

## Arctic Icebreaker Coordinating Committee (AICC) Meeting

Pier 36 - 1519 Alaskan Way, Bear Room, USCG Base  
Seattle, WA  
December 12 & 13, 2005

### Appendices

- I. [Agenda](#)
- II. [Attendees](#)
- III. [Review of Past Action Items](#)
- IV. [UNOLS Report](#)
- V. [RVOC Report](#)
- VI. NOAA Report
  - a) [Kathy Crane - NOAA](#)
  - b) [Jeremy Potter - NOAA](#)
- VII. [USCG HQ Report](#)
- VIII. [ARVOC Report](#)
- IX. [Summary of HLY-0501 and HLY-0503 Debriefs](#)
- X. [National Ice Center](#)
- XI. [Status of ARRV](#)
- XII. [AICC Action Items \(day 2\)](#)
- XIII. [NSF/OPP Subcommittee on US Antarctic Program Re-Supply](#)
- XIV. [USCGC HEALY Science Support](#)

### Executive Summary

The UNOLS Arctic Icebreaker Coordinating Committee (AICC) held a meeting at the Coast Guard's Integrated Support Center in Seattle, Washington on December 12 and 13. In addition to members of the committee, representatives of the U.S. Coast Guard, the National Science Foundation, the Arctic Research Commission, the Antarctic Research Vessel Operations Committee (ARVOC) participated in this meeting. Discussions centered on recent and planned operations aboard the U.S. Coast Guard Cutter Healy, with the committee providing recommendations regarding the scientific outfitting and operation of the vessel. Also discussed was the status of the Polar Star and Polar Sea as well as the preliminary recommendations regarding Coast Guard icebreakers from the National Academy of Sciences study. Recommendations and the minutes of the meeting follow below.

### Recommendations and Action Items

|   |                  |
|---|------------------|
| Make sure that the UNOLS Fleet Improvement Plan includes USCG icebreakers (at least Healy)  | Edwards & Prince |
| Find out what the toll through the Northern Sea Route is, as the Russians are charging so much now that ODEN had to be re-routed.   | Brass            |
| Conduct an international fleet-wide review of existing icebreaker installed multibeam systems to evaluate performance. Coordinate with M. Jakobsson, who is heading up a similar effort for the Swedish icebreaker Oden | Chayes & Edwards |
| Take comments from the Debriefs and from today's discussion and draft a letter from AICC about the need for improvements in NIC support for high resolution ice coverage.   | Minnett          |
| Provide a list with priorities for equipment upgrades as everything listed here can't be  | Chayes &         |

|   |                   |
|---|-------------------|
| funded for this year. Need Dale to provide ballpark costs. Recommend using the hotel rate scheme: \$, \$\$, \$\$\$, \$\$\$\$. | Edwards<br>(AICC) |
|---|-------------------|

## Recommendations

NSF (and other Federal Agencies funding cruises on HEALY) could send a formal letter to PIs once they are scheduled indicating what their responsibilities are.

NSF could send a formal letter to PIs once they are scheduled indicating what their responsibilities are.

Information about new helicopter operations structure would be a good addition to the website.

## Meeting Notes

### 1. General business & reports

#### Welcome and introduction (USCG, Margo Edwards)

AICC Chair, Margo Edwards called the meeting to order at 0843 and introductions were made around the room.

#### Review and approve minutes of last meeting

A motion was made, seconded and passed to approve the March 2005 AICC meeting minutes (with some minor corrections).

## Chair report

### AICC Action items (Margo) [appendix III](#)

Margo reviewed the Action Items.

- Follow-up on the Booz Allen-Hamilton (BAH) report – Done
- Prioritize recommendations from 2004 debriefs and send to USCG/NSF – Done
- Review guidelines for dealing with Arctic communities – Done, but not delivered.
- Review UNOLS PCAR and modify the Healy debrief questionnaire – Done mostly.
- Recommend to State Department that BASC be notified about foreign icebreakers coming into Barrow – Done, need to follow-up.
- Develop short and long-range plans for ice data needed on Healy – Short-range done, long-range in progress.
- Review Healy cruise planning manual and send comments to Dave Forcucci – Pending.
- Review Dale's new lab layouts and send official AICC recommendation to Simon – TBD this meeting.
- Establish priorities for "2006" system upgrades – in progress.
- Recommend what to do about the multibeam upgrade – Pending.
- Plan a future meeting with ARVOC – In progress.
- Get EOS article about native concerns finished and published – No progress.
- AICC briefing for NAS panel on future USCG icebreaker needs – Done.

