

Fleet Improvement Committee Meeting Report

**UNOLS Fleet Improvement Committee
Harbor Branch Oceanographic Institution
Fort Pierce, FL
Tuesday & Wednesday, March 9 & 10, 2004**

Executive Summary:

The UNOLS Fleet Improvement Committee (FIC) held a meeting on March 9 and 10, 2004, at the Harbor Branch Oceanographic Institution in Fort Pierce, Florida. The meeting on March 10th was a joint session with the UNOLS Council. Fleet renewal was a major focus of the meeting.

The FIC began the meeting by reviewing their past action items and identifying their projects, goals and priorities for the upcoming year. A list of items was drafted.

The KILO MOANA debrief responses were reviewed. The vessel has now experienced operations in high sea states. In general, everyone likes the stability of the ship. It is a good platform for lab work. There are however, a number of items where improvements are needed. FIC identified the problem areas and included them in a letter to the University of Hawaii. FIC will continue the debrief interviews to gather additional information about the capabilities of the SWATH.

The FIC reviewed the KILO MOANA debrief interviews with respect to the monohull versus SWATH hull characteristics. A major reason for initially conducting the KILO MOANA debriefs was to better understand the capabilities of the SWATH and to identify the pros and cons of this hull form as compared to a monohull. This information would be useful in future design efforts. The FIC generated a table listing the SWATH pros and cons for various features.

Planning for Global Class mid-life refits will begin with an update of the SMRs for general purpose Global Vessels. FIC will coordinate this effort. In other SMR activities, FIC plans to amend the Regional and Ocean Class SMR to include ADA requirements. They will also review the "Lessons Learned" and the PCAR comments to incorporate input as appropriate into the SMR documents.

In other business, the FIC recommended that Annex IV of the UNOLS Charter be readopted as written. Chris Measures is completing his second term on FIC and a replacement is needed. UNOLS will send a call for FIC nominations to the community.

During the FIC/Council joint session, NSF's Fleet renewal plans for project construction and funding were reported. The ARRV is slated to begin construction in FY06 with an estimated cost of \$82M. The EWING replacement is planned over the period FY04 to FY09 at a cost of \$20M. ALVIN Replacement is planned during FY04 to FY07 at an estimated cost of \$20M. Three Regional Class vessels are planned with incremental

construction of the first ship beginning in FY06 and the last ship coming on line in FY2112. Total cost for the three ships is estimated at \$75 M.

NSF plans to issue a solicitation for Regional Class ship operators in 2004/2005. NSF UNOLS' SMR priorities are needed by summer, 2004. UNOLS will form a Regional Class Advisory Committee to address this effort. The design will need to consider the construction as well as operating cost constraints as factors in the prioritization effort. Based on UNOLS input, Navy and NSF will develop draft "Operational Requirements" in preparation for a RFP.

ONR has funded Phase II of the Ocean Class study, which will attempt to compare three different hull variants at both the minimum and maximum SMR level. The three hull types being considered are mono-hull, SWATH and X-Craft. Throughout the study, JJMA will interface regularly with UNOLS, NSF, and ONR representatives.

The Federal Oceanographic Facilities Committee (FOFC) will update their Long-Range Fleet plan in an integrated way, so that it is a National research fleet plan. They hope to do address this task over the next 18 months. They may broaden the scope of the plan somewhat beyond ships to perhaps include AUVs and ROVs. FIC will provide input to the plan by updating the projected retirement dates for each UNOLS vessel based on operator input. Specifically, they will ask the operators whether the retirement date should be extended, and if so the estimated cost of the extension effort (5 and 10 years).

Other ship design and construction activities that were reviewed during the meeting included the status of the CAPE HENLOPEN replacement effort, EWING mid-life refit/replacement plans, ARRV design and the CAPE HATTERAS mid-life. An interim report was provided on the "Comparison of SWATH and Monohull Vessel Motion for Regional Class Research Vessels."

In other activities, UNOLS will draft a unified response to the Ocean Commission report.

FIC Recommendations:

- FIC recommends that FOFC consider other facilities needs, such as those needed for ocean observatories in their long-range Fleet plan update. Additionally, the recommendations of the Ocean Commission report should be considered. The updated plan should include local vessels as part of the Fleet.
- The FIC recommended that Annex IV of the UNOLS Charter be readopted as written.

