

UNOLS FLEET IMPROVEMENT COMMITTEE MEETING
The National Science Foundation
Stafford II - Room 555
Arlington, VA 22230
Monday, October 22, 2012

Meeting Minutes

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Action Items – New and Continuing

Fleet Improvement Plan (FIP): Initiate drafting of a new FIP for beyond 2030 considering a different form for the plan and new models for future fleet acquisitions. Incorporate, where appropriate, Consortium for Ocean Leadership recommendations. Incorporate the update charts developed by the UNOLS Office to reflect the new ship classification system and trends. FIC will develop a “living” web-based FIP modeled after NSF Research Overviews.

Fleet Projected Service Life End Dates – Continue to work with agencies to update all end of service life projections for existing vessels in the fleet. Add a revision date on the Fleet Service Life chart.

Vessel Optimal Usage Definitions – FIC has been requested to define optimal windows of usage for ships by class rather than single fixed number of days. FIC will continue work with the Fleet Operators to set new FOY range limits and to re-assess Fleet capacity (total available operating days). These limits will depend on where the ship operates and what is needed to maintain the crew.

Long Core Repositioning Study - NSF has requested input from UNOLS (FIC) on whether to move forward with the Long corer repositioning to the *Langseth*. FIC will host a community webinar in 2013 to consider trade-offs and hear from users after AGU.

Autonomous System Requirements - FIC to integrate autonomous systems requirements into SMR documents so these needs are fully considered in future ship designs, and

operations. This will extend the reach of the vessels. Effort needs to be linked to improved communication systems.

FIC Meeting Guest Speaker - Spring 2013 FIC meeting will host a guest speaker to discuss the capabilities of autonomous aerial and underwater vehicles and their operations from UNOLS vessels. Dan Schwartz to help identify speakers.

Meeting Summary Report:

Call the Meeting: Clare Reimers, FIC Chair, called the meeting to order and provided an opportunity for introductions. The meeting agenda is included as **Appendix I** and the participant list is included as **Appendix II**.

Fleet Modernization Activities:

Regional Class Research Vessel (RCRV) - Matt Hawkins provided the report. His slides are included as **Appendix III** (<http://www.unols.org/meetings/2012/201210fic/201210ficap03.pdf>).

The RCRV Project budget driver and key funding driver is the NSF Major Research Equipment – Facilities Construction (MRE-FC) request. The plan is to include the RCRV in the FY2017 budget. If this is successful, the first ship would be delivered in 2019.

- Clare Reimers asked where the MRE-FC falls in the budget process. Matt – Within NSF, the RCRV approval is at the Director's level. It is a separate line item within the NSF budget request that is submitted to Congress.

RV Sikuliaq - Marc Willis provided a brief update on the *Sikuliaq*. Construction is progressing on schedule. The ship launch ceremony was very nice. Delivery is scheduled for the summer 2013. A leak in the z-drive was discovered, but it has been repaired. The Chief engineer and Captain have been hired. They were at the launch and are spending time at shipyard. The next hires will be the Chief Mate. There is a phased plan leading up to the delivery. Technician hires will begin in the next few weeks.

Matt Hawkins added that in 2014, the ship would transition to Rose Dufour for operations.

Ocean Class Research Vessel (OCRV) – Mike Prince said that Tim Schnoor sends his regrets for not being available to attend the meeting. Tim is at an INSURV.

Chris MacDonald continued the OCRV report and showed photos of the Ocean Class vessels under construction at Dakota Creek. The photos are included in **Appendix IV** (<http://www.unols.org/meetings/2012/201210fic/201210ficap04.pdf>). The ships are both in construction and progress on the two is closer together than they had planned, but this is great news. The ship construction is modular.

The Navy has announced the name for the first ship that will be operated to Woods Hole Oceanographic Institution (WHOI). The vessel has been named after the astronaut, Neil Armstrong.

Chris reported that the Navy is required to go through the ITAR process for release of all of their presentations. The Navy is still trying to get the AGORs removed from the ITAR list. AGOR stands for, Auxiliary General Oceanographic Research.