### UNOLS Reports [appendix IV](#)

#### UNOLS (Mike Prince)

There will be a \$5M reduction in ship operations budget for NSF OCE in 2006. This may be accommodated by retirements of older vessels or by lay-ups in the short term, but this solution will be

looked at carefully as this is not long-term money saver. At this time, UNOLS can't predict an upward slope in the NSF budget, but the present schedule still has 4000 days at sea. Most of the large ships are supported for 1/2 to 2/3 of a year at sea.

An unresolved problem is how to retain technical support staff who may take new jobs with more secure pay.

### **FIC (Mike Prince) [appendix IV](#)**

An RFP is out for Regional Class vessels design and construction industry teams.

The time has come to revise the Science Mission Requirements for GlobalClass vessels as the last version was published in 1989.

Federal agencies including UNOLS, NSF and NOAA are working on a broader vision of the fleet renewal plan that will look at ships beyond the academic fleet. UNOLS will generate a companion plan that will include the USCG icebreakers.

***ACTION ITEM FOR AICC: Make sure that the UNOLS Fleet Improvement Plan includes USCG icebreakers (at least Healy)***

### **DESSC (Hedy Edmonds)**

There was heavy use of Alvin and ROV in 2005. Gloomy news from NOAA about the NURP and OE budgets with ~50% cuts. The HOV is coming along and due to be available for science programs in 2009. Alvin and Atlantis are presently in an overhaul period. DESSC is being asked for input on sensors for the new HOV. Looking at bringing new assets into the NDSF, notably ABE and Sentry. Forming an HOV safety standards committee to set up certification and safety procedures for the new HOV and other existing HOV's. Discussion followed about the application of ABS versus Navy standards. At present NSF accepts reciprocity for Russian and Japanese submersibles.

### **RVOC (Dan Schwartz) [appendix V](#)**

The Volatility of fuel prices is a major concern for RVOC. To add to the volatility problem, the NAVY has increased the frequency of fuel cost adjustments to every three months, but in the meantime, all ship operators are over-budget for 2005.

The next RVOC meeting will take place in Seattle April 25-27th.

### **RVTEC (Dale Chayes)**

RVTEC held a meeting in Corvallis in November, Nov 8 - 10. Elected Stewart Lamerdin as vice-chair. Fall 2006 will be joint meeting with INMARTEC. RVTEC expressed significant concerns about Regional Class specifications, which NSF is addressing.

Looked at the standard outline of technical services. A primary issue for RVTEC is the retention of technical staff and community expertise when NSF's budget for ship days is being drastically reduced.

RVTEC has concerns about safe working loads (SWL) for wires and cables and the methods for determining the acceptable loads. It's unlikely that that this issue will impact Healy, but the CO should be advised about what is happening to help with Healy operations. Specifically, RVTEC has asked the UNOLS Safety Committee to address SWL and NSF is testing cables to help inform SWL decisions.

### **Agency Reports**

#### **NSF/OPP (Simon Stephenson)**

Going back to the purpose of AICC, to improve the operation of the Healy primarily as well as the POLARS. The debriefs show that the work has been quite successful over the past year and this is a testament of the good work by AICC and by the Coast Guard, in particular the Healy crew. The conditions for the first cruise were very tough and continued with a challenging set of operations.

The MOU and the program plan: Moved forward with drafting an MOU not really knowing whether or not there would be a budget transfer. They decided to use the NSF/DOD MOU for the Antarctic as the model and then were able to complete the MOU in two months. Once the MOU was signed, they had to negotiate the program plan for the next fiscal year. Program plan for Healy year is around \$18M of which about \$15M is base funding. In addition, Simon will be also be paying \$4M for CY 05. There is a gap that needs to be filled for maintenance budget with two components of about \$3M each. They will have to find money from within some science budgets to make the difference. Mike Van Woert has stepped in as interim acting head of OPP with Tom Pyle's retirement. Also, the head OPP fiscal officer position is vacant.

The remainder of the \$48M being transferred is for the Antarctic mission. NSF leased the Krasin for Deep Freeze '06, with the POLAR STAR in standby mode in Seattle. Not certain that Krasin will be available next year. The program plan for Deep Freeze 2007 is to have the POLAR SEA be the primary vessel, which means that the program funds will be needed to make the SEA ready for next year's operations. OPP director, Karl Erb, asked that a committee look at eliminating the single points of failure in the Antarctic supply operations. Options include building a runway for wheeled aircraft at the South Pole station, which would allow direct fuel delivery. Fuel to be re-delivered to the Pole is a significant portion of the fuel brought into McMurdo. Increasing the tank capacity at McMurdo to cover two years supply and implementing over the ice transportation for re-supply are also under discussion.

