

DRAFT
UNOLS COUNCIL MEETING
Thursday, September 18, 2003, 8:30 am
National Science Foundation
Room 1235

To download a pdf copy of these minutes click: [<cncmi309.pdf>](#)

Executive summary

The UNOLS Council met on Thursday, September 18, 2003, at the National Science Foundation (NSF), Room 1235. Tim Cowles, UNOLS Chair, called the meeting to order at 0830. Due to the approach of Hurricane Isabel, many Council members could not travel to the meeting, but participated via phone conference. The meeting was abbreviated so that those who wished to avoid the storm could do so.

A major focus of the meeting was academic fleet renewal activities and plans. Jim Yoder gave a report on the National Science Foundation (NSF) facility implementation plans. A resolution has been approved for including a funding request for the ARRV as part of the Major Research Equipment and Facilities Construction (MREFC) account in a FY2005 or future budget. Jim discussed the status of the Regional Class Ship design and construction effort. OCE is discussing design and acquisition strategies for 3-4 ships based on the SMRs and the JJMA report. The Integrated Product Team (IPT) approach with two teams is under consideration.

Jim discussed the EWING midlife refit plans. OCE is discussing replacement vessel options with Lamont as an alternative to a EWING refit. For the replacement vessel option they will carefully consider total cost, cost in relation to refit, and the financing plan.

Jim addressed the topic of ALVIN replacement. OCE will carefully consider the recommendations from the NRC study on Future Needs for Deep Submergence Science before making a recommendation. Funds are available beginning in FY04, if NSF decides to support ALVIN replacement.

Lastly, Jim reported on the status of marine mammal and acoustic permits. NSF has been meeting with the NMFS to address acoustic permitting and to establish guidelines. There is a matrix under development that is intended to provide guidelines for the permitting process; however, it will not be ready this year.

The Navy has expressed interest in supporting an Ocean Class Phase II study. The Ocean Class study will resemble the study conducted for the Regional Class by JJMA.

A series of charts showing ship utilization trends and projections were presented. Fleet utilization and projected use for 1993 to 2005 indicates an increasing ship demand. In 2003, a total of 373 days needed to be deferred to 2004. In 2004, it is estimated that

deferred programs will require 289 days to be moved to 2005 in addition to a near record number of days being scheduled in 2004.

A summary of FIC recommendations and activities were presented. FIC encourages the agencies to update the FOFC plan so that consideration of increasing ship demand, future observatory facility needs, and changing ship retirement dates are included. FIC endorses the Integrated Product Team (IPT) plan (2-teams) as a reasonable acquisition approach; however, the opportunities for community feedback need to be clearly defined in the process. FIC recommends the formation of a Regional Ship Users Advisory Committee that will include science users, naval architects, ship operators, and marine technicians. The issue of community input to the design process was a serious concern of both the FIC and Council.

Other FIC activities include:

- Continuation of KILO MOANA debrief interviews.
- FIC recommends that a ship motion analysis of KILO MOANA be supported.
- Continue to review and provide feedback on design and construction efforts.
- FIC will send NSF a letter of endorsement in support LDEO's option for replacement of EWING with a commercially available modern, seismic vessel.
- FIC will keep abreast of new ship design efforts and ensure that new issues/regulations are considered in future design efforts.
- FIC recommends that the UNOLS Post Cruise Assessment Subcommittee provide feedback to FIC in respect to shipboard capabilities and equipment improvements.
- FIC will review the UNOLS Ocean Observatory working group recommendations and encourage community feedback to the working group's draft report.

Tim Cowles provided a summary of the JJMA Phase II study on the Regional Class Conceptual Development Task. The "desired SMR" monohull design regional vessel is estimated to be within the budget cap and does not require design trade-off decisions. The estimated ship day rate for the desired SMR monohull and SWATH variants were \$13,389 and \$14,287, respectively. The day rates are comparable to current intermediate vessel rates. Various acquisition strategies were considered by the study including the conventional approaches, Integrated Product Team (IPT) with one team approach (Similar to AGOR 26), and the IPT with two-team approach. It appears that that JJMA and NSF are favoring the IPT 2-team approach for acquisition. The Council voiced concern over the need for a formalized mechanism for community feedback into the design process. There is also concern regarding the size of the "desired SMR" vessel. Due to regional operating area differences, there is not a community consensus regarding the vessel's size. NSF plans call for construction to begin in FY06.

The status of various ship design and construction efforts was presented. Terry Whitledge reviewed the status and future plans in the ARRV design effort. A key change in the design was the decision to use a Z-Drive propulsion system instead of Azipod. The propulsion evaluation of the Azipod revealed that the system exceeded the noise criteria. Z-drives will improve underwater-radiated noise characteristics over all frequency bands. Mike Purdy of Lamont-Doherty Earth Observatory (LDEO) provided a report on plans

for EWING's mid-life refit/replacement. LDEO is considering acquisition of a modern, commercially available, seismic replacement vessel. The estimated cost for acquisition of the replacement ship is \$7M with an additional cost of approximately \$12M for conversion (which includes costs for re-flagging).

Two ship mid-life refit efforts were reported. Steve Rabalais reported that the PELICAN mid-life refit effort is complete and the ship is back in operation. As a major part of the refit, the ship was extended approximately 11 feet. Bruce Corliss reported that the CAPE HATTERAS mid-life effort is 90% complete and the ship is back in operation. The remaining work is being done dockside in homeport.

The CAPE HENLOPEN replacement effort continues. Four shipyard proposals were received for the construction of the CHRV and are under consideration.

