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Arctic Icebreaker Coordinating Committee (AICC) Meeting
December 8-9, 2009
Rainier Room, Coast Guard Integrated Support Unit
Seattle, Washington

Meeting Minutes

Executive Summary

The Arctic Icebreaker Coordinating Committee (AICC) held their winter meeting on December 8-9, 2009 at the United States Coast Guard Integrated Support Center, Pier 36, 1519 Alaskan Way, Seattle Washington. The meeting was attended by AICC members, United States Coast Guard, National Science Foundation, Office of Naval Research, U.S Arctic Research Commission, NOAA, Cold Regions Research and Engineering Laboratory, National Ice Center, and the UNOLS Office. A complete attendance sheet is included in the appendices. Many issues as they relate to Arctic research were discussed. The meeting highlights included a ceremony to mark the change in the Committee Chair from Dr. Carin Ashjian, (WHOI) to Dr. Robin Muench, (ESR).

Action Item List

1. Alaskan Community contacts still need work
2. Icefloe questionnaire improvements continually being made.
3. Retreat in Alameda needs to be revisited.
4. Protocol for science equipment has been a part of the new MOA between NSF and the USCG. Renee Crain and Lisa Mack have the lead on this.
5. *Polar Sea* upgrades to science equipment needs AICC input.
6. Continue to track foreign research vessels working in Alaskan waters and make sure when US State Dept. receives request for operations in Alaskan waters, the local native communities are informed.
7. Science of Opportunities needs to be identified earlier if possible. There are none anticipated in the coming year.
8. Pickart/*Polar Sea* cruise has moorings that will need a crane-, this needs further discussion
9. Observers Program- The process is not well documented. Accountability, details, and obligations need to be clarified.
10. Debrief form- use the percentage scale and then articulate what caused anything less than 100 %.
11. Create a budget estimate for all upgrades currently identified.

Appendices Table – insert table

Minutes

Carin Ashjian, Chair/AICC called the meeting to order at 0830. Introductions were made and a quorum verified. Catherine Coon from Minerals Management Service called in. Minutes from the June 2009 meeting were accepted as written.

Carin provided a review of the list of Action Items from the June 2009 mtg.

Progress made since the last meeting include:

- Elected new AICC members to replace departing members
- Finished debrief of *Healy* Cruises
- Revised Berthing Policy
- Members of AICC joined an ARVOC teleconference (Renee, Robin, Jon)
- Revised Medical policy posted on Icefloe

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- Recommendations submitted to MSO's on the upright incubators
- Carin gave talk to AEWC at their July meeting and in September met with Harry Brower and Janice Meadows, (AEWC Exec Director) in Barrow.
- Bibliography of past cruises has been compiled by Phil McGillivray.

Challenges as we move forward:

- Getting *Polar Sea* back to sea as a research vessel - AICC is willing to provide input on request.
- Continue working with native communities, especially now with increasing pressure from industry: outreach efforts have been very beneficial and need to be continued.
- Establish a relationship with ARVOC
- Keep up with debriefs and recommendations.
- Think about an icebreaker retreat in PACAREA
- NSF to establish science logistics support that will include radioisotope logistics
- Cruise scheduling and planning- Efforts are ongoing to schedule and get cruise planning documents submitted earlier.
- Chief Scientist needs additional time and support to fill the role as Ch Scientists. These cruises are very complex and require a significant investment of time.
- Appropriately handle requests from industry for Arctic science.
- The observer program needs to be clarified as to exact requirement, tasking, outcome and funding.

