

DRAFT

**UNOLS Fleet Improvement Committee Meeting
Tuesday and Wednesday, January 28-29, 2003
National Science Foundation - Room 380
Arlington, VA**

These minutes can be downloaded as a pdf document by clicking: <[ficmi301.pdf](#)>

Meeting Minutes

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Monday, January 27, 2003

CAPE HENLOPEN Replacement Vessel Mock-up – A field trip to the mock-up facility in Delaware was arranged for Monday, 27 January. Matt Hawkins provided the tour. Mike Prince, Annette DeSilva, Steve Rabalais, and Woody Sutherland attended. Photos from the tour are available at the UNOLS Office.

Tuesday, January 28, 2003 - 8:30 am

Welcome and Introduction – Larry Atkinson, FIC Chair, opened the meeting at 0830. The agenda for the meeting is included as [Appendix I](#). Meeting participants introduced themselves. The attendance list is included as [Appendix II](#). Larry reviewed FIC activities since their September meeting. Activities have focused on fleet renewal and primarily the development of the SMR documents. Additionally phone debriefs by FIC members with Chief Scientists who have used KILO MOANA have been conducted. Both of these items will be discussed in detail during the meeting. Two new members have joined the FIC since September, Clare Reimers (OSU) and Ron Benner (U. So. Carolina). Larry/UNOLS viewgraphs are included as [Appendix III](#).

Agency Reports and Fleet Capitalization:

National Science Foundation (NSF) - Mike Reeve reported that NSF still has no budget for 2003 and that there is no new status on the budget since the September FIC meeting. NSF is operating at 85% of their FY2002 budget. It is forecast that in 2003 and 2004 the budget will be level funded. The FY04 budget has not yet been submitted. The agency still has intentions to pursue the Regional Class construction effort. However, there is no definitive news on capitalization plans for fleet renewal. The NSF director and the National Science Board (NSB) have not yet approved the process for funding mid-size infrastructure from program budgets. The process is being reviewed and NSF is discussing the funding level distinction between Major Research Equipment (MRE) and mid-size infrastructure. The ARR V MRE item has not yet been submitted to the NSB. The MRE item for the ARR V will be part of the next review planned for summer 2003, which will determine whether or not it is to be forwarded to the NSB.

Office of Naval Research (ONR) – John Freitag (ONR) reported that the Navy has an FY03 budget.

The Senate Committee on Armed Services and House Committee on Armed Services directed the Secretary of the Navy to provide a report detailing specific requirements and outlining a specific plan for UNOLS fleet renewal. The draft report has been drafted and originated in ONR. It has passed through review and approval by the CNR. It cannot be made public until approved by the Secretary of the Navy. The report is currently being passed through the Navy chain of command. John assured the Committee that the draft report is largely based on the FOFC fleet renewal plan. Cost figures and hull form possibilities were taken from the Navy's Common Hull Study and the overall parameters of planned vessels were taken mostly from the UNOLS SMRs. Based on realities, the CNR has chose to show the earliest funding for an Ocean Class vessel in FY 06 (accelerated plan). The funding will likely be Ship Construction Navy (SCN) money and the recommendation, stated in a generic way, is for streamlined contracting and construction. The Navy report estimates the cost for the Ocean Class at \$60-80M and \$28-37M for the Regional Class, The lower figure represents the monohull cost and the higher figure the SWATH.

Capt. Houtman added that Admiral Cohen submitted an FY04 request for funding of the Ocean Class. It did not make it into the budget because of other internal Navy competing requests. It is highly likely that the Ocean Class request will be resubmitted for program consideration for the FY05 budget. At this time there is no identifiable funds for ship construction in Navy budgets. Because the near term prospects for moving forward with the Regional Class through NSF seem more likely, the Navy's Common Hull Study will be expanded to examine Regional Class hull forms, regulatory implications, and acquisition strategies.

Capt Houtman emphasized the importance of the fact that the report from the Secretary of the Navy will be in concert with the Fleet Renewal Plan. It will be important to keep in mind that their report and the Fleet Plan constitute a template for Congress to support if they wish to fund academic fleet renewal.

Capt. Houtman was asked what FIC's role should be. He indicated that finishing the SMR process was the foundation for the rest of the process. He would also like FIC and UNOLS to participate in and work with JJMA in completing the Phase II tasks of the common hull study. ONR would like this phase to be more interactive with FIC and result in prioritization of the SMRs.

It was recommended that FIC working with the University of Hawaii provide documented feedback to the Navy on the KILO MOANA streamline acquisition process. The Navy would be interested in specific recommendations for improvements and changes.

United States Coast Guard (USCG) – Jon Berkson (USCG) provided the agency report. This year there is approximately 40 miles of sea ice in Antarctica to open instead of the usual 15 miles. The Coast Guard needed to send HEALY to the Antarctic to help in the icebreaking operations. The ship is expected to return to Seattle in time for this summer's Arctic science missions.

The Service Life Extension Board report for the POLAR Class Icebreakers has just been received. The report will be reviewed and will form the basis for deciding on the future of these vessels. The most expensive upgrade option is approximately \$230 million for both vessels and would include re-powering and replacing shafts and propellers.