The ship constructions are expected to be completed six months apart from each other.

Discussion:

- Jon Alberts – Have there been any meetings with the OCRV advisory committee? Mike Prince – They sent some information to the advisory group and invited them to the launch. They will probably engage the group more in the near future.
- Stewart Lamerdin – What is the timeline? Mike – R/V *Armstrong* is to be delivered in October 2014. The second ship will be delivered in April 2014.
- Jon Alberts – When will the second ship be named? Mike – The second ship name will probably stay with the astronaut theme. The timing could be soon.
- David Checkley – It looks like there will be a one year gap from taking *Knorr* out of service and new ship coming on-line. Jon Alberts – The schedulers have been considering this. Mike Prince – About a one-year gap has been the case for past ships as well. Time is needed for crew transition, etc.
- Kenneth Coale – What will happen to *Knorr* and *Melville*? Mike – The Navy has a process for removing ships from service, but there is no pre-deposed plan.

Propulsion Design of the Ocean Class AGOR – Chris Chuhuran of Guido Perla & Associates (GPA), Inc., provided a report on the propulsion design for the Ocean Class AGOR. His slides cannot be posted.

Chris first reviewed the overall acquisition process that was followed for the construction of the OCRV. The design phase was a competition and this presented a challenge because it constrained an open dialog between the design team, the ship owner and the community. This was particularly difficult when it came to the propulsion system design decisions.

The ship design requirements that were known while designing the propulsion system included:

- Monohull configuration
- Draft limitations
- Sustained speed – 11 knots
- Tow requirements (10,000 lbs at 6 kts, 25,000 at 4 knts). This became a driving factor for the propulsion system.
- Required integrated diesel electric plants
- Multi-mission ship – no operations profile. They had to consider a vessel that would be efficient in all cases.

Since the design was a competition, GPA tried to determine which criteria were most valued. Evaluation factors included:

- Functionality of shipboard systems
- Functionality of working, machinery and living areas
- Mission mobility
- Fuel efficiency
- etc.

However, they didn't know which of these items were most important to the community.

There was a list of enhancements that the ship designers were provided by the Navy. As a competition, GPA wanted to meet all enhancements if possible. The enhancement included:

- Crew single staterooms
- Scientist double staterooms
- Larger stern working deck area
- Larger lab space
- More science payload
- etc.

Other factors that affected the propulsion design included:

- Fuel efficiency – big factor
- Dynamic positioning – these were heavy duty items.
- Maneuvering
 - Directional stability
 - Zig zag capability
- Costs - A cost cap was in place on the contract. \$74,500,000 for the first ship and less for the second ship.
- Operating Environment - Ice requirement
- Noise requirement - Sonar self noise – consistent with sonar equipment interference requirements.

The ship's general vessel characteristics are:

- Length 238'
- Beam = 50'
- Design draft = 15'
- Propulsion plant - total installed power = 4,176 kw

Chris Chuhran discussed the DCI/GPA propulsion study.

- The propulsion was designed to meet:
 - Cruising at 11 knots
 - Towing 25,000 lbs at 4 knots
 - Optimal pitch and skew would vary significantly depending on mission
- Some other areas considered were:
 - Lifecycle
 - Noise
 - Etc.

Design assumptions assumed efficiency as the highest criteria. Lifecycle cost, reliability, and maneuverability were considered next.

There were challenges due to the nature of the design competition:

- They were unable to determine operator preferences
- There were reliability issues with Z-drives in the current fleet, but they didn't have all of the information.
- Recent R/V designs seem to favor Z-drive propulsion.
- There are noise issues with the z-drive gears.
- There were competing design requirements:

- Stability vs. maneuverability
- DP vs. cruising/towing.