General Business and Reports-

Jon Alberts/ UNOLS Office

- The UNOLS Office is fully staffed now.
- We are starting a pilot program to look at research vessel technician retention and recruitment, with funding from NSF. One idea is to use expert contract techs to work on cruises, where possible. Program should start in January 2010.
- The UNOLS community is working with the Rolling Deck to Repository (R2R) Project team which is taking cruise metadata from time of ship time request on through all cruise data. The goal is to provide a central repository for all cruise data (LDEO, WHOI, and SIO). R2R will primarily provide a good data archive of cruise metadata, e.g. navigation, weather, and all other data captured by the ship systems. The intent is not to add to the workload of the techs, but to attempt to streamline the process. *Healy* data are being used as a prototype for this project. (www.rvdata.us)
- In November UNOLS assisted the Coast Guard and NSF/OPP by facilitating communications with Dr. Chen Hongxia from the Chinese First Institute of Oceanography.
- The Ship Scheduling Committee scheduled 3800 total UNOLS days for next year. The global ships are fully subscribed but very weak for intermediate sized ships. Alvin replacement design review is still underway.
- UNOLS Office is looking at possibly adding ARVOC to the UNOLS office which may increase vessel access and break down some barriers. Antarctic vessels have a lot of science tech support as compared to UNOLS ships, so look at merging systems and bringing them closer. An *ad hoc* committee will look at terms of reference, charter members, and possibly establish another committee with UNOLS. The AICC role will continue as it is.

Dan Schwartz (UW)/ SCOAR

- The Scientific Committee for Oceanographic Aircraft Research, (SCOAR) recently met by teleconference and is planning a Town Hall at Ocean Sciences 2010. The committee promotes the use of airborne assets as research facilities similarly to ships. Dan provided a power point presentation with photos of autonomous aircraft, many useable from ships. The group deals with both manned and unmanned aircraft. Safety of system use aboard ship has been verified.

Steve Hartz (Univ. of Alaska) RVTEC

- The 2009 RVTEC meeting was held in November at Univ. of Washington and was highly successful. Minutes available at www.unols.org

Deborah Hutchinson – USGS report

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- Deborah presented a power point presentation on the two-ship work last summer with the *Healy* and *Louis St. Laurent* as part of the US Extended Continental Shelf (ECS) Project. The cruise collecting seismic data was extremely successful. It exceeded its goals by more than 25%, got to 84 N, and got good data quality even in heavy ice. The 2010 field season will be the last of the Canadian seismic work, with cruise in August. *Healy/Louis* for ~40 days with Jon Childs as US liaison aboard the *Louis*. The cruise will operate in the US EEZ, plus several lines outside the US EEZ. It is unsure exactly where the Canadians want to collect data: maybe up to Mackenzie Delta, or up west of the Arctic Islands (Banks Is.). They will use AUV's equipped with multibeam and will try to connect existing seismic lines. Ice conditions will control the degree of success. Assume 4.5 knots mean speed on lines. USGS is lead agency, contracted with LGL. NOAA/OAR and USCG are cooperating agencies, involving also NMFS and USFWS.

Craig Russell - NOAA (for Andy Armstrong who was unable to attend)

- **RUSALCA 2009** (Kathy Crane involvement). "Russian-American Long Term Census of the Arctic". One additional large cruise scheduled. Some thought that the Bering Strait part may continue on an annual basis.
- **UNCLOS** mapping update (law of the sea related), using seismic profiling, sonobuoys and dredges. Also got a lot of bathymetric data. Will be a 2010 cruise on *Healy*, and another in 2011 (bathymetry only, no seismic?). Some NOAA ships will also participate. Bathymetry data in Canadian EEZ is subject to an embargo for some period. Seismic data are all embargoed for a period of time, to be determined.
- Korea has an icebreaker coming online in 2010 and is looking for US scientists to participate.
- NOAA Ship *Fairweather*- A NOAA cruise is being planned by James Crocker for going into Provideniya. NOAA is increasing its interest in Arctic research. A *Healy* cruise request from Larry Mayer in 2011 will be submitted through UNOLS.

