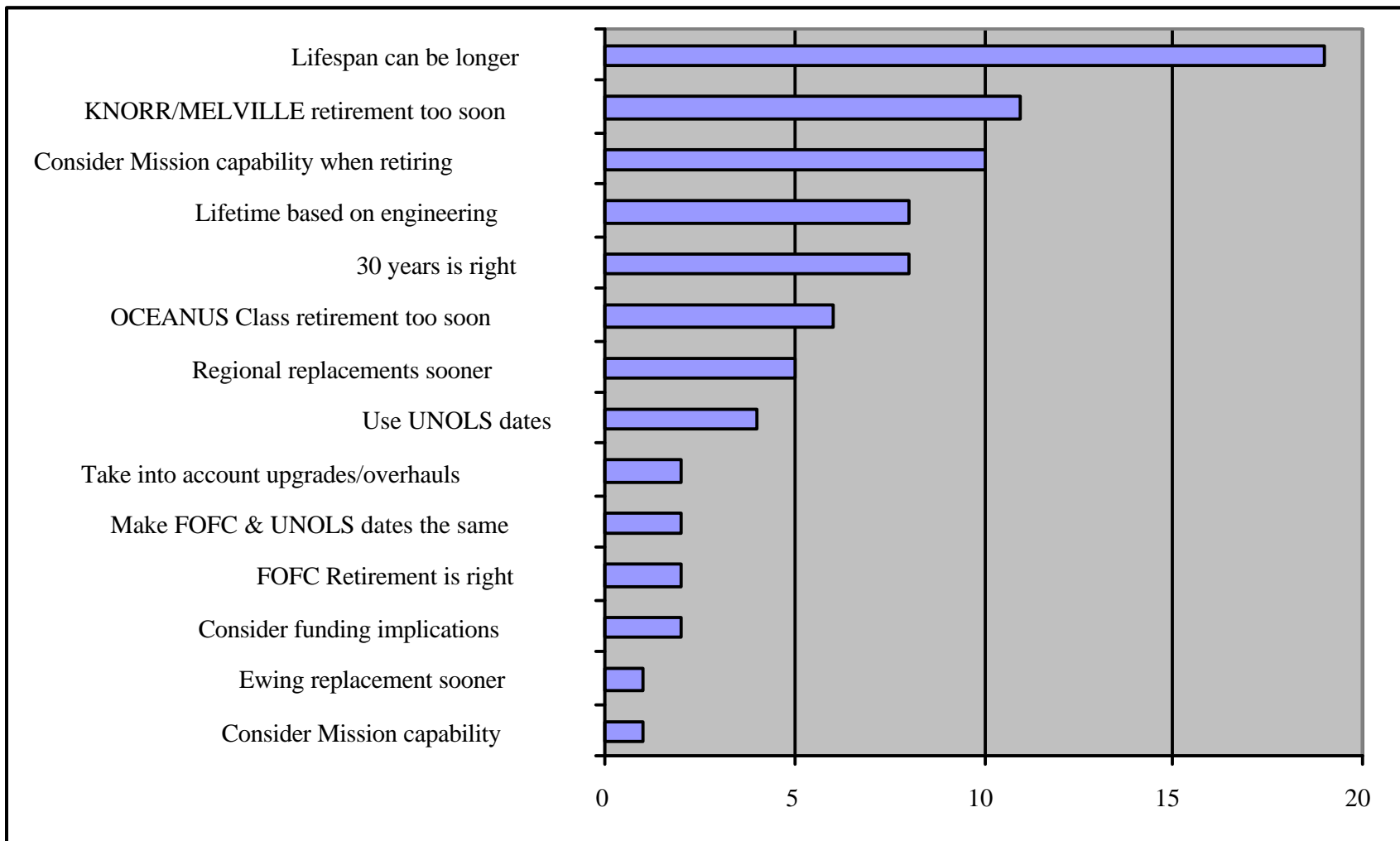
# Comments on Political Intervention



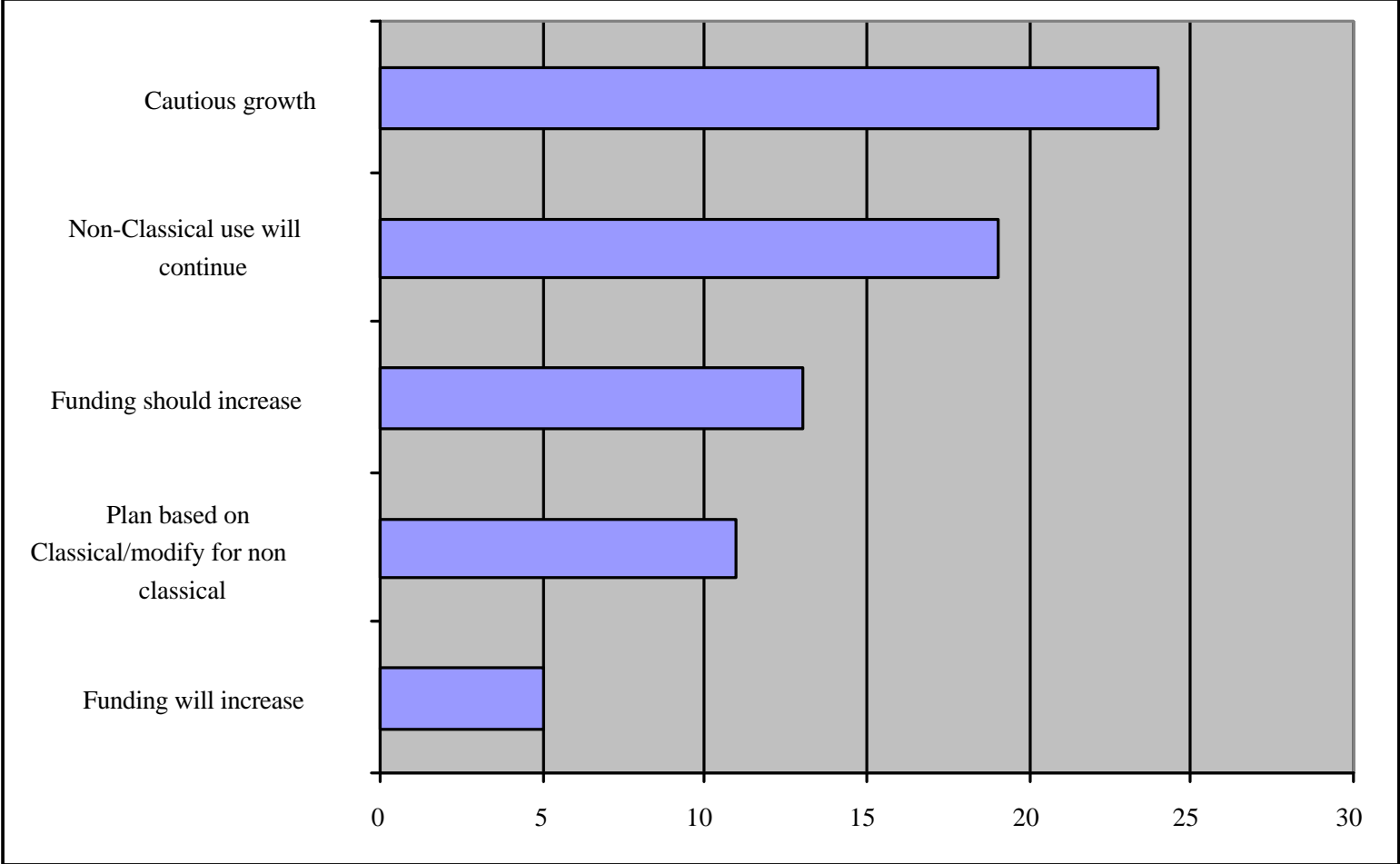
# Comments on Competitive Process



# Comments on Lifespan



# Comments on Funding



# Appendix VII



Corvallis Workshop – August 2000

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**Assessment of Future Science Needs  
in the Context of the Academic  
Oceanographic Fleet**

## Workshop Goals

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



# Major Science Themes (as examples)

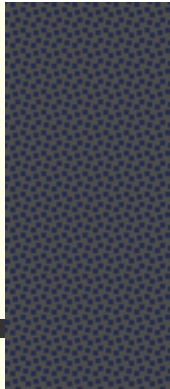
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- Better Observations in Selected Environments
  - Coastal Oceans
  - Ice-edge, ice-covered
  - High-latitude Open Ocean
  - Sea floor: mapping, spreading centers, sediments
  - Air-Sea Interactions
  - Benthic Boundary Layers

# Major Science Themes (as examples)

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



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

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

Satellites (color, temp, winds, currents, etc)

Long-term moorings

Drifting (single depth and vertically cycling) platforms

Autonomous vehicles

(some of this is already in place)

## Science Needs, continued

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### **Vessels to provide deployment/recovery/service for moorings, drifters, vehicles**

Improved capabilities for handling untethered objects

Acoustically quiet

Improved heavy weather capabilities

Increased use of AUVs, ROVs and submersibles

(some new vessel construction probably needed here)

## Science Needs, continued

---

### **Vessels that function as primary observational and experimental platforms**

Improved capabilities for handling untethered objects

Acoustically quiet

Improved heavy weather capabilities

Undisturbed sampling in/around air-sea interface

Increased use of AUVs, ROVs and submersibles

(some new vessel construction probably needed here)

## Science Needs, continued

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### **Vessels that can meet the expanded needs of the marine geology community (growth in ODP)**

increased coring capacity (expanded site survey needs)

sea flooring mapping

seismic systems

increased use of AUVs, ROVs and submersibles

