

DRAFT
UNOLS COUNCIL MEETING
University of Southern Mississippi
Department of Marine Science Facility
NASA's John C. Stennis Space Center
Building 1022 - The George A. Knauer Building
March 30-31, 2010

Meeting Minutes

Executive Summary

The UNOLS Council met at the University of Mississippi's facilities at Stennis Space Center in Mississippi on March 30-31, 2010. The first day of the meeting included a joint session with the Fleet Improvement Committee and focused on fleet utilization and renewal efforts. Agency representatives reported on budget projections and facility acquisition efforts. Major discussion items during the meeting included:

- The decrease in ship time demand
- A request to form a UNOLS standing committee on ocean observing systems
- Forming a cooperative relationship between UNOLS, OPP, and OCE
- Green Technology for the fleet
- Outreach and mentoring initiatives

A nominating committee was formed to prepare the 2010 Council slate and a subcommittee was formed to review the UNOLS Charter.

Action Items

Proposed formation of a new UNOLS Ocean Observatories Science Committee (OOSC) - An ad hoc committee of Kenneth Coale, John Morrison, and Wilf Gardner was formed and tasked to:

- Select an interim OOSC representative to attend the June and September OOI Review meetings.
- Review and finalize the draft OOSC Terms of Reference so that they can be forwarded to the membership for vote at the Annual Meeting
- Develop a slate of candidates for OOSC Charter members.

Antarctic Research Vessels and UNOLS: UNOLS will explore a cooperative relationship with NSF OCE and OPP for polar facility coordination. The Council recommends that OPP consider the UNOLS model for marine operations in the Antarctic and adopt the UNOLS model for planning, acquisition, operations, vessel operations, science research operations.

- Vernon and Robin Muench will draft a white paper. The following individuals will work with Vernon and Robin on this effort: Peter Wiebe, Jon Alberts, and Clare Reimers. Mike Prince will be ex-officio.

Greening the UNOLS Fleet – Form a steering committee to work with Bruce Corliss to develop a proposal for a workshop.

UNOLS Charter Review – The UNOLS Charter states that a review should be conducted every three years. A review subcommittee of Nancy Rabalais, Rob Pinkel, and Vernon was formed to carry out this effort. The establishment of Ocean Observing Science Committee will require a modification to the Charter, as well as a vote by UNOLS representatives.

Nominating Committee – A nominating committee of Bruce Corliss (Chair), Wilf Gardner, and Peter Wiebe was formed to review the Council membership and positions opening. A call for nominations will be announced. The nominating committee will draft a slate of candidates.

Annual meeting:

- Date – the UNOLS will conduct a Doodle survey to select optimal dates.
- Keynote Speaker suggestions should be sent to the UNOLS office.

UNOLS Council Summer Phone/Web Meeting – June 9 and 10th

Post Cruise Assessment Report (PCAR) Subcommittee - The PCAR subcommittee will continue their PCAR review and move forward with the development of a new draft form.

Investigate the feasibility of a more flexible UNOLS to meet the needs of additional users:

- Task an *ad hoc* committee to investigate the problem and make recommendations regarding a more flexible UNOLS fleet.
- Ad hoc members include:
 - John Diebold (Chair)
 - Nancy Rabalais
 - Mary Jane Perry
 - Stan Winslow
 - Dennis Nixon can contribute.
 - Agency reps.
- The ad hoc committee is tasked to prepare a White Paper addressing fleet opportunities, constraints, and methods that are successful in engaging new users.
- The ad-hoc committee should define how decisions are made regarding the ship use.
- Vernon will prepare their task statement. RVOC will be asked to provide a list of outside funding sources in recent years, (Neptune Canada, Kaust, German Gov't.)

Gender Climate at Sea –

- Kenneth Coale has explored on-line training options with Workplace Answers.
- Liz Caporelli, Bruce Corliss, Vernon Asper, Jon Alberts, and Annette will review Workplace Answers videos and other material. They will follow-up with a telecom.

UNOLS Involvement at Future Science Meetings - Robin Muench will explore options for a UNOLS Plenary session on the future of the fleet. This could be for a future fall AGU or Ocean Sciences meeting.

UNOLS Outreach/Mentoring Initiatives:

- **Create a UNOLS mentoring program** that will introduce junior scientists to cruise planning and participation. Utilization of the fleet is low; we need to increase the user base. Consider transit cruises as possible mentoring opportunities. Prepare a proposal for a mentoring program. (Office/FIC/Council – FIC will take the lead)

- **Cruise opportunity page and volunteers** - Cruise opportunities are needed. There are many volunteers http://www.unols.org/info/cruise_opportunities.html#volunteer_list . The office will contact PIs who have scheduled ship time.
- **Transit Cruises for Student Opportunities** – Contact science program managers to request support for the use of transit cruises for student opportunities. Students can propose to use the transit cruises for science operations.

RVOC ad hoc committee on Medical Issues – The Council recommended that the RVOC ad hoc committee on medical issues be reformed.

Ship Time in 2011- In light of the low number of funded and pending days requested for the UNOLS fleet, the Council will submit a letter to NSF requesting ship time in August Proposals to be considered for 2011. The Council will also send a letter to the UNOLS Representatives informing them of the opportunity for ship time requests for NSF’s August Proposal deadline.

Appendices:

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Appointments and Motions:

Meeting Report:

Tuesday, March 30th: Joint session of the FIC and Council

Call the Meeting: The UNOLS Council met on March 30-31, 2010 at the University of Mississippi facilities at Stennis Space Center in Mississippi. Vernon Asper, UNOLS Chair, called the meeting to order at 0830 and provided an opportunity for introductions. Vernon provided information about USM and Stennis Space Center.

The meeting agenda was followed in the order recorded in these minutes. The meeting agenda is included as *Appendix I* and the meeting participant list is *Appendix II*.

A motion was made and passed to accept the minutes of the October 2009 Council Meeting <<http://www.unols.org/meetings/2009/200910cnc/200910cncmi.html>> (Muench/Rabalais).

UNOLS 2010 Fleet schedules and science operations, estimated operation costs, and 2011 ship scheduling –Jon Alberts began the ship scheduling report. His slides that include data about ship utilization and costs are provided as *Appendix III* and. Over the course of the last year, the schedulers have had many phone meetings to work out the details of the schedule.

A chart showing the 2010 scheduled days by ship was presented. Global ships are over subscribed and some of the operations are being supported by stimulus money. NSF is providing about 70% of the funding for ship operations in 2010. With the exception of the *Revelle*, most of the ship time on the Global vessels is supported by NSF. The annual cost for Global ships is about \$10M per ship.