On March 1st the Coast Guard will transfer to the Department of Homeland Security. The Coast Guard will move intact and non-homeland security missions will be retained.

National Oceanic and Atmospheric Administration (NOAA) – Jim Meehan (NOAA National Marine Fisheries Service) reported that NOAA has received 50% of the funding for construction of their second Fisheries Research Vessel (FRV) and hopes to get the second half in FY03. Until then, the construction of the second vessel is on hold. The Navy T-AGS 51 vessel, LITTLEHALES, will be transferred to NOAA as a survey vessel. The vessel has been used by the Navy as a survey vessel, and as a result, there will be little need for modifications. This will be a much more economical and effective use of this vessel than trying to convert it to an Ocean Class research vessel.

Studies Related to Fleet Renewal:

Navy's Scalable, Common Hull Study – Dan Roland (JJMA, Inc) reported on the findings of the Navy's Common Hull Study. His viewgraphs are included as [Appendix IV](#).

The purpose of the study is to determine if there would be cost savings by developing a common hull for the Navy's T-AGS vessel and the Academic AGORS. Six different hull forms were developed and sized to meet T-AGS and AGOR mission requirements.

The study revealed that there is minor commonality between T-AGS and AGORS primarily in mission handling systems and hull mounted sensors. There are significant differences in capabilities in the areas of:

- Speed - maximum, sustained, and survey
- Number of accommodations
- Working deck/lab areas (T-AGS is 2:1 over Ocean Class)
- Habitability requirements (T-AGS are required to meet MSC standards)
- Moon pool (T-AGS)
- Helicopter landing capability – T-AGS(X)
- Mission electronics and communications systems

The study results concluded:

- Resulting platforms are significantly different in size (T-AGS 50% longer and 150% larger displacement).
- A common platform would result in ships not optimized for particular operations.
- A common hull would burden the Ocean Class AGOR with a much larger and more expensive than necessary ship.
- If based on scalable hull, resulting platforms would be poorly optimized for their particular operating profiles and day rates would suffer.
- A common hull is not feasible.

The study provided a cost estimate summary (lead ship in FY04 dollars):

- Ocean Class Program Cost (2400 tons, 220 ft)
 - \$63M to \$67M for mono-hull
 - \$70M to \$80M for SWATH
- Regional Class (1000 ton, 168 ft)
 - 28M to 30M for mono-hull
 - 33 to 37M for SWATH

Jim Snyder commented that NAVSEA did a study on the savings of multiple ship contracts. There is an estimated 83% savings on a second ship and 87% savings on a third ship based on an assumed 95% learning curve. Pete Kilroy believes that the best way to save money would be to put all ship acquisition (Regional and Ocean) in one contract with options to build the follow on ships. How much this would save is open to debate and could be severely affected by the time period between subsequent ships. If two to three years elapse between the first and future ships, then the learning curve percentage and the savings would be less.

The Scalable Hull Study was expanded to evaluate the conversion of T-AGS 51 as an OCEAN Class vessel. The T-AGS 51 design fell significantly short of meeting Ocean Class mission requirements.

- T-AGS 51 was designed as a coastal survey ship.

- It has no dynamic positioning capability.
- T-AGS 51 has a single screw, geared diesel, and no bow thruster.
- Accommodations for only 18 scientists (vice 25 required by the Ocean Class).
- The day rate expected to be slightly higher (3-4%) than new OCEAN Class.
- The T-AGS 51 Chine hull form is designed for slower speed.
- Working deck area 300 sq-ft vice 1,500 required by the Ocean Class SMRs.
- The working deck is not designed to ruggedness or load requirements of the Ocean Class working deck; no bolt grid.
- The T-AGS 51 has no space for vans.
- Lab area 700 sq-ft vice 2,000 required by the Ocean Class.
- Handling Systems are inadequate.
- There is no suitable over-side or over-stern handling equipment presently installed on T-AGS 51.
- Need to install aft A-frame and side hydroboom (including underdeck strengthening).
- No suitable winches currently installed on T-AGS 51.

In summary, extensive modification of T-AGS 51 would be required to meet even the basic Ocean Class SMRs (DPS, science accommodations, and day rate). Major T-AGS 51 modifications would include:

- New stern aft of mid-ship with new propulsion plant.
- New 20-foot long hull section.
- Add bow thruster.
- Expansion of accommodations and storage areas.
- Converted ship does meet stability requirements.

Dan showed the T-AGS 51 seakeeping performance charts. At Sea State 5 the ship would start to greatly exceed motion limits.

It is not economically feasible to turn a T-AGS 51 into an OCEAN Class; any economically feasible conversion would result in sharply reduced capabilities vs. OCEAN Class SMRs. The expected life of a T-AGS 51 converted ship is approximately 20 years vice 30 years for a new ship.

