

Arctic Icebreaker Coordinating Committee

September 11, 1996
National Science Foundation,
Room 770
4201 Wilson Boulevard Arlington, VA

The UNOLS Arctic Icebreaker Coordinating Committee (AICC) held its inaugural meeting 11-12 September 1996 at the National Science Foundation headquarters building in Arlington, VA. Present were Committee members Lisa Clough, Joe Coburn, Glenn Cota, Kelly Falkner, Larry Lawver, and Jim Swift. Members Dan Lubin and Tom Weingartner were unable to attend. Others present included as [Appendix I](#).

1. Introductory Remarks

Officials from UNOLS and NSF opened the meeting with a variety of introductory remarks and information.

Jack Bash, UNOLS, provided a general introduction which included financial and AICC charter information.

Don Heinrichs discussed NSF participation.

Neal Sullivan discussed the recent NAS report "Arctic Ocean Research and Supporting Facilities", the Congressional Office of Management and Budget Report on the Arctic, and the subsequent status of US plans for a research vessel dedicated to Arctic polar research. The UNOLS planned Arctic Research Vessel (ARV) is not a viable option at this time. The USCGC HEALY is now under construction at Avondale, Louisiana, and that the community and AICC should work together.

Ken Johnson, UNOLS Chair, noted that in this 25th year of UNOLS it was proving to be a year of building partnerships, i.e. with Naval oceanography and with NOAA, and that the proposed UNOLS/Coast Guard partnership was in this spirit. He also noted that the Ship-Time Request Forms now are handled entirely by UNOLS.

Don Heinrichs provided a history of vessel support reality and prospects from the NSF perspective:

- 1970's - PRV (polar research vessel design but funds not procured)
- 1980's - renewed effort
- 1990 - NSF funded concept design (2 stages completed 1991, 1994) with \$1 million invested in the design
- 1993 - NSF requested \$2.75 million to complete the design and start construction 1994 - \$6.5 million requested [After 1994 no longer asked]. At the same time, in 1992 Coast Guard started its fiscal requests for a polar research icebreaker 1995 - the GAO report was followed by the NAS study
 - policy level committee exists
 - Tom Pyle, Don Heinrichs, Rick Rooth consist of the working group
 - GEO Long range plan

Discussion at the meeting included the issue of how the AICC is to deal with an exclusively Arctic perspective versus the "polar" nature of parts of its business. NSF replied that a Deputy Director level committee sets policy, which in this case is that the AICC will focus exclusively on Arctic polar research ship issues with the HEALY as first or "demonstration" project.

Tom Pyle showed a "wiring" diagram for Arctic Science including budget and projections for NSF and for Arctic involved agencies. (These were self-reported agency figures.) He discussed the Arctic research and policy report from 1984 and past USCG ARCSS projects (large scale) such as the NE Water Polynya Experiment of 1992-93, and AOS 1994, and showed Arctic Natural Sciences funded programs. HEALY science operation budget projection is \$6 million (presumed \$15,000/day to run the ship and science, approximately equal to 1/5 of current budget).

It was suggested that the HEALY day rate could be higher. Also Neal Sullivan mentioned that Senator Stevens has called for an NSF study (due March 1997) to report on moneys spent by agencies on Arctic research (i.e., more accurate data are on the way).

Ken Johnson suggested that an ONR representative be sought for future AICC meetings. Garry Brass, ARC, suggested that NOAA and NASA representation would also be welcome. The AICC agreed that agencies which support Arctic polar research, especially those whose investigators use vessels, should be offered the opportunity to select a representative who would be copied AICC email and invited to attend AICC meetings. Scientific committees and organizations with an interest should also be represented (for example, Garry Brass, representing the ARC), some via "cross-over" members (on both groups), or via correspondents who would function similarly to the agency representatives. The process should be inclusive, and so all who wish representation should be part of AICC communication and meetings.