Liz continued the scheduling report. In recent years there has been increased use of the Global ships and less use of the Intermediates. The number of ship days requested for 2011 is sharply decreased from previous years. The total 2011 days requested is less than 3000 days and this is of great concern. Demand is at an all time low. Liz provided the OOI ship needs through 2017.

- Bruce Corliss – Can proposals for ship time be considered for the August NSF deadline? Liz – This could help some of the smaller vessels, but global ships that have cruises with clearance requirements could not be scheduled until late in 2011.

UNOLS Fleet Highlights: Jon Alberts compiled a set of slides that included photos of each ship along with highlights from the past year (see *Appendix IV*). The meeting participants were invited to comment and elaborate on their respective vessel highlights. Their comments are included below:

- University of Hawaii – *Kilo Moana*: Tim Schnoor clarified that the ship operations did not include mining.
- University of Washington – *Barnes* and *Thompson*:
Thompson – Dan Schwartz reported that the vessel's master, Captain Phil Smith passed away in February while aboard the *Thompson* off Chile. Dan traveled to Chile and arranged for

repatriation. This was followed by a z-drive coupling failure that required a shipyard period. Dealing with the z-drive manufacture (Lipps) was a challenge. The Chilean earthquake made shipment arrangements to the *Thompson* challenging. It has been an interesting couple of months. As a result of these events a student cruise had to be cancelled and the schedule is delayed about two weeks. They are considering increasing their transit speeds to save time. There has been a lot of communications with scientists on the BEST cruise alerting them to the schedule situation. Dan hopes not to lose too many science days. There is also concern with staying within the JdF weather window.

Barnes – Dan reported that UW is putting together plans for a replacement for *Barnes*.

- Oregon State University – *Wecoma*: Pete Zerr reported that they received funding for a new crane.
- Moss Landing Marine Laboratories – *Point Sur*: Kenneth reported that the vessel has a light schedule and they are using the free time to catch up on ship projects.
- Scripps Institute of Oceanography – *Melville*: Dave Checkley remarked that a rapid response cruise was added to the ship schedule because of the Chilean earthquake.
- Louisiana Universities Marine Consortium – *Pelican*: – Joe Malbrough reported that the ship is very busy. During the shipyard period new transducers, a Markey winch, and chain locker were added. Nancy Rabalais added that the ship has supported methane sampling operations using and an ROV.
- University of Miami/RSMAS - *Walton Smith* – Rich Findley reported that a new Nitrox diving system was purchased for the ship with stimulus funds.
- Duke/UNC Oceanographic Consortium – Bruce reported that Duke has hired a new Marine Superintendent.
- Lamont-Doherty Earth Observatory – *Langseth*: John Diebold reported that the ship is in the shipyard and the seismic equipment is being refurbished.
- Woods Hole Oceanographic Institution- *Atlantis*, *Knorr*, and *Oceanus*: Al Suchy reported that they have been busy getting ready for a new multibeam system installation. Some modifications may be needed on *Atlantis* to accommodate the upgraded *Alvin* vehicle.

Agency Reports:

National Science Foundations (NSF) – Bob Houtman provided the NSF report. His slides are included as *Appendix V*.

The GEO Advisory Committee has identified three main challenges for the next decade:

- Understanding and forecasting the behavior of a complex and evolving Earth system
- Reducing vulnerability and sustaining life
- Growing the geosciences workforce of the future

Additionally, the National Research Council (NRC) has made recommendations for restructuring climate research:

- Integrated scientific-societal issues
- Interactions among the climate, human, and environmental systems
- U.S. climate observing system including physical, biological, and social observations
- Coupled Earth system models
- Adaptation

NSF had a big increase in funding from the stimulus program. Within GEO, the American Recovery and Reinvestment Act (ARRA) investments totaled \$601M. The R/V *Sikuliaq* project benefitted by the ARRA funds. The FY2010 budget is a 10.2% increase over FY2009 and includes the Agency-wide climate initiative. The FY2011 President's budget request includes a 7.4% increase for GEO.

Climate Research Investment (CRI) is a special emphasis area in the FY10 Budget. There is \$197M in CRI funding in FY10 across NSF (\$46M in GEO including \$7M in EAR) and eight Directorates are involved. There is also \$10M for new Climate Change Education in FY09/FY10. FY2010 CRI solicitations are planned for:

- Decadal and Regional Earth System Modeling
- Water: Sustainability and Climate
- Ocean Acidification
- Dimensions of Biodiversity and Climate
- Climate Change Science Education

In 2011, GEO will support research to study regions that are highly susceptible to the impacts of environmental changes, such as coastal areas subject to sea-level rise and the Arctic. A 2011 Initiative will focus on the "Dynamic Earth."

Discussion:

- Bob Houtman – The best scenario would be for science demand to increase and in turn the ship demand increases. The low ship time demand does not make a compelling case to build new vessels.
- John Morrison – It looks unlikely that the Regional Class acquisition effort will move forward in 2012. Bob – Not necessarily. NSF is looking at the condition of the current ships and will also look at demand.
- Maureen – It looks like there is an emphasis on education programs within NSF. Perhaps a UNOLS mentoring program could be supported. Bob – Yes, if proposals are formulated within GEO/OCE they can be entertained.
- John Morrison – Younger scientist are not submitting proposals, they are worried about funding and they don't have support.
- Peter Wiebe suggested using transit cruises for student cruise opportunities. In addition to educating the students, it would better utilize the ships. Houtman – This is a great idea and he encourages UNOLS to talk to the science program managers.

Equipment Pools – Vans, winches, and wire – Matt Hawkins (NSF) provided a report on the equipment pools. His slides are contained as *Appendix VI*.

Pooled equipment is agency funded equipment intended to be used on multiple ships but managed by one institution. Generally, NSF retains title of the equipment. Shared-Use equipment is agency funded equipment with majority use on one vessel, but occasional use on other ships. Institution has ownership of the equipment.

Equipment pools and their managers become “Centers of Expertise.” They facilitate engineering analysis and documentation. The pool operators understand and communicate equipment capabilities. They provide additional support for operators and science users. The pooled equipment is free to NSF-funded users. Other users pay standard daily rates. The pools reduce the need for duplication of equipment at multiple institutions. The pools provide improved management, maintenance & reliability. They are not a repository for old junk or a mechanism to support “orphaned” equipment.

Equipment pools have a designated pool manager and there is a “normalized” daily rate for all equipment. The pools are supported by 3 to 5 year grants and they are subject to the standard NSF review process.