Mike Prince - ONR

- Mike was hired by ONR at 60 % time at CIRPAS/ Div. 321- Navy Research Facility of Ocean sensing and applications. Mike is working with Tim Schnoor who is in charge of facilities and includes UNOLS ONR ships and Alvin.
- ONR is taking a renewed interest in Arctic. Last summer one cruise funded by NOPP and ship time paid by ONR. Question was asked whether ONR will increase funding for Arctic research, to which ONR responded that a task force is looking at how changes in Arctic will affect Navy mission, but nothing specific yet.
- Mike's role is to represent the UNOLS community in the building of Ocean Class Ships. ~ 210-225ft at 85 million each delivered in FY 2014 and interface with UNOLS. Four UNOLS operators have submitted proposals. End of Jan 2010 the operators will be decided. The two design teams will be reviewed and selected.

Denise Kruse - National Ice Center

- The National Ice Center supports all operations and planning for anyone who needs sea ice information. The primary concern is to make sure the products properly address the needs of users, who are encouraged to contact them. Products include everything from global ice conditions to specialized products for ships. Large lead times are advisable if there is an anticipated future demand for support. The outfit is minimally manned and not 24/7, but is dedicated and can provide good support. Radarsat 1 images are \$3K per shot, though, so the service is very pricey. ESA says that their future policy will be near real-time and free for SAR, so the trend might be toward more affordable data. All future options are under consideration.

John Farrell - US Arctic Research Commission

- A "Road Map" to Arctic Research was released a week ago-

http://www.navy.mil/search/display.asp?story_id=49725

John explained the importance of the Arctic and why the US is involved there, stating that it is a 1 trillion dollar issue. John provided a detailed power point presentation, available in appendices.

USCG Reports

John Reeves - XO on *Healy*

- A service life machinery evaluation survey is underway on *Healy*, and he requested input from AICC. If you have question, thoughts, or concerns, please send them to john.d.reeves@uscg.mil who would like these by 18 December 2009.

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Lisa Mack/USCG Headquarters

- The Coast Guard is undergoing a modernization in the overall organization, Lisa showed an organizational chart as to where the organization is right now and noted that it is still a work in progress. The Ice Ops Program within Lisa's office covers domestic ice breaking, polar icebreaking, and international ice patrol.

Priority issues:

- Return of budget authority from the NSF, the target being to have a revised MOA in place by 2011.
- Recapitalization for *Polar Star* reactivation (shooting for late FY12), high latitude requirements study, and new acquisitions or service life extension projects. This will provide a bridge to the decision between a new acquisition or a service life extension.
- Communication/coordination. Both internal, interagency, and support of CG and other agency Arctic initiatives.
- Internal Arctic initiatives matrix team to develop Arctic strategy and link to national goals, and 17th District proof-of-concept operations.
- Deal with the issue of budget authority over the *Polar Star* following re-activation, given that NSF has opted out of funding for the *Star*.

Greg Somers - PACAREA

- PacArea is going through reorganization. It is unsure when the changes will occur, however, the same groups will still be responsible, i.e. Forcucci, McGillivray and Somers won't change.
- JMS Naval Architects & Salvage Engineers did a third party review on *Polar Sea*, and the CG has received their report and will start work on most issues that are within budget.

Steve Hartz - Alaska Region Research Vessel- (ARRV)

- Steve provided an update on the ARRV, which is now 254 ft in length. This is 12 ft longer than final design review, with the aft deck longer. Ship will be Polar Class 5, capable of breaking 2.5 ft of ice at three knots. Being built at Marinette Marine, Wisconsin, to start in Jan 2010 followed by 6 -7 months to finalize design. Start will be laid in July 2010. The Z-drive delivery is set for Dec 2012, then post delivery outfitting March 2013. Ready for science by late 2013. Draft is 18-9 inches; beam is 52 ft. crewed by 20, 3600 tons.