A variety of UNOLS discussion items were addressed. These included:

- Ocean Studies Board's Committee on Future Needs in Deep Submergence Science
- UNOLS Working Group on Ocean Observatory Facility Needs
- Icebreaker Plans and Major Issues
- Quality of Service, Post Cruise Assessment – Subcommittee tasking
- Defined Levels of Technician/Instrumentation Support
- UNOLS Wires and Cables
- Winches – Manufacturer ship visits
- Committee and Agency Issues

Lastly Tim Cowles recognized departing Council and Committee members and thanked them for their dedicated service to UNOLS:

Recommendations – No formal Council recommendations were made at the meeting.

Council Action items

Task	Assignment
Review draft UNOLS objectives, priorities and goals for 2003-2004 (Top 10 list) – provide input to UNOLS Office	Council
Review draft report from UNOLS Working Group on Ocean Observatory Facility Needs – provide input via on-line feedback page.	Council
Subcommittee on Post Cruise Assessment – revise tasking statement and implement	PCA Subcommittee
Review draft performance requirements for a new wire. Provide input via on-line feedback page.	Council

Index of appendices

- I. [Meeting Agenda](#)
- II. [Participant List](#)
- III. [NSF Report](#) (1.2 MB)
- IV. [UNOLS Utilization Trends and Projections](#)
- V. [FIC Report to Council](#) – 9/18/03
- VI. [JJMA Regional Class Concept Development Task Review](#) (1.7 MB)
- VII. Alaska Region Research Vessel – Status Report – to download the PowerPoint slides along with video clips go to [<http://www.mlml.calstate.edu/unols/fic/arrv/arrv.html>](http://www.mlml.calstate.edu/unols/fic/arrv/arrv.html)
- VIII. [EWING Replacement Plans](#) (3.1 MB)
- IX. [UNOLS Ocean Observatory Working Group –Status Report](#) (15.4 MB)
- X. [Icebreaker Plans and Major Issues](#)
- XI. [RVTEC Subcommittee Report on Definition of Technical Support](#)
- XII. [AICC Activities and Issues](#)

Proceedings of the meeting

Welcome and Introductions: The UNOLS Council meeting was held on Thursday, September 18, 2003, at the National Science Foundation (NSF), Room 1235. Tim Cowles, UNOLS Chair, called the meeting to order at 0830 and provided an opportunity for introductions. Due to the approach of Hurricane Isabel, many Council members could not travel to the meeting. Some of these members joined in the discussions via phone conference. The meeting was abbreviated so that those who wished to leave the area to avoid the storm could do so.

Accept the minutes of the June 2003 Council Meeting – A motion was made and approved to accept the minutes of the June 2003 Council meeting.

Academic Fleet Renewal Activities and Plans:

Federal Agency Plans for Fleet Renewal Implementation - Jim Yoder gave a report on the National Science Foundation (NSF) facility plans and Fleet renewal. His viewgraphs are included as [Appendix III](#). There are three Ocean Science programs that are in the Major Research Equipment (MRE) queue for support. These include the Integrated Ocean Drilling Program (IODP), the Ocean Observatories Initiative (OOI), and the Alaska Region Research Vessel (ARRV). In August, “the Board approved a resolution for including a funding request for the ARRV as part of the Major Research Equipment and Facilities Construction (MREFC) account in a FY2005 or future budget request by the National Science Foundation.” Of the seven NSF MREs, three are from the Ocean Sciences division.

Jim discussed the status of the Regional Class ship design and construction effort. OCE is discussing design and acquisition strategies for 3-4 ships based on the SMRs and the

JJMA report. One acquisition possibility under discussion is the Integrated Product Team (IPT) approach. This approach could be implemented with an MOU between NSF and another Federal entity with shipbuilding expertise. Government teams would be formed and would include a UNOLS representative. An RFP would be issued for Phase I design and construction. Two competitors would be selected. Their competing designs would be evaluated and then one would be selected. A firm fixed price contract for Phase II would be awarded and the lead ship operator would be added to the IPT. Once the detail design is completed, construction would begin. Following lead ship construction, the options for more ships could be executed and in turn the additional ship operators would be added to the team. NSF would conduct competitions for selection of the ship operators with each selection in time to join the Phase II process. NSF is very concerned with the cost of the construction project, as any extra costs would need to come out of the science budget.

Jim discussed the EWING midlife refit plans. In October 2003 a EWING midlife refit community workshop was held and the recommendation was that: "Only a replacement vessel can provide all the desired capabilities for improved 2-D MCS, an effective 3-D MCS and substantially improved general-purpose capabilities." OCE is discussing replacement vessel options with Lamont as an alternative to a EWING refit. For the replacement vessel option they will carefully consider total cost, cost in relation to refit, and the financing plan.

Jim's last slide was on the topic of ALVIN Replacement. The agencies recommended a study be conducted by the National Research Council to examine future needs in deep submergence science. The NRC committee report is expected in October 2003. OCE will carefully consider the report recommendations and discuss internally before making a recommendation. OCE has not determined the process for replacing ALVIN, should that option be chosen. The process will likely require NSF and NSB approval. Funds are available beginning in FY04, if NSF decides to support ALVIN replacement.

Jim reported on the status of marine mammal and acoustic permits. Over the past year operations were delayed and/or cancelled due to marine mammal permitting issues. NSF has been meeting with the NMFS to address acoustic permitting and establish guidelines. There is a matrix under development that is intended to provide guidelines for the permitting process; however, it will not be ready this year. For now, operations involving various sound sources are being addressed on a case-by-case situation. It is unclear how multibeam operations will be addressed. NSF has no plans to support acoustic permits for anything but seismic work.

There was Council discussion on these issues:

Question – Have the OOI facility installation and support needs been addressed and will they be included in an updated Fleet Plan? Jim replied that they plan to wait until the OOI office is established to address this issue.

Question – Will the FOFC plan be updated, and if so when? Jim replied that FOFC plans to address this issue at their next meeting. However, an update may be overtaken by Congressional language that will direct the agencies to establish an implementation plan.