The Wire Pool located at WHOI and SIO are the oldest established Pool. Rick Trask (WHOI) is the Wire Pool manager. The current inventory includes:

- 0.680 E&M cable
- 0.322 E&M cable
- 0.5” 3x19 wire rope
- 0.25” 3x19 wire rope

The East Coast Van Pool is located at the University of Delaware and Tim Deering is the manager. The Web Site is: <http://marops.cms.udel.edu/uecyp/> . The current inventory includes:

- (3) Cold Vans
- (2) Isotope Vans
- (3) GP Vans – “Wet” and “Dry”
- (1) Trace Metal Clean Van
- (1) GEOTRACES Van
- 10-foot GP van
- Future:
- Portable Seismic Compressors

The West Coast Van Pool is located at OSU and is managed by Pete Zerr. The Web Site is: <http://www.shipops.oregonstate.edu/ops/vans/> . The current inventory includes:

- Cold Van
- Isotope Van
- GP Van
- OPP Isotope and GP Vans

In the future a Portable Seismic Compressors pool will be established.

East and West Coast Winch Pools are being developed. The East Coast pool was initiated with ARRA funding in 2009. The East Coast manager is Dave Fisichella and the west coast manager is Eric Buck. The current and future inventory is listed in Matt’s slides.

Other pools are under consideration and suggestions are welcome. Some ideas include a “Fields” Pool (Gravimeters), a Multibeam Pool, and an OBS Pool. Dan Schwartz suggested a transducer pool. Peter Wiebe expressed the need for a pool of multiple frequency systems.

Alaska Region Research Vessel (ARRV) - R/V *Sikuliaq*: Matt Hawkins provided a status report on the R/V *Sikuliaq* construction project. His slides are included as *Appendix VII*.

The ship construction contract was awarded to Marinette Marine Corporation (MMC) in December 2009. They are currently in the Design Verification and Transfer (DVT) phase. Module fabrication will begin in October 2010. The Z-drive delivery (Wartsila) to the shipyard is scheduled for December 2011. The vessel delivery to UAF is scheduled for December 2012. Ice and science trials will take place in 2013 and the vessel will begin operations in January 2014.

The vessel particulars are included in the slides. The length overall is 254 feet (77 m) and there will be 26 science berths.

Regional Class Research Vessel (RCRV) – Matt continued with an update on the RCRV. His slides are included as *Appendix VIII*. The RCRV down-select panel report was received in October 2009 and the Glostien Associates design was recommended to move forward into the “Project Refresh” phase. NSF concurred with the panel recommendations and notified the Design Teams in March 2010.

The panel identified issues with both designs. “*Future areas of inquiry*” include total power, DP capabilities, Aft Deck Space with two vans on deck, Bulbous bow and bubble sweep down, and Underwater Radiated Noise (URN). The UNOLS Fleet Improvement Committee (FIC) has been tasked to provide input on the RCRV “*Future Areas of Inquiry*” by October 1, 2010.

The proposed RCRV schedule is:

- 2010: NSF develops Independent Cost Estimates for the total project (construction plus management)
- If construction funds are identified:
- Early 2011: Release Solicitation for “*Construction and Operation of the RCRV*” - Review Proposals & Begin Phase I (Design Refresh)
- 2012: Shipyard Selection (II)
- 2013: Construction (III)
- 2015: Trials (IV)
- 2016: Begin Science Operations

Peter Wiebe – What is the estimated vessel cost? Matt – They do not know.

National Oceanic and Atmospheric Administration (NOAA) – Mike Weaver provided the report for NOAA. His slides are included as *Appendix IX*.

The topics that Mike reported on included:

- NOAA’s Ship and Aircraft Support
- NOAA Ships and Homeports in FY2010
- NOAA Aircraft and Bases in FY2010
- NOAA OMAO Budget

- ARRA Funding - Vessel Maintenance and Repair received \$20M of ARRA funds and Vessel Construction was funded in the amount of \$78M for the construction of NOAA's fishery vessel, FSV 6.
- NOAA vessel operating days

Mike provided the status of NOAA's ship acquisition programs:

- *Pisces* - Final acceptance is scheduled for May 2010.
- *Bell M. Shimada* - Construction issues contributed to lengthy delays in delivery. Final acceptance is scheduled for December 2010.
- *Ferdinand R. Hassler* - Ongoing construction issues have contributed to lengthy delays in delivery.

Aircraft acquisition and upgrades were reported:

- *WP-3D Aircraft*: A Service Live Assessment Program has been funded for all three P-3 aircraft in FY2010. NOAA took delivery of an additional P-3 in FY2010.
- *NOAA King Air Aircraft*: Final acceptance was in May 2009 and the aircraft is now operational

NOAA's Ship Recapitalization Plan was reviewed:

- There is \$3M included in FY2011 President's Budget to continue design work for FSV 5.
- The FSV 6 contract award is scheduled for April 2010.
- Six additional multi-mission NOAA Survey Vessels (NSVs) are planned to be placed in service between 2018 and 2024. These will replace two hydrographic survey vessels and four fisheries/ecosystem research vessels.
- NOAA's Phase II Recapitalization Plan is being drafted to look at innovative, cost effective ways to collect in situ data.

The lease for NOAA's Marine Operations Center-Pacific (MOC-P) in Lake Union, WA expires in June, 2011. On August 7, 2009 NOAA signed a 20-year lease with the Port of Newport, Oregon to serve as the MOC-P homeport.

Discussion:

- Bruce Corliss – A lot of NOAA time is commercial charter. Is there any reason why this can't go on the UNOLS vessels? Mike – He is not sure why the time is on commercial vessels.
- Jon Alberts – He just heard from NOAA that they will request UNOLS ship time to support their DART work

Navy – Tim Schnoor provided the Navy report. His slides are contained in *Appendix X*.

In 2010, there are 493 days of Navy research funded with 250 days on *Revelle*. The Navy is supporting major repairs on *Melville*, *Knorr*, *Thompson*, and *Kilo Moana*, as well as the *Alvin* survey and its special hull inspection. These efforts have exceeded ONR's FY10 budget and some costs will be covered with FY11 funds.

Two design/build team awards were made in January 2010 for the Ocean Class AGOR. The teams are Marinette Marine-Glosten and Dakota Creek-Guido Perla. The Phase I design period is 14 months. Phase II award is planned for spring 2011 with ship deliveries in 2014.

Summary of Fleet Improvement Committee Meeting and Action Items – Clare Reimers summarized (via phone line) the FIC meeting activities on March 29th. Her slides are included as *Appendix XI*.