(some new vessel construction needed here)



## Science Needs, continued

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### **Global high-bandwidth communication capability (transition from cell phones to internet)**

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

Vessel-vessel and vessel-laboratory data communications

(commercial technological advances can be moved quickly into ocean science – already in progress)



## Science Needs, continued

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### **Rapid response capability within the oceanographic fleet**

Have vessels/remote systems that are available to respond to “events” detected by observational program

Implies excess capacity will be available

(Places a new set of challenges on ship scheduling system)



## Vessel capabilities needed for the future: (1)

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- Acoustically-quiet vessels for improved communication and tracking of autonomous vehicles;
- Greater stability to work in a wider range of sea states;
- Sheltered, ice-free decks for operations at high-latitudes;
- Undisturbed sampling of ocean surface, air-sea interface, and levels just above and below the interface;
- Improved launch/recovery operations for remote systems, whether towed or untethered (AUVs);

## Vessel capabilities needed for the future: (2)

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- Ice-hardened ships as climate change drives more research in marginal ice zone areas;
- Clean sampling handling during perturbation experiments (trace elements, etc);
- Improved and expanded shipboard laboratory space;
- Improved sea-floor mapping, coring;
- High-speed data communication to shore, ships, deployed instruments.

# Conclusions

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- New observational tools will *extend* the reach of the fleet, but *will not replace* or reduce the fundamental use of vessels to conduct basic observational and experimental research at sea
- These trends will lead to *increased* demand for shiptime

# Conclusions

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- Vessel capabilities must be extended to meet the needs of new systems and approaches
- We recommend a community evaluation of “general-use” versus “specific-use” vessels in the fleet