Dan continued by reporting on the work that has been done in relation to the Regional Class monohull and SWATH designs. The Regional Class monohull design used in the JJMA study is based on the NEW HORIZON design. A NOAA coastal SWATH design was used as the template. These designs were used to examining how well Regional Class SMRs could be met and what the costs would be. Dan provided drawings of sample design layouts. These are included in [Appendix IV](#).

Next Dan briefly described the Phase II tasking for the Common Hull Study. Phase II will include an acquisition strategy analysis. They will develop a selection of acquisition strategies that could be used for procurement of the REGIONAL Class research vessels.

They will also try to identify approaches that have the potential for reducing cost and/or accelerating the schedule.

Other elements of Phase II include:

- Refine the Regional Class concept designs to come within the 25M cost cap.
- Effects of tonnage on regulatory requirements and life cycle cost
- Technologies to optimize reliability, manning, and life cycle cost
- Ship specification and other documentation to support acquisition
- Includes NSF requirements to develop the documentation for the Concept Design RFP.

In Phase II, JJMA would develop the information necessary for NSF to draft a call for Concept Design proposals and strategies on how to proceed. There will need to be some level of prioritization of the SMRs as part of the Phase II study. The study is the key to moving forward with both the NSF and ONR acquisition process. JJMA will try to estimate cost savings resulting from multiple ship contracts for a class with realistic time spacing. They will further evaluate hull form choices and common hull issues. The Phase II study has a four-month timeline once started.

Morning Break

Bay Marine Inc. Study - Bay Marine Inc. was contacted by UNOLS to do a study of the relative cost comparison between a Regional research vessel similar to the CHRV, but one that is larger than the CHRV and thus exceeds the key regulatory thresholds of 500GT(ITC) and 300GT(US). This vessel would meet the regional requirements of the FOFC report and the Regional Class SMRs. The study was funded by ONR. Bay Marine, Inc. is the Naval architect contracted by the University of Delaware for the design of the CAPE HENLOPEN Replacement Vessel (CHRV). Because the CHRV has been designed to fall just under the 500 gross ton international tonnage limit and just under the 300 GRT domestic regulatory tonnage this vessels represents a very good benchmark for a new vessel that will not be subject to many International Maritime Organization (IMO) regulations and will not be U.S. Coast Guard inspected.

The international tonnage regulations do not include any significant exemptions that would allow a vessel with any greater internal volume to be designed that would fall under the 500-ton limit. This means that any vessel larger than the CHRV would be over this limit and would be subject to IMO regulations such as STCW, ISM, etc. A larger vessel could be designed that could be kept under 300 GT domestic and remain un-inspected but this would be more difficult as the vessel became larger.

During the course of developing SMRs for the Regional Class vessel it became apparent that it would be useful to have a better understanding of the initial cost and life cycle costs resulting from crossing these regulatory boundaries. Mike Prince and Matt Hawkins presented the findings of the Bay Marine Study. The full study is contained in [Appendix V](#).

The study was limited to comparing the CHRV with a vessel that met the SMR and was approximately 160 ft LOA. The report made the assumption that since the CHRV was choosing to meet most of the requirements of an inspected vessel with the exception of manning and that IMO and ABS requirements would supercede the Subchapter U requirements that a vessel that was designed to be over 500 GT international would also be over 300 GRT domestic and would be inspected. The study did not consider an un-inspected vessel over 500 GT.

Some of the principal characteristics of Bay Marine's Regional vessel design include:

- Length Overall = 160 ft
- Beam (Max) = 37 ft
- Depth = 16 ft
- Draft (Full) = 11'-0"
- Displacement (Full) = 720 LT
- Power 2 x 750 KW Schottel SRP 550M Z drives
- Max Full load service speed = 13.25 knots
- Crew = 14
- Science Party = 18
- Science Party (expanded) = 26 (convertible lounge, berthing van)
- Working Deck area (aft of portable vans) = 1036 sf
- Labs (Total) = 1040 sf

The study concluded that the life cycle cost increase would be more significant than the initial construction costs, primarily due to the required increase in manning. The CHRV comes in at an estimated initial construction/program cost of \$11.5 million. The 160-ft Federal Regional Vessel comes in at an estimated cost of \$16.3 million (this translates to \$25M when program costs are added). Both of these figures are estimates only and much of the estimate comes from empirical data in Bay Maine files. The day rate for the CHRV is estimated at \$7461, whereas the Regional Ship is \$12,402.

Initial construction/program cost for the Regional ship would be increased mostly due to the increased size and associated increase in power requirements. Initial cost would also be increased by approximately \$200k because of the requirement to have double bottom tanks instead of wing tanks. This increase may not be a real difference since double bottom tanks may be desired anyway in order to achieve the endurance and range requirements. Many existing un-inspected research vessels, such as the Cape Class, have double bottom tanks. Other increases in initial cost that are directly related to crossing the regulatory boundaries have to do with inspection and documentation requirements.

The total estimated increase in initial construction/program costs is approximately \$5 million and of that it appears that 10 to 15% are due to crossing regulatory boundaries and the remainder is due to the added size of the vessel.

There was some discussion and debate about the assumptions and estimates of the costs related to manning, maintenance and construction. Overall the estimated costs appear in line with other estimates and current operating cost models. In any event, the framework

provided by this report could be further refined to evaluate the cost impacts of design decisions.