Question – Will UNOLS be funded for additional staff to support the marine mammal permitting process? Jim explained that they would wait until they hear from NMFS with a recommendation before providing support for a person. We need to find out what level of expertise is needed for that position. Jim commented that the technical expertise would probably be beneficial to the process.

Navy – Although there was no representative present, at the FIC meeting it had been reported that the Navy has expressed interest in supporting an Ocean Class Phase II study. The Ocean Class study will resemble the study conducted for the Regional Class by JJMA.

Ship Utilization Trends - Annette DeSilva reviewed a series of charts showing ship utilization trends and projections. Her slides are included as [Appendix IV](#).

The first chart showed fleet utilization and projected use for 1993 to 2005. Use has steadily increased over these years. In 2003 there were a number of programs that needed to be deferred to 2004 for a total of 373 days. The reasons for deferring ship time to 2004 included:

- Ship Availability - Ships were booked for other projects or the specific type of ship needed was not located close enough to schedule (134 days).
- External reasons – Forces outside the control of schedulers or PIs such as permits, clearances, civil unrest and changes in the availability of funds (180 days).
- Instrumentation Availability – Scheduling conflict or unavailability of major instrumentation including ROVs, MCS, OBS, etc. ALVIN is included with ship availability unless ALVIN was out of service while ATLANTIS was available (17 days).
- Principal Investigator – Delay or deferral at the request of the PI or because the PI or user equipment was unavailable for the proposed cruise period (42 days).

In 2004, deferred programs will require 289 days to be moved to 2005. The reasons for deferring ship time to 2005 include:

- Ship availability - 214 days.
- Instrumentation availability –40 days.
- Principal Investigator –35 days.

Additionally, there were seven programs that requested large vessels, but were scheduled on UNOLS intermediate vessels (204 days). There is one other program (78 days) that has not been scheduled yet on a UNOLS vessel.

Next, Annette showed utilization broken down by class. The Global/Large ship utilization has been very high. The Intermediate/Ocean Class utilization has been lower

than full utilization over the past years. Regional and local ship utilization trends show increasing demand.

Jim Yoder remarked that since the budget is unlikely to be significantly increased, we would probably see lower ship use in coming years due to a lack of funds.

FIC Meeting Summary – Plans and Recommendations – Annette DeSilva reviewed a series of slides prepared by FIC at their meeting on 17 September. The slides are included as [Appendix V](#).

In summary, FIC recommendations and activities include:

FOFC Long Range Fleet Plan - FIC encourages the agencies to update the FOFC plan so that consideration of increasing ship demand, future observatory facility needs, and changing ship retirement dates are included. FIC will update the FIC website and draft a FIC version of Figure 17 of the FOFC plan.

Regional Class – FIC endorses the IPT 2-team plan as a reasonable acquisition approach; however, the opportunities for community feedback need to be clearly defined in the process. FIC recommends the formation of a Regional Ship Users Advisory Committee that would include science users, naval architects, ship operators, and marine technicians - both intermediate and regional vessel users. FIC recommends community review and feedback opportunities to both of the team designs prior to selection.

KILO MOANA – FIC will continue FIC debrief interviews. As an action item they will send the University of Hawaii a list of items that need to be addressed including: CTD operation problems, noise issues and over-the-side handling issues. Additionally, FIC will review the debrief interview responses in respect to the monohull versus SWATH hull characteristics. This information will be useful in supporting future hull form decisions. FIC will again recommend that a ship motion analysis of KILO MOANA be supported.

Ship Design and Construction - FIC will continue to review and provide feedback on design and construction efforts including the replacement of CAPE HENLOPEN, the Alaska Region Regional Vessel, and the EWING Replacement. FIC will send NSF a letter of endorsement in support LDEO's option for replacement of EWING with a commercially available modern, seismic vessel.

New Ship Design Efforts – FIC will keep abreast of new ship design efforts and ensure that new issues/regulations are considered in future design efforts including homeland security, handicap access, noise, and broadband communications. FIC recommends that the UNOLS Post Cruise Assessment Subcommittee provide feedback to FIC in respect to shipboard capabilities and equipment improvements.

Ocean Observatories – FIC will review the UNOLS Ocean Observatory working group recommendations and encourage community feedback to the working group's draft

report. They will work to ensure that new vessel designs consider ocean observatory facility support. Future fleet plans must include consideration of emerging observatory facility needs.

Discussion followed:

Bruce Corliss and Wilf Gardner commented that they endorse FIC's recommendation to update the FOFC plan.

Jim Yoder asked what the benefit of community review would be to the two Regional Class design studies if the IPT included a UNOLS representative. It was explained that although it is good to have a full time UNOLS representative on the IPT, one person would have difficulty adequately representing all science disciplines, especially in terms of science outfitting and arrangements.

Regional Class Ship Planning – Status report on JJMA's Phase II - Tim Cowles provided a summary of Dan Rolland's slides that were presented at yesterday's FIC meeting. The slides are included as [Appendix VI](#).

The JJMA Phase study included the following tasks:

- 1) Acquisition Process - Analyze possible acquisition approaches
- 2) Refinement of Concept Design – What can be built for \$25M and how will it meet the SMRs?
- 3) Tonnage Analysis - Analyze tonnage of concept designs and regulatory impacts
- 4) Technology Investigation - Investigate innovative technologies to reduce manning, life cycle costs.
- 5) Ship Specification Development - Develop specification and other design documentation to support the next phase.

Two concept designs were developed by JJMA and analyzed:

- Minimum (threshold) ship that meets the minimum SMRs
- Desired (objective) ship that meets the desired SMRs

The slides include a table showing the concept variant designs versus the UNOLS Regional Class SMRs. The “desired” SMR ship design met all desired SMRs. The “minimum” ship variant can meet the minimum SMR value with the exception of storage space.