# Conclusions

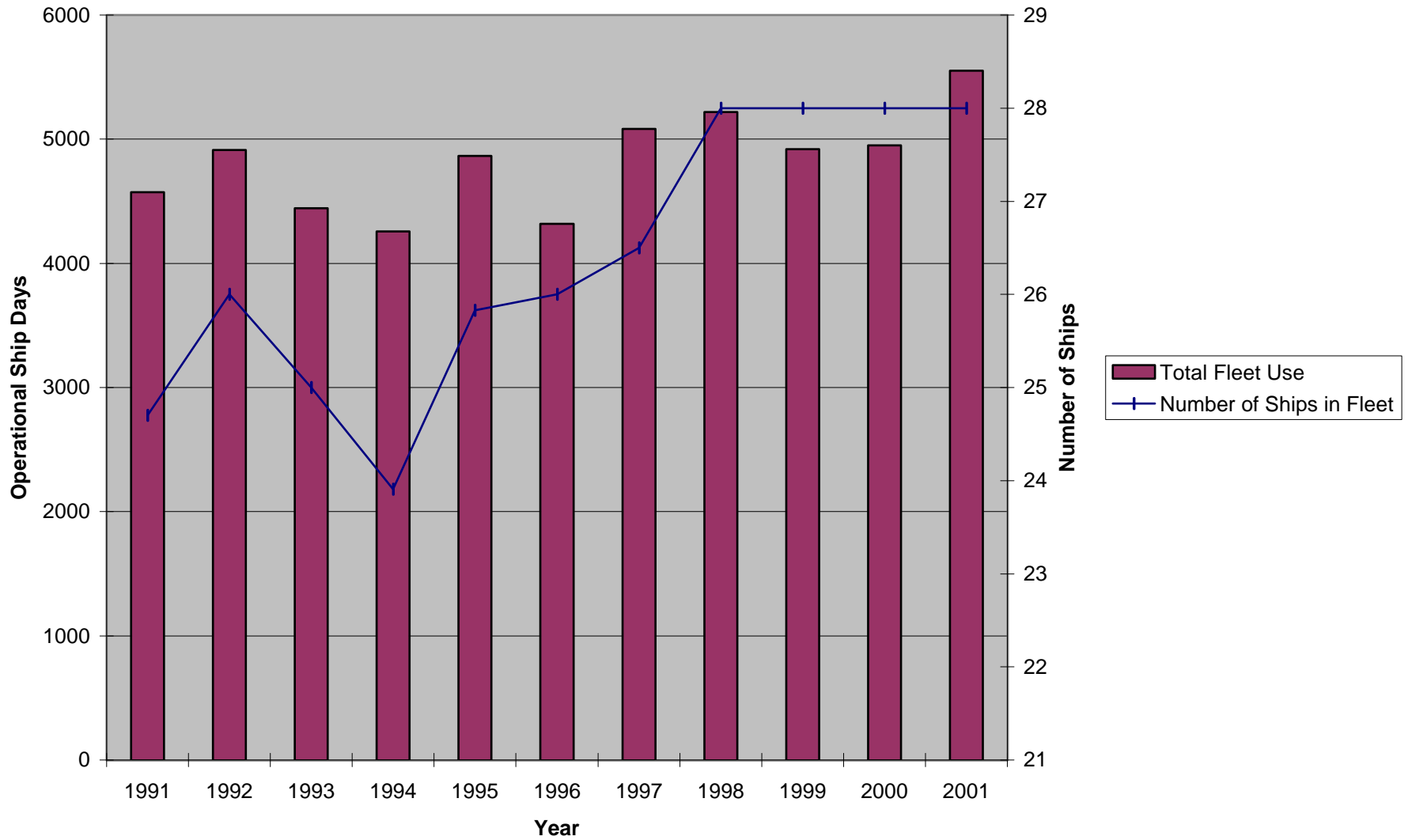
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- Expanded time/space scales of resolution of observations will lead to scientific demand for “event-scale” studies of ocean processes
- We therefore recommend a thorough evaluation of the ship scheduling process

# Appendix VIII

Chart 1- Fleet Utilization

**Fleet Utilization: 1991-2001**



# Appendix IX



## *Motion*

### **NAVO/UNOLS resolution**

The UNOLS Council takes this opportunity to affirm its support for the ongoing use of UNOLS ships to undertake operational activities of federal agencies when this is practical, appropriate and mutually beneficial. An example is use of UNOLS ships by the Naval Oceanographic Office (NAVOCEANO) to carry out Navy projects. The benefits of this partnership to NAVOCEANO and to UNOLS have been spread nationally: since inception of the NAVOCEANO funding to UNOLS by congressional action in 1997 18 UNOLS vessels of varied sizes operated by 14 different institutions have provided over five ship-years of support to Navy programs in a wide array of coastal and open ocean areas. Consequently, NAVOCEANO has been able to satisfy Navy requirements in US and international waters without diverting its own fleet of ships from other high priority surveys elsewhere, and the UNOLS fleet, the major vessels of which were constructed primarily with Navy funds, has been more fully utilized on oceanographic tasks for which it is well suited. NAVOCEANO program managers have cooperated fully with established UNOLS mechanisms to schedule ships and to make the sometimes difficult scheduling decisions required to optimize the use of all the UNOLS ships on behalf of all participating agencies and projects. NAVOCEANO has received ship support that is technically and operationally first-rank, and has been able to select ships of different sizes, capabilities and costs according to program requirements. These are attributes of a partnership that works, and the Council goes on record in favor of continuing this and analogous partnerships with other agencies. Such continuation must be founded on the existence of genuine need for use of the UNOLS facilities in partnership mode, on the availability of genuinely supplemental funding to support the work, and on the principle of equitable access to UNOLS scheduling by programs of all user agencies.