Catherine Coon - Mineral Management Service (MMS)

- There are over 50 ongoing Arctic studies currently underway, and Catherine reinforced that MMS wants to be involved with AICC activities (www.mms.gov/alaska). Samples of the studies underway include:

- Physical oceanography and meteorological studies, as well as surface radar mapping in Beaufort and Chukchi Sea.
- Beaufort Sea near-shore currents using ADCP
- Sea ice over-flooding in Smith and Camden Bays
- High Arctic kelp bed studies
- Fate and effects of oil in snow and ice studies
- Bowhead whale studies including aerial surveys and satellite tracking

Renee Crain - NSF/OPP

- NSF is preparing a solicitation for ship support. Details are being worked out. The solicitation will be for technical support as well as cruise planning support. This person would interface with all the users and all the UNOLS institutions that support OPP/Arctic cruises.

- No planned changes to the medical forms or processing, though there is growing concern about medical vetting for the many alternate ways in which researchers work in the Arctic. They do not want to create unenforceable policies.

-The BEST cruises will be on *Polar Sea* and *Thompson* next summer. Plans are to discourage crew changes in Barrow to avoid risking a repeat of past logistical problems involving vessels and helos.

Matt Irinaga - CH2MHill Polar Services

- They are the primary NSF Arctic Logistics Contractor (matt@polarfield.com)

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- They will supplant BASC in providing passenger and cargo handling, lodging, and ground transport in Barrow. Also facilitating permitting and local coordination. The transport of cargo and personnel to Barrow from the ship remains an issue. Helos sometimes can't fly and smaller suitable vessels are not always in the area. This issue needs more discussion before the next meeting. The landing craft from Bowhead is one option but there are scheduling issues. Should we explore using the *Healy's* boats instead of Helos? The small boat and the helos mix needs to be worked out for 2010.

Operations Planning for 2010 and beyond

- *Healy* 2010 Schedule. A shakedown cruise is planned for mid April.
- On May 16 2010 *Healy* depart Seattle for Honolulu for multibeam acceptance trials, then to Dutch Harbor for NASA cruise which will depart Dutch June 15 with Kevin Arrigo, up to Beaufort for 30 days, then back to Seward, and do the ECS in August, then Chukchi Seas cruise for Coakley in Sept doing seismic cruise, then back to Seattle. The seismic system for Coakley still needs to be built, which is an issue in respect to permits.
- 2011- Coakley wants to go again in August-September and Larry Mayer wants to do more ECS work. A NASA cruise will go again, as well.

CDR Greg Stanlik - USCG/Baltimore

- He works in Baltimore in Polar Engineering product lines and provided an overview of all engineering projects on polar and black ships.
- He reports that The *Healy* support structure is unchanged despite some administrative shuffling.
- *Healy* will be in dry-dock from November 2009 through March 2010- Multibeam replacement is the big project. Shafts will be pulled, hull plating and frames repaired, and propeller hubs.
- *Polar Sea* just returned from Arctic west and will be in stand by mode until Jan 2010, when she will act as the stand by vessel for Operation Deep Freeze 2010. Cranes have been ordered but won't be ready for installation in summer 2010.
- Issues: Pickart has moorings that will need a crane-, this needs further discussion.
- Scheduled for dry dock availability in May-June 2010
- *Polar Star*- A \$60M reactivation plan is place is worked out to reactivate this ship. Goal now is a 3 year plan, but this all is pending budget authority. Back up to a seagoing status in late 2012, early 2013.

1545: Regular Meeting- Adjourned- followed by executive session

Wednesday 9 Dec 2009- Meeting commences at 0830

John Anderson - Chair of Antarctic Research Vessel Oversight Committee (ARVOC)

- John called into the meeting and provided some background information and current status report on ARVOC. This is an advisory committee which is answerable to, and provides feedback to, Raytheon Polar Services.
- Earlier in 2009, ARVOC received a letter from Scott Borg/ NSF/OPP that the *Laurence M. Gould* contract would not be renewed. Last January, they convened a special meeting in Wash DC for 2 days to determine how they could keep doing science without the LMG. Palmer Station would be significantly impacted. There was a lot of discussion of what UNOLS does better that is not done as well in the Antarctic. Then 2 months later we were told the LMG contract would be renewed. ARVOC is very open to future collaboration with UNOLS and AICC. We need the LMG for Palmer Station and we need some plans in place to handle the LMG contract. Not yet signed, but we expect it will be.
- The *Nathaniel Palmer* is approaching her 15th year of service; to replace the *Palmer* would take 10 years if we started today. We did a design a few yrs back for a new design, but this was shelved. We know *Palmer* could serve another 10 yrs, but there is concern that the ship isn't being used as much in the winter, a lot of discussion.

