Meeting Minutes

Arctic Icebreaker Coordinating Committee (AICC) Meeting
Wednesday and Thursday, April 20 and 21, 2011
Board Room 1235
National Science Foundation
Arlington, VA

Appendices (All appendices are in pdf format unless otherwise noted.)

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Executive Summary

The Arctic Icebreaker Coordinating Committee (AICC) convened for their spring 2011 meeting on April 20 & 21, 2011 at the National Science Foundation in Arlington , Virginia .

Item #	Item	POC	Comments
1	Set Date for next Meeting in Dec.	Robin, Jon, AICC	*Healy* doesn't return to Seattle until 30 December.
2	Accept Minutes from December 2010	Jon	Done, edits made, minutes approved and posted
3	Public review comment period by Mid June for	John	Due by Mid June

	the National Ocean Policy	Farrell	
4	Greg Somers is being transferred- Certificate of Appreciation	Jon	Jon to send this.
5	AICC to promote R/V *Sikuliaq*	AICC	
6	NSF Science Equipment on Polar Sea		Ask Renee Crain of NSF
7.	AICC letter is needed to support the Iridium OpenPort.	AICC	Send letter to Jim Wilson
8	AICC- provide input to Renee on what ice images are needed	AICC	
9	Add "On Ice Ops" to debrief form	Robin Muench	Work in progress

Welcome and Introductions
Dr. Lee Cooper, AICC Deputy Chair, chaired the meeting as AICC Chair Robin Muench was on travel for this meeting and unable to attend.

Chair Report
The meeting opened at 0830 with welcome remarks, a review of the agenda, and introductions. Lee presented a Power Point of past action items and current status of each.
These were reviewed, and a list was presented of issues being addressed since the December 2010 meeting. We received some edits to the December 2010 meeting minutes, and these changes will be made and then a vote will be taken on acceptance.

UNOLS Reports
Jon Alberts reviewed current activities of the UNOLS office (see presentation).
http://www.unols.org/meetings/2011/201104aic/201104aicmi.html
AICC membership and terms were reviewed. The AICC web site is being worked on, and AICC is requested to send suggestions to Erin Jackson/UNOLS. The MOA was signed between UNOLS and the Coast Guard to provide training opportunities on a space available basis on UNOLS ships for CG MST's. The Technician Recruitment and Retention Pilot project accomplishments to date were reviewed. CG MST's were placed on UNOLS ship (see appended slides).

A brief update was provided on other UNOLS standing committees, followed by an update on the Research Vessel Operators Committee, (RVOC) (see Doug Russell's slide). The RVOC will meet in San Diego on April 25-28, 2011. Research Vessel Safety Standards Appendix B will be discussed, and Appendix A takes effect on June 1, 2011.

<u>Agency Reports</u>

NSF - *Renee Crain* (NSF/OPP)

<u>STARC Proposal status</u>
The call for STARC proposals was issued in fall of 2010, and two proposals were received. An official award has not yet been made, however, a recommendation was made and both candidates have been notified. NSF is currently negotiating a cooperative agreement.

Medical Review Process
NSF is evaluating the process for medical clearances and physical qualifications. We are considering a risk-based system dependant on how far from medical attention the vessel will be working. We do have a PQ process for people working in Greenland, and have used a PQ system for remote sites in Russia. The OPP Medical Panel will meet in June, and a ship-based system will be on the table. Before any policy is made, we will consult with AICC and the Coast Guard. The RVOC Safety Committee is also looking at this issue for UNOLS ships.

Alaskan native programs and the community participants
NSF is supportive of this program and is receptive to suggestions from AICC.

CH2MHill - *Faustine Bernadac* (CH2MHill Polar Field Services, and SRI)

Overview
CH2MHill Polar Services (CPS) is a cooperative venture of three companies (CH2MHill, Polar Field Services, and SRI) and the lead contractor supporting approximately 140 NSF-sponsored projects in Alaska , Greenland , Canada , Russia , the interior Arctic Ocean, and Northern Europe . In Barrow, CPS' 2 employees – Faustine Bernadac and Joshua Bacon - are available to provide support from ship to shore.