UNOLS FIC Meeting Action/Task List:

Task Description	Action
Regional Class Actions:	

<ul style="list-style-type: none"> • UNOLS Regional Class Rep - By summer 2004, UNOLS needs to recommend a community representative to interact in NSF/Navy meetings beginning with the program definition phase. NSF will consider salary compensation. This will be the UNOLS rep to the IPT. The person will also be a member of the RCSUAG. 	Dave, Wilf, Tim, Office – solicit input from Council and FIC
<ul style="list-style-type: none"> • Prioritize Regional Class SMRs -- Hold a conference call with JJMA, NSF, Pete, Dave Hebert, Wilf Gardner, and Office to outline the process and timeline. Discuss the level of detail that is required, the format that would be useful for development of operational requirements and performance specs. Any design/cost constraints should be identified. 	Office, Dave and Wilf -COMPLETE
<ul style="list-style-type: none"> • Form Regional Class Ship Users Advisory Group (RSUAG) - Solicit volunteers for a range of disciplines. Circulate to Council and FIC for recommendations. Form Group by the end of March. 	Dave and Wilf - COMPLETE
<p>Ocean Class Phase II Study – schedule phone/web conference(s) between FIC and JJMA. Annette will contact Dan to make arrangements. Identify any JJMA material that should be available prior to the conference. Determine how FIC can provide input on a regular basis.</p>	Annette and Dave Hebert - Web conf. being held on regular basis.
<p>Ocean Commission Report – Review report outline and identify sections that require review by UNOLS and Committees. Draft a unified Council response. Input needed by May 20th.</p>	Tim, Dave and Office will initiate process. - COMPLETE
<p>Form Global SMR Steering Committee – Form Steering Committee and draft task statement. Update Global SMRs in the same format as Ocean and Regional Class. As a follow-on activity incorporate Heavy Lift considerations, and Seismic Capabilities</p>	Dave with input from Office, FIC – ONGOING
KILO MOANA Actions:	
<ul style="list-style-type: none"> • Continue Debrief Interviews 	Annette will post assignments and send reminders to FIC. - ONGOING
<ul style="list-style-type: none"> • Review table (drafted at FIC meeting) that provides pros and cons of SWATH hull form as compared to a monohull 	Office will send to FIC
<ul style="list-style-type: none"> • Obtain feedback from WESTERN FLYER and KILO MOANA Captains 	Dave to contact Captains
<ul style="list-style-type: none"> • Letter to UH with list of problems 	Dave will draft letter to UH and distribute to FIC for comment. - COMPLETE
<ul style="list-style-type: none"> • Compile Debriefs for posting on the UNOLS website 	Annette will compile and send to FIC for review/comment

FOFC Fleet Plan Update - Encourage the Agencies to update the FOFC plan and provide the Working Group information.	
<ul style="list-style-type: none"> • Update the projected retirement dates – Contact Operators for Input <ul style="list-style-type: none"> ▪ Should the retirement date be extended? ▪ SLEP cost for 5-year extension ▪ SLEP cost for 10-year extension 	Office and Dave - ONGOING
<ul style="list-style-type: none"> • Update Construction dates with new projected dates 	Dave and Office
<ul style="list-style-type: none"> • Incorporate Ocean Observatory Facility needs into Plan 	Dave and Office
<ul style="list-style-type: none"> • Update ship utilization projections to include ocean observatory facility needs 	Annette first draft – then input from Dave and Mike - COMPLETE (presented by P. Wiebe at FOFC)
Prioritize and update all SMRs: <ul style="list-style-type: none"> • Amend Regional and Ocean Class SMR to include ADA requirements • Carefully review the “Lessons Learned” and PCA comments. Incorporate as appropriate into the SMR documents 	RC and OC Steering Committees
FIC Membership – Nominations are needed to replace Chris Measures	Office and Dave
FIC Fall meeting date – Contact FIC members to determine if 13 October would be good for a meeting.	Office - COMPLETE
PCAR Comments - Review PCAR comments with regard to facility improvements. Ask FIC to read document and send comments – over summer.	FIC
Design and Constructions Efforts - Stay engaged in ongoing design and construction efforts (ARRV, EWING replacement, CHRV, etc.)	FIC - ONGOING