The NAS study has not been released yet and it will take some time to have these recommendations inform the NSF/Administration budget process. When the NAS Interim Report is released, the AICC will need to be constrained by its recommendations in the short term.

2007-2008, the IPY will be a major driver for operations, however the NSF call for IPY proposals has not yet been released. It is expected soon.

Discussion followed about the use of foreign vessels. NSF has been successful in using icebreakers to support U.S. scientists, but in almost every case there has been partnerships with scientists for the other country, usually initiated by the P.I.'s collaboration. Some times the collaboration is initiated as part of solving the scheduling issues. Bob Bourke asked how these options could be made better known, such as on the NSF or AICC websites. Simon also mentioned that AOSB/FARO is trying to develop an international IPY-oriented website for ship use.

#### **NOAA (Margo Edwards)**

Kathy Crane ([appendix VI\(a\)](#)) sent a report that was optimistic about a transit along the Russian Margin, which may use a Russian vessel. At the same time Jeremy Potter ([appendix VI\(b\)](#)) reports that whereas OE has a request for 55 days of Healy time, this is likely to be significantly impacted by the recent 40-50% cuts to NOAA's OE budget. Garry Brass asked how the day rate for other agencies such as NOAA would be calculated. The day rate is really an incremental rate for costs over a fixed base budget.

***ACTION ITEM (AICC or BRASS?): Find out what the toll through the Northern Sea Route is, as the Russians are charging so much now that ODEN had to be re-routed.***

#### **Arctic Research Commission (ARC) report (Garry Brass)**

Garry says that from now on, Law of the Sea will be referred to as LOS-82. The White House is committed to getting the treaty ratified in the coming year. National Geospatial Intelligence Agency (NGA) to track hazards in the Arctic. NGA has put in a proposal to divide the Arctic into five new nav-areas used for reporting Notices To Mariners (NTM). With the implementation of Nav Areas, there will

likely follow the need for Rescue Coordination Centers (RCC) and Global Maritime Distress Signaling Systems (GMDSS) in these areas, which will be difficult due to lack of satellite coverage. Groups are looking at northern sea routes such as from Iceland to Adak. Also working on a five-nation agreement for permit free zone for research in the arctic outside the 200-mile limit that would allow surface and subsurface data collection in claimed regions. State Department is interested, but they are not sure yet. Norway, Greenland/Denmark, Canada, U.S. and Russia are the countries that are considering this treaty. Garry's retirement has been postponed until March 31, due to a lack of replacement.

### **Coast Guard Icebreaker Operations (Headquarters) report (CDR Wojahn) [appendix VII](#)**

CDR Tom Wojahn reported for CG HQ ice operations, which includes polar icebreaking, domestic icebreaking and international ice patrol.

Budget authority. Congress moved \$48M from CG to NSF's budget for polar icebreaker operations. Funding covers Polar Sea repairs to be ready for DF07, Polar Star in standby status for DF06, after which the PSTAR will be in caretaker status at the pier (34 crew members to maintain in operational status). Starting with the next deployment, CG helicopters will not be used on Healy, due to a lack of aircraft while they are cycling them through major maintenance and engine replacement. They will use contract aircraft for Healy.

NAS interim report has five recommendations, but not released until congressional committees are briefed which is happening today and tomorrow. The USCG was briefed on the recommendations one week before this AICC meeting.

National Security Presidential Determination will have a major impact on the future plans for Coast Guard icebreakers. State Department and National Security Council will start this after the interim report is released.

#### Efficiency alternatives:

Crewing models – Military Sealift Command review for crewing options for the POLAR Class, from current Coast Guard crewing to a mix to all civilian mariners. After this report is briefed through CG commands, may seek AICC input.

Training standards for Healy - this is training for the Healy crew, having to do with the unique systems on Healy. Examine the training budget and cycle for systems training.

Margo made the point that training and performance of MSTs has improved greatly in the past few years. She wanted to make sure that this message made it back to HQ. The MSTs are very enthusiastic and skilled, but lacking in experience. Continuing to give the MST's experience on UNOLS ships is improving science operations.

Tom covered the ice conditions in the Antarctic. The conditions are similar this year to last year, with warmer temperatures, but still a lot of fast ice. This year the icebergs are gone. There is about 65 nm of soft ice with no snow and then 15 nm of first year ice mixed with multi-year brash and snow coverage. At present the wind has not blown the ice away from McMurdo.

### **Coast Guard Pacific Area report(s) (CDR Craig Lloyd & LCDR Greg Stanclik)**

PACAREA is reorganizing to address "response and prevention," so expect to see new faces at the next AICC meeting.