It was commented that Faustine needs to work with Renee on helicopter support. Capt. Rall (USCG) offered that disembarkation and embarkation in Barrow does not constitute a port call given the lack of facilities and should more properly be classified a "logistics stopover".

Alaska Native participation in cruises
CPS reviewed the various members of the community who are involved in cruises. Community Participants are short-term volunteers taken from the community. CPS is arranging them, and they are offered an honorarium or per diem to compensate for their absence from home. *Renee Crain* noted that the optimal situation, though not a requirement, is for the volunteer to participate in an entire cruise. A good example was Bob Pickart's 2010 cruise. If cost becomes an issue, then the NSF becomes involved.

Marine Mammal Observers
Marine Mammal Observers: (MMO), now called the "Protected Resource Observers" (PRO), are in most cases qualified by and report to NOAA, or in some cases another appropriate government agency. They are there to ensure compliance with permits and are required by a government agency, usually NOAA/NMFS. Therefore, when you have a permit, you will need a PRO aboard.

Larry Mayer offered that in the past we have had a community observer for the duration of the cruise. They were paid, and the arrangements were made by the AEWC to build trust that the cruise didn't impact marine mammals. They served as effective liaisons with the whalers when whaling was underway. Last year and this year we will have a PRO even though we aren't required to have a permit this year. This person does not have to be NOAA qualified, i.e. a NOAA training is not required. It was mentioned that it would be beneficial if the roles of both the community observer and the PRO could be filled by one person, preferably from the local communities of the North Slope . The tribal college Ilisagvik in Barrow has trained local members to be PROs for the past few years and CPS will likely hire a PRO who took this specific training.

Renee Crain pointed out that the "on the ground support" in Barrow is now called UMIAQ, not BASC as in the past. CPS is working closely with UMIAQ, a Barrow native organization, and it has been a great partnership since January 2011. Faustine's slides show details on this partnership. BASC however still exists, and they provide other organizations with logistical support. They have a big project with DOE, as

well as other NSF in some cases. CPS remains separate and the main contractor tasked by the NSF.

It was suggested that the local logistical information presently on the Icefloe website needs to be improved. *Lee Cooper* will work on this with *Faustine* on this effort.

Kathy Crane inquired as to how a foreign vessel makes arrangements in Barrow for logistics. Is it reasonable to contact CPS? *Renee Crain* offered that they should contact her at NSF to work out details such as payment and scientist exchanges. *Lee Cooper* mentioned that this is information is currently on Icefloe and that we did make an announcement in Korea last month, so communication is getting better. *Bob Campbell* noted that for other cruises, such as NOAA-supported, BASC can be used out of Barrow, unless NSF becomes involved and task CPS for the support.
Renee Crain notes that customers have generally been satisfied but requests that she be informed of any problems. It was pointed out that any operations out of Deadhorse (Prudhoe Bay) pose special challenges, given that the region is under the control of the energy companies.

Renee Crain reported on the status of the Arctic logistics support contract. The current contract held by CPS extends through May 2012. NSF is currently recompeting the contract. Proposals were due April 15th, and they hope to announce a decision by October. This will be a 4- year award with the possibility of up to two 2- year options.

BOEMRE - *Ron Lai*

Ron described a new Environmental Science Program, ESP, which will focus on Arctic science (see presentation). There are various efforts on how to fund this work including collaboration with other federal agencies and with UAF Coastal Marine Institute and others. The present plan is to deploy more weather buoys in the Chukchi and Beaufort seas. *Tom Weingartner* (UAF) will deploy the bulk of the drifters, with Bob Pickart to deploy one from the *Healy*. Industry will deploy their own buoys in response to an EPA requirement to calibrate models. *Ron* is program manager for the physical oceanography portion of the project.