GPA conducted a propulsion trade off study. The propulsion systems considered included:

- Z-drive
- Fixed pitch propeller
- Controllable pitch propeller
- Fixed pitch propeller 2

Matt Hawkins asked if GPA looked at the reliability of the z-drives commercially. Chris – Commercially, z-drives are used a lot with good success. But it was hard to assess the situation knowing that *Thompson* was experiencing problems with their z-drives.

Weights that were applied to the study included:

Efficiency = 3
 Life cycle = 2
 Reliability = 2
 Maneuverability = 2
 Noise = 1

The controllable pitch propulsion had the highest score, and it was allowed by contract, so they decided to go with it. The manufacturer has been around since 1926.

Discussion:

- Kenneth Coale – Was the tunnel thruster considered? Chris – He needs to look back, but he doesn't think that it was considered.
- David Checkley – What requires the 25,000 towing requirement? Mike Prince – Dredging, maybe a large net. The towing requirement was called out in the SMRs.
- Joe Mackes – The speed requirement was 10 knots in the SMRs, but they increased it to 11 knots. The SMRs made speed a low priority.

Chris Chuhran continued and showed the DP plots. The Spiral Test plot passed and was stable. They were able to confirm through testing that everything worked.

Discussion:

- Chris MacDonald – The Navy hadn't anticipated the controllable pitch propulsion design, but it seems to meet the requirements very well.
- Mike Prince – The thing that drove this during the design competition, was how the DP requirements were articulated. The FIC should go back and look at the way we articulate the propulsion. If maneuverability is the highest requirement for the RCRV design, you would probably go with Z-drive.
- Robin Muench – Has there been any consideration of use of synthetic fuel? Chris Chuhran – The nice thing about diesel-electric is that it is adaptable and flexible as new technologies come on line. All of the customers are asking about tier 4. Costs will go up and everyone is looking for solutions.
- Matt Hawkins commented on the design competition process and explained that it will be very different with the RCRV. NSF does not have any plans for revisiting the SMRs. They will consider the OCRV project and input from the RCRV down-select group and the FIC. Fuel efficiency is a lower priority because they hope that hybrid

technology can be applied. NSF also feels that z-drives have improved since purchasing the ones for the Navy AGORs. They are doing a duty-cycle study on *Sharp*. NSF is also looking at what commercial operations are doing in regard to z-drives and CP. They feel that the RCRV will do more ROV work. *Sharp* is doing more and more ROV work because of their dynamic positioning (DP). So they want to see how the commercial world is doing this and what they are using. NSF doesn't plan to revisit and redefine the DP requirements.

- Chris Chuhuran – Will NSF look at cost? \Matt – RCRV doesn't have a cost cap yet. The cost will come out of the process.
- Rose Dufour – Did you look at fuel consumption for the cruising speeds. Chris – Yes, but he doesn't have the numbers with him.

R/V Barnes Replacement Plans – Allan Devol provided an update on the status of the University of Washington's (UWs) efforts to acquire a *Barnes* replacement. His slides are included as **Appendix V** (<http://www.unols.org/meetings/2012/201210fic/201210ficap05.pdf>).

UW has pledged \$1.5M of UW funds for a replacement vessel. Over the last five years they have had declining budgets at UW, so there is a backlog of capital projects. However, they were given permission to approach the state legislature for ship funding.

Barnes 2013 schedule has 128 days. About 60% of the days are funded by UW and 40% is from outside sources. They anticipate that this will continue.

In summary, UW is committed to acquiring a replacement and they are actively seeking funding.

- Al Hine commented that FIO operates two ships and they are trying to figure out how to approach state legislatures to get support. What did UW do or is planning to do? Robin Muench – Puget Sound has many impacts and problems that are of high societal importance - shellfishing, seismic zone, hypoxia, etc. There will be huge demand to study these problems.

Thompson Z-Drive Repairs – Mike Prince provided an update on the z-drive problem. His slides are included as **Appendix VI** (<http://www.unols.org/meetings/2012/201210fic/201210ficap06.pdf>).