LCDR Greg Stanclik gave the remainder of the report. Polar Star is currently underway on a two-week shakedown cruise and then will be in 48-hour standby status. They are looking at the options for Polar Star in an 18-month to 24-month caretaker status. Polar Sea is in the shipyard undergoing 3 major overhaul items. Replaced the main rotor on the center line shaft, this was a major lift. Next will go into drydock (January 4, 2006) to recondition the underwater body, recondition hubs and shafts. The Polar

Sea/Polar Star maintenance plan means that most of their crew won't have much experience when they finally sail in November 2006.

Maintenance budget for Healy is 7.2M, for PSEA it is \$14.4M to get it ready for deep freeze and \$400K for Polar Star's caretaker status. Healy's next drydock will be in November 06 and then again in November 09. Upgrade of the SeaBeam will have to be scheduled for the 09 shipyard. Dale said the plan was to use the 06 drydocking to do an extensive ship check of current system as a prelude to designing the refit.

***AICC action item: conduct an icebreaker fleet-wide review of existing multibeam systems to evaluate performance. Coordinate with M. Jakobsson, who is heading up a similar effort for the Swedish icebreaker Oden.***

What is the expected lifetime of the Polar Sea after maintenance? Answer: This is a two-year fix assuming that nothing happens to the Polar Star.

How are gas turbines on Polar Sea holding up? There are three spares and the turbines are holding up well.

Funding for science on the Polar Sea and Polar Star has been zeroed.

They just signed a 5 year phased maintenance contract with Todd Pacific Shipyard for work on Healy.

#### **ARVOC – Palmer Replacement Update (Jim Swift) [appendix VIII](#)**

Jim reviewed a condensed version of the ARVOC agenda. They are concerned primarily with what the replacement for Palmer will be. Rob Dunbar of Stanford presented ARVOC with a report on the conceptual design of a possible Polar Research Vessel. They have held workshops to define the science requirements for the next 20 years or so. Worked with MARAD and STC to do a feasibility level design study to see how much of the requirements could be accommodated. The important driver is the need for a larger heavier vessel to increase icebreaking capability. There are a lot areas and time frames when the Palmer cannot operate. They also want increased capabilities for mapping during icebreaking, accommodations for 50 scientists, helo capability. See appendix for specs of conceptual design.

## **2. 2004/2005 Completed Science Operations**

### **Summary of HLY-0501 and HLY-0503 Debriefs (Margo) [appendix IX](#)**

Margo Edwards introduced the subject. Denis Darby collected 470 meters of core material. Margo's towed sonar (IMI-30) was deployed only briefly. Rolf's program used ROVs, divers and on-ice observations. Dennis Darby (HLY-0501 and HLY-0503) and Bernard Coakley (HLY-0503) debriefed separately by telephone. They both had very positive comments about the ship and crew's performance. Margo will compile debrief notes provided by participants and present draft recommendations tomorrow. Rolf Gradinger (HLY-0502) provided written responses to debrief questions and the suggestion is that the debrief take place after today's meeting adjourns. Approved debriefs will be posted to AICC (UNOLS) website ~ January 2006.

Permitting issues and solutions (Bernie Coakley)

There was a broad discussion about the requirements for obtaining Incidental Harassment Authorizations (IHA) for seismic work and the potential impacts on other work.

Bernie: "Red Zone" shouldn't be an issue for 2006 as now both Oden drilling of Lomonosov and Healy transit for HOTRAX have set precedents.

HOTRAX applications for IHA are online and can be used (cut and paste) by Lawver to speed up application for that program.

*Side note: during HOTRAX program, 97 sonobuoys were deployed and marine mammal observers could monitor them in real-time. No marine mammals were heard.*

Mike Reeve reported that NSF is working to develop an EIS for all NSF-sponsored seismic activities. Process likely to take an additional 15-24 months. NSF is making a tremendous effort to make this an open process.

### **NIC Ice Support (Peter Minnett)**

Peter raised the issue of having the ice data sent to the ship and processed on board as opposed to getting ice products from the ice center. The lack of sufficient high resolution SAR imagery could be mitigated by use of ESAR. Limited bandwidth is not an easily solved problem. The ship's point of view was that it was almost impossible to predict the location for high resolution imagery two days ahead of time, therefore using Helo recon is the surest way to get real time high resolution ice information. Dale showed the pathway for getting processed ice data to the ship. It seems that RADAR SAT data cannot be obtained any faster than six to eight hours through the National Ice Center.

Arctic Research Commission is trying to pull together the needs from the National Ice Center.

NIC needs feedback ([appendix X](#)) on how to improve their service to the customers such as the CG icebreakers. The orientation to customer service needs to be improved.