Cdr Michelle Webber- 17th District USCG - Incident Management Branch in Juneau.

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- Cdr Webber explained that 3 years ago the CG moved up to North Slope to see what it would take to operate in the Arctic. We learned very early on that engaging with Native communities was very important. A list of programs follows here.
- Major efforts are underway with native consultations to create a native cultural communications course.
- This past year in Prudhoe Bay, took boats up there and worked on improvements to launch boats
- In Nome in 2009, we operated boats and helos off of Nome. We told the communities that we would be there to help and asked what we could provide. Veterinarian was the biggest request and the operation kept growing, had 83 people to help. The National Guard brought up two helos as we had to fly in tandem due to limited communications up there.
- Helped communities with search and rescue demos, beach clean-ups, medical issues, and community outreach efforts which included a build-a-boat project.
- One of our challenges is diversity in CG. We thought it would be good for District 17- Recruitment of native Alaskans. We started a "Kids Don't float Program" to help kids with life jackets and water safety.
- USCGC SPAR did a cruise in summer 2009, put in a 12 meter buoy west of St. Paul, then deployed an oil recovery system in Nome and brought doctors to Little Diomedede village.
- CGC Alex Haley- Arctic patrol in Sept to Oct 2009
- Arctic domain awareness missions, community outreach,
- Maritime Boundary Line patrol flights-C130's to Air Station Kodiak, done twice a month from March to Dec, to help pilots learn the area, feeding info back to district, ice, erosion, as well as boundary line law enforcement for fisheries enforcement. These flights are opened to science of opportunity, though approval of any necessary gear can take up to a year.
- Oil Spill Recovery Institute near Cordova at Cape Ellis-
- Geo-reference camera flights, last year, currently this program is on hold. This is used to add GPS positions to photos for online location use.
- Air-data Collection has been the most commonly used science of opportunity program- Dr. Colm Sweeney has been quite active in this.
- New projects using air-dropped buoys (e.g. one WOCE buoy), laser altimeter (ice thickness mapping) and T probes. One AXBT probe launch test.
- Native Commissions include AEWC and Eskimo Walrus Commission, and CG has been attending their meetings and presenting planned CG activities. This includes some icebreaker activities such as science transfer out of Barrow near opening day of whaling season. Crucial that ship is >50 miles due west of Barrow during whaling season: constant communications are needed. Looked at issues like walrus kills. Can we coordinate District 17 work with AICC-related outreach, in the sense of working with them in telling natives about cruise activities? Natives have early input re cruises and goals, but too early and they can forget. Flag a couple of the 2010 cruises for possible problems in this area (Coakley seismic, Pickart mooring work close in off Barrow). Need to sort out true status of "native observers" aboard the ship.
- Eskimo Whaling commission asked us to fly a survey flight, but Fisheries would not Allow it as a "take permit" was not in place. So survey flight was not done.
- We spent 1.27 million in Arctic ops last year. This year will depend on if we get a budget.
- Arctic 2010- Flights planned for March to December which will be the Arctic Awareness flights.

Phil McGillivray - Science Liaison

- Phil provided an extensive overview of the *Polar Sea* cruises in 2009 in his power point slides. Cruises in 2009
- R. Coffin- methane hydrate, mostly ONR. Had a radiation lab van and an ROV plus Scott Hiller from SIO to assist.
- Ben-David/Harlow Cruise- focus was on polar bear and marine mammals. Teachers on board, good blogs
- Chen- Chinese mooring cruise.- too much ice though, not able to recover mooring, There was a polyna, but it refroze.
- *Polar Sea* 2010 over view and schedule included in his slides in appendices. Phil also raised a few issues.
- Pickart's cruise dates will conflict with whaling season; this will require more coordination and communications. Also Pickart is working way to the east.