BOEMRE also has a 36-ft research vessel for work in the Beaufort Sea . They are using radar in the coastal margins and in the Chukchi Sea . They are also studying spring leads and land fast ice areas. These data are available and Ron Lai is the point-of-contact. *Lee Cooper* offered that he was involved with Anna Shoal work in 2012.

A question was asked about industry partners and the availability of their data, a topic that is currently under discussion.

Extended Continental Shelf (ECS) - *Larry Mayer*

Larry provided a Power Point on current work as part of the shelf mapping effort.
In collaboration with the Canadian Ship *Louis St. Laurent*, they have 49 days scheduled in 2011. The *Healy*-1102 cruise departs 18 Aug 2011, and the *Louis St Laurent* departs 11 Aug, and the two vessels will then rendezvous. They will focus on the Barrow Margin, conducting a multibeam survey on *Healy*, with the *Louis* following, to just south of 89 North, after which the *Louis* will take the lead. We will have a Canadian/AUV program, deployed from the *Louis*, and also have a short seismic line. The U.S. Navy will participate, along with 2 from Metoc, doing xbt's and balloon launches. The National Ice Center (NIC) will participate with ice observations and buoys. Participants from Fish & Wildlife and the USGS will contribute an ocean acidification component and TCD's.

A GEO Camera will be used. We deployed previously it on the *Nathaniel B. Palmer* and will use it on the *Healy*. The camera data, which are continuous, allow for tilt and pan with geo reference.

John Farrell stated that people have applauded the new bathymetry data availability and asked if there were updates on access to the seismic and AUV data. *Barbara Moore* responded that the seismic data will not be released until they have worked out an agreement with their finance ministry. The science community in Canada is pushing hard on this. By 2013, when Canadian present data packet, then it will be released.

Department of State (DOS) - *Barbara Moore*
The Arctic cruise is only one of several ECS cruises in 2011. We have seven other regions under exploration including two *Langseth* cruises to the Bering Sea and Gulf of Alaska . This work will continue for a few more years, possibly two for the Arctic, depending on budgets. By Dec 2011, we have series of reports due, evaluation of which will tell us what additional data collection is needed, maybe another 2-3 years. We currently are planning for an Arctic cruise in 2012, around Nautilus Basin in August or September. Work on the Barrow Margin could be done using any available ship.

Office of Naval Research (ONR)-*Martin Jeffries*

The US Navy is aware of and concerned with climate change as it will affect the Navy's mission (see presentation). In 2009 a taskforce on climate change was established following the Arctic Road Map, which is a 5-year plan on what is happening there and how to plan for the next 10-30 years.

ONR has decided to reinvigorate Arctic research programs and, with help from Admiral Carr, has created an Arctic & Global Prediction program having 3 focus areas:
1) Improve basic understanding of the environment and physical processes in the Arctic Ocean and atmosphere. This is, in part, fundamental curiosity-driven research.
2) Develop integrated ocean-ice-wave atmospheric earth system models for improved prediction.
3) Explore new technologies for measurements (platforms, sensors, communications) required for persistent operation in the Arctic.

New money will be in the FY 2012 budget. FY11 activities included ICEX, an ice camp in support of submarine activities, that also allowed ice thickness observations. Biogeochemical sampling was carried out from one of the participating submarines for developing protocols.

On Feb 14th we released the announcement for new department research in the form of a call for planning letters, due the first of April. Response was outstanding, this is new research funding.

In FY 2014 we are planning a significant at sea effort, and ONR will be looking for a vessel, *Healy* being a potential contender.

NOAA Arctic Research Program- *Kathy Crane*

Kathy gave an overview on the RUSALCA program that is funded jointly by NSF and NOAA (see presentation). In 2011 we will use a Russian vessel from Nome to Nome to service 8 moorings across Bering Strait . Since 2004 we have had a cooperative agreement between the US & Russia for long-term moorings and climate change detection studies. We maintain moorings in Bering Strait as well as Marine mammal programs. A second program, part of the National Ocean Service, is a coastal survey of several areas that are not well mapped. The NOAA Ship *Fairweather* will continue this work depending on ship

funding.