There was no obvious accident that the ship was involved in. There was no indication that the ship hit anything. However, the z-drive shank and pipe are bent. There was a 7-week analysis period by Warsilla. The ship is expected to be back in service in January 2013.

Discussion:

- Clare Reimers – Are any spares being made? Mike - There are spare units, but not for these. This is the first type of failure of this nature.
- Kenneth Coale – On a smaller vessel there is a weak link (shear pin) so that you don't damage the whole system. Could this be considered in the future?
- Matt Hawkins – They have gone back and carefully reassessed the R/V *Sikuliaq* z-drive system. Marc Willis – The *Sikuliaq* is designed to withstand hitting hard objects. Matt – The *Sikuliaq* is designed to meet different load scenarios.
- Jon Alberts – This has been a real monkey wrench to the 2012 and 2013 ship scheduling.

- Al Hine – What will the OCRVs do for spares? Mike Prince – The Navy is looking carefully at this and planning.
- Miles Sundermeyer – If the failure was in the shaft, would have the shear pin helped? Matt Hawkins – No, since the failure happened above it. It is a unique failure. The system cannot handle misalignments.

Break

Mid-Life Refit Plans for *Thompson*, *Revelle*, and *Atlantis* - Mike Prince reported that the Navy is looking at what they can do to extend the life of these ships by 10 years. Also, they are looking at what can be done to make them more environmentally friendly. The Navy just did a scoping study and they are still working on the report.

Environmental and regulatory requirements are under consideration. If the engines are replaced, EPA requirements must be met. Many of the manufacturers are not supporting tier 3 and they are looking at tier 4. The engines are not supportable for upgrade. Finding engines that would fit into the space available within the ship is difficult within the project budget scope. At the moment, the recommendation is to keep these engines going. Glosten and the operators feel that they are supportable over the next 20 years. These decisions will need to be considered at a much higher level.

The ballast water system and refrigeration will be replaced with a new system that can meet new environmental regulations.

The Navy is considered getting a new manufacturer for the z-drives, but there is no guarantee that they could get something more reliable. They will replace some of the infrastructure and electrical systems, but keep the basic systems.

Discussion:

- Dan Schwartz – Have they looked at automation? Mike Prince – The Navy will look at this.
- What is the timeline – At the earliest, *Thompson* would come out of service in April 2014 for a mid-life refit. The refit could last six months to a year.
- Peter Ortner – Is NOAA still going to plan this type of mid-life for *Ron Brown*? Mike Prince – NOAA is listening to the Navy's plans.
- Kenneth Coale – Will there be any science upgrade planned as part of the refit? Mike - They are looking at the cranes. The science upgrades are typically done more regularly. Matt Hawkins – They are looking at replacing the handling systems with one similar to the Markey system, if funding permits.
- Stewart Lamerdin – Are the hulls being inspected? Mike – Hull inspections are done during the ship INSURV inspections. All hulls are in good shape. The piping might be replaced.
- Jon Alberts – Is it tough finding electricians to work on the DC motors and electrical systems? Mike – The manufactures are still maintaining the systems.

R/V *Langseth* – MLSOC/FIC liaison report - Sandy Shor began the report and reviewed MLSOC's current areas of focus. Details of the MLSOC report are included in **Appendix VII** (<http://www.unols.org/meetings/2012/201210anu/201210anuap21.pdf>). Sean Higgins

continued the report. He said that the IHA requirements for seismic cruises are very rigorous and time consuming. The 2012 and 2013 *Langseth* cruises were reviewed.

NSF has conducted a study to transition the Long Corer System to the *Langseth*. This will be discussed in greater detail later in the meeting.

LDEO continues to improve the over-the-side handling capability of the vessel. They had their ship inspection and continue to make progress with improvements.

LDEO was asked to support ROV operations on *Langseth*. They had a very short timeframe to prepare for the cruise, but then they successfully supported the Tivey and Butterfield ROV cruise at Axial Seamount. There was great coordination between all groups. It was a good opportunity to prove the ROV support capability.

In 2013, there are two NSF 3-D seismic programs planned.

