

HLY0902 debrief, held via teleconference (Rev 05/09)

June 18, 2009

Carin Ashjian (Chief Scientist/WHOI)

Robin Muench (AICC/ESR)

Lee Cooper (AICC/UMd)

Steve Hartz (AICC/UAF)

Renee Crain (NSF)

Hedy Edmonds (NSF)

Dave Forcucci and Healy personnel (USCG)

Dale Chayes (LDEO)

John Alberts (UNOLS)

Notes based on written responses by Carin Ashjian. Unless otherwise identified, all comments are those of Carin Ashjian. Additional comment noted as: "Added Comments" or by the name of the person commenting.

Please provide comments on the topics and questions that are appropriate for your cruise. Note that 1a and 1b are two alternate forms that are under consideration for point 1.

*1a) How satisfied were you with meeting the overall science objectives of the cruise?
(Categorize 1-10, and/or comment)*

We met all of our science objectives. The science party was very satisfied with the work that was accomplished. It was a highly successful cruise.

10

*1b) What percentage of the planned science objectives was met during this cruise?
Please specify contributing factors that affected the completion of the science objectives,
especially if not all of the objectives were met (ie. weather, equipment failure, etc.).*

99.9%. The .1% is a single deep-water station that was not visited because of conflicting science needs and not because of any failure or weather. We did experience some nasty weather but we easily moved our operations to more pleasant locations (in the ice!). Relocating or changing plans due to weather is very common for research vessels so I don't see this as a negative at all.

The suggestions that follow in no way detract from the overwhelming success of this cruise. I have solicited comments from the science party and they are incorporated into my responses.

Added Comment: Scientists tend to favor 1a because it tends to be quicker and easier to complete. The USCG would prefer to see a better definition of the categorization number and how it relates actual to desired results. Scientists often have more work planned than is actually contained in the proposal. This will be a point for discussion at the upcoming AICC meeting.

2) Pre-Cruise Planning

a) How beneficial and useful is the cruise planning form and the Icefloe web site?

The cruise planning form is quite useful.

Added Comment: It encourages the Chief Scientist to organize the submit the information to other involved parties.

b) Is it clear what is required to be provided to the ship and the schedule for receipt of that information (schedules, lists, plans, forms)?

Presently there aren't any guidelines on the icefloe web site for timing of submissions, one example being the submittal dates for medical forms. It might be helpful to add some. I would think "relative" timing would be appropriate; for instance, to fill out the questionnaire as soon as the chief scientist has been identified.

Added Comment: This will be discussed at the coming AICC meeting, with the USCG to provide more details.

c) Were the questions on the pre-cruise questionnaire appropriate and easy to respond to?

For the most part. The part about email and data transfer still needs some work since I think it still includes questions that your average scientist doesn't have the background and understanding to answer.

Added Comment: Less experienced scientists may need additional guidance on some of the questions.

d) Were you able to submit the questionnaire fairly early in the planning process?

I started working on the questionnaire shortly after I was selected to be chief scientist. This might have been later than the ship would have liked but there wasn't any way around it.

Added Comments: A lead time of 3-4 months seems appropriate for submittal, though it's hard to identify an specific optimal lead.

Robin: Agencies need to be encouraged to identify Chief Scientists as early as feasible, and a minimum lead time needs to be specified.

e) Did an operations (cruise?) plan get submitted in a timely manner? Was it useful for you and the ship before and during the cruise?

Putting together the operations plan helped solidify for me what was required by the science party during the cruise. So yes, it was helpful. Unfortunately, I don't remember when I submitted it! And I know that I updated it after the initial submission.

Added comment: The plan requires time stamps on the web in order to facilitate tracking upgrades. The USCG will address this.

f) Do you have suggestions for how the website and questionnaire might be improved?