It is predicted that the desired SMR monohull ship design could meet the seakeeping criteria spectrum for both short and long crested seas. A chart showing the percent time operability versus wave height for long and short crested seas was displayed. The “desired” monohull and SWATH variants both meet or exceed the operability criteria for short crested waves. The SWATH also exceeds operability for long-crested waves in SS6 (the monohull does not).

The seakeeping speed polar diagrams were presented. The models predict that:

- At SS4 all speeds and directions are met with roll stabilization tanks for both the desired and minimum SMR designs.
- At SS5 with roll stabilization tanks the designs exceed the SMR motion criteria during head seas transit for the monohull. The SWATH exceeds the motion criteria in aft seas.
- At SS6 with roll stabilization tanks there will be some operability in beam seas with the desired monohull SMR ship design, but little operability in other seas. The SWATH was fairly operable.

The program cost estimates for the desired and minimum SMR ships were presented. The estimated lead ship costs are:

- Desired SMR Monohull = \$25M - \$28M (within budget)
- Minimum SMR Monohull = \$23M - \$26M
- Desired SMR SWATH = \$30M - \$37M
- Minimum SMR SWATH = \$27M - \$33M

The desired SMR monohull is within the budget cap and does not require design trade-off decisions. Also, reducing to the minimum SMR ship achieves relatively minor initial cost savings at the expense of significantly reducing capability. JJMA also indicates that there can be economy with a multiple ship contact (multiple equipment purchases and non recurring costs).

Fuel cost analyses and operating costs were estimated for each variant. The ship day rate for the desired SMR monohull and SWATH variants were \$13,389 and \$14,287, respectively. The day rates are comparable to current intermediate vessel rates but considerably higher than existing regional vessels.

Various acquisition strategies were considered by the study:

- Conventional Approaches:
 - Contract Design
 - Circular of requirements
- IPT with 1-Team Approach (Similar to AGOR 26)
- IPT with 2-Team Approach

The IPT would include government, industry and a UNOLS representative. The industry representatives include the shipyard and the designers.

The pros and cons of the various acquisition strategies were identified by JJMA. These included:

Contract design approach:

Pros:

- Community opportunity for input at design reviews
- Design defined in detail
- Greatest control over design process

Cons:

- No shipbuilder input to design process or cost estimate

- Limits innovation by yard and designer
- Risk of exceeding budget ceiling because of unknown costs
- Design budget increases with iterations and changes

Integrated Product Team approach:

Pros:

- Shipbuilder involvement early in process helps avoid surprises
- Design to cost cap lowers risk of exceeding budget ceiling
- Community has real time input to design process through representatives on IPTs
- Reduce costly change orders during construction
- Ensure ship meets research needs
- Allows more innovation by shipbuilder and design agent
- Competition throughout process encourages technical innovation and cost savings

Cons:

- Multiple teams can increase initial design cost
- Some control over design process ceded to community representatives and IPTs
- Need effective communication between community and representatives
- Mitigate with team design reviews with larger community audience

JJMA also performed a tonnage analysis for a design that would be <300 Domestic tons. To stay below 300 Domestic tons some SMRs cannot be met. The ship length is estimated at 132 LWL, which is shorter than the desired SMR length. The ship would still be over the International tonnage limit.

JJMA conducted a technology investigation to identify ship systems where life cycle costs are high and some improvement would be welcome. They looked at: propulsion, mission systems, handling systems, and auxiliary systems.

Discussion followed Tim's summary. It was commented that JJMA's study and NSF are favoring the IPT 2-team approach for the acquisition strategies. Tim remarked that with the IPT approach it would be more challenging for the community to provide feedback into the design process. Also, there needs to be a clearly defined SMR at the onset of the process.

Mike Reeve commented that this process is probably drawing concerns because people are viewing it with respect to the KILO MOANA design effort. The KILO MOANA used a one-team IPT approach. The approach that is being considered now is a 2-team IPT and will include a full time UNOLS representative. Jim Yoder added that there would be opportunities for community input before the design is selected. However, once the design is finalized, it is costly to make changes.

The question was asked if NSF has a timeline for the project. Jim replied that they plan to review the JJMA study recommendations. They will meet with another federal entity

with shipyard experience to explore arrangements for joining the IPT. They need to identify the UNOLS representative to the IPT. They will also need to prepare the project Request for Proposals (RFP). This whole process could take a year. They are still looking at construction in FY06.

The question was asked what other federal entities are being considered as part of the IPT. Jim replied that there are only a couple options since only two agencies have recent ship construction experience.

Ocean Class Planning – An ONR representative was not present, so discussions from the FIC meeting were briefly summarized. ONR has indicated that they are still very interested in Ocean Class construction. Admiral Cohen is a strong advocate, but ONR has to compete with the rest of the Navy for funding. ONR will support a Phase II study and they are finalizing the JJMA statement of work. They welcome UNOLS input to the project.

FOFC Implementation Plan – There is language from the Senate for NSF to provide an agency implementation plan. The status of this is unclear at this time.

Ocean Commission Recommendations – It was reported that the Ocean Commission report would likely be supportive of academic fleet renewal.

Ship Design and Construction Efforts:

Alaska Region Research Vessel (ARRV) – Terry Whitley reviewed the status and future plans in the ARRV design effort. Terry's viewgraphs are included in [Appendix VII](#). He reviewed the key changes in the design, deck equipment issues, handicap access issues, security systems, broadband communications, and the science equipment list.