# Appendix X

# Conceptual Design Characteristics

- Length over all 64 meters
- Beam 15.8/16.8 meters
- Draft 4.6 meters
- Installed power 3,730 kW
- Classification ABS, ACCU, A1 Ice
- Maximum speed 14 knots
- Ice capability 0.8-0.9m @ 2 knots

# ARRV Operability

- South of Bering Strait  
typical conditions:  
less than 1.0 m first-year ice, ridging, rubble  
late December to late May ( $\pm$  month)  
possible independent operations:  
year round
- Chukchi Sea - South  
typical conditions:  
about 1.5 m first-year ice, dynamic  
October to mid May  
possible independent operations:  
limited May to December

# ARRV Operability

- Chukchi Sea - North
  - typical conditions:
    - 1.8m first-year + significant multi-year ice, dynamic
    - late September to early September
  - possible independent operations:
    - limited
- North of Alaska / Beaufort Sea
  - typical conditions:
    - significant multi-year ice
  - possible independent operations:
    - ~3-8 weeks, severely limited

# ARRV Operability

- **South of Bering Strait**

typical conditions:

less than 1.0m first-year ice +  
ridging, rubble

late Dec - late May ( $\pm$  month)

possible independent operations:  
year round

- **Chukchi Sea - South**

typical conditions:

about 1.5m first-year ice, dynamic  
Oct - mid May

possible independent operations:  
limited May - Dec

- **Chukchi Sea - North**

typical conditions:

1.8m first-year + multi-year ice  
late Sept - early Sept

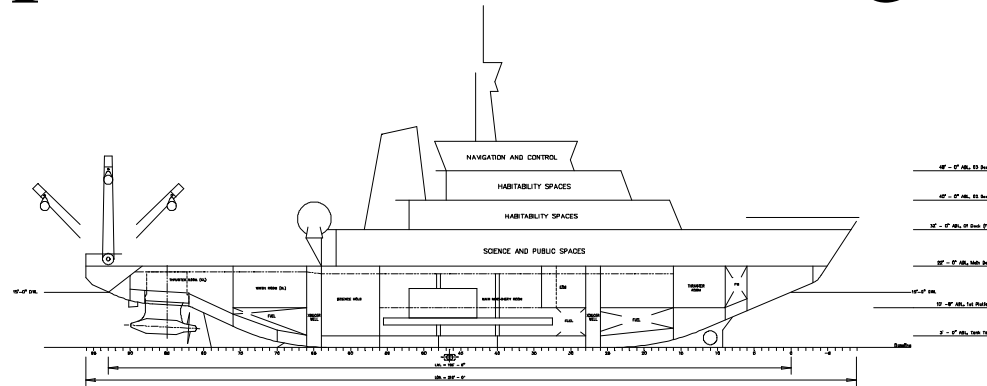
possible independent operations:  
limited

- **North of Alaska /  
Beaufort Sea**

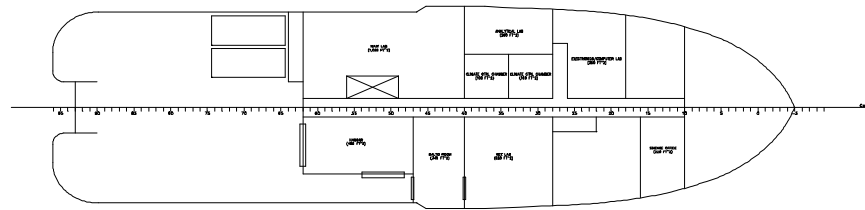
typical conditions:

significant multi-year ice  
possible independent operations:  
~3-8 weeks, severely limited