- 1) Adding a spot to attach a list of hazardous materials would be helpful and should be incorporated into the forms.
- 2) Modifying the section about email requirements would be good (we have been discussing this already).
- 3) It is great that the questionnaire can be updated. However, the chief scientist often goes onto the questionnaire and makes a minor adjustment. Some group of people receives notification that there has been an update with no information regarding what was updated. For my cruise, I started to send a message to some people (MSO, OPS, Dale, Dave, Scott....) to tell them WHAT I had updated. It would be great if the automatic update message could include information on what sections were changed.
Added Comment: A list is needed showing where messages are sent, as it's at present unclear where the email notifications are being routed.
- 4) Information on lab vans should be added to the web site.

Added Comments: USCG noted that UNOLS has a place on their scheduling form for this, and the CG could do something similar.

Jon Alberts: UNOLS notes however that this has been a long-standing problem for them, and points out that WHOI has a good method for dealing with van requests.

3) Pre-Cruise Communications

How were pre-cruise communications between the Coast Guard and the Science Party, especially the Chief Scientist? Were points of responsibility easily identified? Were responses to questions and concerns received in a timely manner? How were communications within the science party and did that impact communications between the Chief Scientist and the CG?

One thing that we did, in addition to the precruise meeting, for my very complicated cruise was to hold teleconferences every couple of weeks prior to the cruise to go over some of the details of set up and logistics. I thought the teleconferences were very helpful and effective. I recommend similar teleconferences to other cruises, particularly large and complicated ones.

Added Comment: The experience of the chief scientist helped here, as well.

In the past, responses to my queries were a bit slow. The responses did come more quickly this year.

Added Comment: An inexperienced Chief Scientist might require guidance in responding to some of the issues.

For lines of responsibility, it is hard for me to answer this question since I know enough already to understand the lines of responsibility and I didn't have to learn them.

I had a very helpful science party for the most part and they responded quickly to requests from me. That was very effective and permitted me to better communicate with the CG. A case in point is that the MSO requested a list of hazardous materials (quantity and type). Because the science party was so cooperative (with one exception, unfortunately), I was able to generate the list within a day or two. The one exception was someone with whom the CG had similar frustrations regarding lack of communication and we all shared the pain.

NSF: Would more key communications from the science party have improved overall communications?

4) Communications and Coordination During the Cruise

How were communications and coordination during the cruise? Were lines of responsibility clear? Were the evening planning meetings effective for communicating information between the Coast Guard and the Science Party?

I thought communications and coordination during the cruise was easy and straightforward. I did most of my coordination with OPS and that was ridiculously easy. The evening planning meetings were effective, even though sometimes I could not be better than vague about what we would do the next day!

5) Environmental Permitting

a) Was any environmental permitting required?

No formal permits were required. We did contact Polly Penhale, the NSF/OPP Environmental Officer, to see what was required.

b) If so, were these requirements identified at an early date and were there clear means to accomplishing those needs? In other words, how well did it go?

Polly contacted the US Fish and Wildlife Service regarding our cruise plans. I had to send her some supporting information. We received a letter saying that we were unlikely to endanger spectacled eiders.

6) Communications with Local Alaskan Native Communities

How well did communications between the CG and science and local Alaska Native communities go during the cruise? (Examples: notifications to local communication centers, communications between Chief Scientists and/or CG and entities such as village tribal governments (e.g. IRAs), village corporations, the Alaska Eskimo Whaling Commission and other appropriate wildlife co-management organizations, , village whaling captains' associations, and other locally based interest groups.)

These communications went very well.

As chair of the AICC, as well as Chief Scientist on this specific cruise, I notified the Alaska Eskimo Whaling Commission about all of the 2009 Healy cruises, including dates, working area, and sampling types. I was unable to attend the AEWG meeting in early March. I am attending the AEWG meeting in July to present the BEST science.