NOAA/PMEL has an Alaska fisheries program that is currently under review. We were scheduled for 10 cruises on *Dyson*, however, this has been reduced. We also have the *Thompson* for two cruises in 2011.

The Distributed Biological Observatory initiative has been gaining traction. This is a multi- ship, multi-national program focusing on four main regions. NOAA is trying to bring together scientists from many nations to look at ecosystems, biodiversity and overall rates of change.

The Circumpolar Flora and Fauna (CAFF), circumpolar biodiversity monitoring program is another driver of NOAA programs that originated with Arctic Council support.

NOAA wants to develop an international Arctic Observing Network with core, standardized ship-based sampling. This will require many ships from all nations. The standards for underway data collection are being developed. Comment that at design time it is not very expensive to improve things if the experience can be incorporated into the effort. .

A question was asked as to how well integrated NOAA is with BOEMRE, ONR and NSF funded PI's. NOAA has had some preliminary talks with ONR. We are looking for partners for RUSALCA program, and more discussion is needed on this topic.

US Arctic Research Commission- *John Farrell*

The commission is a small policy and advisory group that can work directly with Congress (see presentation). We have a new chair, *Fran Ulmer*. Two aspects of the Commission were discussed.

The Inter-Agency Research and Policy Committee are now managed by the National Science and Technology Council (NSTC), which is based in the White House. The first meeting of principals at the assistant secretary, deputy secretary level is next week. The Committee will develop a 5-year plan for FY 14-18, including cross-cutting themes within the budget, and have FY12-13 initiatives dovetailing with Homeland Security Presidential Directive (HSPD) 66 and National Security Directive (NSPD) 25, that provide high-level direction for US policy in the Arctic.

OMB says don't plan on anything new that is beyond existing budgets, but they approved for inclusion a Homeland Security budget request for 5 million for yet another analysis of icebreaking requirements. Not down to Coast Guard, but handled by undersecretary of management of DHS.

The new National Ocean Policy Act created a National Ocean Council to flesh out nine objectives for action, with the Arctic being the only specifically named geographical region. The Council is needed to coordinate research being done across federal agencies.

National Ice Center (NIC) - *Caryn Panowicz*

John Simms sends his regrets that he was unable to attend. *Caryn* outlined the 2011 support. The decrease in Arctic multiyear pack ice continues. Caryn noted however that the charts of ice coverage and thickness over several years, as well as forecast for 2011, are based on freezing degree days without ground truthing.

NIC will provide 82 radarsat images for the Healy HLY1101 cruise at $2300 per image. UNCLOS cruises will have 450 images on HLY1102. A Navy AG meteorological person will participate in the cruise for training and daily briefs, and an ice analyst will serve as a communication liaison.

An issue exists on sharing ice data with Canadian Ice Service and the NIC. The NIC can share, but Canadians cannot share ice data. They are working on this situation. NIC is part of the North American Ice Service. Edward Lau from MDA is working on an agreement with Canada, and Dale offered to work with him on this.

NIC was asked what other missions it supports. NIC responded that it spends 90-95% of SAR imager resources in support of US Navy Submarine activities.

Concerning data availability after a cruise: data are archived, but it's unclear whether it's available from the archives at no cost.

It was noted that *Sikuliaq* operations will require ice images, and that NSF/OPP will need to look into this.

Karen Frey noted that European Ice Services provides this information at no cost.

NIC will convene an Ice Conference on June 28th at the Navy Memorial.

NIC has the dates for *Carin Ashjian*'s winter 2011 *Healy* Cruise, but has not yet received a budget for this.

Enlisted military, about 15 personnel at present, are pulling out of NIC but will continue as a Navy command. When the transition is completed, NIC will consist of about 12 civilian analysts and a few officers.