2. Coast Guard Presentations

Rick Rooth, Head of USCG Ice Operations, discussed some of the history of the HEALY. The vessel now under construction is the second design, accepted in 1993 by the Coast Guard. The primary mission is, and has been science, because the former military mission is no longer relevant. Construction is underway and testing scheduled (with the AICC presumably involved in sea trials), with initial science deployment in mid-1998. The other Coast Guard icebreakers (POLAR SEA and POLAR STAR) were commissioned in 1975. The Antarctic "Deep Freeze" mission has been an annual commitment to break out and re-supply McMurdo with a vessel at the ice edge on 1 January each year. This is regarded as a firm commitment and may cause HEALY to be called for that mission if neither of the polar-class vessels are available. This may come up because the polar class vessels are currently in a prolonged phased, one ship in, one ship out. Step-wise refit of systems for 15-20 years added life, with the first ship now in the yard.

Discussion suggested that if there is no back-up ship for "Deep Freeze" that the Canadians might be looking for business. Another issue which arose in discussion was ship-of-opportunity use while the Coast Guard is testing systems in the ice. In the past the principal science window has been June through August, but the Coast Guard is not locked into that time frame.

Staffing of the Coast Guard icebreaker shore group was recently cut from ten persons to three persons, and one of those positions is currently vacant. Also, Neil Thayer, the civilian scientific liaison, recently left the Coast Guard. The Coast Guard is grappling with issues of manning the vessels to meet recommendations of more experienced and more consistent personnel. For example, they are looking at lengthening duty tours. But with regard to providing civilian as opposed to military technical support, the Coast Guard feels they need time with the HEALY in the Arctic before deciding. However, the Coast Guard does realize that it cannot meet all recommendations of the NAS report with in-house staffing. The decision rests with the Commandant to what extent Coast Guard staffing will change.

In discussion it was asked how the Coast Guard now handles scheduling of science-of-opportunity operations, and it turned out that there is no vehicle/process in place to accomplish this, i.e. that vessel-of-opportunity policy now is happenstance. For example, science on break out and re-supply missions is sometimes funded by small NSF additions. The Coast Guard prefers not to broker decisions on opportunity-type science so this is being given to the AICC.

Other discussion touched: (1) while science will be the primary mission of the HEALY, other missions include search and rescue, environmental protection, and enforcement incidents; (2) although the Coast Guard encourages critique, academic criticism may not mesh well with the Coast Guard culture; (3) there is a need for a chief scientist manual similar to those for UNOLS vessels; and (4) Coast Guard concerns

that foreign vessels are used without even requesting Coast Guard vessels.

3) UNOLS/AICC/Agency Discussion

The terms of members, and initial terms, were discussed. The AICC suggested a minor change in the terms of the initial membership to better provide experienced membership during the initial phasing of terms. (See Action Items.)

Funding for AICC expenses (mostly travel) is handled by contributions from NSF and the Coast Guard to the UNOLS Office. Basically two meetings per year are covered plus ex-officio attendance at other meetings (e.g., UNOLS Council) by the AICC Chair. Expenses such as administrative assistant support and miscellaneous items such as meeting room or exhibit booth rental are also supported.

In general discussion AICC members expressed concern over the apparent reduction of the status of the icebreaker program within the Coast Guard, for example in the 70% reduction in staff of the icebreaker group, reduction in rank of the position of leader of the group, and departure, without immediate action to replace, of the two key civilian liaisons (Larry Jendro and Neil Thayer) in the icebreaker program. This seemed to be exactly the wrong approach to be taking with a new research icebreaker coming on line.

Another concern widely expressed was how to deal effectively with the rapid turnover of personnel at every level which is routine with the Coast Guard. All agree that this is inimical to provide confidence that each science program will receive a high level of technical and logistics support expertise. Long experience within UNOLS has amply demonstrated that continuity of personnel adds invaluable experience and expertise. The challenge for the AICC and the Coast Guard will be to find a mechanism that will work with or within the military system to match the quality of technical and logistic support now afforded oceanographers by the UNOLS operators. There are many associated issues, such as providing effective systems for pre-cruise scientific planning and coordination, for marine technical advice and support ashore and at sea, and a system for providing feedback to the vessel operator and technical support staff. With regard to the latter there has been perceived in the scientific community some reluctance of the Coast Guard when dealing with criticism, perhaps due to criticism being not well tolerated in a military environment (as opposed to being routine in the academic environment). This cultural difference is likely to become a sensitive issue from time to time and should be kept in mind by the AICC.