Appendices, Meeting Presentations, Reports:

March 9th - FIC Meeting:

- I. [FIC Meeting Agenda](#)
- II. [Attendance List – March 9th](#)
- III. [FIC Meeting Slides](#)
- IV. [Comparison of Monohull with SWATH](#)

March 10th – FIC/Council Joint Meeting:

- V. [Attendance List – March 10th](#)
- VI. [NSF Report](#)
- VII. [FIC Report to Council](#)
- VIII. [JJMA Presentation – Regional Phase III effort & Ocean Class Phase II study](#)
- IX. [ARRV Update](#)
- X. [POINT SUR and WESTERN FLYER Motion Study](#)
- XI. [University of Hawaii Application for UNOLS Vessel Status for KAIMIKAI-O-KANALOA](#)
- XII. [Guidelines for Becoming a UNOLS Vessel](#)

Meeting Minutes

March 9th: FIC Meeting:

Welcome and Introduction – The UNOLS Fleet Improvement Committee (FIC) meeting was held on Tuesday and Wednesday, March 9 and 10, 2004, at the Harbor Branch Oceanographic Institution in Fort Pierce, Florida. The second day, March 10th was a joint session of the FIC and Council. David Hebert, FIC Chair, called the meeting to order at 0830 and provided an opportunity for introductions. The meeting agenda ([Appendix I](#)) was followed in the order recorded. A list of meeting participants is contained in [Appendix II](#).

Accept the minutes of the September 2003 FIC Meeting - A motion was made and approved to accept the minutes of the [September 17, 2003](#) FIC meeting.

Review FIC Action/Task List from the September meeting - Dave reviewed the FIC task list that was assigned during the September FIC meeting and provided the status of each item:

- Dave sent a letter to NSF recommending that a Regional Ship Users Advisory Committee be formed. The letter also stated community concerns regarding feedback into the ship design effort.
- FIC will provide feedback to the Navy/JJMA Ocean Class Phase II study. This effort is ongoing.
- FIC is encouraging the Agencies to update the FOFC plan. FIC will be prepared to provide input. This effort is ongoing.
- An update to the FIC website, as well as an updated draft of Figure 17 of the FOFC plan will be prepared by FIC
- FIC will continue debrief interviews of KILO MOANA users. They will send the University of Hawaii a list of KM items/problems that need to be addressed.
- ONR has funded a ship motion analysis of a SWATH, WESTERN FLYER, with a monohull, POINT SUR.
- FIC will review KILO MOANA debrief interviews with respect to monohull vs. SWATH hull characteristics.
- The FIC will continue to review and provide feedback on design and construction efforts (CHRV, AARV, and the seismic vessel).
- A letter of endorsement was sent by FIC to NSF in support of the EWING replacement plan.
- The Post Cruise Assessment Subcommittee provide PCAR feedback to FIC with respect to facility improvements. FIC will review the information later in the meeting.
- FIC will review the UNOLS working group recommendations on ocean observatory facility needs.

Identify FIC Projects, Goals, and Priorities for 2004 – The FIC spent time identifying their projects and priorities for the upcoming year. A list was drafted and included:

- Stay engaged in the Regional Class acquisition process and insure community input
- Evaluate and prepare response to the Ocean Commission report.
- Actively participate in the Ocean Class Phase II study
- Encourage the Agencies to update the FOFC plan.
 - Ocean Observatories - Review UNOLS working group recommendations.
 - Prioritize and update all SMRs using agreed on constraints
 - Provide feedback to draft Global Class Seismic SMR
 - Update Global SMRs in the same format as Ocean and Regional Class.
 - Update the FIC website and draft a FIC version of Figure 17 of the FOFC plan.
 - Provide recommendations to FOFC regarding update of Fleet Renewal Plan.
- KILO MOANA - Continue FIC Debrief Interviews
- Send the U.Hawaii a list of KILO MOANA items/problems that need to be addressed.
- Review PCARs with regard to facility improvements.
- Stay engaged in ongoing design and construction efforts (ARRV, EWING replacement, CHRV, etc.)

There was additional discussion on some of these items. UNOLS needs to be ready with SMRs for new ship classes.