***Action item: Take comments from the Debriefs and from today's discussion and draft a letter from AICC about the need for improvements in NIC support for high resolution ice coverage.***

### **3. Alaska Region Research Vessel Status (Denis Wiesenburg) [appendix XI](#)**

ARRV planning started in 1976 and a ship was designed in 1980 with the goal of breaking 2.5 ft ice at 2.5 knots. With this latest design now complete they hope that ship construction will begin in 2007, but no money in the present budget. Funds will probably be requested in the FY07 budget.

Money is in hand to improve the marine center in Seward.

### ***Bridge Wings (Denis Wiesenburg)***

Denis sought input on whether or not bridge wing extensions were needed.

Although they are useful for measuring sea ice thickness, they are a problem when it comes to logistics and parking the ship at the pier if they extend past the sides of the hull. Response to bridge wing idea from AICC was not enthusiastic. It was suggested that mounts for live-feed video cameras or catwalks outside the pilothouse could serve as lower cost alternatives with less impact on the overall design.

### **4. Scheduling and planning for 2006 and 2007**

#### **Healy 2006 Cruises (Dave Forcucci)**

Dave gave a brief overview of the planned 2006 field program. [http://www.icefloe.net/reports\\_healy.html](http://www.icefloe.net/reports_healy.html)

- HLY0601 Lovvorn – Benthic Predators in Northern Bering Sea
- HLY0602 Lawver – Crustal Structure of Western Canada Basin
- HLY0603 Mayer - NOAA Continental Shelf Mapping
- HLY0604 Reeves-Sohn - AUV testing

#### **Clearance issues for Healy in 2006 (Dave Forcucci)**

Dave indicated the Coast Guard felt they should not take bottom samples such as cores within the red

zone (continental shelf claim outside the 200 mile EEZ claimed by Russia) until they had guidance from the US State Department. Dave is providing Bob Smith at State with information regarding the cruises, including maps with cruise tracks, so State can provide USCG with guidance. Garry Brass remarked that considering 2005 guidance received from State that research should be permitted in the red zone, however he will contact State Department to get a clarification. The Coast Guard would like guidance in writing about where and if they can work in the Russian claimed area and west of the 169° convention line

### **Permitting issues for 2006**

Discussion focused on making scientists aware of their responsibilities with regards to cruise planning and interactions with the Arctic communities early in the proposal writing and planning process. There is a need to build the funds and plans into their proposals to do the work of communicating and planning with the Barrow community. Utilizing the Barrow Whaling Captain's meeting is a good opportunity to reach the leaders of the community.

***AICC Action: Need to finish article about working with whaling communities and pass result to Rene Crain, then publish in EOS.***

A discussion about the potential conflict with Mayer/Sohn personnel transfer near Barrow around whaling season followed. Helicopters are not popular with local community at this time of year. Simon will follow up with PIs.

### **2007 Healy Plans and Availability (Dave Forcucci)**

There will be a drydock in Nov 2006 until Feb 8th, 2007. The only known funded project at NSF is for Reeves-Sohn on the Gakkel Ridge. The BEST program is looming as a possible program that will need ship time in 2007 or beyond.

There was some discussion on how to make cruise planning meetings mandatory. The Healy sent an email to 2006 PI's that have not used the ship before to come for a pre-cruise planning meeting. One question was how to make these cruise planning meetings part of the planned regular process for funded projects. It was suggested that either the AICC and/or the Coast Guard website should contain a checklist about responsibilities of PI's for working in Arctic areas. Also, NSF could send a formal letter to PIs once they are scheduled indicating what their responsibilities are. It's important that PIs include funds in their budget to interact with northern communities well in advance of their field programs to make sure that they don't run afoul of locals. BASC is a good resource for collaboration, but they can't always address specific concerns about programs that PIs can.

### **Day Two**

#### **Action Items from first day (Margo)**

Margo presented new action items generated during the first day. [appendix XII](#)

| <b>New Action Items</b>  | <b>Who's in Charge</b>                                      |
|--|---|
| Review the UNOLS Fleet Improvement Plan to make sure it includes icebreakers.  | AICC/Mike Prince  |
| Provide community with information about use of foreign icebreakers, IHAs, working with indigenous communities, budgeting travel, etc. | AICC via various websites                                   |
| Determine toll through Russian Northern Sea Route and make information available to Arctic researchers.                                | Dave Forcucci   |
| For multibeam upgrade - review other icebreakers and the performance of their multibeam systems.                                       | Margo Edwards, Bernie Coakley, Dale Chayes Martin Jakobsson |



|   |                              |
|---|------------------------------|
| Use debriefs as basis for letter of "constructive criticism" to NIC for ice service support (with copies to CGHQ, NSF, ARC).  | Margo Edwards, Peter Minnett |
| Investigate feasibility of getting Terrascan data (SAR and MVSAT data) on Healy in 2006.                                      | Peter Minnett, Dale Chayes   |
| Clarify State Dept's position on Healy working on Russian Shelf. Get written policy statement from State for the Coast Guard. | Garry Brass, Dave Forcucci   |