One interesting observation was that if you designed a vessel that was only slightly larger than the CHRV, which resulted in an increased manning requirement due to subchapter U (inspected vessel) status, you would reduce the science capability while increasing the costs. This happens because of the requirements for additional crew, the requirements for single person staterooms and the requirement for a hospital, which all reduce the amount of space left over for science staterooms, lab space and working deck. To make up for that loss, it appears that if you cross the line, you need to make a significant increase in size in order to meet the SMR. On the other hand, many of the “requirements” associated with becoming an inspected vessel are consistent with some of the goals stated in the SMR, such as providing single person staterooms for crew and technicians, increasing habitability, etc. Further evaluation of these impacts should take place during Phase II of the Navy’s Scalable Hull Study.

RFP for Regional Class Conceptual Design – Jim Yoder reported that NSF had hoped to announce the Request for Proposals (RFP) early in 2003; however, they decided that they needed additional information and a well-defined process before proceeding. They plan to have the RFP this fiscal year and they are still envisioning multiple concept design efforts.

To obtain the additional information needed for the RFP, NSF is supporting the JJMA Phase II effort. The Phase II results will assist in deciding on an acquisition strategy and developing the criteria and boundaries that would be used in drafting the call for concept design proposals. Phase II has a short timeline of four months.

There was discussion on some of issues that we would like to see addressed in the Phase II effort:

- Estimate the amount of times annually that Regional ships of various sizes and configurations would be able to operate in their respective geographic areas.
- Estimating the cost savings by building as a class – with construction every two years.
- The impact of a class design on regional operation differences
- Is \$25M the per ship cost or \$100m for class
- The pros and cons of various acquisition strategy

The near-term focus for FIC and UNOLS should be on finalizing the SMRs. We need to provide input to JJMA’s study regarding prioritization of the SMRs and developing the recommendations for an acquisition strategy.

Finalize Science Mission Requirements (SMRs) – The latest draft of the SMRs, as well as the community comments that have been received and were provided to the FIC and the steering committees in advance of the meeting. Mike introduced the subject and distributed draft hardcopies of both the Ocean and Regional Class SMRs. He remarked that we seem to have received as much community input as can be expected and their

comments have been integrated as appropriate. An editorial review of both documents is needed. We would like to forward the documents to the Council for consideration at their March meeting.

Mike suggested that a preface be added that explains what the SMRs are and how they should be used. Larry offered to draft the preface.

The question was asked if there were any outstanding issues raised by the community. Mike replied that there was some concern that the towing requirements are identical for the two different class SMRs. There were also concerns raised regarding specific regional needs that cannot be met by a class design.

Mike reviewed the organization of the SMR documents:

- Mission statement and overall characteristics
- SMR – overview
- SMR – detail
- Appendix I – mission scenarios
- Appendix II – SMR summary table
- Appendix III – SMR process and participants

It was suggested that reference documents be included:

- Wind/sea state tables
- Motion standards

The SMRs should be designed as a living document. It will be titled as “Version 1.” Past SMRs have been used as templates. The preface should indicate that the SMRs should be used as guidelines throughout the entire design process.

Lunch Break

Finalize SMRs (continued):

The FIC discussed some specific issues regarding the SMRs:

- Chris Measures commented that a brief statement on trace metal clean sampling should be added on page 9.
- Cover colors were decided: blue for the Ocean Class and green for the Regional Class.
- The Regional Class SMR document needs additional mission scenarios.
- There was discussion on whether or not the Regional vessels should be a class design. This issue will be further addressed by the Phase II study.
- Clare Reimers remarked that the 1000 sq ft for lab space on the Regional ship seems to be small. Space is always an issue. If you are leaning toward the upper end of the ship size, the lab space should be increased accordingly. There was considerable discussion on the lab space needs.
- There was discussion on SMR prioritization. A cost benefit analysis should be factored in. The issue of prioritizing too early was noted. The purpose of

multiple conceptual designs is to find creative ways to meet the desired parameters.

In summary, the following items will be accomplished to move forward with SMR approval:

- Larry will draft a preface to the SMR documents.
- Office, with help from reviewers, will finish correcting typos, errors and grammar.
- Fix table of participants for Ocean Class to include Dave Hebert.
- Add Mission scenarios to Regional Class to achieve more balance. Also include a statement in both SMR about these being examples and that they should be developed more thoroughly in concept designs.
- Add appendices for sea/wind state and for motion standards.
- Add e.g. concerning specialized winches (e.g., clean sampling, pumping, multi-conductor)
- Expand the table of contents to include all SMR elements and make the table of contents dynamic in pdf, Word and online versions.
- FIC Review and edits of existing documents should be sent to the office by Feb. 10.
- Circulate revision to FIC and steering committees by Feb. 17th for approval.
- Objections should be filed by Feb. 24th.
- Circulate to Council on Feb. 24th for review.
- Council will be asked to approve SMR as version one (showing date of approval) at the March Council meeting.