A key change in the design was the decision to use a ZDrive propulsion system instead of Azipods. The propulsion evaluation of the Azipod revealed that the system exceeded the noise criteria. Z-drives will improve underwater-radiated noise characteristics over all frequency bands. The vessel will potentially be able to meet ICES noise goals up to 11 knots except in the very low frequency bands. The ship's length had to be increased by 10 feet to accommodate the z-drives. This will allow for an added fuel capacity resulting in increased endurance. It appears that there will be no impact on resistance or sea keeping characteristics.

Another key change in the design is with the arrangements. These include:

- Move the bridge as far aft as possible for aft deck visibility
- Add a hydro boom control room (01 deck) with visibility to the Baltic room and the exterior of the vessel
- Relocate service lift to Baltic room for interior access
- Rearrange galley/mess area
- Rearrange/relocate EOS
- Add mammal observation area on forward 03 deck

- Reduce the size of the science office
- Add a science workshop on the main deck
- Add main deck camber (outboard of trawlway)

Terry reviewed deck equipment issues regarding the motion compensated hydro-boom arrangement. Both Dynacon and Markey proposed arrangements for a motion-compensated hydro-boom involving dedicated deck space in the Baltic room that would reduce the utility of the space. Both Dynacon and Markey noted that operating the motion-compensated boom within the confines of the Baltic room and through the existing Baltic room side port pose significant design constraints.

Handicap access issues have been addressed. Current handicap access arrangements include one handicap stateroom provided on the 01 deck. A personnel lift, handicap accessible, is provided for access to all deck levels with the exception of the bridge. All passageways are a minimum 4-ft width to accommodate handicap access. Additionally, portable/dropping door coamings will be provided on the exterior entry door on the main deck.

Terry commented that they are pleased with the news that the ARRV has been included in the MRE account.

Terry Whitledge is completing his term on the Arctic Icebreaker Coordinating Committee (AICC). He was presented with a certificate of appreciation for his service on the AICC by Tim Cowles, UNOLS Chair.

EWING Mid-Life Refit/Replacement Plans - Mike Purdy of Lamont–Doherty Earth Observatory (LDEO) provided a report on plans for EWING’s mid-life refit/replacement. His viewgraphs are included as [Appendix VIII](#).

MAURICE EWING was built in 1983 and converted in 1989-1990. It is 237 feet in length and accommodations include 29 Science Berths. In planning for the EWING mid-life refit needs, the following questions were considered:

- How might EWING be upgraded to best address the scientific needs of the community?
- What additional capabilities should the ship have?
- What are the tradeoffs between optimizing seismic capabilities and general-purpose capabilities?

Science needs have changed since EWING entered the fleet. The future scientific requirements have been identified and are listed in Appendix VIII. To address these science needs, the community will need:

- Ocean Observatory Systems
- High Resolution bathymetry/side-scan and advanced seafloor imaging and sampling
- 2D and 3D Multi-channel seismics and large arrays of OBS/OBH
- Broadband seismic instruments

- Repeat seismic surveys, seafloor geodetic instruments
- Time series measurements of ocean currents and properties
- Hard rock and water sampling capabilities; heat flow measurements
- High resolution sub-bottom profiling
- Long sediment cores and large volume shallow cores
- Active archives of MGG data; centralized searchable online metadata catalog

To plan for the refit of EWING, LDEO solicited input from community via EOS advertising, direct mailing; and requests in community newsletters. They established a new internal advisory committee along with a community-wide steering committee. An extensive set of ‘Technical Option Papers’ has been produced. A workshop was held in October 2002 and LDEO has produced a workshop report.

Key statements of the EWING Mid-life workshop summary and conclusions included:

- “A refit of EWING cannot improve 2-D MCS and provide an effective multiple streamer capability (for 3D) and substantially improve general-purpose operations.
- Quality of present EWING MCS operations would be substantially improved through increased repeatability of the sound source.
- In the refit of EWING, use of a linear airgun array forces serious compromises in OBS and general-purpose operations.
- In the refit of EWING, without a linear airgun array, there are excellent options for new lab and deck layouts.”

The workshop recommended that if the goal is to tow multiple long streamers, improve source repeatability using linear gun arrays, and improve the vessel’s general purpose/OBS capabilities, then EWING cannot satisfy these needs, and the possibility of securing a used industry vessel should be studied. In response, LDEO has formulated a set of three options for discussion:

- Maximize EWING general-purpose capabilities, and enhance conventional MCS. Outfit EWING with linear gun array
- Acquire a replacement vessel.

Replacing the EWING with a used industry vessel would greatly enhance the US Academia’s capability to collect MCS and OBS seismic data.

Mike Purdy reviewed the science capabilities of a potential replacement vessel. The ship would have 4 streamers x 6 km (8 km) with separation up to 200m. There would be four linear gun arrays (Dual Source) with separation +/-50m. The ship’s dynamic positioning capability would include a twin screw with bow tunnel thruster and would include a forward azimuthing thruster. The ship’s over-the-side capability would match or exceed EWING’s for over-the-side handling. Lab area far exceeds EWING’s and there is more open deck than on EWING. There would be a five-van/container capacity without effecting other operations. A scale model of the replacement vessel was on display at the meeting.

Cost for a EWING refit is estimated at \$12M. The estimated cost for acquisition of the replacement ship is \$7M with an additional cost of approximately \$12M for conversion

(which includes costs for re-flagging). The potential replacement vessel is a 1991 hull form.

Bob Knox asked if the daily rate for the replacement ship would be much higher than EWING's. Mike indicated that there are additional costs but not significant.

Mike Prince stated that Al Walsh and Paul Ljunggren have created a draft SMR for a Global Seismic Vessel. It is posted on the UNOLS website and community review is encouraged.

Annual Meeting Cancellation - Tim Cowles officially announced that the Annual meeting scheduled for 19 September is cancelled due to Hurricane Isabel.