## 5. Science Modifications, Infrastructure and Equipment

### Healy

#### *Seismic gear for Lawver (Dale Chayes)*

Dale met with Harm Van Avendonk at Lamont to discuss their requirements for seismic gear for Dr. Lawver's trip. Dale noted that the seismic equipment for the 2005 work was provided by the science party. Lawver's proposal assumes that this facility/equipment will be provided. With guidance from Simon, Dale has taken responsibility for putting together the seismic equipment and expertise. He is working with John Diebold and Jay Ar dai at Lamont to put together the specs for a system and will probably use some combination of commercial providers. Lawver also will deploy seismometers on the sea ice, and needs helicopters for this work.

#### *Helicopter support*

Simon (NSF) will go through the Department of Interior's Office of Aircraft Services to select a contractor that could provide helicopter support. Need to specify what the mission requirements are and to make sure the CG Shipboard Helicopter Operations Procedures (SHOP) are considered in making the selection of contractors. Simon, OAS, and the Coast Guard will work together to find the right vendor and procedures to accomplish the mission. XO mentioned that the number of bunks for the AVDET is normally about 8. The helicopter support facilities on board will be available but will not have any Coast Guard aviation personnel available. Coast Guard would provide someone TAD to go through equipment with the contractor before and after the cruise.

***Recommendation: (Coast Guard/Forcucci): Information about new helicopter operations structure would be a good addition to the website.***

### Fiber-Optic winch for Reeves-Sohn

Rob Reeves-Sohn will be launching, recovering, and navigating AUV's and a camera/manipulator platform in the ice and how this will be done is unknown at this time. They will need a fiber optic winch with 0.68" tow cable for this work. The SIO winch is obligated for 2006 and the WHOI winch will not be available from the THOMPSON until March 2006. Reeves-Sohn will work with Dale to arrange for this winch/wire to be made available.

Margo raised the issue of replacing fiber-optic cable if it were damaged while deployed on Healy, especially if it impacted cruises on other ships. The solution is to have access to other cables, either within or outside the UNOLS wire pool.

Discussion followed about the survivability of streamers (which are very different from .68 cable) and how to ensure that data capability is not lost early in a cruise.

It was also noted that the IHA process needs to start immediately and that Larry Lawver will need to take some responsibility for this and work with Mike Rawson. Margo thought that it would be valuable for AICC to receive a report on the planning meeting to see how the process is working and to take the opportunity to make suggestions for systemic improvements.

**NAS Icebreaker Study and NSF Antarctic Logistics Study (Jim Swift) [appendix XIII](#)**

Late in the meeting, Jim Swift got approval and reviewed the recommendations of his Advisory Subcommittee on Antarctic Logistics and the NAS study recommendations.

The National Science Foundation's Office of Polar Programs Advisory Committee appointed a Subcommittee on U.S. Antarctic Program Re-supply. The subcommittee members were James Swift, Chair, Ed Link, co-Chair, Sridhar Anandkrishnan, Sam Feola, Berry Lyons, and Olav Orheim. Their report was submitted in August 2005 to NSF. They found that the overall the U.S. Antarctic Program (USAP) is healthy and is producing good science. Logistics for the program have been developed over a number of years and are well honed to the task. However, logistics support is being pushed to the limits in terms of what is being delivered each year by one tanker of fuel. There are approximately 25 million liters of fuel delivered each year, of which only 36% being used at or near McMurdo station. 12% is used for remote field sites and 11% is used at the South Pole Station. 41% is used to directly support the logistics program, providing fuel for the icebreakers and for the flights to the South Pole Station. The South Pole Station is completely dependent on supplies and fuel being delivered through McMurdo Station every year. Recent experiences with the B-15 iceberg and Coast Guard icebreaker availability have pointed out that this route of supply and the requirement for success every year without fail make this system vulnerable from a single point of failure.

The subcommittee's charge was to look at the full spectrum of options for field support of Antarctic science, to identify a subset that might merit further study and perhaps implementation and to examine the role of icebreakers in the re-supply chain. Instead of focusing only on potential problems, they tried to envision the re-supply system which might best support some future USAP. This system would support field work in locations remote from bases, provide "Just in time" logistics tuned to current needs and move people and cargo to where they are needed, from outside Antarctic where feasible. Continued robust science at South Pole Station and continued support from McMurdo and Palmer stations would be included. The system would also attempt to increase the availability of energy for science without additional fuel, personnel, etc. on the Antarctic continent.