I contacted Merlin Koonooka (AEWG Commissioner, Gambell), George Noongwuk (AEWG Commissioner, Savoonga), Branson Tungiyon (IRA, Gambell), and Vera Metcalf (Eskimo Walrus Commission) prior to the cruise with our plans. In my communication with Gambell and Savoonga, I said that I would write to them daily to update them on our position and plans. During the cruise, I wrote daily to Merlin, George, Branson, Sylvia Toolie (Savoonga IRA), Gay Sheffield (AK Fish and Game), and Helen Chythlook (Bristol Bay Native Association) from April 6 – May 12 with our location, our plans, the weather at our location, and any interesting observations during the last 24 hours. I also included maps (thanks OPS) and imagery to supplement the written materials. Many of them thanked me at the end of the cruise for including them in this communication.

Added Comments: Noted that Renee is the current NSF contact person for dealing with local Alaskan native communities and that this contact, which changes over time, needs to be pointed out to new Chief Scientists. It might be useful to add these materials to IceFloe. Also, past chief scientists could be considered future resources for assistance with these communications.

7) Cargo/Hazmat/Materials Handling CONFUCING BETWEEN A AND B.

a) How did any and all aspects (scheduling, communication, etc.) of the cruise onload and offload go?

The MSTs, as usual, did a great job with the onload and offload. Despite concerns, there seemed to be no problem in getting everything on board. There was some strangeness regarding “negotiating cargo space” with Lee Cooper that I didn’t quite understand (this communication was in an e-mail to my co-chief scientist Evelyn Lessard who was at the onload, I had sent a representative). Also, I don’t think it is necessary or even efficient for me as chief scientist to approve who can come on to the base for the onload/offload. I am happy to coordinate and provide a list but I think that any PI should be able to bring whomever they want with them to help without approval of the Chief Scientist. And, for efficiency, it should be perfectly OK for a PI to contact the MSO or Dave Forcucci directly to have that name added to the list.

This cruise had a major gear offload in Dutch Harbor, with equipment transfer over to the Knorr. Most of the planning for that was done by Phyllis Stabeno, Nancy Kachel, and Tom Van Pelt working together with an agent in Dutch. However, some coordination between Healy, the agent, me, and these organizers also occurred. We had at least one teleconference with the majority of the organizers to discuss the offload. The scheduling etc. went quite well, in the end, although the agent was clearly on Dutch Harbor time at one point.

Many thanks to Healy for the hospitality offered to out of town science party members during the on/offload (staying on board).

b) How did materials handling, including hazmat, go during onload/offload and during the cruise?

We were concerned that the gear would get wet if staged on the dock during the onload/offload. We were lucky during the offload because the weather was fantastic and there was no need to cover the gear (perhaps sun umbrellas would have been appropriate!). During the onload, I understand that some of the gear was not that well covered and got wet. I don't think that requiring waterproof boxes is a realistic solution; the cost would be prohibitive and it doesn't seem to be a supportable expenditure of the taxpayer's money. Some nice big plastic tarps and a standard operating procedure whereby gear staged on the dock would be sheltered with tarps seems to be a more appropriate solution. Because of the large volume of gear, and the manner in which it is mixed together in the hold, I recognize that sorting and staging gear on the dock is desirable. In the past, such sorting and staging has been accomplished in the helicopter hanger, which affords protection from the weather. The downside to this of course is that the gear has to be craned off the ship when the truck arrives.

One of the scientists noted that it wasn't clear how the scientists present could have helped the MSTs during the onload. If someone had simply said what the best way to help was, maybe it would have gone even more smoothly. He also suggested commandeering a few extra hands from the crew to run pallets up and down the lifts.

During the Dutch Harbor offload, by contrast, the scientists were actively involved in moving pallets in the hold and up into the lift. Generally, the science party is happy to help out with onload/offload. The Dutch Harbor offload went VERY well and was accomplished in much less time than had been anticipated.

The shipping form seems to have worked better this year. The PIs did understand that the form would not be updated until the gear was loaded onto the ship. Perhaps they all used tracking numbers and had representatives at the onload rather than paying any attention to the shipment form. I did not receive any comments about the form this year.