United States Coast Guard - *Mike Krause*

The FY 12 budget will be austere. OMB has approved the *Healy* budget, but only at the $24M level and we are required to shut down the *Polar Sea* while redirecting crew from *Sea* to *Star*. We are getting some push back from Congress, but *Polar Star* activation will continue and is intended to keep her active for 10 more years. *Polar Sea* will be decommissioned at the end of 2011. *Polar Star* is planned to be functional by December 2012, then one year (CY'13) required for training/sea trials to make it fully operational by December 2014. This is similar to commissioning a new vessel and involves a full plate of training and certification. The intention is to transfer science outfitting onto Star from Sea, but this is not covered in the current budget. Some science of opportunity may be considered during the CY 2013 training/sea trials phase.

On the 1 July 2011 change of command Capt Vaughn will take over as CO of Star, and crew from *Sea* will join the *Star*.

The MOA for training ops for MST's on UNOLS ships has proven successful and is very important.

D-17 PacArea- *Greg Somers*

(See presentation) *Polar Sea* officers sailed in the Antarctic on BAS and Australian icebreakers.

D-17 Arctic Domain Awareness (ADA) flights using the C-130 will continue bi-monthly for flights of opportunity.

With respect to the marine environment, pollution response exercises are planned off Prudhoe Bay this

summer in CONOP and out of Barrow as a SAR exercise, and a maritime towing exercise will be undertaken in Bering Strait . Additionally, safety training for fishing vessels is being addressed.

There have been as yet no requests concerning 2011 foreign research vessel activities. *Healy* has 217 operating days encompassing 5 cruises during 2011, which makes it a very big year.

Greg Somers is being transferred in August, and will be replaced by *Doug Wyatt*.

One slide is available on outreach efforts and the *Coffin* cruise report (ftp.polarscience.net requires the password: "forhealy")

Update on R/V SIKULIAQ - *Steve Hartz*

The keel laying ceremony was held on April 11, 2011 and was attended by, among many others, David Conover, the new NSF/OCE Division Director (See presentation for complete schedule).

Recent changes to *Sikuliaq* include a new met mast and hull length extension to 261 ft. These and other changes reflect design verification weight issues and their mitigation. She will be classed as a UNOLS Global vessel with an ice class of IACS- PC 5, enabling operations in first year ice with some multiyear ice. Endurance will be 45 days, with availability of fuel being the limiting factor. Steve presented photos of the ship, modules, mock-ups, and the Marinette Marine facilities.

Operations, Scheduling, and Planning for 2011 and beyond

Healy - Dave Forcucci

The Healy schedule can be accessed at Icefloe with a password (also, see presentation).
Shakedown April 25 to San Francisco, then back to Seattle, then Honolulu.
JMS inspection out of Honolulu on 12 June.
NASA cruise June/July, Dutch to Kodiak
ECS cruise Aug/Sept, Barrow to Dutch
Pickart cruise Oct, Dutch to Dutch
Ashjian cruise Nov to Dec, Seward to Dutch

The 2012 season includes *Pickart* and ECS cruises, and pending NSF cruises.

Polar Star - Neil Meister

Neil Meister is retired CG and currently with the Buoy and Construction Office in Baltimore , providing icebreaker support (see presentation).

Polar Sea Retirement Asset Status is as follows. The Coast Guard will transfer the title to the Maritime Administration in Beaumont , TX , and scrapping will be in Brownsville , TX . with disposal not later than 30 Sept 2011. Some critical parts will be saved for use by *Polar Star*. The Coast Guard is using the *Sea* as a testing platform for *Star* components.

Polar Star is undergoing major system upgrades for a 7-10 year extension, in order to improve reliability while retaining the same capabilities. Sea and ice trials are scheduled for early 2013. Upgrades include a new 15 ton crane, new bearings in stern tubes, upgraded engines based on lessons learned from *Polar Sea* ,

new fuel monitoring systems, and a Miranda davit. The main motors will be cleaned.