Break

Fleet Renewal Implementation – Other Items:

Conceptual Design Studies – Dan Rolland (JJMA) reported that before proceeding to the Conceptual Design phase, the agencies and UNOLS need additional information. In response, JJMA has been tasked with the Phase II effort. Dan reviewed the task statement. The detailed task descriptions are contained in [Appendix VI](#).

The purpose of this task is to further develop the REGIONAL Class AGOR program by:

- 1) Refining the Phase I REGIONAL Class rough-order-of-magnitude (ROM) designs below a \$25M cost cap and feeding the results back into the requirements development process.
- 2) Analyzing and providing recommendations on acquisition strategies.
- 3) Interfacing regularly with representatives of UNOLS, NSF, and ONR to ensure all concerned parties are fully informed and have every opportunity to provide input during the process.
- 4) Investigating the impacts of vessel tonnage on regulatory requirements and life cycle cost.

- 5) Investigating and recommending technologies to improve reliability, reduce manning, and reduce life cycle cost.
- 6) Developing design criteria and requirements to form basis for the beginning of the acquisition.

There was discussion by FIC on what the final product of PHASE II will be. Dan explained that the documentation from Phase II would depend on the acquisition strategy selected. It seemed that some of the tasking for Phase II overlaps with what in the past was included as part of the Conceptual Design process.

There was FIC concern that feedback from the community is missing from the effort. Strategies that will optimize community feedback are needed. There was discussion on how FIC/UNOLS could provide input to and from Dan. It was agreed that a working group be established to interact with JJMA. The group would include FIC, the UNOLS Office, and the SMR steering committees. A group e-mail list could be established. It is expected that prioritization of the SMRs will be necessary at some level during the Phase II study.

Operator Selection Process, Ship Construction Management and Timelines for the Ocean and Regional Class Vessels – Operator selection, construction management and review of the timelines were on the agenda for discussion. The agencies felt that for the most part it was premature to make any decisions or recommendations regarding these issues. From their perspective much of this is dependent on funding mechanisms and acquisition strategy. This is why the recommendations and information developed in Phase II of the Scalable Hull study are needed before addressing these other issues. Consideration of these issues should be included as part of developing the acquisition strategies. FIC/UNOLS can make their recommendations to this process.

The UNOLS Office developed timelines for the Regional and Ocean Class design process in September. These charts are contained in [Appendix III](#).

Steering Committee – FIC reviewed the membership of the SMR Steering Committees. Although the SMR effort is coming to the end, it is clear that the steering committees are still needed to interface with JJMA and the agencies during the Phase II effort. The FIC would like to maintain a balance of science, marine technicians and ship operators on the committees. The following suggestions were made:

- Add Matt Hawkins to the Regional Steering Committee (he brings experience of ship design and construction)
- Rich Muller could fill the technician and ship operator roles on the Regional Class Committee.
- Add Marc Willis to the Ocean Class Committee to represent marine technicians.

Ocean Observatory Facility Requirements – Larry Atkinson reported that a UNOLS working group has been formed to address the ship and submergence facility needs for ocean observatories. There are a variety of major ocean observatory development efforts

underway on global, regional and local scales. Some of these observatories have already been established and are operational. The Ocean Studies Board has established a committee to study “Implementation of a Seafloor Observatory Network for Oceanographic Research.” Bob Detrick (WHOI) is chair of this committee. Their study will develop an implementation plan to establish a network of seafloor-based observatories to support multidisciplinary research. The committee has been tasked to provide advice on the design, construction, management, operation, and maintenance of the network, including the need for scientific oversight and planning, appropriately phased implementation, data management, and education and outreach activities of the observatories. Additionally, they have been asked to examine the impacts on the UNOLS fleet and current submersible and ROV/AUV assets in the research community. Bob Detrick, in turn, has asked UNOLS for input regarding observatory facility needs and the impact these needs will have on the UNOLS fleet. In response, the UNOLS Council recommended the formation of a working group with individuals familiar with the establishment and operation of ocean observatories.

Annette distributed the task statement and Working Group membership list. Both are available on the web at: <http://www.unols.org/fic/observatory/work_group.html>. Alan Chave (WHOI) chairs the working group. The task statement includes the following:

- Identify major observatory-related ship and submergence needs and describe the process that will be used to address these issues. Provide this as input to the OSB Observatory Committee.
- Identify the requirements for facility support of ocean observatory systems. This should include requirements for both ships and submergence vehicles.
- What requirements can be met with currently available academic assets (vessels and submergence vehicles), and what modifications or augmentation may be suggested including efficiencies that may be gained through contracts to industry?
- What are the anticipated changes in demand for facilities resulting from observatory initiatives?
- Identify the specific observatory needs that cannot be met by currently available academic facilities.
- When are the facilities needed for installation, operation, and maintenance of the observatories? Establish a timeline.
- Provide suggestions for the management, scheduling and operations of facilities related to observatory infrastructure.

The goal is to complete the tasking in 6 months. The working group plans to meet in February.