Some shipments did get "lost" at the CG base. Apparently some chemicals were not delivered to the Healy MSTs, although labeled as such, but rather went someplace else. Fortunately they were located. The CG base needs to be better informed about where stuff for the Healy MSTs is supposed to be delivered.

At least one truck (mine) was almost turned away at the gate during the offload. The trucking company was told that there was no pickup scheduled by the gate. Fortunately, the company called me on the cell phone and I was able to say yes, there is a pickup, it is at the big red ship. I did supply the names of the trucking companies to the MSO and I believe he sent that information to the gate. Perhaps something didn't get passed between morning and afternoon gate shifts? Also, we all understand what the address means...but it is likely that not every

civilian is going to understand that USCGC Healy means “big red ship” so perhaps the drivers aren’t able to effectively communicate with the gate.

For some reason, we didn’t have enough pallets to palletize all of the gear during packing on the way back to Dutch. This is odd, one would have thought that all the incoming pallets would still be on board and that we wouldn’t have generated more cargo than we brought!

One scientist suggested plastic banding material would be easier to use and safer. I am not sure that my heavy gear would be secured to the pallet using plastic. Many thanks to the ship for providing banding and the plastic wrap!

Many thanks to the MSTs for their help in moving, craning, and forklifting the gear.

8) Laboratory and Other Vans

a) Did you use vans from the UNOLS van pool or from another source (specify)?

We used three vans, two general purpose vans and one rad van. We also used one storage van (a 20’ container) that was rented in Seattle.

b) How did the procurement go?

The procurement of the lab vans went very well. This was the second year that we had needed lab vans so I had already requested them from the UNOLS van pool. Because they were requested early, Renee and the van pool were able to do the necessary financial arrangements in a manner that was transparent to me.

The procurement of the storage van was a little rocky. Renee tasked the Polar Logistics provider, CH2MHill, with renting the storage van, arranging its delivery, and arranging a crane to come to the USCG base to load the rad van onto the bow (the weight of the rad van exceeds the lift limits of the Healy bow crane). Both the MSO and I had a lot of trouble engaging the logistics coordinator. We wrote repeatedly in response to an introductory letter from a CH2MHill representative and received no response. After about three weeks of this, I finally wrote to the person’s supervisor. We had a good response after that. I don’t think that there were problems with this during the arrangements for the offload of the vans in May; Silas can better speak to this.

c) Were lines of responsibility clear for obtaining appropriate vans and for setting up and maintaining the vans on board?

It isn’t elucidated on icefloe who is responsible for arranging for the vans. On UNOLS ships, it is the ship that arranges for the vans, not the chief scientist. If Healy is going to do this differently, it needs to be clearly spelled out to all.

Robin: In general, the process for reserving vans from the UNOLS pool needs to be improved.

I suggested that the vans be connected and tested upon delivery in Seattle to make sure that everything worked; this suggestion was not viewed favorably and I do not know if the vans were tested prior to leaving the dock. If done, this might have prevented one of the problems we had with one of the vans during the cruise. The heat in one of the general purpose vans did not work. According to the PI who worked in the van during hly0901, the heat NEVER worked from the time that he got on board in Kodiak. If this problem existed upon delivery and had been detected then, it would have been a lot easier and less expensive to fix while the ship was at the dock in Seattle. It appears that shipping a van on the forecastle in March is riskier than later in the season. Additional discussion is needed with USCG about locations for shipping the vans.

The ship also doesn't appear to want to take much responsibility for maintaining the vans on board. It certainly isn't clear who is going to fix the vans if they are damaged while on board the ship. After damage to the vans during the storm, there seemed to be some uncertainty initially that the CG would be available to assist with repairs so that the vans could be used. This was cleared up following a letter from Renee and the Captain assured us that the CG would be able to help.

d) Was adequate time available to obtain the vans?

Yes, in fact, we freaked out the van pool by asking for three vans so early. Renee purchased an OPP/Arctic General Purpose van. This is a great addition. It is also great that it resides at UNOLS since the van pool can maintain it, even when not in use.

e) How well did the vans perform?