Carin Ashjian - Healy Debriefs

- Carin provided details of the debriefs in her power point presentation.

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- *Healy* 0904 Pickart- cruise was very successful. One issue was the mooring winch on CG icebreaker ships. Pickart recommends a winch be procured.
- Observer – NSF needs to require some accountability of the observers, this needs some work. The process is not well documented and details and obligations are not clear.
- HLY 09-05 /Mayer cruise: two ship op with *Louis St. Laurent*. Cruise had many successes.

Challenges-

- Icefloe was redundant
 - Gear storage in Seattle between field seasons- this issue is being worked on now.
 - AICC Reviews and recommendations - Carin requested a ranking of all issues
- With a numbering system, we reviewed the items that were 1.5 or higher.
- Mooring Winch- Dale - I think the right strategy is to have the WHOI maintain a mooring Winch

Michael Macrander - Shell Oil Company (tel: 907-317-9314)

- Called into the meeting to discuss possible opportunities in the Arctic. There is a lot of interest in Arctic oil exploration and interest in continental shelf, 30-40 miles off Beaufort coastline to Chukchi. This has been done mostly on ships of opportunity with crews not necessarily tailored to the tasks. Shell/Conoco Phillips wants to send the "Buoy Boat" with a staff to do science in the Arctic. Our needs don't fill the 3-4 weeks of time, so we are considering sharing some time and make it available to science community. Dates may be as early as mid June, but also the in mid July to mid October time frame. Vessel has not been identified. They would like some help locating a vessel that is ice capable, but not necessarily. The point-of-contact is Michael Macrander, but Shell is thinking of a third party provider. Interested parties can buy time. Shell has used the Canadian icebreakers in the past.

Polar Sea 2009 Debriefs

- Carin Ashjian provided an overview of the debrief process.
- PSEA0901-Rick Coffin, Chief Scientist. Reported that 70 % of cruise objectives were met. Some issues were the multibeam, small boat issues, and not being able to do 24 hours operations. Challenges- Old cranes make it risky to launch the boats.
- PSEA09-02 Ben David- Chief Scientist. This was a polar bear cruises and was 60-70 % successful. Details in debrief.
- Debrief Forms- Issue of how to phrase the question concerning satisfaction with cruise, i.e. should it be prioritized or a percentage. Renee Crain asked if weather losses could be considered in the evaluation. How satisfied were you with meeting the overall science objectives? A scale of 1-10 and/or comments was discussed. What percentage of the planned science objectives was met during the cruise?

Action item- Take the percentage question and use this one. No preference from USCG. And then articulate what caused anything less than 100 %

- Could debriefs be done on the cruise- Yes, AICC Chair needs to make sure the Ch. Scientist has the forms ahead of time. Also the Ch Scientist needs to articulate the cruise needs and the cruise plan must be submitted to the Captain before the cruise.

Science Modifications, Infrastructure and Status of Equipment-

- ADCP 150- Steve Hartz will let the *Healy* use theirs, just need to buy new cable.
- Incubators- we have a plan for these, but multibeam has priority. Plan is to get one repaired, in time for Lee Cooper cruise. Then we are asking NSF for funds to replace a new one.
- Mooring Winch- John Kemp, (WHOI) was asked for a quote to purchase and maintain a mooring winch. Quote was approximately \$70, 000 to purchase and \$20,000 per year to maintain.
- Vans- Matt Hawkins (NSF) offered to look at a feasibility study to move vans from fwd location, this was funded and we have 3 quotes to review. Engineering Officer has it on the *Healy* for review. The two older vans can't be grandfathered due to age and condition. There is a 3rd van that may be grandfathered. Dave Forcucci is trying to find out who owns these two old ones. Dave Forcucci and Phil McGillivray have the van requests in for 2010.

