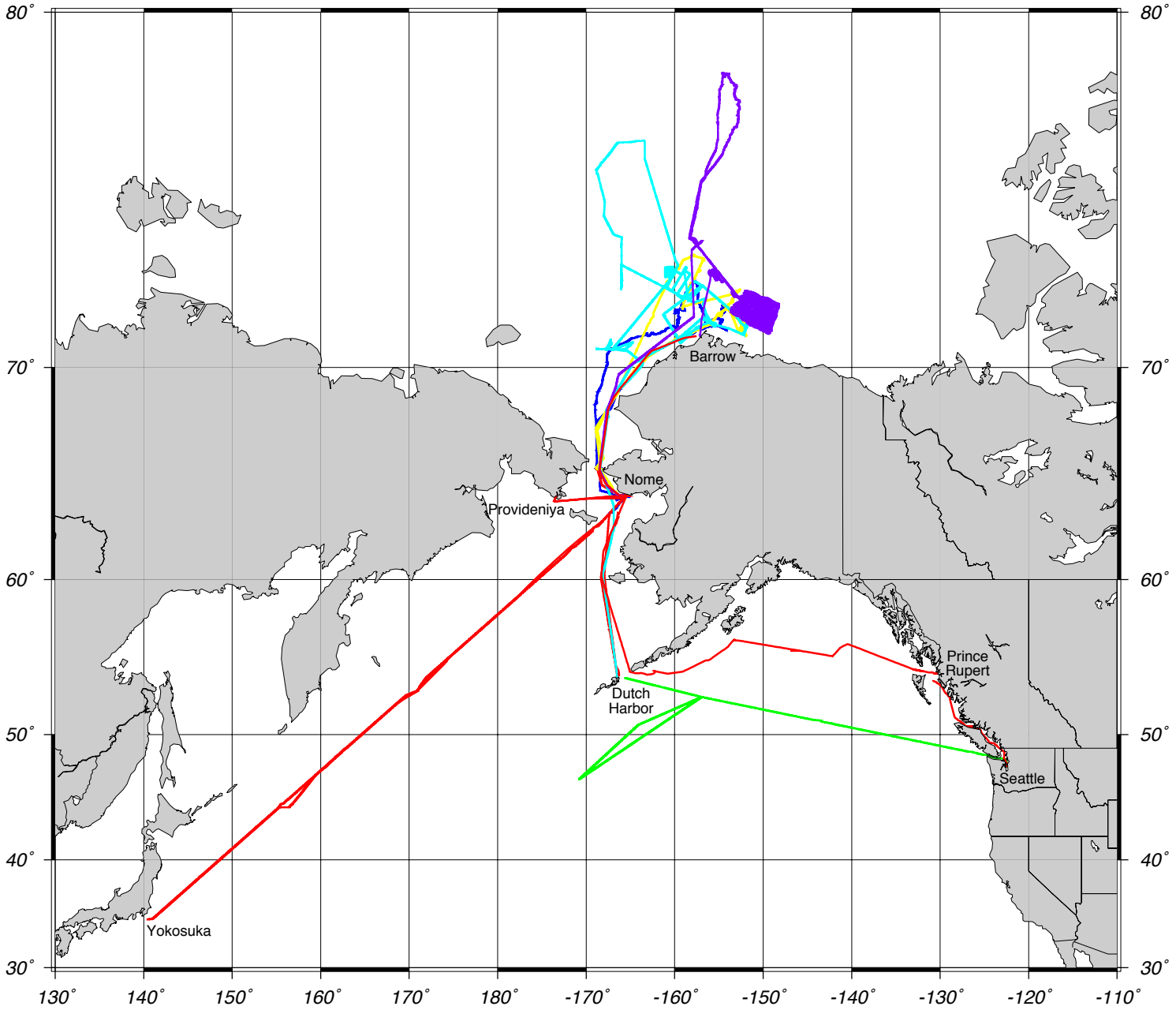
ARCTIC WEST SUMMER 2004

USCGC HEALY (WAGB 20)

30 April – 9 November 2004

USCGC Healy - Arctic West Summer 2004



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Lamont-Doherty Earth Observatory of Columbia University

HLY-04-01	McArthur	2004-04-30	Seattle	-	2004-05-10	Dutch Harbor
HLY-04-02	Grebmeier	2004-05-15	Nome	-	2004-06-23	Nome
HLY-04-03	Cooper	2004-07-19	Nome	-	2004-08-25	Nome
HLY-04-04	Pickart	2004-09-02	Dutch Harbor	-	2004-09-30	Nome
HLY-04-05	Mayer	2004-10-06	Nome	-	2004-10-25	Barrow