With the exception of the heater mentioned above and damage sustained in the Gulf of Alaska, the vans performed very well. The OPP/Arctic van is GREAT.

Clearly the bow is not a good place to put vans.

Added Comment: More discussion is needed on the onboard placement of vans during shipping, so that they're not obstructing other vans or in too exposed a location (the forecastle). This issue will be discussed at next week's AICC meeting.

f) Were they appropriately equipped with ship connections?

They appeared to be so equipped. For the two vans on the stern, when the vans were initially installed there was a substantial gap between the van door and the ship that was rather dangerous. During our cruise, we asked if there could be some sort of bridge made so that the gap was not present. Tom Krueger worked on it and discovered that there are metal plates that were supposed to go over the gap. The science party thanks Tom VERY MUCH.

g) How well did load and offload go?

Once we got CH2MHill engaged, I think the load and offload went fine. I did not hear of any problems. The van load/offload was accomplished on days when the science party was not present for load/offload so none of us were present.

9) Lab and Your Science Equipment Setup/Installation

a) How well did set-up of the labs and science equipment go? For example, were you able to have the lab counters and unistrut adjusted appropriately to fit your needs?

I don't remember hearing any complaints. Everyone seemed to set up quite easily.

b) Did installation of science equipment outside of the ship's equipment go well? Were there any unexpected surprises in terms of needs or ability to support such scientific equipment? How clearly were special requirements for science equipment defined prior to the cruise?

I did not hear of any problems. I think that the only science equipment that was installed that was not the ship's was the Isis that was set up in the science seawater system. There were no echosounders installed this year, as there had been last year.

c) Was anything identified during your cruise that should be recommended as a permanent addition to the ship's science equipment?

No.

10) Information Technology On Board and On Shore

a) Communications (Local and remote E-mail, account set-up, internet access, data transfer on/off and within ship or between ships, Inmarsat and Iridium, radio). Were you satisfied with the capabilities? Were there computing resources or communications enhancements that you could have used but that were not available on board?

Yes, we were very satisfied. People seemed happy with their internet access. The on-board outreach groups were extremely happy with the capabilities of the system and with the help provided by David Hassilev.

b) How did the shipboard data collection, management, and archiving go? Were these services provided efficiently and made available in ways that promote rapid transfer of data to users?

Yes. Since we had EOL/Janet Scannell on board, data was provided in several ways. I didn't hear anyone complain about receiving underway data.

c) How well did operational technology work? (Map Server, board of lies, web cameras on board, monitors for changing among closed-circuit cameras, functionality of the closed-circuit cameras on board, winch display on back deck)

This all worked very well. The board of lies works only as well as the chief scientists can update it but it is truly great to have it on the web. The map server is a FANTASTIC tool and I will miss it when I am not working on Healy. Steve Roberts did a great job as usual.

One thing I really appreciate is the tv in my stateroom that has some of the cameras displayed. I know that on Palmer, similar (but very small) TVs are in each science stateroom so that everyone can look and see what is going on on deck. This is really useful on a large ship such as Healy. Perhaps this could be considered for the future.

11) Healy Science Systems

a) How well did these perform? This includes deionized water, multibeam, winches, environmental chambers, freezers, refrigeration, science seawater , underway data acquisition systems, ADCPs, depth sounders, etc.)

Overall, the science systems performed very well. The one exception is the science seawater system and that is in part our own fault for needing so much seawater on the bow for the water baths. Following are some specific suggestions.

The deionized water in the main lab didn't meet the requirements of the nutrient chemist. I am not sure of the final resolution to the problem (except that we all used the other deionizer). There didn't seem to be extra cartridges on board. I think that this unit needs to be checked out further before the next cruise requiring DI.