FIC activities and action items include:

- Regional Class Research Vessel (RCRV) – FIC is to provide NSF with recommendations on 13 areas of design concern that were raised by the RCRV down-select process by October 1, 2010.
- Ocean Class Research Vessels and lessons from R/V *Sikuliaq* - Once OCRV operator selection is known, FIC will recommend a structure and tasking for an OC Advisory Committee. FIC will compare Ocean Class SMRs to Phase I Industry Team RFP Performance Spec to see how designers and spec writers have interpreted the SMR.
- FIC will review all projected end of life dates for the existing fleet and work with NSF to make recommendations on new end dates, investments, and upgrades through to 2030. FIC will continue R/V *Hugh Sharp* debriefs, and review of *Kilo Moana*'s load handling system.
- Global Class Vessel Planning - FIC will continue to prioritize community needs and science drivers within the context of a changing fleet.
- UNOLS Outreach/Mentoring Initiatives – FIC will explore options for a mentoring workshop/transit cruise program to educate young ocean scientists on how to be the chief scientists of the future. The UNOLS Office maintains a website for announcing cruise opportunities and for people to volunteer.

Discussion:

- Matt thanked FIC for taking on the RCRV task.
- Dan Schwartz – UW has begun plans for a replacement for *Barnes*. Dan requested FIC's input on the replacement plans.
- Clare – Would UW apply for UNOLS designation of the *Barnes* replacement? Dan – yes.
- Bob Houtman – What is the replacement timeline? Dan – UW would like input from FIC over the next couple of months. It will take about three or four years to acquire the vessel.
- Clare – Al Devol is on FIC and can liaison with UW on the replacement effort.

An Ocean Infrastructure Strategy for U.S. Ocean Research in 2030 – The National Research Council has formed a committee to provide advice on the types of U.S. ocean infrastructure that will facilitate research in 2030. The project scope can be viewed at <http://www8.nationalacademies.org/cp/projectview.aspx?key=49139>. Peter Wiebe provided information about the study. His slides are contained in *Appendix XII*. The slides contain the committee participants and the statement of task.

The study will take into consideration:

- New scientific and technological developments
- Interdependence of various infrastructure assets and multi-purpose or multi-user assets
- How anticipated changes in the oceans, its interactions with the atmosphere, land, sea ice, marine and terrestrial ecosystems, and humans, and commercial enterprises might affect demand for various assets and operational characteristics,
- Potential use of infrastructure assets to collect data for multiple goals
- Potential for emerging technology

- Potential opportunities to phase out programs or facilities in order to develop capabilities in new research areas
- Institutional or policy barriers, if any, that may hinder the optimal use of facilities and infrastructure.

The report will provide advice on the criteria and processes that could be used to set priorities for the development of new ocean infrastructure or replacement of existing facilities. It will not recommend specific new infrastructure or facility fabrication / construction investments.

The committee is scheduled to meet four times over an 18 month time period. Many agencies are supporting the study. The report must be complete by 18 months from December 2009.

Peter remarked that the committee is still looking for community input. He is using the UNOLS Fleet Improvement Plan and it has been quite useful. Input from the Council is welcome.

Interagency Working Group on Facilities (IWG-F) – Bob Houtman reported on the IWG-F activities and plans. His slides are contained in *Appendix XIII*. The IWG-F subcommittees have been active.

A joint workshop of the IWG-OP and IWG-F was held in December 2009 to address Interagency Ocean and Coastal Interests in the Arctic.

The IWG-F Task Force on Unmanned Systems held meetings on 29 January and 25 March. The subcommittee's terms of reference are to identify areas for potential increased cooperation and coordination between the federal agencies on activities and future plans related to unmanned systems.

Consortium for Ocean Leadership – Jon Alberts read the report provided by the Ocean Leadership. The report is contained in *Appendix XIV* <http://www.unols.org/meetings/2010/201003cnc/201003cncap14.pdf>.

Greening of the Fleet – Bruce Corliss provided a report on, “Green Ships and Blue Waters - Environmental Considerations for the Future UNOLS Fleet.” His slides are included as *Appendix XV*.

Bruce reported that creating a green fleet should consider vessel construction, operation, and recycling. Elements of construction and operation that can potentially apply green technologies include:

- 1) Hull and design
- 2) Propulsion, fuel and lubricants
- 3) Power systems
- 4) Fluids - water and sewage
- 5) Interior: cabins, labs, galley and mess areas.

A Leadership in Energy and Environmental Design (LEED) criteria has been developed that applies to boat building.

Some of the green alternatives for ship propulsion systems include solar and wind. The *Solar Sailor* has solar wings that are used as solar collectors and as sails. The M/V *Auriga Leader* has solar panels that provide power for the ship's main electric grid.

Biofuels can be considered for fuel and lubricant applications. NOAA's Green Ship Initiative will work to convert Great Lakes vessels that use petroleum-based fuels to renewable and environmentally friendly products.

Bruce reported on an experiment that was conducted on R/V *Cape Hatteras* to use waste vegetable oil (WVO) for diesel power. During early 2008, shipboard personnel configured one of the ship's generators to run on WVO, which is commonly used to fry foods in deep fat fryers. A beta test was conducted on the *Hatteras* during the May – June 2008 time frame. To carry out the beta tests, Duke Marine Laboratory students, employees, and ship's personnel contacted local seafood restaurants to explain the test and make arrangements for transferring WVO to tanks. Restaurant-to-truck and truck-to-ship WVO transfers were carried out using a tank and pump mounted to a trailer. A WVO pickup schedule was established. During the beta test, WVO was stored in the trailer-mounted tank until it was filtered and eventually transferred to the ship.

The beta test was successful and much was learned from the experiment. Incorporating WVO as a secondary or primary fuel source requires substantial personnel and infrastructure. Additionally, formal arrangements with WVO providers are necessary.

In terms of ship recycling, Bruce reported on IMO's Guidelines on Ship Recycling (2003) that call out the "Green Passport." The Green Passport can be used to formulate a safe and environmentally sound plan for decommissioning a ship. It raises awareness of hazardous materials. Lloyd's Register verifies the Green Passport for both new and existing vessels.

Additional costs will be incurred to address or incorporate green solutions and many of these expenses will be front-loaded. Bruce suggested that UNOLS consider development of guidelines for both existing and new vessels.