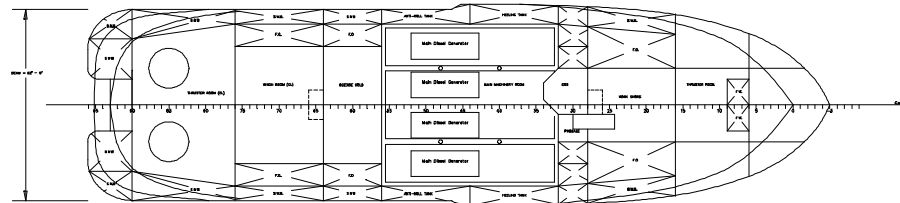
# Conceptual General Arrangement



**Profile**

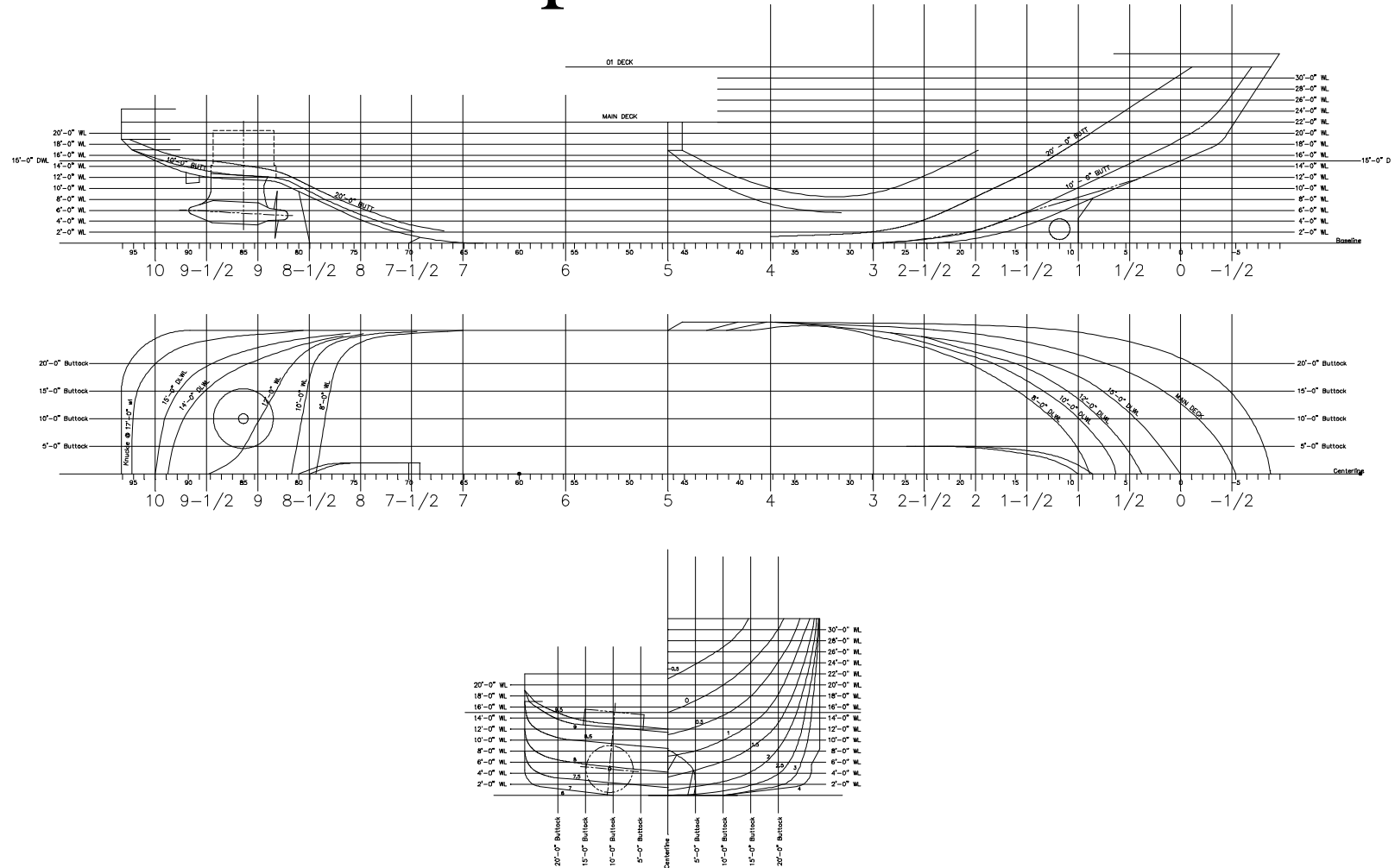


**Main Deck**



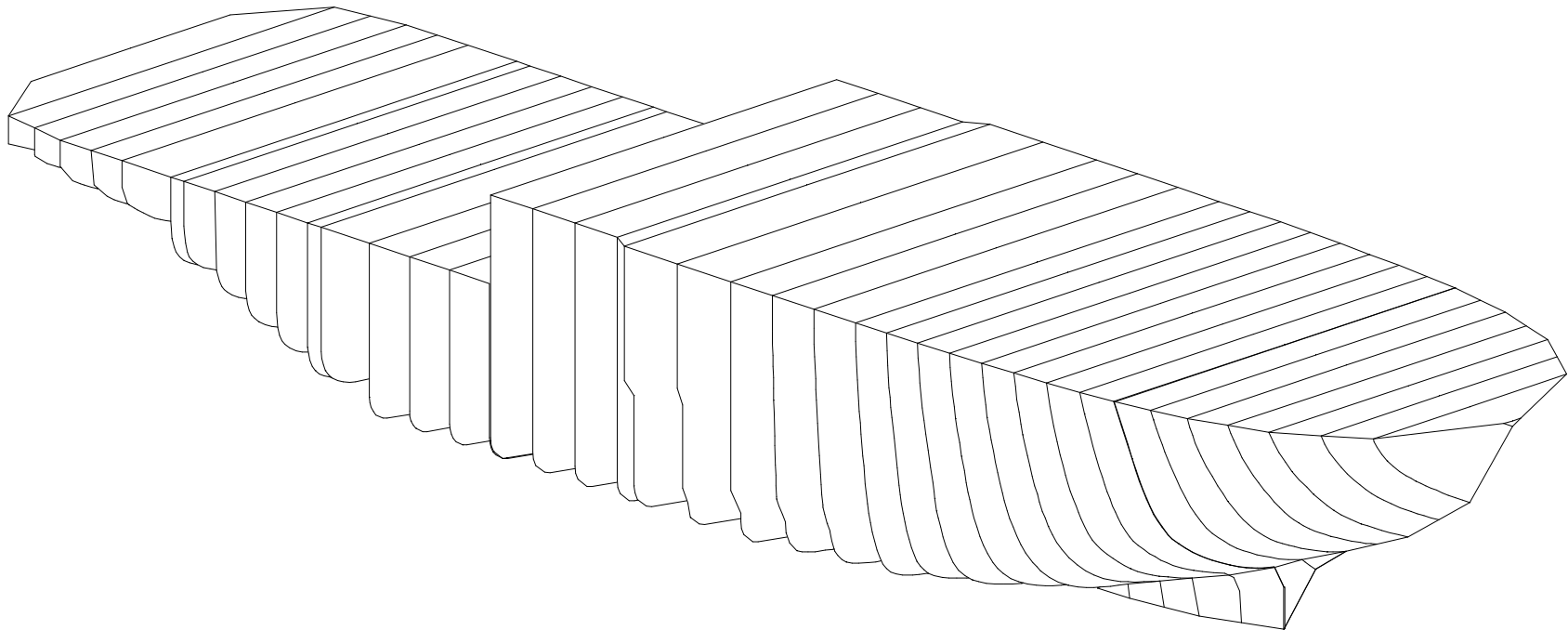
**Hold Plan**

# Conceptual Lines Plan





# Concept Hull Wireframe Model



# Appendix XI

	Committee	Location	Dates
<b>UNOLS Home</b>	<a href="#">Arctic Icebreaker Coordinating Committee</a>	<a href="#">USCGC HEALY, Seattle, Wa.</a>	<a href="#">January 25 &amp; 26, 2001</a>
	<a href="#">Fleet Improvement Committee</a>	<a href="#">RSMAS, Miami, Fl.</a>	<a href="#">February 21 &amp; 22, 2001</a>
<b>Committees</b>	<a href="#">UNOLS Council</a>	<a href="#">RSMAS, Miami, Fl.</a>	<a href="#">February 22 &amp; 23, 2001</a>
	<a href="#">Submergence Technology Meeting</a>	<a href="#">Miami Beach Convention Center, Miami, Fl.</a>	<a href="#">April 4, 2001</a>
<b>Scheduling</b>	<a href="#">Deep Submergence Science Committee</a>	<a href="#">WHOI, Woods Hole, Ma.</a>	<a href="#">May 30 &amp; 31, 2001</a>
	<a href="#">UNOLS Council</a>	<a href="#">MLML, Moss Landing, Ca.</a>	<a href="#">Week of June 21 &amp; 22, 2001</a>
<b>Ships</b>	<a href="#">Ship Scheduling Committee</a>	<a href="#">NSF, Arlington, Va.</a>	<a href="#">July 19, 2001</a>
	<a href="#">Arctic Icebreaker Coordinating Committee</a>	<a href="#">NSF, Arlington, Va.</a>	<a href="#">Sept. 10 &amp; 11, 2001</a>
<b>Jobs/Personnel</b>	<a href="#">Fleet Improvement Committee</a>	<a href="#">NSF, Arlington, Va.</a>	<a href="#">Sept. 12, 2001</a>
	<a href="#">Ship Scheduling Meeting</a>	<a href="#">NSF, Arlington, Va.</a>	<a href="#">Sept. 12, 2001</a>
<b>Links</b>	<a href="#">UNOLS Council</a>	<a href="#">NSF, Arlington, Va.</a>	<a href="#">Sept. 13, 2001</a>
	<a href="#">UNOLS Annual Meeting</a>	<a href="#">NSF, Arlington, Va.</a>	<a href="#">Sept. 14, 2001</a>
<b>Travel Info.</b>	<a href="#">Research Vessel Operators Committee</a>	<a href="#">URI, Narragansett &amp; Newport, R.I.</a>	<a href="#">October 23 - 25, 2001</a>
	<a href="#">Research Vessel Technical Enhancement Committee (one day as joint session w/RVOC)</a>	<a href="#">URI, Narragansett, R. I.</a>	<a href="#">October 23 - 25, 2001</a>
<b>Office</b>	<a href="#">Deep Submergence Science Committee</a>	<a href="#">AGU, San Francisco, Ca.</a>	<a href="#">December 9, 2001</a>
	<a href="#">AICC Town Hall Meeting</a>	<a href="#">AGU, San Francisco, Ca.</a>	<a href="#">December 10, 2001</a>
	<a href="#">Webmaster</a>	<a href="#">Contact</a>	<a href="#">Site Map</a>

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## Appendix XII

**Sorry for the inconvenience, but an electronic version of this Appendix is unavailable. A hardcopy of the Appendix can be obtained by contacting the UNOLS Office <[office@unols.org](mailto:office@unols.org)>.**

# Appendix XIII

**Sorry for the inconvenience, but an electronic version of this Appendix is unavailable. A hardcopy of the Appendix can be obtained by contacting the UNOLS Office <[office@unols.org](mailto:office@unols.org)>.**

# Appendix XIV



## Office of Marine Affairs

# R/V Maurice Ewing MCS Upgrades

To download the full Adobe Acrobat PDF version of this document click on the following link: [3D MCS proposal](#)