U.S. Department of Homeland Security

United States Coast Guard

Commanding Officer
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16155
23 Mar 2005

MEMORANDUM

From: W. J. Kall
Acting CGC HEALY (WAGB 20)

Reply to
Attn of:

To: CG PACAREA

Subj: ARCTIC WEST SUMMER 2004 CRUISE REPORT

Ref: (a) Polar Icebreaker Cruise Reports, COMDTINST 16155.2B

1. This report is submitted in accordance with reference (a) and covers the period from 30 April to 09 November 2004.

2. HEALY completed multiple missions to support Arctic research during AWS-04. The first mission was an eight-day Dart buoy service phase. This phase largely revolved around servicing tsunami buoys in support of NOAA's Deep Ocean Assessment and Recording of Tsunamis project. HEALY's next two missions were part of a multi-year Shelf Basin Interaction (SBI) project. There were 18 research projects included in this ship-based program. During SBI I process phase, thirty-five stations were occupied, where CTD sampling collected physical and hydrochemical samples; an additional 11 XCTD and 4 Video Plankton Recorder deployments were also conducted. A total of 48 scientists from 19 institutions in the United States, Bermuda, Canada, and Japan participated in this interdisciplinary scientific endeavor. SBI II process phase included approximately 180 CTD casts and a wide variety of oceanographic gear, including three corers, grabs, varied nets, traps, video and optics instrumentation, which were deployed over the side of the ship approximately 600 times over the 40-day cruise. Sampling of the Colville River delta sediments was made possible with helicopter flights and numerous small boat operations were conducted in support of experimental floating sediment trap deployments. Following these missions, HEALY then moved into an SBI mooring recovery phase where twelve moorings, deployed in AEWS03 (to measure temperature, conductivity, and currents) were recovered. Additionally, two of the three Acoustical Recording Platforms (ARP) moorings were also recovered. HEALY's last science mission was a 20 day NOAA Arctic Mapping Phase. The primary mission of this science leg was to continue mapping efforts from AEWS`03 along the 2500m contour. The SeaBeam was used to collect new, modern multibeam sonar data to more clearly define critical bathymetric features and substantially improve the quality of a potential EEZ claim under Article 76 of the United Nations Conventions Law of the Sea.

3. In addition to the science missions, HEALY was involved in two search and rescue cases. The first case involved an overdue boater in Kotzebue Sound. The second involved overdue walrus hunters near the Colville River Delta. Both rescues were successful and had minimal impact on science operations.

4. During Arctic West Summer 04, HEALY provided a Coast Guard record 138 supported science days, 116 of which were above the Arctic Circle, and all missions met or exceeded research goals. AWS04 also marks the completion of three years supporting the field research for the SBI Project. HEALY has continued to demonstrate that it is the premier platform from which to conduct polar scientific operations.

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Enclosure: Arctic West Summer 2004 Cruise Report

Dist: :

	Qty
Commandant (G-OPN, G-OCU, G-OCA, G-SEN)	1 ea
Commander, Pacific Area (Po, Pof, Poo)	2 ea
Commander, Atlantic Area (Ao)	1
MLCP (v, t)	1 ea
USCG Academy	1
Aviation Training Center (POPDIV)	1
USCGC POLAR STAR	2
USCGC POLAR SEA	2
Arctic Icebreaker Coordination Committee	10

	Qty
National Science Foundation	1
Center for Polar and Scientific Archives National Archives of the United States	1
U.S. Army Cold Regions Research and Engineering Lab	2
Engineering Logistics Center (01, 02)	1 ea
NESU Seattle	1
ESU Seattle	1

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CHAPTER I – SHIP OPERATIONS

1. AWS 2004 Operations Summary

A. Deployment Preparations & Shakedown Cruise, Seattle to Victoria to Seattle

Planning for this cruise began while HEALY was deployed on the previous season's mission. Most of the scheduled missions were already firm, since the commitment to SBI field cruises had been made much earlier.

Formally, planning kick off was a meeting at NSF headquarters in Ballston, VA, on 16-17 September 2003. Participants included NSF, OPN, POPDIV, NOAA, and PACAREA. NSF presented that there would be two SBI process cruises and an SBI mooring cruise. Also under consideration was a bottom-mapping proposal by NOAA and Larry Mayer, a follow up to the 10-day mission accomplished on AEWS03. The only other addition came from NOAA; a tsunami warning buoy system, dubbed DART, had requested seven days for turnaround of three buoys in the Gulf of Alaska, along the Aleutians.