Bruce reported on various green ship activities and initiatives that are underway. These include:

- An annual Green Ship Technology conference.
- The Danish Green ship of the Future
- M/V Explorer that has an Onboard Environmental Management and Waste System

Greening efforts should consider a life cycle analysis that assesses the environmental and economic impacts of a product or service from the start of its construction to its disposal. As a pilot study, a *Cape Hatteras* life cycle analysis will be carried out.

Future activities include:

- Annette DeSilva reported that she contacted MBARI to inquire about the status of a replacement for *Western Flyer*. MBARI is moving forward and has contracted with Glostén Associates to evaluate options for a replacement vessel. As part of this project, Glostén will look into greening options. A preliminary report is due in August 2010.
- Liz Caporelli reported that she plans to introduce the idea of an RVOC questionnaire at the April RVOC meeting. The RVOC questionnaire would focus on how to make

existing ship operations more environmentally friendly. There may be some easy ways to implement this efficiently and sustainability.

- Bruce reported that he will give a “Greening the UNOLS Fleet” presentation at the NSF Workshop on Large Facilities in May 2010.
- Bruce recommends that a UNOLS proposal be submitted to hold a workshop with an objective to Assess current technologies, designs, and practices for environmentally sustainable research vessels. The workshop could be held at Duke with 25-30 invited participants. Details are contained in the slides.

Council Discussion:

- Clare – There is a lot of “green technology” activity in the Navy. She suggested that Bruce look into the “MIRI” project.
- Marc Willis – You should also look into industry efforts. A hybrid tug has been built.
- John Diebold – Dubai has environmentally friendly seismic vessels: <http://www.ngoilgasmna.com/article/Polarcus--a-new-Dubai-based-3D-marine-seismic-company/>
- Jay Edgar – There is an effort underway for developing a green rating for ships. The question is often asked “why” ships should be green. The answer should be “because it is a responsibility.” It is good to have real green needs defined. We should develop reasons why green technologies are beneficial: green technologies provide access to research areas where might be restricted (example - Galapagos). A mission statement is needed and is important.
- Bruce – NOAA has actually been able to reduce costs by going green.
- Mike Prince – A mission of research vessels should be the abilities to carryout studies with little impact on the ambient environment.
- Justin Slater – Have we looked at the Enviro-plus?
- Kenneth Coale – This UNOLS greening project has come a long way since the fall. We should also focus on the additional things that can be done that are related to science operation. Think about station work and ways in which things can be done more efficiently. Can power be generated by roll tanks?

Action Item: Form a steering committee to work with Bruce Corliss to develop a proposal for a workshop.

This concluded the joint meeting of the FIC and Council.

Lunch Break

Proposed formation of a new UNOLS Standing Committee - Ocean Observing Science Committee (OOSC) – The draft terms of reference for the proposed OOSC were drafted by NSF and distributed to the Council prior to the meeting. Bob Houtman reported that NSF is making a large investment into the installation of ocean observing systems. OOI is funded under the Major Research Equipment (MRE) account and a science advisory committee is required. With other MREs, the advisory committee reports to the facility and to NSF. OOI has a Project Advisory Committee (PAC), but the PAC doesn’t meet the intent of a community input group.

NSF explored a few models for an advisory group and decided to propose it as a new standing committee of UNOLS. The OOSC would advise on more than just OOI. NSF is asking that the

UNOLS consider the establishment of an OOSC. They worked with Jon and Annette to make sure that the terms fit within the Charter structure.

Discussion:

- Vernon – This is an excellent idea. There has been a perception that OOI is a closed group.
- John Morrison – Will other agencies task the OOSC. Houtman – There is no effort to include IOS (NOAA) as part of the OOSC terms. However, other agencies are invited to participate with OOSC.
- Clare – Can an individual who is from an IO, but not involved with OOI serve on the OOSC?
Bob – The cleanest way is to exclude members from IO institutions.
- Bruce – This OOSC model brings everyone together under one umbrella.
- Rob Pinkel – He is really a fan of OOSC. However, the OOSC should be able to take advantage of technical expertise. He is concerned about the number of people who might be conflicted.
- Bob Houtman – If the Council decides to precede, an interim UNOLS representative is requested to participate in the summer and fall OOI review meetings. The representative who is selected should have an interest in Ocean observing systems.

Annette reported that formation of a new standing committee requires a membership vote at the Annual meeting in the fall. The Council will first need to endorse the Terms of Reference. Once approved by the membership, the terms would become a new Annex to the UNOLS Charter. Material requiring membership vote must be distributed to the membership at least 30 days prior to the vote.

Peter Wiebe made a motion to form an ad hoc committee with the following tasks:

- Review the OOSC draft Terms of Reference and provide a revised draft or recommendation to the Council for endorsement. Once the OOSC terms are endorsed, they will be distributed to the Membership for vote at the Annual Meeting
- Develop a slate of Charter OOSC members.
- Recruit an interim representative to attend the OOI review meetings in June and August.

The motion passed. (Wiebe/Rabalais) The ad hoc committee will report to the Council. The ad hoc committee members include Kenneth Coales, John Morrison, and Wilf Gardner.

Mid-Afternoon Break and Stennis Space Center Tour

Antarctic Research Vessels and UNOLS/AICC – Vernon Asper reported on efforts to form an ad hoc committee to make recommendations for enhanced collaboration or a potential merger between the AICC and ARVOC. His slides are contained in ***Appendix XVI***.

NSF/OPP funds science that requires the use of both Arctic and Antarctic research vessels. UNOLS oversees the operation of UNOLS vessels and the Arctic icebreakers (*Polars* and *Healy*). NSF/OPP oversees the operation of contracted Southern Ocean vessels (*Palmer*, *Gould*, and *Odin*). Coordination between these efforts is inefficient. UNOLS vessels could do some high-latitude work and Polar vessels could supplement UNOLS vessels in low latitudes.

During the fall Council meeting it was suggested that an ad-hoc committee be formed to develop the terms of reference for a UNOLS Antarctic Research Vessel Coordinating standing

committee. This committee would be tasked to review the current arrangement of research vessel oversight in both regions to determine if more efficient use of resources might be possible by reconfiguring the committee structure.

Since the fall UNOLS meeting NSF representatives cautioned that more buy-in from NSF is required before proceeding. Because of the complexity of funding and logistics support contracts, merging support won't be easy or simple. The AICC role of liaising with the USCG is critical, unique, and time-consuming and perhaps not well met by a merged/diluted committee. However, NSF is very interested in having UNOLS work with them.