Mike Prince suggested that FIC begin to draft an ocean facilities plan

There was further discussion on the Ocean Commission report. The report will be released on 20 April and there will be a 30-day review and response period. UNOLS and FIC need to be ready to evaluate the report sections concerning facility needs and draft a response. The report's table of contents is available on-line. It can be reviewed to identify the sections that will need to be carefully evaluated. Chapter 5 appears to be relevant to ocean facilities. Additionally the chapter on Security (Chapter 4) and Marine Mammals (Chapter 3b) should be reviewed. The Ocean Commission report will be discussed further during the Council/FIC joint session.

The FOFC long-range Fleet plan was also discussed. FIC recommends that FOFC consider other facilities needs when updating the plan, such as those needed for ocean observatories. Additionally, the recommendations of the Ocean Commission report should be considered. The updated plan should include local vessels as part of the Fleet. These ships play an important role in ocean research and are often used to carry out federally funded programs. Beth White indicated that they would appreciate FIC feedback. Captain Houtman indicated that a prioritized set of SMRs is essential to move forward.

KILO MOANA Debrief Discussion – The KILO MOANA debrief responses were reviewed. A total of 15 debriefs have been conducted. The feedback received has been compiled by Annette DeSilva and is contained in the slides of [Appendix III](#). The vessel has now experienced high sea states. Additionally, a lot of different types operations have been carried out from the ship. In general, everyone likes the stability of the ship. It is a good platform to carry out lab work. A summary of some of the comments and discussion follow:

- CTD operations have been problematic.
- The crane is unusual and still being evaluated. There is a visibility problem.
- The center-well that had been installed post delivery for CTD operations does not provide a fix. There is little clearance between the hatch and CTD frame and there are problems with wave slapping.
- The new DP is operational and user feedback will be of interest.
- Ship users are pleased with the amount of lab space.
- There have been comments that there are no tie downs on the 01 and 02 levels. Marc Willis replied that the tie downs weren't intended on these decks because of stability. Pete Kilroy added that these decks weren't supposed to be working decks.
- It appears that no consideration was given to incubator location during the design of the ship. KILO MOANA may have suffered from lack of community input during the design phase.
- The KILO MOANA crew has been getting great reviews.
- Since the first cruise, no one has complained about the need to go up and down from deck to deck when moving fore and aft.
- There have been no recent complains about positive pressure problems
- Drainage continues to be a problem and is often mentioned. This may be associated with a trim problem. Pete Kilroy remarked that it would be interesting to get the trim measurements of the ship for comparison with a monohull and to evaluate the drainage problems. This should be requested from Univ. of Hawaii.
- Visibility of the rear deck is a problem.
- There have been no recent complaints about loading the ship (high freeboard).
- There have been comments regarding low flow rate of the underway seawater system.
- Additional cameras on the bridge would improve visibility. This is an easy fix.
- The aft staterooms are noisy due to the winch. The science party needs to wear earplugs because of the noise. Pete Kilroy indicated that the ship had met all noise requirements. Dave commented that the noise problem was reported on multiple cruises. Capt Houtman will ask Brian Taylor to take noise measurements.
- Wireless communication has been recommended.

- In rough seas, wave banging on the bottom of the deck, vibrations, and wave slapping have been reported by users. It was suggested that MBARI be contacted to get some feedback on their moonpool and their experience with wave slapping. Do they have any sea state limitations?
- The SWATH appears to be very sensitive to changes in sea conditions and loading.
- In rough weather, the KILO MOANA was forced into hiding. One of the users felt that they would have been able to resume operations sooner with a monohull.
- The multibeam is getting good reviews. The hull depth and stability of the ship help to improve performance.
- The ADCP has not been operational. An RDI unit has been installed.
- No OBS cruises are willing to use KILO MOANA.
- Tank capacity and the frequent need to pump out has been reported as a problem. A possible fix would be to drain seawater flow-through over-the-side? This problem needs to be looked into to determine what water is going down the drains into the tanks. New ships should be design so that the flow-through system is isolated, and that the chance of other items be put down the drains is eliminated. This should be included in the SMRs. This item needs to be brought to the attention of Univ. of Hawaii.
- It was commented that in rough seas, the ship's motion was unsettling. They could not predict the motion.