The aft climate control chamber did not work as well as it has in the past. There were large variations in temperature (unacceptable variations) on a periodic basis (defrost cycle?). These variations were much greater than what we experienced using the same chamber in the past and also than what the forward climate control chamber experienced. Also, the aft chamber didn't hold temperature well or get cold enough at the beginning of the cruise. This was rectified (Thanks engineering!). I believe that the compressor on one of the chambers was replaced recently; if not for the aft chamber, perhaps its compressor should be replaced. (Note, Dave Forcucci has temperature datalogger records for the aft chamber from 2008 and 2009 and for the forward chamber for 2009).

The stand up white incubators did not hold temperature particularly well. They seem to have exceeded their useful life. Alternatively, they need some kind of maintenance that none of us can perform! Curt Podhora tried to get one of them to work; he improved performance but it still wasn't what was desired by the scientist. Despite this, two other scientists "borrowed" the incubators for the Knorr cruise so clearly they are useful to someone (but not useful enough that they want to keep them).

Science Seawater: We had a lot of trouble with the science seawater system because of ice getting into the system and clogging. This negatively impacted both the water baths on the bow and the sensors in the underwater seawater stream in the biochem lab. The MSTs (Tom Krueger) had worked hard to install better hardware on the bow so that there would be fewer constrictions in the plumbing and so that the manifolds did not freeze. This coupled with some nice warm weather while we were in heavy ice early in the cruise demonstrated that the freezing problem originates in the pipes inside the ship that become clogged with ice rather than in the hoses going from the manifold to the water baths, since those hoses did not freeze in the warm weather when the piping inside the ship was clogged. The CG was ready with the ballast

seawater delivery system. This worked very well until later in the cruise when the air temperature became too high so the stored water heated either in the ballast tank or during delivery from tank to water bath. The CG was an excellent partner in the ballast water system setup and operation. Many thanks to the EOWs and to Bryson, Oscar, and EO. Please see the cruise report for more information on the ballast water system (http://www.eol.ucar.edu/projects/best/cruise_summary_info.html). Lee Cooper raised the question as to whether the Palmer can use ballast water in this fashion.

ADCPs: The ADCPs seemed to work well, although Chip Maxwell did update the data acquisition software (VMDAS) for at least one after WINADCP (data display software) was discovered to not be operating properly (RDI was consulted about the problem and recommended the upgrade).

CTD and sensors: The CTD was a critical piece of equipment. Most of the time everything worked well and when it didn't, Scott Hiller worked hard to fix it. We did have a problem with leaking bottles that he was able to identify and fix. The sensors for the CTD should be on a regular calibration schedule. At minimum, the T and C sensors should be calibrated 1x/year. The fluorometer also had not been calibrated in quite some time (2007?).

Added Comments: The fluorometer should be subject to at least an annual calibration. A clear method is needed to determine whether pre- and post-cruise calibrations are needed, in order to initiate contacts with the science party (Scott Hiller at SIO is contact).

The freezer and walk in refrigerator worked well. The -80s worked well also, though one of them badly needs defrosting. Further use in this condition is likely to damage it because of ice buildup.

Since the ship already has purchased a freezer, I don't need to recommend a backup freezer. The fate of the incubators should be discussed at the AICC meeting.

During cold weather, the on-deck seawater hoses on the fantail froze up very quickly. Perhaps foam insulation could be attached to the hoses that go outside. USCG (Capt. Sommers) will make improvements to seawater system provided that these address the problems. They have asked Raytheon (Bob Kluckhohn) for design advice.

b) Do you think anything needs to be upgraded?

The UPSs are aging, and some are running overloaded. It would be useful to reconsider the number of outlets per UPS and perhaps reallocate them. We had to switch UPSs for one of the "circuits" in the main lab from a small UPS to a large UPS because there were too many instruments on the circuit for the small one to handle. The USCG will examine this issue.

There was a suggestion that the sink in the darkroom be properly plumbed so that it does not leak when turned on. I guess the users of the darkroom used the sink. Hmm....

12) Deck Operations and Deployment/Recovery of Science Gear

a) How well did the planning, understanding of responsibilities and approaches, and implementation go for both science and crew?

