

**Healy & Polar Class cruise debrief, held via teleconference (Rev 01/10)**

**Date of post-cruise teleconference debrief:**

**Chief Scientist: Carin Ashjian**

**Name of Project: Winter Cruise**

**Name of Ship & Cruise Number: Healy, HLY1104**

**Start and end dates of cruise: 11/7-12/17/2011**

*Please provide comments on the topics and questions that are appropriate for your cruise.  
NOTE: This form must be submitted as either a \*.doc or \*.docx file.*

**1) Overall Success of Cruise:**

a) *What percentage of the planned science objectives was met during this cruise?*

I look at this by region. This also divides out temporally since the Chukchi Sea and northern Bering Sea were worked first with the Bering Sea proper being worked in December. We were extremely successful in the Chukchi Sea. Unfortunately, bad weather hindered our success in the Bering Sea. Despite this, I think that this cruise was a great success.

	<b>Gulf of Alaska</b>	<b>Chukchi Sea</b>	<b>Bering Strait / North of SLI</b>	<b>Bering Sea</b>	<b>Total</b>
Stations	2	85	13	24	124
Original Planned Stations	0	79	8	89	176
Percentage	200	108	160	27	

b) *Please summarize positive and negative factors that impacted completion of the science objectives (for example, personnel issues, equipment performance, ice and weather conditions).*

Positive:

The entire Healy crew was helpful and supportive of our science. There was excellent communication with all levels (officers, MSTs, etc.). There was an overall can-do attitude throughout the cruise even when the weather was awful. Several Healy crewmembers distinguished themselves by their contributions to supporting our science including EMCS Donze and team, MKCS Akerman and BM1 Wada, DC2 Doyon, LCDR St. Pierre, LTJG Steckle, ENS Sheridan, and our MST team (MSTC Stewart, MST1Brittle, MST2 Jarrett, MST3 Adams, MST3 Curtaz, and MST3 Purse). It was a real pleasure to work with everyone on board Healy.

The STARC and ESU team also did an excellent job (T. Martin, E. Arnesen, S. Roberts, IT1 Burns). As usual, it was a pleasure to have S. Roberts on board. His accumulated knowledge of science systems on Healy is a real asset.

We had on board also an ice observer from the NIC (AG1 Chad McLaren) who was a very helpful and contributed to the cruise through ice analyses and weather briefs.

Negative:

- 1) Storms: A succession of low pressure systems came through the Bering Sea during both November and December. Occasionally there was enough time between systems to permit us to work. However, towards the end of the cruise we were not even getting those weather windows because the storms were coming too close together. The high winds and ensuing high seas effectively shut down our sampling for many days. Also, we took a wave on the fantail that broke in the bottom of the aft staging area door, flooding that compartment and damaging a large tool cabinet. The door was not functional after this event. Luckily, because of the bad weather, we didn't need to open the door again anyway.

The Multibeam EM122 system performed very poorly in the high seas encountered in the Bering Sea, with performance notably worse than what was seen using the older, previous SeaBeam 2112 (S. Roberts). It was hypothesized that the further aft location of the transmit array for the EM122 relative to the location of the SB2112 may have exposed the array to more bubbles.

- 2) Cold: It was very cold in the northern Chukchi Sea. I mention this because it could have negatively impacted our work but did not. We were able to mitigate the potential impacts and were very successful at sampling despite the cold. The CG also issued everyone cold weather gear that included some awesome boots and gauntlets that really helped when standing on deck to tend gear over the side.
- 3) Ice: Ice didn't hinder over the side sampling any more than is normal (we know how to work with it). However, the underway sonar systems were adversely affected by the sea ice. This was not surprising overall as it is a known problem. What was surprising was that the EM122 performed very poorly in new, thin ice through which we transited with ease. Again, this might have been due to the location of the transmit array that exposed it to a lot of ice debris.
- 4) Equipment: We had some issues with equipment but they were addressed and successfully rectified by the Healy crew. Two potential show stoppers were that (1) the winch used to deploy the CTD "froze up" multiple times during each cast and (2) the door to the CTD staging area did not operate when cold. The winch problem was eventually traced to a short but again, this was a real show-stopper. The door problem was mitigated by heat tape on the control box located outside, intense heat inside the staging area, and short durations of opening the door; this needs to be addressed before another trip north. The heat tape to the outside control box that was powered by an extension cord running under the CTD hanger door generated occasional arcing and fireballs on deck. Clearly this is not a long-term solution.

- 5) Ice conditions: We never received satellite images of the very northern portion of our sampling region. This was the area that we needed the information the most, since we encountered multi-year ice.
- 6) Radioactive contamination of the ship: Some of the interior lab spaces were contaminated with both  $^{14}\text{C}$  and  $^3\text{H}$  on a previous cruise. The level of radioactivity did not pose a health hazard however it was a contamination issue. One of my scientists works in a  $^{14}\text{C}$  free building at WHOI and could not use some of the lab facilities because of the contamination. Luckily we were not sampling naturally occurring isotopes. The contamination was cleaned by the MSTs (and some of our science party) prior to our cruise. Results of swab tests taken after the MST cleaning finally showed up and demonstrated that the contamination had been successfully cleaned up. This contamination could not have resulted from dirty feet; something hot was brought inside the lab and into hoods/on counters. THIS IS A SERIOUS ISSUE.

## ***2) Pre-Cruise Planning***

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

Very beneficial as it easily lays out what is required by the ship and what the Chief Scientist needs to think about.

*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)?*

Yes.

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

Yes.

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

Well, as early as possible considering that this cruise was only scheduled for Healy in...April I think.

*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?*

I hope it was useful.