The full list of debrief responses can be reviewed in [Appendix III](#).

Morning Break

KILO MOANA's Cruise Schedule and Debrief Assignments – KILO MOANA's 2004 schedule was reviewed and FIC members volunteered to conduct the debriefs. The list of assignments is contained in [Appendix III](#) (slide 37).

FIC Letter to U. Hawaii – The FIC spent time generating a list of KILO MOANA areas of concern (CTD operation problems, Noise, Over-the-side handling issues). This list will be sent in a letter to U. Hawaii for consideration. It includes the following:

- CTD ops – location issue.
- Crane evaluation - visibility problem.
- Establish incubator work site
- Investigate drainage problem – record ship trim and evaluate
- Additional cameras for bridge
- Low flows for underway system.
- Take noise measurements in cabins. If needed investigate noise insulation.
- Request trim measurements for evaluation of drainage and wave slapping.
- Address tank capacity problem and implement fix.

The letter should ask how these concerns would be addressed.

Status of SWATH ship motion analysis – ONR has funded the Naval Postgraduate School to conduct a SWATH/monohull motion analysis comparing WESTERN FLYER with POINT SUR. Curt Collins will report on the status of the study during the joint Council/FIC session.

The University of Hawaii has the funding to instrument the ship for motion. The POS-MV should be useful in the analysis.

Review KILO MOANA debrief interviews in respect to the monohull versus SWATH hull characteristics – A major reason for initially conducting the KILO MOANA debriefs was to better understand the capabilities of the SWATH and to identify the pros and cons of this hull form with a monohull. This information would be useful as future design efforts progress.

The FIC generated a table listing the SWATH pros and cons for various features. The table is provided below and as [Appendix IV](#):

SWATH comparison with Monohull

Feature	SWATH Pros	SWATH Cons
Over the side handling arrangements need to be more carefully thought out, geared toward SWATH design		Adapting after the fact may be more difficult
Deeper draft	Stability, Performance of acoustic systems	Access to shallow ports, location of intake for surface water. Loss of upper five meters or so in sampling with ADCP and other systems.
Motion is different, but generally much less	Much more stable for lab work, reduces fatigue	Unnatural motion for some, unexpected movements
Ship does not move relative to sea surface	Stable platform	Affects the retrieval and deployment of equipment on the sea surface
High Freeboard affects deployment and recovery of moorings, drifters and other equipment.		Makes deployment and recovery of equipment from sea surface more difficult.
Working deck space limited (KM Design)	Extra beam allows for a lot more deck-space	Due to stability not all deck space can be used for heavy weights.

		Tradeoff between enclosed space and deck space. No provision for deck space admidships on KM
Variable Deck load constraints	KM Science Load is within Ocean Class parameters. Ballast system allows for flexibility in changing trim, draft and load capacity.	More sensitive to weight changes. Open deck spaced is not necessarily useable, due to weight limitations.
Larger Sail Area		Affects ability to hold station and position relative to the wind
Sea conditions between the hulls and ability to deploy/recover equipment between the hulls		

It was recommended that the captains of KILO MOANA and WESTERN FLYER each be contacted for feedback on the SWATH/monohull comparison. Both of the captains have experience with monohulls and SWATHs.

A few questions that might be added when talking to SWATH users include:

- Did you get seasick?
- Was the deck ever awash?

KILO MOANA Debriefs - Next Steps – The FIC discussed the next steps that should be taken in the debrief process. The following actions were agreed upon:

- Continue debrief interviews
- Review the table that provides pros and cons of SWATH hull form as compared to a monohull
- Obtain feedback from WESTERN FLYER and KILO MOANA Captains
- Send letter to U. Hawaii with areas of concern
- Compile debriefs for posting on the UNOLS website

Lunch Break

Science Mission Requirements (SMRs): The FIC reviewed and discussed the SMRs to determine if any updates would be needed. Dave Hebert reviewed the process that was used to develop the recent Regional and Ocean Class SMRs:

- Formed Steering Committee

- Developed mission scenarios and drafted preliminary SMR
- Held community workshop
- Revised and posted draft SMRs for Community Input
- Finalize and post

Funding to support these efforts was approximately \$25K each. Most of the funding was necessary to support the community workshops.