Sandy reported that the quality of the data from the *Langseth* cruise off Costa Rico was outstanding.

Sean Higgins concluded by reporting that there were a lot of student participants on the cruises this year. They are encouraging their participation at the AGU MLSOC meeting in December.

Fleet Planning and the UNOLS Fleet Improvement Plan (FIP):

Optimal Window of Vessel Usage Definitions – Clare Reimers reported that during the last meeting, FIC was requested to work with the Fleet operators to review vessel optimal use calculations and establish a low and high limit range of operating days.

Clare requested input from the Fleet operators regarding the vessel usage and Full Optimal Year (FOY) definitions. The operator input along with a set of charts that plot day compare operating costs and utilization are included as **Appendix VIII**. <http://www.unols.org/meetings/2012/201210fic/201210ficap08.pdf>.

Clare asked the FIC to consider these slides along with Clare's recommendations that are included in the slides.

Clare gave some thought about what would influence the FOY definitions. She took the *Wecoma* day rate with a 2.5% inflation rate and plotted it against the annual operating days. *Wecoma* never operated to the FOY in that time frame. Based on the chart, it looks like the optimum days is about 200 to 240 days.

Clare's initial conclusions were:

- Schedules at FOY estimates help lower day- rates but can only lower total costs to NSF if this encourages other users and/or fewer vessels are operating
- Costs and trend differences are greatest between classes not between operators
- Schedules <FOY lead to better vessel upkeep and fewer days lost to ship problems

The General Purpose Global vessels sometimes exceed the FOY of 300 days. When the ships operate more than 300 days the costs tend to increase.

Later conclusions included:

- Scheduling Globals beyond their FOY limits especially escalates fleet costs.
- Combining cruises or moving work to smaller vessels to reduce Global schedules to FOY would create savings.

Discussion:

- Checkley – Science output per dollar spent should be considered. When you compare the class of ships, you need some metrics for comparing the science accomplishments. There are probably some social issues that should be considered as well. Getting back to the COL and the broad view, probably need to take a different perspective.
- Dan Schwartz – In the past they have tried to go down that path and it is a slippery slope. There was an article in MTS, that he wrote a rebuttal on it. It is really hard to make the qualitative comparisons.
- Mike Prince – Within a ship class you can look at the costs because they are more similar. When you look at the fleet as a whole, then you can look at the different metrics. Maybe best to evaluate classes first and then look at the fleet.
- Kenneth Coale – These are interesting slides. Most of the ships had a downward slope with the exception of the Globals.
- Sandy Shor – There is a huge gap between the Intermediates and the Ocean. The intermediates are going away. The Ocean Class is the same cost as the Globals. So there won't be cost savings.
- Clare – Is the OCRV day rate available? Mike Prince – The OCRVs are being built for fewer crew due to automation. There is potential for smaller crew, but if they operate with 20 crew the cost will be the same as the Global. The fuel will be less, but not much. If you operate at higher speeds the cost will be the same as global.
- Stewart Lamerdin – *Point Sur* probably has never operated at 200 days. As the Globals operated past 300 days, was there much change in day rates? Clare – The rate isn't going down with more than 300 days. This also starts pushing the limits of the ship in terms of maintenance and crew.
- Jon Alberts – There is so many variables in the day rate. He feels that going with a range is good step.
- Al Hine – Why do we have an FOY?
- Mike Prince – in the mid to late 1980's the operators were asked to come up with FOY definitions. It is one way to see how utilization compares to ship capacity.
- Robin Muench – What is driving the sort of science that we need in the future? What are the science drivers? The whole way that we do science is changing – gliders, observatories, satellite data, etc. There needs to be a science top-down approach.

The current Fleet and an update on Fleet utilization trends – Annette DeSilva presented charts with Fleet utilization and cost trends. All of her slides are included in **Appendix IX** <http://www.unols.org/meetings/2012/201210fic/201210ficap09.pdf>. Most of the figures in the slides are updates of Figures from the 2009 Fleet Improvement Plan. The new four Class ship categories were applied to the trends.