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

One thing that might be added is to have the science party compile and submit a file listing the hazmats that they will be bringing on board. We did this but it is not specified on the form.

### **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?*

I found communication very straightforward and easy. The MSOs (Skapin, Steckle) were very helpful and responsive. ENS Sheridan (berthing officer) likewise was very responsive. OPS (LCDR St Pierre) was very helpful. Captain Havlik also was great especially when we were discussing the length of the cruise before we left.

### **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?*

Again, I thought this all went very easily. Of course, I know what I am supposed to do so I am not a good guinea pig.

### **5) Environmental Permitting**

a) *Was any environmental permitting required?*

No but I did work with Polly Penhale at the NSF on an informal consultation with USFWS regarding potential impacts of the cruise on potentially endangered birds and mammals.

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?*

It went fine. I knew it had to be done and worked with Dr. Penhale to get the information to USFWS.

### **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.)*

I had extensive communication with local Alaska Native communities and entities both before and during the cruise. During the cruise, I wrote daily email updates to a list of individuals in the communities to communicate our location, our plans, what we had been doing, what we were

seeing, and our weather/ice conditions. Rather than going into more detail here, I am including the excel file in which I tracked the communications.

### **7) Cargo/Hazmat/Materials Handling**

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

No major problems. We did have to delay the onload in Seward but that was because of vile weather.

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

Overall no problems. One delaying factor was that the science party is no longer allowed to operate the elevator.

### **8) Laboratory and Other Vans**

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

No

*b) How did the procurement go?*

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

*d) Was adequate time available to obtain the vans?*

*e) How well did the vans perform?*

*f) Were they appropriately equipped with ship connections?*

*g) How well did load and offload go?*

### **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?*

Lab set-up went very well. Our biggest difficulty was getting the plankton wheel into the environmental chamber (required squeezing it under the table holding the pCO<sub>2</sub> system).

*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 don't know of any problems.

*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?*

This went very well. I realize that this may not be realistic but I expect that in the future outreach components of cruises (such as teachers) will want to use Skype for those efforts.

*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.

*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. Some of the cameras on deck succumbed to the cold. Winch display on back deck worked great once we figured out that we could turn it on.

One thing that would be helpful would be to have a static version of our Map Server operating on land post-cruise so that we could continue to use it as we analyze our data.

### **11) Shipboard 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.)*

The environmental chambers worked well enough but as usual they were very finicky and difficult to control. They are, in my view, one of the great science assets of this ship and I encourage the CG and science providers to maintain them.

The Multibeam appeared to be particularly sensitive to environmental conditions, both high seas and newly formed sea ice, and performance was very poor under those conditions. Steve Roberts is thinking that this is due to the location of the array. This should be pursued. AICC/Healy/Scripps should look into this.

The jackstaff wind sensor is very sensitive to the relative direction of the wind. These data are displayed in the main lab on the environmental data/ winch data display. The information was very deceptive and not useful to people working on deck, since Healy would frequently shelter the sensor and give much lower readings than were real. It would be more useful logistically to display wind speeds/directions from a different sensor (e.g., we almost blew one of our lighter science party members overboard when the wind was actually 40 knots and not the 10-15 that was on the display).

Minor point: It is necessary to call ECC to have the distilled water turned on prior to using the deionizer. This in itself is a bit of a pain but can be lived with. However, the Scripps techs didn't know about this and couldn't brief the science party. One of scientists (and me but I wasn't around) did know about it and was able to inform the rest of the science party (our chemist in particular).

*b) Do you think anything needs to be upgraded?*

Environmental chambers?

## ***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?*

Very well.

*b) Was appropriate and appropriately sized safety equipment available?*

Somehow I always manage to be with people who need extra small mustang suits. There was one available. Perhaps a second would be good.

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

Yes. Yes. And Yes.

*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. I thought communications between bridge and deck were very good. The ship drivers took special care to do a good job.

*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?*

Mostly good however we never received SAR images for the very most northern portion of our study area, despite providing a list of our planned sampling locations to the NIC. We don't know why.

### **14) Small Boat Operations**

*If appropriate, please comment on:*

*a) Adequacy of boat briefs*

*b) Provision and availability of appropriate safety equipment*

*c) Identification of science needs and requirements*

*d) How well the operations went*

*e) Other*

### **15) Helicopter Operations**

*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**

Food was overall very good. Mid-rats were much better than on previous cruises, with some really great meals. There was some really creative cooking going on at times. Food choices were healthier than previous cruises. Sometimes the vegetarian choices were a bit limited. Salad



bar was excellent. Perhaps a few more nuts for vegetarians at the end of the cruise would have helped.

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

*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)?*

*c) Other*

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

*a) How did all aspects of housekeeping go?*

Very well. The vacuum cleaners on the 02 deck should require ear protection for use (get new ones?).

*b) How did the berth assignments go?*

Excellent.

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

Easy.

*d) Other*

We cannot be the only people who have noticed this: The shower heads deliver the stream of water to the far wall about 4' off the deck and cannot be adjusted to deliver water to the center of the shower. This is because the pipe to which the shower head is attached is too long. It would be great if someday this could be fixed! I really don't like plastering myself to the wall to get into the shower water.

Gyms were excellent.

**18) Medical**

*a) Were needs, if any, met?*

I believe so.

*b) Medical history questionnaires*

*i) Could the forms be improved?*

Forms went well. I supposed they could always be improved.

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

Very well.

**19) Other comments (if any)**

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**Appendix – Additional Questions for Specific Activities or Instruments. Answer only if 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?*

**3) Operations on the ice (Don Perovich)**

a) *How well were safety issues addressed?*

b) ...

**4) Science Support in Barrow (Bob Campbell)**