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## The Recommendations

The US academic MCS community has recommended that the EWING's MCS capability be enhanced in several ways: first, to maximize the effectiveness of 2D data collection by improving the onboard real-time monitoring and quality control of navigation and acquisition parameters; second, to improve the ability to collect 3D data, but in such a way as not to impinge on other important marine geophysics, such as OBS operations and other over-the-side work; third, to increase the level of technical support during complex MCS projects. Lamont and NSF are currently working on the first recommendation. Funding for SPECTRA, the premier integrated navigation system available today, has been granted, and the system will be installed early in 2001. Systems for real-time data QC are currently being investigated. The third recommendation will be addressed, when the need arises, by hiring experienced contractors. To satisfy the second recommendation requires adding the ability to tow multiple streamers. This modification is the most expensive, and the most difficult to implement. We anticipate that it will be implemented as a component of EWING's upcoming midlife refit.

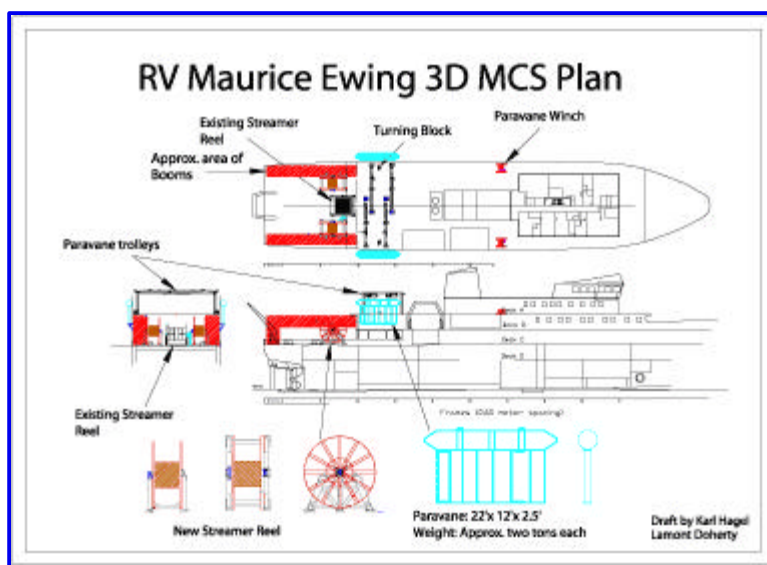
## The Limitations

3D MCS acquisition can be carried out by making many parallel passes with EWING's current 2D MCS system. With a single source array and a single streamer, each pass yields a single CDP line. The recommended enhancement can be obtained by adding multiple, parallel streamers, and/or airgun arrays. These streamers and source arrays must be separated, held out to either side by large paravanes. Standard industry practice is to tow two source arrays, 50 meters apart [each 25 m. from the centerline] and multiple streamers [8 is typical] 100 meters apart. In this configuration, 16 CDP lines, with 25-meter separation, are gathered simultaneously. There are four major factors limiting the extent to which EWING can be upgraded for 3D work: The ship's pulling power, which limits the amount of equipment towed; deck space; the abovementioned need to retain significant multipurpose capability; and of course, funding. EWING's power will limit us to two paravaned streamers, and our design studies show that the conversion from our current single source array to dual, separated arrays would severely impact our ability to do OBS work and to carry containers. We therefore propose to keep the current seismic source system as it is, and to add a system to accommodate towing multiple streamers.