PELICAN Mid-Life - Steve Rabalais reported on the PELICAN mid-life refit effort. The PELICAN began its refit at Conrad Shipyard on November 4, 2002. Seven months later on 31 May 2003 sea trials were completed and science operations resumed. Support for the refit included \$1.8M from the State of Louisiana, \$260K from LUMCON, and \$370K from NSF for a total cost of \$2,430,000. As a major part of the refit, the ship was extended approximately 11 feet. Some of the major mid-life items include:

- 280 sq. ft. of open back deck.
- 25 tons of deck load compared to 15 tones before refit
- 2,496 cu. ft. storage space
- 8 linear ft. of dry lab.
- Upper deck science lounge.
- Two additional science berths (total science capacity = 16).
- Completely new interior.
- Major overhauls on main and generator diesel engines.
- New main engine gears.
- All new bilge, ballast, fire fighting, domestic/portable water (including new MSD), seawater, fuel, and MIDAS piping including pumps, valves, strainers, and manifolds.
- All new electrical systems
- New main trawl/coring winch and new deck crane.

Status of CAPE HENLOPEN Replacement effort - Annette summarized a report by Matt Hawkins on the CAPE HENLOPEN replacement plans. On August 29th four shipyard proposals were received for the construction of the CHR.V. The total cost was slightly higher than expected, but the proposals were competitive and pricing was relatively tight. The University of Delaware is in a 90-day shipyard evaluation process and cannot discuss precise cost details at this time. Matt has been instructed by the UDel leadership to proceed toward yard selection and contract negotiation. Contract signing is currently projected for November.

CAPE HATTERAS Mid-life – Bruce Corliss briefly reported (via phone conference) on the status of the CAPE HATTERAS mid-life effort. The mid-life work is 90% done and the ship is back in operation. The wet labs improvements are being completed. They

hope to have all items complete in the next six months. The remaining work is being done in homeport dockside.

Open Discussion on Fleet Renewal Issues:

Coring – There was discussion on coring capabilities and if these operations could be conducted from a SWATH vessel. Hawaii has indicated that coring can be done off the stern of KILO MOANA, but other operations may not be done simultaneously. Also, there would be limitations to the length of cores. It was pointed out that the Ocean Class SMRs specifically define the desired coring length. As the Ocean Class concept design analysis goes forward, we need to ensure that the desired coring capability is not lost.

UNOLS Discussion Items:

Review draft UNOLS objectives, priorities and goals for 2003-2004 (Top 10 list) - Tim Cowles requested that this item be deferred to e-mail correspondence so that the full Council would have an opportunity to comment.

Marine Mammals and Acoustic Permitting Issues – Mike Prince reported that during the Scheduling Meeting on 18 September permitting issues were identified. There is one cruise in Canadian water that needs to be addressed. Additionally, the entire EWING schedule will require permits.

Ocean Studies Board’s Committee on Future Needs in Deep Submergence Science – Patty Fryer report on the status of the OSB committee study. There have been three meetings of this group and a variety of presentations have been made. The first meeting focused on the National Deep Submergence Facility and Human Occupied Vehicles (HOVs). The second meeting focused on deep submergence science drivers, various submergence vehicles and new technologies. The third meeting was closed. The draft report is being circulated for review and should be available later in the fall.

UNOLS Working Group on Ocean Observatory Facility Needs – Dana Yoerger was to report on the status of the working group efforts to address ocean observatory facility needs; however, because of the storm he was unable to attend the meeting. Annette summarized his slides that were provided in advance of the meeting. The slides are included as [Appendix IX](#). The working group was formed early in the year by the UNOLS Council. The group membership and full task statement is included in Appendix IX. The group was asked to identify facility support needs for ocean observatories in terms of both ships and submergence vehicles. They studied:

- Deep ocean seafloor observatories
- Deck handling and mooring deployment/recovery needs
- ROV and AUV requirements
- Mapping requirements
- Coastal observatory requirements (including aircraft)
- Vessel characteristics, possible improvements, and recommendations for new vessel designs.

They met once in February. Since that time they have been gathering information and drafting their report.

The group has been reviewing recent studies to determine ship and vehicle time requirements. Installation, operation, and maintenance requirements have been extensively documented in DEOS global buoy feasibility and implementation reports, NEPTUNE feasibility and O&M reports, and NRC OOI Implementation reports. The NRC OOI estimates are:

- Global buoy component: 20 ship-months/year (10 with ROV)
- Regional cabled observatory: 4-8 ship-months/year (with ROV)
- Coastal observatories: 6 ship-months/year

The working group agrees with these estimates and emphasizes that access to ROVs must become routine for observatory maintenance and science.

Annette showed a map of the moored-buoy observatories locations. Many of the locations are in high latitudes where high sea states can be expected. Ships that can operate in these conditions will be needed. Some buoys are moored in waters that are at depths of up to 3000m. The deep-water observatories will require:

- A heavy lift capability for cable servicing (20,000 lbs or more) – equipment and specially trained personnel.
- Large open deck space
- More sophisticated, redundant DP capability
- The ability to operate in higher sea states
- Routine access to ROVs for all observatories operations.

Some modification to the Global Class ships should be considered to improve their utility for observatory operations. UNOLS should also consider the acquisition or long-term lease of a heavy lift vessel.

Drawings of the various buoy configurations, as well as, the spar buoy design were presented. The spar buoy is very large, approximately 40m long with a diesel generator. These will be difficult to service and fuel. Installation and buoy maintenance will not be feasible with the largest UNOLS vessels. Servicing is required on an annual basis. Installation and instrumentation maintenance will require an ROV.

Slides demonstrating two baseline repair scenarios for seafloor observatories were shown. Both options require ROVs. The minimal handling equipment that will be required to support seafloor observatories include an aft chute, 20,000 lb Safe Working Load (SWL) winch and 2 capstans (10,000 lbs each for handling soft line) with stoppers applied on deck. Generic equipment that will be required included capstans/tuggers, grappling gear, hard/soft stoppers, cable splicing gear (several transportainers), and deck space.