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- Multibeam Replacement- Dale Chayes provided an extensive power point presentation. The timeline was a learning experience for Dale, idea was floated in 2003 at AICC, and it has taken this long. A lot of engineering went into this, SAIC provided consulting on what system to install. Field trials are scheduled on the transit to Honolulu and then one day on the transit to Dutch. Education and Training will be done, an essential part of the process.
- Seabeam 2112 has been removed- Kongsberg EM122- new multibeam- this system will give seafloor reflectivity that the Seabeam system would not.
- Helmsman will have bridge display in bridge and aloft conning station.
- Acceptance test- pitch, roll, and repeatability. Current plan will be to go to Hawaii
- Science Upgrades during Drydock- No other major upgrades planned-, but a better Aloft Conning station is being planned.
- ADCP's- There have been chronic problems with these two systems. Can't get spares for the BB150. Will borrow one in 2010, but Dale recommends a new one be purchased in 2010/2011 and provided NSF with an approximate budget.
- Wire Tension- wire monitor for winches, recommend purchasing one for *Healy*.
- New PC02- /TSG locations- PPT with suggested locations, set-up, plumbing arrangements
- Computer lab- back in 2005, awareness developed that there was a problem here. We proposed a rearrangement and working up some different designs now in concert with EO on ship. Would like to get this on schedule for the 2010/2011 maintenance period.
- Improved Acoustic Communications: at present the ship has to stop to dip a hydrophone, and new proposal is to install a transducer and integrate it.
- Renee Crain request: it would be best to get a complete budget estimate for all these upgrades to investigate funding mechanisms.

Action Item – Check with Dale on his creation of a budget for Renee

- Science Tech Support: we will sail at least two people on each *Healy* cruise, and are looking to hire one new person. Still need to see the science plan to determine make-up of which techs to send.

Jim Wilson - ESU Report - Electronic Systems Support Unit Seattle, USCG

(james.m.wilson@uscg.mil)

- *Polar Star* has no science network, but work on *Polar Sea* has indicated what would be needed. *Healy* will have VSAT, and Iridium Reachback will enhance email capabilities. VSAT will go in during January 2010. ECR prototype has been approved. Satellite services will be contracted out and testing to science network to commence in spring.
- *Polar Sea* uses Inmarsat B and Iridium reachback (low speed, stable and consistent). Inmarsat had problems on the last cruise, now being evaluated. Low bandwidth precluded web access. The Iridium open port WAN install (both *Healy* and *Polar Sea*) was temporary and undergoing tests during the past summer. Need an engineering change request for the permanent installation. Have in hand two units per ship (1 spare per ship). Used for large file and image transfers while underway on science missions only. Issue is not hardware or engineering, rather, it is a computer security issue. Question (Dale) as to where DOD stands with respect to Iridium. What is VSAT bandwidth (Renee)? No changes scheduled to the LAN on any vessel other than software upgrades. Wilson has got a debrief on this material from each departing PI. *Polar Sea* had problems with web speed and emails, but mostly because of Inmarsat problem and system startup issues. Should have email addresses in similar form between the *Polar Sea* and the *Healy*, as leads otherwise to some confusion.
- Carin Ashjian asked if there is need for the mapserver on *Polar Sea*? Renee thinks so, but more capability is available if funding can be found. Much more complex if real-time data are needed rather than just existing data as files. NOAA STS does not meet requirements of *Healy*, and would not on the Polars. Scaling issue goes beyond software and through to the server itself for real-time data. Need to figure this out over the next few months (Dale/Renee). Basically, more details are needed than "nice to have".

Polar Sea Updates- Phil McGillivray is developing the list.

Website- Dave Forcucci reported ICEFLOE is being regularly updated by Erin Jackson in the UNOLS Office.

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Final Business

Dates and location for next meeting:

April 27/28, 2010 in Arlington and Dec 9/10, 2010 in Seattle.

Motion to adjourn- Meeting adjourned at 1410, December 9, 2009.