They had four main recommendations:

- Recommendation #1: Develop a comprehensive systems approach to Antarctic icebreaking in order to alleviate the single point of failure inherent in the current mode, and to reduce operating, maintenance, and fuel costs.

- o In the near term this should include commercial sources, backed up by the US Coast Guard icebreakers, which are at present to be maintained by NSF.

- o A new McMurdo-capable icebreaker may be required to meet future logistical needs of the USAP.

- o Commercial business models should be examined (possibly involving the private sector) considering procurement and/or operation of that icebreaker.

- Recommendation #2: Study the feasibility of constructing a wheeled-aircraft capable runway at South Pole Station to support direct flights to the South Pole from off-Continent.

- o 50 C-17 missions from New Zealand would accomplish South Pole resupply at 20-25% of the current cost. Also reduces McMurdo fuel requirement and makes LC-130 flights available for direct science support.

- Recommendation #3: Continue to develop traverse capability.

- Recommendation #4: Improve ability of McMurdo Station to operate with one missed ship-borne delivery.
  - o Increase fuel storage, improve efficiency, move some services off-Continent.

Next Jim reviewed the preliminary recommendations of the National Academy of Sciences Committee on the Assessment of U.S. Coast Guard Polar Icebreaker Roles and Future Needs. Jim is on this committee, which had just reviewed their recommendations with Congress and the Coast Guard.

- "Recommendation #1: The United States should reliably control (by ownership or other means) at least one heavy icebreaker that is available and capable of breaking a channel into McMurdo Station."
- "Recommendation #2: The United States should maintain dedicated, year-round icebreaker capability for the Arctic to support national security interests as well as science."
- "Recommendation #3: In the short term, the required maintenance should be performed to make at least one Polar Class ship mission capable over the next 4 to 8 years."
- "Recommendation #4: In the short-term, the management of the U.S. polar icebreakers should reside with the U.S. Coast Guard, and it should have the appropriate operational and maintenance budget to fulfill Coast Guard missions that require icebreaking."
- "Recommendation #5: In the short-term, the NSF should revert to being a user and should continue to negotiate financial agreements to pay for icebreaker services when U.S. Coast Guard ships are employed."

There was some discussion about Coast Guard budget priorities for polar icebreaking and how the recommendations might affect this within the administration's budget requests.

## **Healy Recommendations/Follow-Ups**

### **Response to recommendations from 2004 field programs (Margo)**

Margo reviewed the debrief process and how a list of recommendations (prioritized) to the Coast Guard and NSF was developed. The process started with debriefs of the PI's from the 2004 field programs. Next Margo generated a list of recommendations from the debriefs and AICC members prioritized the list, which included 36 final recommendations. This rank ordered list was sent to the Commanding Officer of Healy, CDR Tom Wojahn, and Simon Stephenson, NSF in June 2005. Captain Dan Oliver has provided the ship's responses to these recommendations.

Margo thought that we should try to figure out how to quantify the success rate for achieving the recommended actions, which is something that Simon would like to see. He would like a system that tracks the improvements. Some discussion followed about how to evaluate the success of the responses and improvements. Margo then reviewed the 2004 recommendations and responses, which available in the appendix. There was discussion about some of the issues.

1. Pre-Cruise planning meetings - should be mandatory. Meetings are scheduled for all 2006 users, with specific invitations for technical people to attend. Carin made the point that PI's need to have the support in their budgets or otherwise to accommodate this travel.
10. MST responsibilities, training and recognition - XO suggested that this recommendation be based on performance expectations for MST support rather than specifying solutions that may not fly.
11. Bathymetry and underway data displays - Improved and learning all the time on how to continue meeting changing needs.
19. Healy crew Internet use - Dale to look into the cost of 24/7 connectivity for Science Net

using INMARSAT.

20. CTD Cart - Discussion about the need to have a cart and track to operate CTD's when working in open water. Dan Schwartz mentioned that UW has a cart and track system that he could loan to CG if needed.

21. XBT Launch tube - Not an issue, there are primary and secondary methods for launching XBT.

25. Shore based marine radio for science party - Iridium phones are available thru NSF.

26. Winches - The safe working loads and speeds are posted in the cruise planning manual.

28. Helicopters - Helicopter support is an issue for NSF to resolve at this point.

29. Habitability - XO will take for action and fix...

31. Hydraulic System - What is the operational requirement that led to this recommendation. Need to be more specific about what the problem is.