Discussion:

- Robin Muench: - The real problem is there no advocacy group for the Antarctic.
- Bob Houtman – Bob said that he recently had meeting with Simon Stevenson (OPP) to discuss plans for a new high latitude platform. Construction of a vessel like this might have to go through the MRE-FC vessel process. One scenario under consideration is to acquire a vessel that would be owned by NSF and operated by an institution (like the UNOLS model). The problem with the current Antarctic support is that ARVOC is advising a contractor, not NSF. Bob sees no value in merging AICC with ARVOC.
- John Morrison – What is status of Polar ships? Bob – The Palmer is operating year to year. Gould may have just renewed for another 5 years. Now is the time to partner with OPP and develop SMRs for a new Antarctic vessel.
- John Morrison – The Council can make a recommendations to OPP to move forward with a UNOLS vessel model. UNOLS offers its assistance in developing SMRs for the new ship.
- Peter Wiebe – The task of creating SMRs could be given to FIC with input from AICC.
- Liz Caporelli – Is Raytheon's contract coming to an end? Houtman – yes.
- Vernon – will *Sikuliaq* be under AICC's oversight? Robin – No, *Sikuliaq* is a UNOLS vessel. Steve Hartz is on the AICC and can provide liaison.
- Houtman – There must be cross-talk between AICC and the other committees.
- Vernon – If the Council makes a recommendation for a *Palmer* replacement to be a UNOLS vessel how would this work? Houtman – It wouldn't be any different than say ONR owning their ships and having them operated by institutions.
- Vernon – With the Antarctic and Arctic having opposite field seasons, there could be sharing of personnel (marine technicians and crew).
- Peter Wiebe – A ship that is more capable than *Palmer* is needed.
- Bruce Corliss – He feels that UNOLS should approach NSF/OPP as follows: Explain the UNOLS model and recommend that it be applied to the replacement vessel for *Palmer*. We could show them an SMR document.

It was recommended that UNOLS explore a cooperative relationship with OPP and OCE for polar facility coordination. Further, the Council recommended that OPP consider the UNOLS model for marine operations in the Antarctic and adopt the UNOLS model for planning, acquisition, operations, vessel operations, science research operations.

Vernon suggested that UNOLS prepare a white paper on this topic. He suggested the following individuals assist with the white paper: Robin, Peter, Jon Alberts, Vernon, and Clare. Mike Prince could be ex-officio. Vernon, Robin and Peter will draft a paper.

The Status of UNOLS On-Going Activities and Issues:

Marine Technician Recruitment and Retention Program – Jon Alberts provided a report on the status, goals, and plans of the UNOLS Technician Recruitment and Retention Pilot Project. His slides are included as *Appendix XVII*.

UNOLS has been funded to add one full time staff member to the UNOLS Office to conduct and manage a two-year pilot program. Focus will be on UNOLS technician recruitment and retention issues. Alice Doyle was hired and joined the UNOLS Staff in late February 2010. Alice will review all UNOLS institution's technical operations in order to better understand shipboard and shore side duties and operations, recognizing the cultural differences and unique nature of each operation.

During the pilot program, activities will include:

- Work to create a better UNOLS fleet-wide system for sharing of full-time technicians.
- Work to establish a data base of contract technicians not currently in the UNOLS fleet that could sail on cruises as needed
- Visit the UNOLS Institutions to discuss the implementation of the Technician Pool concept and to assist in establishing working relationships with the Technical Managers of the fleet.
- Work with the UNOLS office to establish an on-line database of all shared-use equipment
- In cooperation with the NSF Program Manager and the RVTEC Chair, investigate the development of a training program for technicians with a focus on increasing versatility and skill levels

Discussion:

- Morrison suggested that Alice also interact with non-ship operator institutions. They might have technicians who would be interested in participating in the pool.
- Jon explained that the plan is not to replace the existing technicians.
- At the end of two year pilot program, a white paper will be produced.
- Kenneth suggested a database that contains technical capabilities that are available.
- Clare – Have salaries been considered? Jon – This is one of the issues that is on the table.
- Kenneth suggested that Alice talk to HR groups.
- Jon – The crewing problem is important, it was just too much to deal with for two-year pilot program.

Post Cruise Assessment Report (PCAR) Subcommittee – Jon Alberts provided an update on the PCAR project and plans for 2010. His slides are included as *Appendix XVIII*.

PCAR Subcommittee members include Bob Collier/OSU (Chair), Joe Malbrough/LUMCON, Wilf Gardner/TAMU, and Dave Fisichella/WHOI. The subcommittee is reviewing a proposed new draft PCAR on-line form and will decide if the form should be modified. They will also consider if a different form for the Captain and Marine Technicians is needed. PCAR return rates from 2007 through 2009 will be reviewed. The goal will be to improve the timeliness and rate of returns of the PCARs. The committee will review recent PCARs that have been submitted for the Global ships.

Discussion:

- Clare – For the cruises that she participates in, Clare would prefer not to see the PCARs from the technicians and captain. Wilf – This topic came up during the PCAR phone meetings.

The captains often use the form as a rebuttal. If the forms are not distributed to the PI, Captain, and techs the opportunity for rebuttal would be lost.

- Annette relayed a question from Bob Collier (who could not attend the meeting). Bob asked if NSF reviews the PCARs that submitted by the Captains and marine technicians. Bob Houtman – All of the PCARs are read by NSF and they flag those that need attention. Perhaps the marine superintendents and technician supervisors should insist that their people complete the form.
- Rich Findley – As a technical supervisor, it is hard to be critical of the ship users when you need their business.
- Jon – Maybe a new form is needed for the technicians and captains.

Gender Climate at Sea – Kenneth Coale reported that he has explored on-line training videos that are offered by WorkPlace Solutions. WorkPlace Solutions offers courses on unlawful sexual harassment. Kenneth took a WorkPlace Solutions representative on a tour of the *Point Sur*. Kenneth recommends that the unlawful sexual harassment videos offered by WorkPlace Solutions be tailored for UNOLS use. The course could be voluntary for people participating on UNOLS cruises. The training is inexpensive.

Kenneth suggested that Liz Caporelli, Bruce Corliss, Vernon Asper, Jon Alberts, and Annette review the WorkPlace Solution videos and then have a tele-conference. Kenneth will send the group a link to the videos.

Rolling deck to Repository (R2R) Project – The R2R team provided a written report on the status of their pilot program to the Council. The full report is included as *Appendix XIX*. Jon Alberts read the report.

Comments:

- Bob Houtman – At the ISOM meeting, the international representatives were very interested in the R2R program.
- Annette – At the RVTEC meeting, R2R held three sessions that were very productive. The marine technicians and R2R team have formed a healthy partnership.