Because this was our second cruise of the program and because most of the MSTs had worked with us before, the deck deployments went very well. We worked effectively as a team. The MSTs were great. I am not aware of major problems with ship handling either. The one exception concerns the CTD recoveries in ice. Apparently the bridge would helpfully “blow out” the hole in the ice just as the CTD was coming up. This turned out to be the wrong thing to do since it disturbed the water before the surface bottle had been closed. The CTD cast had to be repeated on one occasion because of this. This despite the MSTs asking the bridge to not flush away the ice. I wasn’t aware that this was such a persistent problem or else I would have discussed it at the evening meeting. Eventually, after many days, the bridge caught on. It was noted that maneuvering a vessel coming onto station in ice will disturb the upper ocean no matter how much care is taken.

The deployment and recovery of the sediment traps went very well. The briefings were comprehensive. The operation was well thought out. The first recovery, which was directly from Healy rather than using a small boat, was superb and as good as any I have ever seen before. The following ones with the small boat weren’t always quite as smooth. One suggestion that the sediment trap team had was that Healy should try to really stay off of the top of the traps during recovery (50’ or more).

b) Was appropriate and appropriately sized safety equipment available?

For the most part. I had to procure an extra small mustang suit for one of the participants. I suggest Healy procure 1-2 extra smalls for future cruises. A few more hardhats would be helpful also when a really large party is on board.

Added Comment: USCG indicates they are ok with this.

c) Were operations safe? Did everyone comply with safety requirements? Were any unexpected safety issues identified and were they dealt with?

I thought the operations were safe. I didn’t see many blatant violations of safety requirements. An occasional forgotten hard hat on the back deck for people transiting perhaps.

d) Was there enough assistance as needed and/or requested with deployments and recoveries?

Yes.

e) Were communications effective with the bridge and winch control during deployments?

Yes, with the exception of flushing the hole for the CTD (see above)

g) Other

13) Ice Conditions

How well was information about the ice conditions in the area of operations provided to the ship and to the scientific party?

I was frustrated before the cruise because I wasn't sure if I had supplied appropriate information to the ice center for them to provide us with the coverage we needed during the cruise. Also, the ice group didn't respond when I wrote to them directly (Dave suggested that). I hope to learn more next week when I visit the ice center. It would be good to provide more information on this on icefloe.

14) Small Boat Operations

If appropriate, please comment on:

a) Adequacy of boat briefs

The boat briefs were efficient and comprehensive.

b) Provision and availability of appropriate safety equipment

I didn't see any problems. However, there were no particularly small people on the boats so I am not sure if the mustang suit (XS) problem would have existed. I think that there was one delay because of a too small helmet but that was resolved with a larger helmet.

c) Identification of science needs and requirements

This went well.

d) How well the operations went

Very well.

e) Other

14.5) Ice Operations

If appropriate, please comment on:

a) Adequacy of ice briefs

These were fine. OPS worked to be efficient and yet convey the necessary information. The science party complied well in attending the briefs.

b) Provision and availability of appropriate safety equipment

There weren't enough MSD-900s (suits for on-ice operations), specifically the large size. One of the science party noted that the cost of the suits is pretty cheap compared to the cost of a day of icebreaker time. Perhaps more can be procured for the next large science party. Note, the number of people going onto the ice was listed in the operations plan. Nobody was kept from the ice by a

lack of sufficient suits, as the available suits were switched among different persons, although Lee Cooper noted that this was not particularly convenient.

c) Identification of science needs and requirements

The ice teams did a good job conveying to me what they needed to do. Also, we had a meeting at the beginning of the cruise to decide on the sequence of events at ice stations so that there would be no conflicts between science needs.