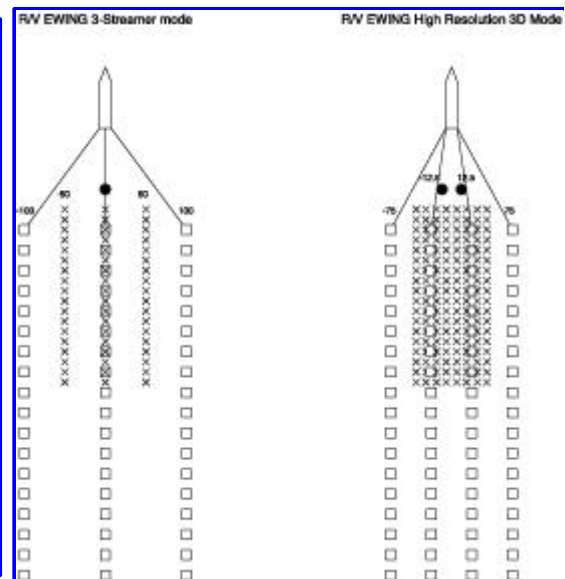
## The Plan

Our ongoing canvassing of past and future EWING MCS users, along with the guidance from NSF regarding potential refit funding levels, has lead us to propose the phased upgrade outlined here. We hope to achieve three new capabilities: extra-long-offset 2D, multistreamer 3D and high resolution 3D, without sacrificing the ability to operate in our current conventional 2D mode. Adding a paravane system and longer, multiple tow leaders will permit us to tow two (or three) streamers, allowing simultaneous

acquisition of multiple lines of CDPs with 100 (or 50) meter spacing. If we extend the current airgun booms by 11 feet to allow towing of two GI guns or cluster sources with 25 meter separation, and add enough tow leaders [and Syntrak input modules] to tow four, 1200 meter streamers with 50 meter separation [total spread 150 meters] EWING could acquire eight simultaneous CDP lines with 12.5 meter separation true high resolution 3D. Finally, if streamer sections were attached end-to-end a single 10-12 km streamer could be deployed for long offset 2D surveying. The needed equipment falls into two categories: paravane system and cable reels. The paravane system must be installed forward of the airgun booms, so as not to interfere with them. The paravanes required to tow two 6 km streamers 100 meters abeam are each about 22 x 12 x 2.5 in size, and weigh nearly two tons. The paravanes are to be deployed and recovered using a pair of telescoping horizontal trolleys, and towed with heavy cables, each with a winch and turning block. We propose to mount these elements on EWING's upper working deck. To provide room, the core winch would have to be removed, and the system's detailed design must accommodate the proposed large crane. With this system installed, there will be very little room left for containers, making the deployment of extensive numbers of OBSs difficult or impossible during a 3D leg. On the main deck, two cable reels will be added, flanking the current reel. These reels will be narrower, but considerably taller than, the current reel. Each of these reels will have a level winding system, stern rollers, and a large fairlead block to keep the tow leader from interfering with the airguns. With these reels in place, there will be little leftover space on the fantail. This installation will only be possible after several other proposed modifications are carried out; notably replacing the crane suite, and relocating a pair of access ladders.



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[full resolution pdf \(11K\)](#)

## Tradeoffs and Considerations

Using the upgraded MCS systems will require increased expenses of time and money over current levels. In addition, the paravane system and cable reel installations will occupy deck areas that are now free, or used by other equipment. If we take the currently installed 2D MCS system as the base mode, then the chart below outlines our estimate of the tradeoffs imposed by the four possible modes of operation.

Estimated times required for in-port mobilization and demobilization are given in days. The number of technicians required is based on the normal 2D MCS contingent of: Science officer, Systems manager, Electronics technician, Senior air gun technician, and three air gunners. For multiple streamer operations,

contract back deck personnel and navigation specialists will also be required. Estimated [and optimistic] deployment and recovery times are given in days. The spaces given up to the cable and paravane systems are listed according to the type of survey.

Mode	Mob.	Demob.	Techs	Deploy	Recover	Congested/Occupied Areas
2D	0	0	7	1	0.5	None
3D	2	2	9	3	1	Traw,Containers,Fantail
3D high Res	2	2	9	2	1	Traw,Containers,Fantail
Long 2D	1	1	8	2	0.75	Fantail

## The Phased Development

### Phase 1: 2001 \$0K

Purchase, installation and training for onboard system for real-time integration and QC of navigation and data acquisition parameters. We have investigated the available systems, and have been funded within our 2001 Oceanographic instrumentation proposal to purchase the best: Concept Systems Inc s Spectra. This system will be entirely applicable to both 2D and 3D versions of EWING's MCS system, and will integrate very well with the proposed system of bridge navigational and ship handling electronics, though optimum ship handling will require the replacement of EWING's old Sperry steering stand with something more modern, cf. Robertson/Simrad. Refinement of the design, specification and costing of the next phases will continue during phase 1, as will the effort to select, purchase and install real-time data QC hardware and software.

### Phase 2: 2002 ca. \$1M

EWING's ability to tow multiple streamers depends upon a system for deployment and towing two paravanes. Our plan is to employ paravanes that are each capable of flying a 6 km streamer 100 meters abeam of the ship s centerline. The working part of such a vane is approximately 15.5 x 8.3, and it hangs beneath a tubular float 22 feet long and 3 feet in diameter. Weight in air is nearly two tons per paravane. The winches, cranes and towpoints for these will be accounted for during the structural modifications proposed for other parts of EWINGs refit, and the items themselves will be designed, built, and installed for testing. As is the case for all of EWING's over-the-side MCS gear, these will be designed to be removable. For standard [i.e., reconnaissance] 3D surveys, EWING s current streamer can be subdivided and towed as two or three shorter streamers, providing CDP line spacing of 100 or 50 meters, respectively. This requires additional long streamer tow leaders. At least one relatively small winch will be added to handle these. In 2D mode, the shape and location of the towed streamer is determined using input from the 22 depth keeping birds (11 of which return heading information as well as depth) and GPS data from the tailbuoy. With multiple streamers, more sophisticated instrumentation, such as acoustic transponders and a laser-based optical system are required. It is likely that these will be leased on a per-mission basis. The Spectra Nav/QC system currently being acquired will be able to accommodate the inputs from all of these advanced devices.