Various improvements to UNOLS vessels should be considered. These include:

- Shrouded Z-drive nozzles to protect props from cables
- Slight increase in fuel capacity

- Improvement in low speed/DP efficiency
- Install redundant DP systems to improve reliability during critical operations
- Remove part (or all) of the hangar on the Global Class ships to increase deck space
- Remove all of superstructure aft of hydro lab to really increase deck space (requires naval architect study)
- Increase A-frame SWL through ship modification to spread the load
- Consider installation of stronger A-frame/heavier winch combinations to increase load-handling ability to 20,000 lbs static.

The working group stresses the major safety issues regarding ocean observatory operations. These operations will require specially trained crew with expertise in heavy lifting work.

As another option, the acquisition or lease of a heavy lift vessel should be considered. Applications for such a vessel include:

- Cabled observatory maintenance and modification
- Cable reuse (H2O as prototype)
- Large buoy installation and maintenance
- Long coring operations

The submarine telecommunications marketplace collapsed in 2001 just as major cable ship deliveries took place. As a result, cable maintenance vessels can be purchased for approximately 10% of construction cost. This is a short-term opportunity that will not last. Some of the advantages of acquiring a commercial vessel include:

- Emerging observatory ops become feasible without compromising safety
- Substantial improvement in ability to operate in high sea state (e.g., ROV ops in SS7 are routine vs. SS4 limit on large UNOLS vessels)
- High latitude operations become feasible (important to global buoy plan)
- Concentration of heavy lift ops on one vessel with trained crew will reduce UNOLS-wide personnel risk.

A slide of a typical cable repair ship was presented. The ship is approximately 100m in length. It is equipped with a large cable drum, a heavy-duty a-frame, aft chute, and open deck space.

Routine access to ROVs will be required for all observatory operations. One additional vehicle will be required when the OOI is implemented (2-3 years from now). One more vehicle will be required when OOI facilities are fully operational (5-7 years from now). Commercial ROVs are not suitable for most science operations but may be usable for routine maintenance tasks.

Coastal observatory needs are also being studied and preliminary findings indicate the need for:

- Better access to vessels for observatory research
- Ten local or regional vessels distributed on the east and west coast

- Need for coordination of multiple vessel operations
- Need for rapid response capability
- Long duration glider-type AUVs will be a key observation platform
- Aircraft facility needs.

Council discussion followed. Dale Chayes commented that the group should explore a service agreement arrangement. There are commercial companies that have ships located globally and could provide a heavy lift capability. This would eliminate the need to drive a UNOLS ship around the world to support the various observatories.

Jim Yoder commented that once the OOI office is established they will be tasked to address the issues identified in this report. Perhaps they will be asked to work with the working group and FIC. Until funding is in place, it will be difficult to address the facility needs.

Icebreaker Plans and Major Issues – Lisa Clough could not attend the meeting, but provided her slides on the USCG POLAR Class Icebreaker Science Upgrade Workshop held in June. These slides are included as [Appendix X](#). Mike Prince reviewed Lisa's slides.

Extreme 2002-2003 Antarctic ice conditions required two USCG icebreakers, HEALY and POLAR SEA. POLAR SEA experienced propeller casualties. The #1 blade on the starboard prop broke off while breaking heavy ice. This is a yet another sign that the POLARs are in need of upgrade.

In good news, HEALY was able to stay on schedule and carry out planned 2003 Arctic operations. HEALY returned from the Antarctic to Seattle in April. The ship underwent SeaBeam repairs, Cycloconvertor repairs, and an SDN upgrade. The ship departed Seattle on 13 June for three Arctic missions including work at Nares Strait, Chukchi Cap and for SBI (on-going).

The bad news is that there is little or no remaining service life on the POLAR Class icebreakers. Major casualties are now the norm on both ships during every mission. Additionally, both ships are now on tap to do the hardest missions year in and year out. No Service Life Extension Program (SLEP) money has been identified.

Cost of the SLEP is \$400M for both ships. They need to identify the money very soon (FY 07); however, this is competing with other USCG programs. Various alternatives under consideration to decrease the SLEP cost include:

- Reduce power (75K SHP down to 45K SHP)
- SLEP only one ship
- HEALY into Deep Freeze mix on a regular basis

The AICC and ARVOC response to these issues include:

- Held March meeting at NSF
- A joint letter to community

- May presentation to the Polar Research Board
- June workshop for science upgrades to the POLARS
- CG presentations throughout the chain of command
- CG representation at PALMER replacement workshop

The June workshop outcomes included identification of likely science and national missions for the next decade. A Presidential Directive specifies the need for four US icebreakers - PALMER, HEALY, and the POLARS. A “wish” list was developed (Ocean Class SMR’s were referenced). 76 items made the first list. There has been no attempt to prioritize the list yet. Items include adding an ADCP and multi-beam (involves cutting holes in the hull...), improve habitability (no more triple bunks, head on the main deck); and adding a bow thruster.

The next step for AICC is to draft the workshop report. There will need to be some cost estimates associated with the wish list.

The icebreaker schedules through 2008 were presented.

Quality of Service, Post Cruise Assessment – The status of the Subcommittee on Post Cruise Assessments and their tasking was discussed. The FIC has requested that the subcommittee inform them of feedback regarding fleet improvement suggestions.

Dolly commented that the new PCA forms have been very helpful in determining equipment needs and for the ship inspections.