The *Star* upgrades will continue in 4 phases as follows:
P1: Assessment in 2009
P2: Dockside- May –Dec 2010, (mostly rip outs)
P3: Drydock-Jan-July 2011
P4: Dockside Aug11-Dec12

Engines had been upgraded to a configuration that we now know from the *Polar Sea* experience does not work. Back-graded engines will be tested on *Sea* to be sure it is correct before committing to changes on the *Star*.

A question was raised as to Miranda davits would work properly given hull tumble home resulting from hull curvature and ice belt configuration. The davit has been moved farther aft in hopes that this would correct any issues, but it has not yet been tested at sea.

***Lee Cooper* - ICEFLOE**

The scientists' primer is now online and our thanks are offered to Renee for providing some of the graphics that are used. AEWC is now reviewing it, and anyone having comments should pass them to *Lee*.

Woody notes that they have talked to Tom Cook, who has agreed to stay on, for the back end.

Dave Forcucci notes that the CG put in for Canadian and Russian cruises, and that this has been a learning process.

Science Tech Support - *Dale Chayes*

Dale will work with the STARC awardee to make the transition (see presentation for details on support provided by Dale, who will work with the new STARC awardee during the transition period). Recent projects include:

The pCO2/TSG installation outline was given. This will shorten the latency time in the system for improved data. There was insufficient time to get it installed once it was funded for the 2011 season. We may consider a temporary installation in a lab van for HLY1103. If we want to do that, we need to commit to it now and get a plan in place.
Jeremy Mathis needs this for his cruise. We don't want to miss another year, and we need to have this plan to CG by end of April 2011.

ADCP: We replaced the old 150 with a UAF unit. OPP will send a new OS150 for *Sikuliaq*. We switched to UHDAS, and still need spares for the 150. A plan exists to deal with electromagnetic issues, and we also need to replace the ADCP window with a Zelux upgrade.

Multibeam replacement: An historical timeline was shown to illustrate how this has gone. We still have some noise issues, and we have 2 days to work on the transit from Honolulu to Dutch Harbor this coming year.

Acoustic Communications: We have effective communication with releases, but have to hang a transducer over the side. We have been working on getting one installed in the hull. *John Kemp*/WHOI has a transducer. We need to confirm availability of a deck unit and workout an installation plan. We hope to do

this for the *Pickart* cruise.

Reference Hydrophone: We discovered the ship has one, though no one knew it was there.

Winch Monitor System: Appendix A will apply to Healy.

Turner Fluorometer: we are looking at this and hopefully will add some new sensors.

Adjourn Day One-

Thursday 21 April 21, 2011
Meeting Convened at 0830
Lee Cooper proposed to accept the minutes by e-mail.

Science Modifications, infrastructure and equipment - *Dave Forcucci* and *Eric St. Pierre*

(See presentation) They just received a report from Elliot Bay Group concerning the Healy bow vans. This was funded by NSF/*Matt Hawkins* to come up with more options for van placement on deck. The Coast Guard has not yet reviewed this report. *Eric St. Pierre* stated that this is a 2 phase approach that considers the "front porch" area and athwartships. Power connections need to be looked at, and shore-ties are a concern with this suggested van location. The report is posted on Icefloe. The installation needs to tolerate minus 50 on insulation, heating, water lines, and drainage of water. On May 13, 2011, Elliot Bay is visiting the ship to brief the CG, and then the recommendations will go to CG Engineering for review. The modifications are estimated to cost about $45K. A fully outfitted lab van is about $140K

ESU Report - *Jim Wilson*

(See presentation) ESU has been a separate command and will become part of the "base." VSAT signed a $19,722 contract on April 1st for nine months at 256 kbps.
Service is for two more months than last year and is about $8K less than last year for 7 months. The Coast Guard is going to VSAT to replace Inmarsat B, which will no longer be supported starting in 2014. We have started plans to put a VSAT for science on *Polar Star*, which already has antenna cable runs for Reachback.

The CG has prohibited tunneling of the science network through CGDN as backup on *Healy* and as the only/primary on *Polar Star*.