#### *Partial list of recommendations from 2005 field programs (Margo)*

Margo reviewed a few recommendations from the first debriefs and the complete list of 2005 recommendations will be compiled and circulated to the AICC for prioritization before the next meeting. 2005 Recommendations so far:

- One central Coast Guard (CG) person as main contact, managing the entire communication with the scientists.
- PI's need to be more responsive to CG (this from science, not CG).
- Make sure the State Department is still "calibrated" for Lawver's trip into Red Zone.
- Not all scientists provided the complete information on the tracking system, so substantial amounts of cargo showed up in Barrow that had not been announced to the ship in advance (error on the science side).
- Adding hazardous material MSDS sheets to the tracking system was initially a problem but solved on the spot by CG team.
- CG: There were a LOT of foreign shipments for 2005 and this caused more problems with clearing customs than in previous years.
- Clarify forms so that shipper isn't "FedEx"
- Use color code for shipments from the various expeditions – would make finding the shipments in the cargo holds a bit easier

#### *Longer range plans (Dale?)*

Dale presented a mixed bag of items that he might need to be included in his proposal to Simon. [appendix XIV](#)

- Trash management is an issue. Need to expand trash van to two containers.
- Map Server, will try to get as much time from Steve Roberts as possible for 2006 operations. Looking at mapserver on other ships. (look at using in UNOLS database) Looking for comments or capabilities for Map Server, which would be helpful.
- Metadata capture - look at SIO Explore as a possible method that is already implemented. TerraScan - There are other sources for doing this type of satellite data capture. This is something to look into.
- POS/MV - hardware was probably a "lemon" and it is being remedied by the vendor with an upgrade.
- Bathy2000 upgrade in the works. Healy ran Knudsen in 2005.
- Climate Control Chambers - action item still exists to write up a clear solution to the problems. One will be needed for the Lovvorn (Grebmeier) cruise this coming summer.
- Watch stander workstations - next round of improvements will include better software for

the displays and a third station.

- Sea Water, Need to look at alternate source or added volume when incubators are used. Without the incubators, flow aft was sufficient to keep the system from freezing up during 2005 ops.
- Multibeam - need sustained support for a planning and design of a multibeam replacement. In the 06 drydock there will be an opportunity to keep multibeam windows open long enough to create real as built drawings in order to create redesign plans. Solution will most likely include wider and longer arrays than now installed. This may present some real engineering problems. Need the clear statement of the problem by January 2006 (four sentences). Simon has asked Dale to submit a three-year proposal for science technical support on Healy.
- Data backup issues can be addressed in part using Polar Star tape loader as a spare. May want to get faster versions of DVD drives.
- High latitude communications for 2006 should be good for 2006 except at the highest latitudes. Dale C. and Dave F. to explore TDRS about Healy usage.
- Electrical requirements for bringing equipment, power strips and UPS on board should be articulated in the cruise-planning manual. Suggestion to include make and models, and maybe what the electrical requirements are and a note to contact CG if unsure.
- Need feedback ASAP on lab renovations and a statement of problem for Multibeam upgrade. Need a clear statement of needs for climate control chambers

***AICC action item: Provide a list with priorities for equipment upgrades as everything listed here can't be funded for this year. Need Dale to provide ballpark costs. Recommend using the hotel rate scheme: \$, \$\$, \$\$\$, \$\$\$\$.***

## **Polar Star and Polar Sea**

*Ship status (LCDR Greg Stanclik)*

## **6. Science operations and technical support**

### **Ongoing services**

*Science Data Network – (ESU/ATG report)*

LT Sara Diluna reported that they are moving forward with upgrades to the network hardware. One problem is the funding for work in the off season seems to come too late. Dale will now be sending in a three-year proposal, which should help with planning further ahead.

*Science Technical Support from LDEO, OSU, Scripps (Dave Forcucci)*

Coring equipment will now be maintained by Dale Hubbard at OSU. This is funded by Simon directly to OSU.

They are looking at having SIO maintain the CTD/TSG equipment.

Need to be careful about the distributed responsibility for different systems.

*Website/cruise planning manual assistance (Dave Forcucci)*

Laura Dippold in the UNOLS Office is now contracted by the Coast Guard to help maintain the content on the Coast Guard icebreaker website and cruise planning manuals up to date.

## **7. AICC business and other issues**

### **AICC membership**

Future needs – Three new members in January 2007. Also need to elect new AICC chair for 2007.

Announce the need for new members in ARCUS and in the UNOLS newsletter, with some mention of desired disciplines.

**Future Meetings - dates, venue, agenda**

The end of April is a good week for meeting with ARVOC, but this is a conflict with RVOC meeting. Margo would look at the 17-19th for a joint meeting.

**Meeting Adjourned**