FOFC Long Range Fleet Plan – Larry raised the question on whether there are plans to update the FOFC long-range fleet plan to reflect changing timelines and new facility needs that are predicted from the Ocean observatory initiatives and other major National Programs. As an example, the North American Carbon Program (NACP) has plans for extensive fieldwork. This work may use ships of opportunity, but increased demands on UNOLS vessels are also expected.

The agencies intend to update the FOFC plan every two years. Dolly reminded FIC that the plan is supposed to be a federal plan and address more than just the academic vessels. They need to look at how the facilities fit together. The FOFC working group met last week and decided to each go back to their own agencies and seek additional information.

FIC Membership – In October 2003 Larry’s final term as FIC chair ends. Annette explained that the Chair position would need to be advertised. The FIC was asked to consider possible candidates.

Additionally, in 2003 there will be two vacancies on the FIC, both are for Non-operator Institution representatives. One of these vacancies is currently open. The other vacancy will open in the fall when Larry completes his term as Chair. The Committee membership information is contained in [Appendix III](#).

Candidates for the open position were suggested. It was agreed that Greg Mountain with an MG&G background and Karen Von Damm (Geochem, UNH) should be contacted to determine their willingness to serve.

Joe Coburn will be retiring from WHOI this year. He is the RVOC ex-officio member to FIC. Joe has expressed an interest in staying on FIC. RVOC will be contacted to appoint the ex-officio a representative to FIC. If Joe were to stay on FIC, he would need support to attend both the FIC and RVOC meetings.

RVTEC has also expressed an interest to have an ex-officio member to FIC. Dale will send a memo to the Council requesting this.

CAPE HENLOPEN Replacement Vessel (CHRV) – Matt Hawkins provided a report on the CAPE HENLOPEN Replacement Vessel design effort and plans for construction. His viewgraphs are included in [Appendix VII](#).

FIC review of the CHRV design is in progress. Comments are needed before the bid package goes out. The target date for completion of the bid package is March 31st. The final design phase with science review is to follow the yard selection and be complete in late 2003. They hope to begin cutting steel in mid-2004 (Perhaps early 2004). Delivery/Sea Trials are scheduled for 2005.

Projects currently underway include:

- Design details, structure, and systems being completed.
- Motion compensated CTD handling crane and traction winch proposed (Dynacon design).
- NCE: Underwater noise prediction model nearly complete (based on arrangement and machinery lists). FEA of engine room deck in progress.
- Shipyard “Pre-qualification” process started.
- Basic model testing program complete.

Matt reviewed the model-testing program. Tank Tests were completed in early November at Vienna Model Basin (SVA). Improvements made include the addition of a bulbous bow and a stern extension for improved flow from the Z-drives. Propeller cavitation tests with SVA and Schottel are scheduled for late February. The dynamic ship's motion analysis will be conducted by OCEANIC Consulting.

Matt concluded by remarking that FIC design input is needed by the end of February.

Adjourn Day 1

Day 2: Wednesday, January 29, 2003

KILO MOANA Debriefs – Annette DeSilva reported that four KILO MOANA cruise debrief interviews conducted. The debriefs are intended to evaluate the use of a SWATH vessel for oceanographic research and aid in any decision process of constructing future SWATH vessels and improvements to this platform. The debrief questionnaire is contained in [Appendix III](#).

The debrief responses were distributed to the FIC members. Larry Atkinson conducted the first debrief with Doug Capone. Chris Measures conducted the other three debriefs (The Chief Scientists for these cruises were from the University of Hawaii). Chris Measures commented that the questionnaire was very useful during the debriefs. He continued by reviewing the comments that he had received:

- The ship's labs are very spacey with a lot of storage area (not weight).
- It is not possible to walk the length of the ship without going from deck to deck. This was a tradeoff that was decided early in the process, as it was not possible to penetrate the bulkheads.
- Multibeam system is working well.
- The biggest problem on KILO MOANA is the CTD operations. These problems are being addressing by building a moonpool for CTD deployment. As a general lesson deployment of the CTD should not be off the ship's aft end as there is excessive vertical motion. Future SWATH designs should consider installation of moon pools. The KILO MOANA moon pool is about 8 ft square. There will need to be a constraining devise so that the CTD doesn't hit the poolsides. Dan Rolland provided a sketch of the moonpool arrangement.
- There is learning curve associated with conducting science operations from a SWATH. Strategies for various procedures are being developed to accommodate the SWATH features. There needs to be a method for communicating these strategies to the SWATH users. Procedures are different from operations off monohulls. It was recommended that the University of Hawaii marine technicians develop a handbook.
- The steep gangplank due the ship's high freeboard is a problem. This hasn't been adequately addressed. Loading and off-loading gear from the ship can be difficult.

- There is noise problem in the aft cabin, however, noise measurements have been taken and they are within the specified standard. It has been commented that there could be noise insulation in the aft cabin.
- The ADCP does not function. This is a SonTek unit. They plan to try it one last time and if it still doesn't work, they will switch to a RDI ADCP unit.