The operational model which is most likely to be pursued by the AICC is that used at a major UNOLS institution, with the AICC taking a role similar to a marine operations committee, coordinating with long-term planning organizations, ship users, and technical groups to organize, prioritize, and initiate business, but itself not carrying out the primary role in routine matters such as marine technical support or ship scheduling. The AICC can help call community attention to opportunities to propose or carry out Arctic polar research about US vessels and can provide and coordinate input on long-term planning and scientific coordination. The AICC itself will not be a review committee for accepting or declining research proposals.

The issue of foreign clearances came up in this discussion. Many scientists do not realize that it is considered the Chief Scientist's obligation to apply for research clearances because most vessel operators so effectively assist their scientists that the process for them is reduced to filling out the provided forms ahead of deadline. The AICC will need to see that ship scheduling for the Coast Guard vessels includes similar assistance with clearance requests. Regarding one of the primary concerns, working in Russian waters, there is at present no official way to facilitate research requests. But the Coast Guard pointed out that one of their vessels did receive clearance to work in Russian waters in 1996 and so fears that they "cannot" work in Russian waters are exaggerated. Another clearance-related issue had to do with Canadian waters, and specifically whether or not the HEALY, which does not meet CASPPR requirements, is assuredly "grandfathered in" under the older requirements (which it does meet). The Coast Guard should be asked to produce written proof that this is not an issue for the HEALY in terms of carrying out scientific research in Canadian waters.

Returning to AICC organization and business, Sandy Shor, NSF/OCE, and others suggested a liaison with

the UNOLS RVTECH group, which includes considerable expertise plus continuity. Al Sutherland, NSF/OPP, suggested liaison with the OPP "high latitude" committee which oversees science functions and outfitting on the NSF Antarctic vessels. Ken Johnson noted the similarity of charter and intent between the UNOLS AICC and DESSC (DEep Submergence Science Committee) groups, especially in participation of and communications with a wide spectrum of users

Discussion broadened to include a number of issues, but in a general way, as potential items of AICC business:

- What will be the HEALY's home port? This is at present a political issue only.
- Will there be any role for the AICC with regard to the HEALY crew size issue? (Presently 75 crew for HEALY.)
- What uses are anticipated for the HEALY's "unassigned" lab spaces?
- What is the status of the USCG MST (Marine Science Technician) program and how will these techs be deployed for the HEALY, which will be exclusively science-oriented?
- Will a "ship scheduling office" and "resident technician program" effectively similar to UNOLS practice be established by the Coast Guard? Could the Coast Guard contract these? If so, what would be the chain of command for external offices that related so strongly to the HEALY (and Polar Class) Arctic science missions?
- Is there a call to establish ASA-like science contractor support? (In discussion there were concerns about back-up expertise and the ASA practice of appointing a manager who stands "between" the vessel operator and the chief scientist.)

There was additional discussion of the need for and type of AICC presence at the 1996 AGU Fall Meeting.

4) Coast Guard Presentations (continued)

CAPT Greg Johnson, USCG & NAVSEA, provided an overview of HEALY history, status, and specifications, beginning with the HEALY being unique to the Coast Guard in that it was designed from conception as a research vessel.

Specifications include:

- Length - 420 feet
- SHP - 30,000
- Beam - 82 feet
- Icebreaking - 4.5'@3 knots
- Draft - 29 feet
- Crew - 75 military (67 plus aviation group)
- Tons - 16,385
- Scientists - 50 "surge" (35 w/doubles only)
- Enhanced seakeeping/transit capability
- Winter-over capability

Life cycle cost reduction measures include:

- Reduced crew size
- One man bridge
- Unmanned engine room
- Automated monitoring & logging

Background:

- First version another "Polar class" more or less
- Yard proposal cost too much & solicitation was canceled
- Received input from universities & vendors (Ingalls & Avondale)

- July 1993 award to Avondale

Further input from science community.

In discussion there was some criticism with regards to the methods and timing of earlier science input and the effectiveness of that input in bringing about needed changes. In that sense the AICC, which does have decision making authority (within various limits), is literally years too late.