Marc Willis commented about the day rate. If the denominator is larger so that it includes the in-port days, the day rates will be lower.

Lunch Break

Continued: Fleet Planning and the UNOLS Fleet Improvement Plan (FIP) – Annette continued the presentation from before lunch.

There was a discussion on the format of the updated Fleet Improvement Plan and it was suggested that the document be a living document.

Review Fleet Projected Service Life End Dates – Clare Reimers presented updated service life projections for existing vessels in fleet. Her chart is included as **Appendix X** (<http://www.unols.org/meetings/2012/201210fic/201210ficap10.pdf>).

The updates in the chart include:

- Agor 27 and Agor 28 both enter the fleet in 2015
- R/V *Sikulialq* enters the fleet in 2014
- The ships are Re-totaled at the bottom.

Discussion about the Service Life Chart:

- Rose Dufour commented that Cape Hatteras has 15 days in January 2013.
- It was agreed to keep Pt Sur's date as 2016
- Matt Hawkins said that he is just waiting for the service life memo from *Endeavor* and then he will send these to the FIC. The end date will probably be 2020.
- Clare it is important to be able to revise the charts as new information becomes available. Matt – put a revision date on the service life chart.

General Discussion:

- Al Hine – There should be more review of the science sections in the FIP. He wouldn't have agreed with the MG&G section of the 2009 Plan.
- Mike Prince – In drafting the FIP, the FIC reviewed the reports that were available at that time.
- Al Hine – Will FIC be able to write the science part of the FIP?
- Sandy Shor – The FIC is responsible for this and should be able to do it.
- Mike Prince – It is the charter of UNOLS to do this. It is why this committee exists.
- David Checkley – Who uses this document?
- Matt – Everyone uses this report - Interagency groups, OMB, etc.
- Annette – The UNOLS Office gets asked for these figures and updates to them regularly - often from the agencies, but also from the National Academy
- Matt – What is the status of the UNOLS Ship use survey? Annette – There is an ad hoc committee that was charged with doing a more in-depth evaluation of the results. They are engaged and will provide a report at their next meeting.
- Matt – This is very important. Without ship user demand, there will be no new ships.
- David Checkley – it is very important to understand the decline in ship use.
- Al Hine – there are probably workshops that are defining new science and developing science plans. He doesn't know what is going on with RIDGE, Margins, etc.
- Annette – The updated draft FIP when ready can be posted for community comment.

In summary, FIC will take on the task of drafting of a new FIP for beyond 2030 considering a different form for the plan and new models for future fleet acquisitions. Incorporate, where

appropriate, Consortium for Ocean Leadership recommendations. Incorporate the update charts developed by the UNOLS Office to reflect the new ship classification system and trends. FIC will develop a “living” web-based FIP modeled after NSF Research Overviews.

Early Career Investigator Oceanographic Research Cruise Training Opportunity – Clare Reimers provided the report on the program. Her slides are included as **Appendix XI** (<http://www.unols.org/meetings/2012/201210fic/201210ficap11.pdf>) and include details about:

- The program development
- Program goals
- Secondary benefits
- Current agency support
- The 2012 program on New Horizon including the agenda, cruise track, science support and equipment to be used

The participants of the program have been tracked through the UNOLS STRS system. Nine of the 28 2011 participants have submitted ship requests as PI or co-PI.

Clare will have a UNOLS Outreach poster about the Chief Scientist Training program at the AGU Fall meeting.

Discussion:

- Annette – From the ship use survey, we realized is that we needed to engage the early career scientists (ECS). We did this with the DESSC workshop in 2011 and it was very successful. We provided modest travel support for participants.
- Matt – Why don't we see early career folks at the UNOLS meetings? Annette – We haven't targeted them.
- Sandy Shor indicated that NSF wouldn't be the optimal place for the ECS participation.
- John Morrison – The ECS are hesitant about submitting sea-going proposals.
- Candace Major – She hasn't seen a bias for either early or senior scientist proposals.
- Rose Dufour – It is a myth that proposals with ship time are viewed unfavorable.