There was discussion on analyzing the motion of KILO MOANA and comparing it with a monohull. This had recommended during the September meeting as well. Annette read the statement from the September meeting minutes:

“Recommend that NSF and ONR support a proposal by WHOI, SIO, and UHawaii to evaluate the ship motion for monohull and swaths. SS vs. motion of ship and its impact on science operations should be evaluated. Wave slaps on hull should also be analyzed. The type of sea needs to be recorded.”

Joe Coburn stated that he would initiate this effort. Pete Kilroy offered to contact Carderock for cost information.

The FIC discussed ways to inform the community about the SWATH capabilities. In 2003 KILO MOANA is scheduled to go to the North Pacific and Bering Sea. It is likely that the ship will experience high Sea States. Also, mooring deployment and recovery operations are planned. The FIC recommended that a short article be drafted now for EOS. Larry offered to prepare the first draft. Its tone will be fairly positive, but indicate that additional information is needed. After a full year of operations and work in higher sea states, the FIC will prepare a more in-depth assessment.

The KILO MOANA schedule was reviewed and each cruise was assigned a FIC member for the science debrief. The ship is in the shipyard now and will resume operations in late March.

The following 2003 assignments were made:

<u>Dates - Debrief Assignment</u>	
26 - 31 Mar	Measures
1 - 3 Apr	Slowey
17 Apr-22 May	Whitledge
23 May-17 Jun	Hebert
18 Jun - 5 Aug	Measures
6 Aug - 8 Sep	Reimers
9 - 29 Sep	Whitledge
11 - 19 Oct	Measures
22 - 28 Oct	Measures
30 Oct-19 Nov	Prince
21 - 26 Nov	Measures
28 Nov-4 Dec	Measures
6 - 11 Dec	Slowey
13-17 Dec	Benner
18 - 23 Dec	Measures

Break

Fleet Renewal – Design and Construction Efforts in Progress:

Alaska Regional Research Vessel (ARRV) – Terry Whitledge could not attend the FIC meeting, but he provided a written status of the ARRV design effort. Terry’s report is contained in [Appendix VIII](#).

The ARRV is entering into the last part of the preliminary design phase. The ARRV design committee and consultants will hold a final meeting for the preliminary design in Seattle on 4-5 February 2003 at Glostén Associates. The primary tasks will be to discuss the radiated noise test results and open water model test and make final decisions on the hull design, propulsion and other key elements in the preliminary design. The final report for the preliminary design is expected by March 2003. The report will be available very shortly thereafter on the new ARRV web site or by CD.

CAPE HATTERAS Mid-Life – Bruce Corliss provided the UNOLS Office with information about the CAPE HATTERAS Mid-Life status prior to the FIC meeting. His material is included in [Appendix IX](#). The Mid-life started in October 2002 and is expected to be complete by June 1, 2003. Major improvements include:

- Renovation of main lab, wet lab, galley, mess, all cabins.
- Relocation of deck crane from main deck to 01 deck
- Creation of one 2-man stateroom
- Replacement of HVAC, water piping

The budget for the project is \$1,200,000. Full details are included in the Appendix.

Ewing Mid-Life Refit Plans - Annette DeSilva reported that LDEO has been planning for the EWING Mid-life refit, which would include upgrade of the ship’s seismic capability. As part of this effort, they held a workshop in October. In preparation for the workshop, a series of “Technical Option” papers were prepared. The Technical Options papers can be found at the EWING homepage:

<http://www.ldeo.columbia.edu/Ewing/Home.html> under “Midlife Refit Workshop”.

These papers address:

- Dynamic Positioning
- Multibeam/sidescan/acoustic capabilities
- Lab layout/vans/science berths/storage
- Airgun array
- Multiple streamers
- New design for 2-D system
- Computer/infrastructure
- Deck layout/winches/cranes/coring and over-the-side handling
- Estimates of magnitude of future needs for 2-D, 3-D and Hi-Res Seismic Reflections
- Contracting Commercial 3-D
- Replacement Vessel
- Technical Support Services

Dave Hebert attended the workshop on behalf of FIC. He reported that the attendees considered three options for obtaining an improved seismic capability:

- Refit Ewing.
- Purchase a new ship.
- Lease a ship for multi-channel seismic work.

It was generally agreed that the ship should have a general oceanographic capability. The economic implications of each of these options will be considered. Dave remarked that the Technical Options paper is a good resource and encouraged the committee to look it over.

Mike Purdy has drafted a letter to the FIC and it is contained in [Appendix X](#).

PELICAN Mid-life – Steve Rabalais reported PELICAN is undergoing a mid-life refit. Major support for the effort is being provided by the state of Louisiana. The mid-life effort includes replacement of all piping and electrical improvements. As the work progressed, it was recognized that the improvements needed were more extensive than originally planned. All of the wiring required replacement. Additional funds in the amount of \$300K for the added electrical work was requested and granted from the state. The ships cabinetry is being replaced. The total cost for the mid-life is \$1.8M. All work is being done to spec and USCG regulations. During the mid-life the ship will be extended 10 feet and the height of the A-frame will be increased. The dry lab size will increase by 200 sq ft. Two new science berths are being added bringing the total science accommodations to 15 berths. A new Dynacon winch is being purchased that will have interchangeable drums and carry 0.5-inch, 0.322 and 0.680 wires.