Discussion was wide-ranging, deliberately not focused towards decisions at this first meeting, and included numerous points and specifications:

- Sea chest will supply ambient uncontaminated sea water
- 24' RIB diesel Miranda launch
- Crane, boats, van storage
- No overboard discharge for 12 hours, including ballast water
- Two - 16,000 HP dual worming synchronized AC motors
- Props are fixed pitch
- Early CASPPR vs recent CASPPR
- USCG says they have documentation that meets CASPPR evaluation
- Winches will be from InterOcean; Markey refused to bid due to excessive military documentation requirements
- 4,000 square foot dedicated lab space
- 600 square foot unassigned future lab space in two labs
- Ice access via accommodation ladders
- 5' x 9' hydraulic hatch over aft science hold
- SIS specs, Sperry system on bridge w/DPS IMET/bow tower
- Biology incubation location and its sea water supply are unresolved
- Provisions for coring include:
 - 30m coring off starboard side as retrofit capability
 - Jim Borda is the consultant
 - Aft (starboard) crane (knuckleboom) will take trawl wire through crane pedestal.

Contract status:

- Priority on delivering on time, which avoids costs increases.
- No more government-initiated changes.

Ice trials:

- Details and instrumentation are pending
- \$186M cost to build; total program \$360M
- Coast Guard wants AICC input for the shakedown & ice trials 9/98 - 1/1/99.

ACTION ITEM:

Committee members review Academy report and discuss ARV science specifications vis-à-vis HEALY specifications, noting potential discrepancies.

HEALY commanding officer probably to be named in January.

Program Office (Capt. Greg Johnson) is responsible for setting up initial operations.

5) AICC Discussion

The AICC, in open discussion, determined that Coast Guard queries should be directed to the AICC Chair, who will then collate AICC response, and communicate back to the Cost Guard.

Discussion also made clear that there is a strong and obvious need for the AICC to become familiar with details of the HEALY plans, some of which are still pending. The AICC and USCG agreed to get together ASAP at the Avondale facility in "workshop" mode to get the AICC up to speed on the HEALY, to learn of and act on the major, most urgent issues, and to build a strong base of communication and interaction between the Coast Guard HEALY team and the AICC. The Coast Guard agreed to provide materials and information for that meeting.

The Coast Guard will participate with the AICC at the fall AGU "town meeting" in order to facilitate community involvement.

Bob Dinsmore is now a consultant to Avondale, and so cannot be consulted directly by the AICC.

The AICC and Coast Guard agreed that a plan is needed for HEALY shakedown and tests, including providing experienced scientists and technicians and a clear and effective test suite.

The AICC discussed how it might handle the needs and requests the Coast Guard may make, some of which are expected to be urgent, very specific, and highly technical. Can these be contracted to a technical group experience in outfitting a research vessel?

The Coast Guard is preparing a handbook of operations for the scientists as well as the crew. The AICC noted that most UNOLS institutions already have the handbook available and they can be used as models. There is also a UNOLS Safety Training Manual, which might be modeled for safety training and standards. It is designed for scientists, as well as ship personnel.

Regarding the possibility of scheduling of arctic icebreakers via the UNOLS form, the Coast Guard was urged to send an informed representative to UNOLS scheduling meetings. The AICC commended the UNOLS process as providing a single coordinated vehicle to handle scheduling requests, and it may very well increase the user pool for the Coast Guard vessels.

In order to proceed with review of plans for HEALY science spaces and systems the AICC asked the Coast Guard to copy and send to each member the relevant/useful sections of the HEALY specification book along with drawings sized for easy comprehension. The Coast Guard not only expressed willingness to do this but also agreed to host an AICC workshop at the Avondale shipyard as soon as it could be arranged. The latter was in response to the AICC's coming into the process at a late date, and with little knowledge of the limitations or extent of its possible actions considering that the HEALY is already under construction. There was a widespread feeling that the AICC members must come up to speed on the HEALY and its role in HEALY construction as soon as feasible, hence the call for an early November workshop (6-8 November) with the Coast Guard.

There was a general discussion touching upon various concerns that had been raised by Committee members and others in the scientific community regarding the HEALY's design and outfitting. One issue faced by the AICC was to begin putting these matters into an orderly framework for future business. But one general issue which came up repeatedly had to do with what types of changes were possible at this stage in the process. A major problem for the AICC was that the HEALY contracts had been signed and construction begun. The Coast Guard noted that the HEALY was designed by the shipyard according to the book of specifications. As long as those specifications are met, the Coast Guard is obligated to accept the shipyard's design. However, the Coast Guard also felt that it was committed to producing a truly first class facility, and if serious deficiencies were uncovered by the user community, there was an obligation to do what was possible to rectify the situation. A few science spaces had not yet been designed in detail, and so the possibility was that as designs for these were readied, the AICC could review and suggest modifications. It was also possible that should a suggested change obviously benefit all sides in areas already designed in detail but not yet completed, that the yard might agree to it. But considering the intricacies of shipbuilding and the goal of NAVSEA and the yard to complete the vessel on time and on/under budget, it appeared unlikely that any substantive modifications could be made during construction. But the Coast Guard also pointed out that there were post-construction opportunities to make even fairly substantial changes, the leading limitation being time (because the time allotted for such changes was short). All these discussions were tentative, more in the nature of the AICC attempting to