The FIC reviewed the [list of UNOLS SMRs](#) posted on the UNOLS website to identify areas where updates or additional SMRs are needed.

[Observatory Support Ship SMRs](#) - The UNOLS working group on Ocean Observatory facility needs has recommended that “The UNOLS Fleet Renewal process should develop a Science Mission Requirement for a class of vessels larger than the present Global Class to support ocean observatory and other heavy-lift needs.” Additionally, their report lists upgrades that could be made to the current Global vessels that would make the vessels better suited for observatory support work. These upgrades include:

- Enhanced seakeeping through bow thruster improvement
- Z-drive shrouding
- Vessel lengthening
- Redundant DP
- Doubling of the heavy lift capability through A-frame, winch, wire, and crane enhancements
- Equip with a below-deck fiber optic traction winch.

The FIC decided that they should first draft the general purpose Global vessel SMR, before identifying the mission requirements for an observatory support ship.

[Global Class Vessel with Seismic Capabilities](#) – The FIC discussed the SMRs for a Global Class Vessel with Seismic Capabilities. Lamont-Doherty Earth Observatory (LDEO) drafted SMRs that could be used for modifying a commercial seismic vessel to serve as a replacement for EWING. Their SMRs were tailored to meet the WESTERN LEGEND characteristics. The LDEO SMRs were posted on the UNOLS website for community input. Very few comments were received. One comment indicated that a science party of 40 seems excessive. It was also commented that the mix of single rooms for crew vs. non-crew seems a bit skewed. There was some concern regarding the data network and on-board computing capabilities.

Dave indicated that the FIC should review the LDEO SMRs and revise them accordingly so that they would apply to any global seismic vessel (not just WESTERN LEGEND). This effort should follow the drafting of the general purpose Global SMRs.

[General Purpose Global Vessel SMR](#) – The Global Class SMRs that are currently available were drafted in 1989. The three newest Global vessels will reach the time of their mid-life refits in the next decade, THOMPSON (2006), REVELLE (2011) and

ATLANTIS (2012). Updated Global SMRs should be in place soon to allow adequate planning for the mid-life refits.

As an aside, Peter Wiebe pointed out that when the Global vessels go off line for their mid-life refit work, they would be out of service for a significant period of time. This shortage of ship time should be considered when we make utilization projections. The Global vessels have been fully/over committed in recent years.

The FIC recommended that the general purpose Global Class SMRs be updated and that the process used for development of the Ocean and Regional Class SMRs be applied. As a first step, a steering committee should be formed. The FIC recommended that the committee include:

- Operator Representatives
- A member of the Ocean Observatory Workshop (non – operator)
- Large coring expert
- ROV representative
- FIC member

A chair for the committee would be needed. The charge to the Committee would be to draft a General Purpose Global Class Vessel SMR. As appendices, adapt these SMRs to meet the requirements of (1) a heavy lift general-purpose vessel, and (2) a seismic global.

ADA Requirements – The FIC discussed whether the Regional and Ocean Class SMRs should be revisited to include consideration of the ADA requirements. We have heard that if a ship is federally funded, ADA requirements must be addressed. FIC recommended that the SMRs be amended to include ADA considerations. Mike Prince suggested that the SMRs also be amended so that they address the “lessons learned” documents. To address the ADA requirements, input should be requested from Paul Ljunggren (LDEO), Terry Whitledge (U.Alaska), and Matt Hawkins (U. Del). They all had to consider ADA in their recent design efforts. Terry Whitledge indicated that he would send the FIC information before the next meeting.

Ocean Class Steering Committee – The FIC reviewed the membership of the [Ocean Class Steering Committee](#) and recommended that Al Suchy replace Joe Coburn.

Regional Class discussion – The FIC discussed the Regional Class design effort. Dan Rolland will present this topic in the joint Council/FIC session. Dolly has repeatedly indicated that the estimated operating costs for the new vessels are too high. NSF has requested a Regional Class Phase III study to address potential design tradeoffs and prioritization. JJMA will conduct the phase III effort. Captain Houtman indicated that FIC must be involved and actively engaged in the effort. This was the first time that FIC learned of the Phase III effort. They will add it to our task list.