Ad Hoc Committee on Alternative Mechanisms for Funding Ships and Consortium for Ocean Leadership Committee – Vernon Asper reported that in response to dwindling demand/funding for research vessels an ad hoc committee was formed at the fall Council meeting to explore creative approaches to funding and applications for ship time. Vernon's slides are included as *Appendix XX*. Over the past months the Consortium for Ocean Leadership initiated a parallel effort to form a working group to “Develop Future Funding Models for New Ships.” The working group includes Vernon Asper, Nancy Rabalais, and Jon Alberts (ex-officio). Vernon suggested that the UNOLS ad hoc committee be disbanded and instead provide full support and endorsement to the Ocean Leadership effort.

Discussion:

- Nancy Rabalais – The Ocean Leadership task focuses only on new ships.
- There are a lot of things to consider: USCG letter of designation, Charter Party Agreements, etc.
- Bruce Corliss – In light of the ship scheduling statistics presented earlier in the meeting, we need to think about other sources of funding.

- Mike Prince – Marine superintendents could compile their successful experiences from outside work (German work, Saudi ship time, Neptune Canada, etc.)
- Nancy – Her sense is that Ocean Leadership was focusing on fleet replacement using alternate funding sources.
- Mike – The user group for new vessels should be expanded.
- Vernon – In light of this discussion, we will proceed with the UNOLS ad hoc committee with John Diebold as Chair.

UNOLS Outreach/Mentoring Initiatives – Annette DeSilva presented ideas for moving forward with a UNOLS mentoring program. There are a variety of options – workshops, using transit cruise for student opportunities, establishing mentoring relations between new PIs and experienced sea-going scientist. The UNOLS Office will work with the FIC to draft a proposal for a mentoring program.

Annette also reported on the status of the UNOLS website that announces cruise opportunities. Currently we have many volunteers looking for opportunities on UNOLS vessels. Most of the volunteers are students. Unfortunately, we have no cruise opportunities. Erin Jackson from the UNOLS Office has been working to match volunteers with cruises. It has been a lot of effort with minimal success.

Discussion:

- John Morrison – REU grants are eligible for ship time. It is the only place where you can get funding for undergraduates to sea.
- Dan Schwartz – The Chilean Embassy brings students on the US ships during port calls.
- Peter Wiebe – The GLOBEC program had an individual whose responsibility was to match volunteers with cruises. NOAA has a similar program. The cruises that Peter participates in need volunteers.
- Mike Prince – At the Crew and Technician workshop in early 2009, the need for technician training opportunities was suggested.

UNOLS Involvement at Future Science Meetings – Annette DeSilva opened a discussion on whether or not UNOLS should have an AGU session on the UNOLS Fleet.

- Bruce Corliss – He thinks that a special session on UNOLS is needed. It could introduce the new topics that are on our agenda such as greening the fleet. We could show historical trends and projections based on future technologies and initiatives.
- Peter Wiebe – A suggested session title could be “What kind of enhancement can be envisioned by a new fleet of the future?”
- Rob Pinkel – The ship demand statistics are alarming. A session that requests community input on why this happening would be useful.
- Robin Muench – In July, he will be on AGU’s executive committee and can inquire about future sessions.
- Nancy Rabalais – Another forum that could be considered is the ASLO meeting.
- Robin suggested a plenary session on the future of the fleet.
- Clare thinks this would be a great idea.
- Robin offered to explore this further with AGU. There is a lot of competition for sessions at the fall meeting.

Adjourn Day 1

Day-2: Wednesday, March 31st

Open Day-2 of the Meeting: Vernon Asper, UNOLS Chair, reconvened the meeting at 8:30 am.

Committee Activities and Issues requiring Council Attention:

Scientific Committee for Oceanographic Aircraft Research (SCOAR) - Dan Schwartz, SCOAR Chair, reported on the Committee's activities and plans. His slides are included as *Appendix XXI*.

In February 2010, the SCOAR hosted a Town Hall session at the Ocean Sciences Meeting in Portland, OR. The session was well attended. There was also a SCOAR poster during the "Ocean Technology and Infrastructure Needs for the next 20 Years" session.

The next SCOAR meeting will be in June at CIRPAS.

- Peter Wiebe – Are there any issues with use of the UAVs and air traffic control? Dan – This is an issue. The FAA will block off a certain areas of operation. More thought will be given to this area.

Ship Scheduling Committee (SSC) - Liz Caporelli (SSC Vice-Chair) reported that the SSC plans to start the 2011 fleet scheduling conference calls in June. The May panel decisions should be known by then.

Discussion:

- Peter Wiebe – Has the ship demand gone down? Jon – Proposal pressure is down. Liz – Requests for Global ship time is about half of what it has been in the past.
- Al Suchy – Do we know why? Robin – People know that the budget will drop with the Stimulus funds going away in 2011.
- Liz – In 2005, Program Managers discouraged proposals with ship time and now we are seeing the impact of this. Also, PIs are submitting requests for large multi-discipline cruises.
- Al Suchy – Scientists are very discouraged. They still think about the 2005 message not to submit ship requests.
- Peter – There may also be a problem with getting proposals awarded from other agencies. PIs are aware of federal budget constraints.
- John Morrison – The young scientists are discouraged. There is a lack of technical support for sea going cruises. Many of the technical support groups at institutions are gone or shrinking. Young scientists can't afford to train and find technicians.
- Bruce Corliss – We have both a long term problem and short term problem. For the short term, there is the August panel.
- Liz – In June, the schedulers begin reviewing draft schedules. The fleet is facing lay-ups and the earlier the operators know about the lay-up the better.
- Annette suggested that the Council makes a recommendation to NSF to make a community announcement that proposals for the August deadline can request ship time for 2011.