WHOI Long-Coring System - Candace Major and Matt Hawkins provided a status on NSF's study to reposition the Long Corer to R/V *Langseth*. Their slides are included as **Appendix XII** (<http://www.unols.org/meetings/2012/201210fic/201210ficap12.pdf>). Their slides include great detail about the project background, Phase I and II efforts, cost, sponsors, and questions to the community.

Matt Hawkins began the report and said that LDEO has done a great job phasing in improvements to the ship.

The estimated cost to modify *Langseth* to accommodate the Long Corer is as a minimum \$6.1M. The best solution appears to be to install sponsons. The pros and cons were reviewed.

Other long core costs (in addition to \$6.1M)

- The long core winch must be maintained annually.
- Tech costs are \$18K /day

The Long Corer is 50 meters, on the Langseth it would be 42 meters. On other vessels it would be shorter.

Candace Major continued the report:

- Is there user demand to continue this activity? The sponsors would broaden the use beyond the LC. If the platform is used for more than just seismic, the day rate could be lower.
- If we lose the LC, we lose a unique capability. There is only one other system in the world – the French and it has serious distortion.
- We need input from the user community.
- NSF would like to suggest a workshop/webinar of past and potential users, including young PIs who might use the LC in the next decade. They want to see if there are viable options.
- Proposal pressure – the first cruises were in 2009 and there were 6. They want to know why demand is down.
- This could be a UNOLS hosted webinar.

Discussion:

- Sandy Shor – Are people now using the Drill ship cores?
- Robin Muench – Where is the user group. If they want to use the LC, they need to submit proposals. You can't keep funding the system, unless it is going to be used.
- Matt – This is actually the point NSF is trying to make. We can't fund the system unless it will be used. They would have to lay-up a ship to afford the Long Core repositioning.
- Candace – Can we afford to lay up the LC?
- Clare – Can NSF give the LC to the French?
- David Checkley – Is there any use outside of academia for the LC?
- Annette – What was the outcome of the other repositioning options (*Revelle* and *Thompson*)? Matt – The other ship operators weren't interested. They are off the table – it is just *Langseth* now. In the mean time, NSF might move forward with additional study of the Langseth option.

In summary: NSF has requested input from UNOLS (FIC) on whether to move forward with the Long corer repositioning to the *Langseth*. FIC will host a community webinar in 2013 to consider trade-offs and hear from users after AGU.

FIC Membership – Two FIC members have terms expiring in 2012, Al Hine and Maureen Conte. Al Hine was present at the meeting and Clare Reimers presented a certificate to Al and thanked him for his service.

FIC Guest Speakers for future meetings - Dan Schwartz commented that we need to think about integrating autonomous systems into the ships and the SMRs. A motion was made and passed: As an action item integrate autonomous systems into Ship designs, operations, and SMRs. This will extend the science reach of the vessels (Schwartz/Checkley).

We will invite a speaker with expertise on autonomous systems.

David Checkley suggested communications as another future topic.

Other Business - Opportunity for Additional Reports/Comments:

Sand Shor commented on the Agency's June 1st Letter to UNOLS with the recommendations on Fleet operations. In the June timeframe it was doom and gloom for fleet operations based on low demand. We need to do better predicting where we will be early on. There is a huge discrepancy. The Navy put a lot of effort into drumming up more days.

- Rose Dufour – some of the 2013 days were from Thompson's days that were postponed from 2012.
- Sandy – How can we do better next time? It resulted in a lot of work for UNOLS.
- Rose – There was a lot of new work that was brought in – German work, *Melville*, *Thompson*, etc.

Adjourn – A motion was made and passed to adjourn the meeting (Shor/Checkley).

FIC Executive/Working Session – The remainder of the day was reserved for FIC members to address tasks and follow-up on activities addressed early in the day.