establish its business. Discussion also made it clear that while there were a wide range of concerns to be addressed, more significantly the community as a whole knew little about the HEALY. Combined with the fact that the vessel was already under construction, this challenges the AICC to find a role which will benefit the community and the Coast Guard.

The Coast Guard suggested as a review mechanism that the AICC examine typical science procedures, for example ten major science operations, determining as best as possible from the plans whether they can be carried out. As a result of post-meeting email discussion the AICC noted that the requirements needed to complete any one of these can be extremely broad, that science operations evolve, and that multidisciplinary science will place complex demands on science systems. The AICC noted instead that the scientific requirements for the ARV exist and should be used in this regard.

The AICC saw many potential benefits in placing HEALY and Polar-class ship scheduling, scientist interactions, and shipboard technical support on a footing as close to that of UNOLS as feasible. Outright full integration would set a precedent, because the UNOLS system is not presently used for non-UNOLS vessels. One suggestion was that as a first step that, on the UNOLS side, the HEALY and Polar-class vessels be one of the ships available in the UNOLS ship scheduling forms and on-line site, and from the Coast Guard side, that the UNOLS ship scheduling form be required of all Arctic users.

The AICC discussed how it will communicate its business with the community. The first step will be to widen the community base by inviting agencies, committees, and organizations with potential interest in AICC business to appoint a correspondent who will be copied AICC documents, offered an opportunity to contribute to email business, and invited to attend AICC meetings. Most AICC business will be conducted electronically. An email alias will be created for the AICC and for the expanded list which includes all correspondents. Before each AICC meeting an agenda will be distributed. Immediately following each meeting the Chair will write an executive summary which will receive wide distribution via email and UNOLS. More detailed meeting minutes will be reviewed by the AICC and once approved be made available through UNOLS.

Another need is to bring the AICC to the user community. This might be carried out effectively at major scientific meetings attended by Arctic vessel users. As a first step the AICC asked UNOLS to sponsor a commercial booth at the fall AGU meeting, asked the Coast Guard to supply a poster for the booth (the Coast Guard and AICC were asked to help man the booth), and asked UNOLS to arrange a meeting room for a two-hour AICC/HEALY "town meeting" (which will be addressed for 10-15 minutes by the Chair but will largely be a session oriented toward the community/AICC questions and answers). A similar presence will be sought at the upcoming ASLO meeting.

The AICC recommended that the Chair start compiling a list of potential changes (text-files).

The AICC recommended that the Chair work to formalize links with OAI (ARCSS & ARCUS).

The Chair was asked to contact the newly appointed Admiral to oversee the group including the icebreakers and to make a personal visit.

ACTION ITEMS

- 1) The Chair will ask UNOLS to amend the AICC charter for start-up terms of two, three, and four years.
- 2) AICC to hold a "town meeting": at the fall 1996 AGU meeting.
- 3) AICC to hold a "town meeting" at the February ASLO meeting.
- 4) UNOLS ship time request form recommended for Arctic science operations on USCG vessels.
- 5) The AICC needs to be informed about the MOU between NSF and the USCG regarding HEALY science cruises; copy from Don Heinrichs.

6) The AICC Chair, working with UNOLS, should develop the means to inform other interested agencies and committees of AICC business, presumably via an expanded email "correspondent" list.

7) The AICC must establish provisional guidelines for science-of-opportunity cruises on USCG vessels in the Arctic.

8) AICC member terms:

Member	Term
Lisa Clough	Two years
Joe Coburn	Four years
Glenn Cota	Three years
Kelly Falkner	Three years
Larry Lawver	Four years
Dan Lubin	Two years
Jim Swift	Three years
Tom Weingartner	Four years