### Phase 3: 2003-2004 ca. \$4M

With the experience gained from towing the current streamer as two, and then three shorter streamers, the feasibility of increasing the length of available streamer will be assessed. A reasonable upper limit is estimated to be three x 6,000 meters. It is anticipated that by 2003, thinner, possibly solid-state streamers will be more readily available than they are at the present moment.

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Last modified: Mon Jan 22 11:25:08 EST 2001

# Appendix XV

**Ship Construction and Upgrades  
Status Report to the UNOLS Council  
February, 2001**

**R/V THOMPSON**

We have just completed a significant habitability upgrade to the R/V Thomas G. Thompson. With much appreciated funding support from ONR, we have removed the originally fitted two four-person berthing vans from the 01 deck, at the after end of the superstructure. In their place, Foss Shipyard has built a new superstructure addition with four new permanent two-person staterooms (built on the pattern of the other science staterooms on the AGORs). Quality of construction and materials are excellent, and we're delighted to provide this enhanced berthing. In addition, creation of the new superstructure provided increased deck surface at the 02 level, allowing for much roomier and more logical stowage for the auxiliary work boat and the gangways and shore power cables. As part of this project, the overhead of the hydro lab (underneath the new berthing area) was modified and improved, and the portside crane pedestal was raised and re-enforced.

We thank ONR for its generous funding support, Glosten and Associates for an excellent design-making effective use of available space, and the Foss Shipyard of Seattle for a quality, on-time job.

Capt. Daniel S. Schwartz  
Manager of Marine Operations  
University of Washington

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**URI and OSU Planning Process**

The University of Rhode Island in partnership with Oregon State University are in the early stages of developing plans for a conceptual design for an Oceans Class research vessel. The ship(s) will have superior acoustic characteristics, provide a stable platform and will have a well designed working deck for over-the-side handling of sophisticated scientific instruments and tools including ROVs and AUVs.

Jack Bash

**Ship Construction and Upgrades  
Status Report to the UNOLS Council  
February, 2001**

**R/V KILO MOANA (AGOR 26)**

We have started cutting steel for the SWATH AGOR 26 (R/V KILO MOANA,) and I updated the web site so that it follows the progress of the ship. As we build the modules I add pictures to the effected deck. The web site address is

<http://imina.soest.hawaii.edu/agor26/index.htm>

A keel laying ceremony was held on Feb 9th with Module # 3 of the pontoons serving as the keel.

Current tracking Schedule

MILESTONES	CurrentSchedule
Contract Award	10/27/99
Completion of Model Testing	04/18/00
Cutting of Steel Commences	1/8/01
Land first Module #3	02/03/01
Keel Laying Ceremony	02/09/01
Comp. Steel work Lower hulls	Feb-01
Substantial Comp. Of Superstructure	May-01
Vessel Launch	September
Comp of Sea Trials	November
Preliminary Acceptance	01/26/02
Dockside Availability (30 day)	02/25/02
Mission trial (30 day)	03/27/02
Available for service	03/29/02
Final Acceptance	Jun-02

Robert Hinton

**Ship Construction and Upgrades  
Status Report to the UNOLS Council  
February, 2001**

**R/V PELICAN**

On September 28, the Louisiana Bond Commission voted on the list of Capital Outlay projects to be supported by the state this year. \$1.5 million was approved for a mid-life refit of the RV PELICAN. The PELICAN is now 15 years old and, with the refit, we can anticipate another 12-15 years of service life.

This \$1.5 million will go towards:

Repair/replace worn or deteriorated systems and components, including: bilge, ballast, fire, gray water, and sewage piping; hydraulic piping, hydraulic components; blast and recoat ballast and sewage holding tanks; new engine controls; electrical wiring

Correct design deficiencies including: hydraulic system; manifold and pump system; capacity of bilge and sewage lines; electrical capacity; HVAC deficiencies

Increase capability including: 10 ft extension; bulbous bow; chain locker and anchor handling system.

The PELICAN presently has a full schedule for 2001. An architect's report to completely describe the planned work will be prepared during this time. Work is expected to begin in late 2001 - early 2002 and will last several months.

The Pelican Refit Committee met on 30 January to begin the process of finalizing a list items to be addressed as a part of the refit.

The Louisiana Department of Facility Planning and Control has appointed a Program Engineer for the refit, Bill Obier. Mr. Obier visited the Pelican on 30 January to get acquainted with the vessel and meet with members of the Committee. A request for proposals for the design phase of the project is being prepared by Facility Planning and Control and should be out before the middle of February.

Steve Rabalais



## **R/V CAPE HENLOPEN REPLACEMENT VESSEL**

I would like to briefly describe the progress to-date in the University's effort to design a replacement vessel for the R/V CAPE HENLOPEN.

Bay Marine, Inc., has been contracted as the principle naval architect for this phase of design, and the Science Mission Requirements (SMR's) have been with them since November. Noise Control Engineering, Inc., has been contracted as the noise consulting firm for the project.

Based on information received thus far, we are fairly confident that the new vessel will have the following characteristics:

- It will be an "all-electric" ship because of lower noise capability, flexibility in arrangement, and good low speed control. Power will be provided by either a diesel-electric or a fuel cell/diesel-electric hybrid system.
- It will have omni-directional propulsors for higher maneuverability.
- It will be a mono-hull due to low freeboard, shallow draft, and asymmetric loading requirements given in the SMR's

The lines plan and general arrangement are now being developed. The target date for delivery of the DRAFT "Concept" design is **April 1, 2001**. We are in the process of scheduling the second Delaware Research Vessel Committee (DRVC) meeting for late April, where we will conduct our first science community review.

The refined "concept" design will be completed by **September 1, 2001**, which we hope will incorporate comments from the Fleet Improvement Committee as well.

Matthew J. Hawkins  
Director, Marine Operations