Katrin Iken, together with the bridge team and OPS/XO/CAPT, selected the ice floes. She was quite happy with how this all worked. Of course, there was the one day when I had to choose the ice floe.....thanks everyone for your help.

d) How well the operations went

The operations went very well. One day the ice floe cracked and everyone got back on board safely and their gear was successfully recovered for the most part. Many, many thanks to the deck force for their help during the ice deployments. They did a great job of working with the scientists. It might be good to figure out some way to make it easier for deck force to get the equipment back on board. Perhaps a small winch that could haul sleds back up the brow? Unless of course deck force appreciates the exercise of hauling it up by hand. It was great that ice equipment could be stored in the hanger, since this freed up space in the lab and also made it easier to stage the equipment for the ice deployment.

e) Other

It would be helpful to procure more fiberglass ice sleds. This would expedite the process of getting gear onto the ice. Also, some of the sleds that Healy presently have are beginning to get a bit worn. It is tough on sleds to be dragged up and down the brow. One scientist thought that next time she would use a cart (such as the yellow one I used for the VPR) to bring gear from aft to the brow. Healy already has one such cart (I think I donated it in 2004!). A few more would be good and would help preserve the paint on the deck. The carts cost about \$70.

15) Helicopter Operations

NA

If appropriate, please comment on:

- a) Adequacy of flight briefs*
- b) Provision and availability of appropriate safety equipment*
- c) Identification of science needs and requirements.*
- d) Other*

16) Food Service

a) How well were special dietary requirements (vegetarian, vegan, low-fat, etc.) identified and met?

Pretty well. It was still difficult for people who were eating a minimum amount of meat or were trying to not eat meat to find stuff sometimes. I didn't see anyone waste away though.

b) How was the quality of service and food, including outside of the three main meals of the day (e.g., (quality and availability of food/experience for those working overnight)?)

I did not hear any major complaints. There was one request to have salad served at mid-rats. This was accommodated several times per week. I think it could have been served more, considering that salad had to be thrown out because it had gone bad! Perhaps a re-examination of the rate of use of food supplies would show that salad could be served regularly at mid-rats.

c) Other

17) Berthing and shared spaces (science conference room, gyms, laundry)

a) How did all aspects of housekeeping go?

Very well. People really appreciated being able to contribute \$5 to the morale fund in return for having their sheets washed after the cruise! This is a great idea! Keep it up.

We were happy also that the Healy is recycling trash! And the Red Goat is a wonderful thing.

b) How did the berth assignments go?

Very well. The ship provided me with a berthing template and I filled it in, putting people together who were on similar watch schedules. My one suggestion regards one of the rooms on the 03 deck that was located next to the 1st lieutenants office. As we all know, the walls on Healy are paper thin and the occupants of that room were able to hear that conversations were occurring in the next room. The room occupants were on watch either at night or at all hours so it wasn't easy for them to avoid working hours.

It was also requested that the loudspeakers in the berthing area have volume controls so that the volume can be turned down during training, when the night watch is sleeping.

c) How were the check-in/check-out processes?

No problems.

d) Other

18) Medical

a) Were needs, if any, met?

Yes.

b) Medical history questionnaires

i) Could the forms be improved?

No doubt but I leave it to the medical folks to decide what else they might need to know.

ii) How did the submission process go? (timing, acknowledgement of receipt, etc.)

The submission process went very well. XO was diligent about acknowledging receipt of the forms (except when he was sick and couldn't get to his Healy e-mail!). Using the word document rather than the pdf alleviated the problems with forms not getting through. XO and OPS were very flexible about a couple of last minute changes, including last minute medical forms, to the science crew because of unexpected issues at home for members of the science party and also for one science party member whose form was late because of family illness. There were a couple of malinger-ers who didn't submit their medical forms in a timely fashion despite repeated requests.

19) Any other comments?

As usual, the MSTs received many thanks and were greatly appreciated.

Appendix – Additional Questions for Specific Activities or Instruments. Do not answer unless appropriate for your cruise.

1) Multibeam

a) How much real-time watchstander effort was required?

b) How much onboard ping editing was done in the post-processing?

c) In both cases, who provided the people? Who was responsible for training the people?

d) Other Multi -Beam issues?

2) Diving

If you conducted scientific diving on your cruise, how did it go?