- Mike – It would be helpful if PIs could be allowed to resubmit proposals from the NSF February 2010 deadline for the August proposal deadline.
- Bruce suggested that NSF should include an article in their newsletter that times have changed and this isn't 2005. Ship time requests are encouraged.
- Liz – Ship time demand for all classes of vessels is down.
- Jon reported that Linda Goad sent an email indicating that for programs with no clearances, it would be possible for them to be proposed for the August deadline. However, NSF has allowed this for a few years for ships that were in dire straits, and it's not a long term solution. It won't help the Global ships much because funding decisions won't be known until 2011.
- John Morrison – The community is discouraged and it doesn't appear that NSF is getting that message.
- Jon – Bob Houtman said that the fleet has to be right sized.
- Annette – In addition to requesting NSF to allow 2011 ship time requests for their August deadline, a concise statement that can be sent to the UNOLS Members is needed to inform them about the opportunity. The UNOLS representatives should be encouraged to distribute the message to their colleagues.
- Robin Muench – NSF could probably use staff support. They have been staffed at the same levels for years.
- Al Suchy – Right sizing the fleet is so frustrating. It is very complicated and there are artificial drivers.
- Peter Wiebe – In 2005 there was 5000 days of ship time and 28 ships. We now have 22 ships and can't keep them filled.
- Kenneth Coale – We are faced with compelling environmental challenges. We need a major pro-active approach to encourage major science programs. Ocean Leadership should be approached with this issue. The ship time should be considered an opportunity.
- Wilf Gardner – We need to think about how ships will be used in the future. We need to think about how people will write proposals for OOI.
- Vernon – The younger community is growing up in a virtual world. Perhaps they feel that they don't need to go to sea.
- Kenneth – There are environmental problems that need to be studied. UNOLS can offer the facilities to solve these problems.
- Mike Prince – We should effectively utilize the facilities that we have. In right sizing the fleet, we need to look at the fleet composition and size. Are we using the facilities effectively?
- Wilf – Climate change is real. What is the oceanographic community doing about it?
- Nancy Rabalais – NSF has indicated that their ocean acidification initiative would have ship time. Society driven research is of interest now.
- A motion was passed to request NSF to formally accept proposals with 2011 ship time for their August proposal deadline. (Morrison/Corliss)
- Wilf – In turn, the Council should alert the UNOLS membership about this opportunity and encourage them to submit proposals for ship time in 2011.

Arctic Icebreaker Coordinating Committee (AICC) - Robin Muench (AICC Chair) provided a report on AICC activities. His slides along with a detailed written report are included in *Appendix XXII*.

The past year has marked an extremely active period for Arctic research and AICC. More than half of the membership, including the Chair, has been replaced. AICC efforts continue to focus on interactions among the Coast Guard, scientists using the icebreakers as research platforms, other government agencies, international activities, and Alaskan Native groups. For details and images, see the Appendix XXII.

Some of the issues that were addressed this year by AICC include the policy of not allowing pregnant women to participate in the *Healy* cruises. Another issue that recently came up was in regard to Foreign Nationals. Foreign Nationals will need a clearance to participate in cruises on the USCG icebreakers. The clearances are required at least 20 days in advance of the cruise. Additional information about this new requirement has been requested.

There was a Seattle Times article on plans for a ship yard refit for *Polar Star*. The refit is estimated to cost \$62M and after completion will allow the vessel to operate from 2013 to 2020.

DEep Submergence Science Committee (DESSC) – Annette DeSilva provided the DESSC report. Her slides are included as *Appendix XXIII*. The committee has a new chair, Peter Girguis. The major activity of the DESSC for the past year has been advising on the design of the upgraded *Alvin* vehicle (HOV). The next DESSC meeting is scheduled for mid May at WHOI.

At the winter DESSC meeting, the deep submergence community raised issues regarding the UNOLS fleet. They expressed concern over the aging Global vessels. The increasing numbers of system failures have resulted in cruise delays, interruptions, and cancellations. The DESSC recommended that there be a pool of spares with long lead fabrication times. The community also expressed concern over the limited number of accommodations on the new Ocean Class AGORs.

Research Vessel Operators Committee (RVOC) - Pete Zerr (RVOC Chair) provided the report. His slides are included as *Appendix XXIV*. There has been a focus on Appendix A and B of the Research Vessel Safety Standards. Appendix A addresses UNOLS Rope/Cable Safe Working Load Standards and Appendix B addresses UNOLS Load Handling System Design Standards. The 2010 Annual RVOC Meeting will be hosted by the University of Rhode Island.

Discussion:

- Annette – Will there be RVOC discussions on medical requirements.
- Dan Schwartz – At UW, the crew is required to have a physical every 18 months as well as entrance exams. They are now also requiring this for the techs. Dan questioned whether medical personnel should be added to cruises to remote areas.
- Mike Prince – There had been an RVOC ad hoc committee on the medical issues, is this still in place?
- Annette – The UK ships require a rigorous medical examination for the science party prior to sailing aboard their vessels. It would be interesting to learn about their statistics on medical incidents.
- Mike – We need to have qualified group look into the medical situation. Until recently there weren't many deaths during cruises.
- It was recommended that the RVOC ad hoc committee on medical issues be reformed.

Research Vessel Technical Enhancement Committee (RVTEC) - Rich Findley (RVTEC Chair) provided the report. His slides are contained in *Appendix XXV*. Rich provided highlights from the 2009 meeting that was hosted at the University of Washington. Details about the special technical sessions, tours, and topics are provided in his slides.

RVTEC's Education Subcommittee activities and plans were reported. There will be a series of 4 two day workshops on the Research Vessel Safety Standards Appendix A to be attended by managers, technicians, scientists and ship's officers and crew.

The 2010 RVTEC Meeting will be hosted by Bermuda Institute for Ocean Sciences.

Marcus Langseth Science Oversight Committee (MLSOC) – Jon Alberts reported on the MLSOC Workshop that was held on March 22-24 in Nevada. The goals and initial outcomes are summarized in Jon's slides which are included as *Appendix XXVI*.

In other committee news Graham Kent has been appointed as the MLSOC Acting Chair. Their next meeting is planned for summer 2010.

Large Facility Workshop – Jon reported that the UNOLS Office is assisting with the NSF Large Facility Workshop that will take place in San Diego in early May. Bruce Corliss will make a presentation on green technologies for the UNOLS Fleet.

Break

Other Business:

UNOLS Charter Review – Annette DeSilva reported that the UNOLS Charter states that a review be conducted every three years. Details are provided in *Appendix XXVII*.

Nancy Rabalais, Rob Pinkel, and Vernon volunteered to review the Charter and provide any suggested revisions to the Council. Re-adoption and/or revision of the Charter will require a membership vote at the Annual Meeting in the fall.

Nominating Committee – A nominating committee of Bruce Corliss (Chair), Wilf Gardner, and Peter Wiebe was formed to review the Council membership and positions opening. Details are included in *Appendix XXVIII*. A call for nominations will be announced. The nominating committee will draft a slate of candidates for Council consideration.

Annual Meeting Dates - The UNOLS Office will conduct a survey to select optimal dates. Keynote Speaker suggestions should be sent to the UNOLS office.

UNOLS Council Summer Phone/Web Meeting – The meeting was scheduled for June 9 and 10th.

A motion was made and passed to adjourn the meeting (Corliss/Zerr). The meeting adjourned at noon.