Fleet Renewal – The FIC had a general discussion on Fleet Renewal issues. They discussed Local Class vessels and where they fit in the Fleet plan. These vessels are becoming increasingly more important. A large portion of their operations is in support

of federally sponsored programs. The FIC generally agreed that they should be included in an update.

Dave showed a slide that included the FOFC retirement dates for UNOLS vessels along with the planned dates of new ship construction. FIC needs to look at the FOFC dates and determine if and how they should be revised. Should ship-life extension program (SLEPs) be considered for some of the vessels that are due for retirement? As an example, the Intermediate vessel retirement dates are approaching and construction funds for replacements have not been identified.

Although ship hulls may be in good condition, some of the vessels may become technologically obsolete. Areas in which they fall short in meeting the new SMRs include lack of dynamic positioning systems, system networks are insufficient, small labs, and not enough berths. Some of the ships would require machinery upgrades including new generators. The FIC agreed that it would be useful to determine cost estimates for SLEPs and provide these to the agencies.

As a task item, FIC will poll the ship operators for the following information:

- Based on the published FOFC Plan ship retirement dates, should the date be extended for your ship?
- If so, what would it cost to extend the ship service life for 5 years, and ten years at the current capability?
- Indicate the current ship capabilities that do not meet the Regional or Ocean Class SMRs
- Are there any SMRs that can be implemented and at what cost?

The Office, working with Dave, will use this information to update the FOFC Plan dates.

As another task, the UNOLS Office was asked to create a new Fleet Utilization chart that includes ocean observatory facility needs in the future projections. The facility needs should be based on the recommendations of the UNOLS ocean observatory working group. The starting year for installation of OOI will be 2006.

Lessons Learned from previous R/V construction – Prior to the FIC meeting, members of the community (ship operators, captains, technicians, users, etc) were asked to provide input on their experiences with past ship design and construction efforts. The responses have been posted on the UNOLS website at <http://www.unols.org/committees/fic/smr/whatwelearned.html>. The input received was very good. WHOI was been a major contributor.

FIC discussed how the information should be used and where it should be published. One thought was to include it as an appendix to the SMRs. Others felt that the document should be distilled somewhat. Pete Kilroy indicated that it might not be good to provide the document to the shipyard verbatim because they might regard it as a requirement. We need to be sensitive to the way we provide this to the shipyard. Another suggestion was

to rather than append them to the SMRs as an appendix; they should instead be synthesized and incorporated into the SMR formally. This was the favored approach.

Fleet Improvement – Potential areas for fleet improvement have been identified in Post Cruise Assessment Reports (PCAR). These comments were provided to FIC. FIC will review the PCAR comments and incorporate as appropriate into the SMRs.

High-Resolution Marine Meteorology (HRMM) Workshop – The FIC discussed the upcoming HRMM workshop scheduled for 15-16 April and FIC's involvement with the group to improve meteorological data collected on UNOLS ships. Background information, including recommendations from the first HRMM Workshop can be obtained at http://www.coaps.fsu.edu/RVSMDC/marine_workshop/Workshop.html. Shawn Smith is interested in getting computational fluid analysis incorporated into new ship designs. Terry Whitledge reported that he would talk to Steve Hartz (U. Alaska) to see if he plans to attend.

Draft a FIC Report for the Council Meeting – The FIC drafted slides to present at the Council/FIC joint session. FIC recommendations and planned actions were summarized (see [Appendix VII](#)).

Other business

Review [UNOLS Charter, Annex IV](#) (FIC) – The FIC recommended that Annex IV be readopted as written. The FIC will examine Annex II to determine how it might relate to Ocean Observing systems.

FIC membership changes - Chris Measures is completing his second term on FIC a replacement is needed. Terry Whitledge's first full term is ending. He has expressed a willingness to continue with a second term. UNOLS will send a call for FIC nominations to the community.

Day one of the FIC meeting adjourned at 1730.

Thursday, March 11, 2004
FIC and Council Joint Session

The second day of the FIC meeting was a joint session with the Council and focused on Fleet Renewal. The meeting report for day 2 is contained in the UNOLS Council report and is available on the UNOLS website at:

<http://www.unols.org/meetings/2004/200403cnc/200403cncmi.html>