On the Openport issue, the CG has concerns about a long term commitment to having the OpenPort connected to science computers. A letter is needed from the AICC to support the Iridium OpenPort. Large file transfers are mission critical for AICC, and they need to send Jim Wilson a letter on this.

Regarding *Polar Sea* science equipment: much of it will be out of date, and a review is being conducted. *Polar Star* should be as capable as *Polar Sea* is today, but this needs to be better defined. The capability to fax something to a village is still needed, and Jim will look into this. The mapserver for *Polar Sea* is now supported by a contract with UCAR's Janet Scannel

Science Tech Support-

Steve Robert will sail on at least the three Healy summer cruises, with NSF funding.

Woody Sutherland summarized the planned technical support during their phase in:
HLY1101: NASA- (6) SIO folks
HLY1102:ECS- *Dale* and *Steve*
HLY1103:Pickart- At least (1) SIO tech and *Steve*
HLY1104:Carin- We are working on that still.

Lee Cooper presented *Dale Chayes* with a certificate of appreciation for all his support to the *Healy*, Coast Guard, and AICC.

Ice Imagery - *Karen Frey*

Karen presented a report provided by Andrew Fleming at the British Antarctic Survey (BAS). The report concerns a service which has been in place for the Antarctic for some time. Now they are doing Arctic , and images are freely available on the internet. We don't have SAR data. Details on what images are available can be found at: http://www.polarview.org/

Dale offered that the interface to the low bandwidth browser has been limited to computers running Windows. Dale did some debugging recently and passed the results on to Andrew so perhaps they will be able to make some progress on that.

Renee asked that she be kept informed of how Polar View and NIC can be more helpful.
Karen mentioned there has been a delay in SAR images from NIC. Processing is better from MDA and PolarView and we will have a direct link from these two. AICC needs to provide input to Renee on what images are needed. We are going to plot *Healy*'s location on the images. Terrascan images are also used when images are good

AICC Business and Other Issues

On Ice Operations - *Don Perovich*

Don is writing a section on Ice Operations. This could be added to debrief forms in similar fashion to helo and small boat ops.

Alaska Native Participants - *Jeremy Mathis*

Jeremy reported on outreach. We have an outreach coordinator at University of Alaska Fairbanks for the Native Outreach Program and can make matches with students to be the observers. They are looking at setting up a course through the university. These are native students. And we want to have students from the village to make the connection back.

Renee notes that NSF would be interested in helping with this, which also would be good for field camps. NSF would be pleased to entertain a proposal.

Faustine notes that involvement of a person from Barrow is important and would like to help. She also notes that during hunting season, it would be hard to find someone.

Lee comments that a written report/feedback is important. We need to have someone capable of, and willing to, return to their community and report back.

Larry Mayer stated appreciation for Capt Ralls' effort to put the berthing document in writing. See letter on how rooms are assigned and rooms assignments spreadsheet. The STARC tech's room should be identified so that they don't have to move every cruise. Larry will look at the rooms and come up with document on what rooms are better then others. For helo-ops personnel this needs to be spelled out as to which rooms these personnel get. Capt Rall will give this some more thought, but I will sign this document.

New Business-

PCO2
This is an extremely important system, and we are concerned that this get on the ship. We need to allocate resources to get this in place. *Dave Forcucci* will work with *Woody Sutherland* to get it installed into the current plumbing system. *Greg Somers* reminded us that for permanent installations, it takes some time to get it approved. Dr. *Taro Takahashi* owns the system .

ScoreBoards
Capt Rall: we have spent a lot of resources to support this. He suggests a wireless system. Knowing the wire tension is important as we clear the deck when the tensions get high. Bob Campbell: we have used it for winch speed, wire out, so it is helpful.
Scoreboards can be rolled into the wire monitor sys LCI90.

Don Perovich agreed to stay on for another term.

Lee Cooper and Renee Crain thanked everyone for coming
Meeting adjourned at 1030