FIC September Meeting Minutes – The FIC will review the September meeting minutes after the meeting.

Action Item Summary:

◆ Finalize Science Mission Requirements - Action items:

- Correct table of participants - Office
- Add appendices: - Office
 - Wind and sea state tables
 - Motion criteria
- Add the preface – Larry Atkinson
- Add a statement to the Regional Class document that the mission scenarios do not provide a broad disciplinary representation. More are needed (observatory servicing, water sampling, other disciplines, meteorology work) - Office
- Add e.g. concerning specialized winches (e.g., clean sampling, pumping, multi-conductor) - Office
- Expanded table of contents to include all SMR elements and make the table of contents dynamic in pdf, Word and online versions. - Office
- Correct typos, grammar, etc. - All
- FIC Review and edits of existing documents should be sent to the office by 10 Feb.

- Circulate revision by Feb. 17th for approval
- Objections filed by Feb. 24th.
- Circulate to Council on Feb. 24th for review.
- Council will be asked to approve SMR as version one (showing date of approval) at the March Council meeting.

◆ **Follow-on Regional and Ocean Class Design Effort:**

- A working group made up of the FIC, SMR steering Committees and UNOLS Office will work with Dan Rolland (JJMA) to provide input into his Phase II effort.
- Steering Committee Additions:
 - Regional Class – Add Matt Hawkins
 - Ocean Class Marine Tech rep – Contact Marc Willis

◆ **KILO MOANA:**

- Evaluate the process used for design, acquisition, and construction. Identify what the pros and cons of this streamline process. – Input from Chris Measures and U.Hawaii needed.
- Ship Motion Proposal - Carried over from the last meeting. Joe Coburn has taken the lead on this and has drafted a proposal – SIO and U.Hawaii input needed. *“Recommend that NSF and ONR support a proposal by WHOI, SIO, and U.Hawaii to evaluate the ship motion for monohull and swaths. SS vs. motion of ship and its impact on science operations should be evaluated. Wave slaps on hull should also be analyzed. The type of sea needs to be recorded.”*
- EOS article: Draft an article now recapping the KILO MOANA post cruise assessments and debriefs. Draft a more detailed article in the fall after additional, more diverse operations are experienced. Larry will prepare a draft of the first article.
- KILO MOANA Debriefs – Conduct debriefs as listed below. Annette will send reminders.

<u>Dates - Debrief by</u>	<u>Area</u>	<u>Type of work</u>	<u>PI</u>
26 - 31 Mar- Measures	NP12/Hawaiian Is.	HOT Series	Karl, D./UHI
1 - 3 Apr - Slowey NP12/Hawaiian Is.	Bottom Mapping	Kelley,C./UHI	
17 Apr-22 May - Whitledge	NP6/North Pacific	FOCE Stabeno/PMEL	
23 May-17 Jun - Hebert	NP6/North Pacific	Recovery	Eble, M/PMEL
18 Jun - 5 Aug - Measures	NP6/N.Pacific	Carbon Isotopic	Popp, B./UHI
6 Aug - 8 Sep - Reimers	NP6/Bering Sea	Trace Metal	Bruland/UCSC
9 – 29 Sep - Whitledge	NP6/North Pacific	FOCI Stabeno/NOAA	
11 – 19 Oct - Measures	NP11/Hawaiian Is.	Student Cruise	Raleigh/UHI
22 – 28 Oct - Measures	NP11/Hawaiian Is.	HOT Series	Karl,D./UHI
30 Oct–19 Nov - Prince	NP12/North Pacific	MOBY	Clark/NOAA
21 – 26 Nov - Measures	NP11/Hawaiian Is.	HOT Series	Karl, D./UHI
28 Nov–4 Dec - Measures	NP11/Hawaii	Student Cruise	Raleigh/UHI
6 - 11 Dec - Slowey NP11/Hawaiian Is.	Bottom Mapping	Kelley,C./UHI	
13-17 Dec - Benner NP11/Hawaiian Is.	Survey	Duennibier/UHI	
18 - 23 Dec - Measures	NP11/Hawaiian Is.	HOT Series	Karl, D./UHI

- ◆ **Navy's report to Congress** – FIC will comment when the Navy report comes out in public.
- ◆ **CAPE HENLOPEN Replacement Design** –FIC comments to the latest design package are needed by the end of February.
- ◆ **FIC Membership** –
 - FIC Chair – Replacement needed in October 2003. The position will be advertised. - Office
 - Open Committee Seat – Non-operator institution: Nominations have been made for:
 - Greg Mountain – MG&G, ship user (Niall Slowey will contact)
 - Karen Von Damm – deep submergence, UNH (Annette will contact)
 These individuals will be contacted to determine interest. Request CV and statement of interest.
 - RVOC Representative – RVOC needs to be contacted to appoint a rep. Joe has expressed an interest in staying on.
 - RVTEC Representative – Contact Dale Chayes for appointment.

1200 Adjourn