Dale commented that the forms should not be used to as a way to grade cruise success. They do not allow for an adequate way of quantitatively assessing cruises. Mike Prince showed a slide on the percent return by chief scientists. Mike Reeve stated that NSF is interested in the assessment grade, as well as the improvement suggestions. NSF is required to provide a quantitative assessment of quality of service. Dale explained that he is not implying that there shouldn’t be a grade. What he is saying is that the form does not give a grade. Most of the assessments submitted indicate that everything is above average. Mike Prince stated that many comments have been submitted regarding the grade system. It needs to be looked at carefully.

Peter Wiebe remarked that the committee is in the best position to advise on how their tasking should be revised. Mike Prince suggested that the subcommittee communicate via phone/web conference.

Lastly, Mike Prince reported that we are trying to eliminate the paper PCA form. So far this year the on-line return is approximately 53%. Since the implementation of the on-line form, we have seen a lower response level. However, PCAs are often submitted at the end of the year.

Defined Levels of Technician/Instrumentation Support – Annette reviewed the status of the RVTEC Subcommittee on Technical Services. Her slides are included as *Appendix XI*.

The Subcommittee members include Stewart Lamerdin (MLML), Woody Sutherland (SIO), Barrie Walden (WHOI), and Marc Willis (OSU). Their goals in this project are to define the technical services that are provided in support of oceanographic research cruises aboard each UNOLS vessel and to develop a standardized, web-based format for providing this information.

They have held three phone conferences. A Technical Service Information Topic Outline has been drafted. Each Subcommittee member is completing the outline with technical services information for his respective institutions. These outlines would serve as a template for all UNOLS operator institutions.

Annette reviewed the major items of the Technical Services Information Topics draft outline:

- Vessel operator organizational structure & points of contact
- Pre-cruise planning and services
- Cruise planning details
- Cruise loading and setup
- Activities at sea
- Post-cruise activities

The subcommittee will ask a select group of marine supervisors and ship users to review the draft outline topics. After comments are received and incorporated, the subcommittee will provide the draft outline to the RVTEC for consideration. At the November RVTEC meeting, the committee will be asked to consider adoption of the outline.

The outline and information will reside on the web. The actual design of the web page has not yet been addressed, and the subcommittee recommends that professional services be contracted to help design the website.

In related issues, Patty Fryer reported that she has been on two ships recently that the marine technicians were not aware of the RVTEC and their activities. Dale replied that if that is the case, the heads of the ship technician groups are not doing their jobs. NSF pays for technical support and provides support for each marine group to attend the RVTEC meetings. This is area that needs to be addressed further.

New Security Regulations –The Security Committee will meet in Duluth, just prior to the RVOC meeting.

UNOLS Wires and Cables – Mike Prince reported on plans for developing new wire and establishing safe working load parameters. Mike had included support for developing a new wire spec in the UNOLS proposal. The agencies recommended that it be removed from the proposal. Instead they requested that Mike draft performance

requirements for a new wire. Mike has drafted these and has sent them out to a few people for review. These people had previously expressed interest in the program. Once the performance requirements are reviewed, they will be posted on the UNOLS website for community comment.

Winches – Dolly reported that this is an area of high interest. The Dynacon and Markey winch manufacturers will visit ships to review servicing procedures and the condition of the winches. Mike Prince is in the process of scheduling these visits.

Opportunity for Additional Reports and Comments:

RVOC Safety Committee Appointment – The question was asked if Council approval was required for an RVTEC appointment to RVOC Safety committee. No.

RVTEC – The November RVTEC meeting will include an open dialog about wireless capabilities aboard ships.

SSC – The Ship Scheduling Committee will continue to address any unresolved scheduling issues.

DESSC – Patty reported that access to non-NDSF submergence assets is an issue. When a PI submits a request to NSF for use of an asset that is not in the NDSF, it often gets reviewed negatively. Patty has sent a letter to agencies regarding this issue.

AICC – Lisa provided a set of slides. See [Appendix XII](#). The committee will next meet in November. Larry Lawver and Terry Whitledge will cycle off AICC in 11/03. Four candidates have been nominated. AICC will decide on possible new members at their November meeting. The Committee will also nominate a new chair, as Lisa Clough will cycle off in Jan 04. Margo Edwards will be suggested as the new chair, with Hedy Edmonds and Carin Ashjian being suggested as vice-chairs. They will also consider two-year terms for the chair position.

Agency Activities – Mike Reeve provided information on changes with the review process for ship operation proposals. In the past, the ship facility program was reviewed every five years and a waiver was granted to allow review of ship operation proposals internally within NSF. After this current waiver runs out (last year of the waiver), starting with the FY05 proposals, the ship operation proposals will be reviewed using the same process as all other NSF proposals. The proposals will be peer reviewed and NSF will not apply for the waiver.

Council Members – Tim Cowles recognized departing Council and Committee members and thanked them for their dedicated service to UNOLS:

UNOLS Council

- Tom Shipley, University of Texas at Austin

Arctic Icebreaker Coordinating Committee

- Larry Lawver, University of Texas at Austin
- Terry Whittedge, University of Alaska at Fairbanks

Fleet Improvement Committee

- Larry Atkinson (Chair), Old Dominion University

Research Vessel Operators' Committee

- Steve Rabalais (Chair), Louisiana Universities Marine Consortium

Ship Scheduling Committee

- Joe Ustach (Chair), Duke University
- Daniel Schwartz, (V-Chair), University of Washington

Scientific Committee for Oceanographic Aircraft Research

- Carl Friehe (Chair), University of California at Irvine

Presentations were made to Joe Ustach for his service as Chair of the Ship Scheduling Committee and to Steve Rabalais for his service as Chair of the Research Vessel Operators' Committee. Each was presented with a UNOLS plaque.

Other Issues:

Summer Council Meeting - Tim Cowles announced that there would be no summer Council meeting in 2004. Any business will be conducted via phone/web conferencing.

The meeting adjourned at 1300.