Some input provided to participants was that any form of barge operations off Nome and fueling by barge were both non-starters. These techniques had been used in the past to save time, but both were unsafe planning factors. Loading containers and fueling must both be conducted pierside.

Finally, OPN and PACAREA looked at the planned science and came up with the following strawman schedule.

6 May	Depart Seattle
15 May	Start SBI 1 (40 day process cruise)
27 June	Start DART (7 day mooring cruise)
4 July	4 day port call in Kodiak
14 July	Start SBI 2 (40 day process cruise)
23 August	2 day port call in Nome
25 August	Start NOAA Mapping (20 day bottom survey cruise)
14 September	5 day port call in Nome
19 September	Start SBI Mooring (30 day mooring cruise)
27 October	5 day port call in Ketchikan
1 November	Underwater sound survey
4 November	3 day port call in Victoria
7 November	Return to Seattle

On 2 October HEAL.Y proposed changes to the schedule based on the following factors:

1. Shift the DART cruise from mid-summer to the beginning of the deployment. The ship's initial transit to Nome would pass close to the buoy locations, so this was efficient. Rather than a port call in Kodiak, this opened up a window in the middle of the deployment to accommodate a long transit and port call. There was still some uncertainty as to whether or not HEALY was the best platform for doing the buoy operation, so in the event the mission was cancelled, having it scheduled at the start simply meant departing Seattle a week later.

2. Switch the order of doing the SBI mooring and NOAA mapping phases
3. Delete a second port call on the return home; makes no sense to do a port call 10-hours from home at the end of a 6-month deployment.
4. Add a 6-day port call in Japan between the two SBI process cruises. Without this port call, AWS04 would be a 6-month deployment without a portcall outside of Alaska.
5. Insert a port call in Provideniya, Russia. If a Russian port call were not approved diplomatically, the fallback would be a portcall in Nome.

The main concern regarding these changes was from Larry Mayer of NOAA, whose cruise was delayed three weeks to a 6 October start. He expressed the fear that waning daylight and potential refreezing conditions would hamper multibeam operations, as his proposed tracklines extended as far north as 80 degrees. We were asked to prepare an explanation as to why his cruise was moved to the later timeframe. From the ship's perspective, the late start of the mapping cruise resulted from three factors. First, there is a limited timeframe of potential data collection in the Arctic each summer. Attempting to schedule 110 days of cruise time in one season demands that work will start in May and end in October, despite that most people would prefer to conduct science in July-September months. Secondly, the majority of the SBI moorings reside in an area that conflicts with the Barrow whaler's fall hunting season, in early October, making this a poor time to schedule that particular cruise. Finally, if darkness or poor weather does persist, the mapping is easier to accomplish as it almost exclusively uses hull-mounted sensors for data collection, vice the mooring cruise, which is primarily over-the-side evolutions. There was also a slight concern from NOAA that the DART buoy turnaround would be harder to accomplish in May weather than sometime in the middle of the summer.

The modified schedule was based upon the HEALY counter-proposal, and meant leaving a week earlier, 30 April, to accomplish the DART mission. An SBI planning meeting was held in Seattle on 3-5 December, where the final dates where accepted and logistical plans were set in motion. On 19 February, HEALY sent the concept of operations message and received approval four days later. Foreign port clearance request messages for Japan and Russia were sent in March.

Communication with the National Ice Center (NIC) started in February to line up Radarsat support. Due to trackline coverage under normal Radarsat areas, no additional coverage was required or ordered. On 30 April, the day the deployment started, NIC had setup a folder on their website, and had started posting imagery.

HEALY planned and executed a two week shakedown cruise after the dry-dock availability. The shakedown covered from 22 March - 3 April and included a very ambitious schedule. A lot of time was devoted to running DC drills, working glitches out of the propulsion plant, the bow thruster, the DPS and the VMS. To support science systems testing, Dave Forcucci lined up Scripps to assist with the CTD system testing, LDEO to evaluate the repairs and window replacement to the Seabeam 2112 sonar system, and Andreas Muenchow to evaluate the ADCP performance. Additionally, the MSTs tested the winches and exercised the cables.

After a hectic five days, HEALY pulled into Victoria BC for a 48hr port call. We got underway on Sunday afternoon in order to be anchored IVO Ediz Hook near Port

Angeles to start our three day, triennial Helicopter STAN visit. Pax transfers were accomplished by boat to Group Port Angeles, since no public boat landing was identified near the Red Lion hotel in town. Day one and two were accomplished at anchor, while day three we got underway and started afternoon flight ops for both day and night qualifications. HEALY gained full certification.

Science load out occurred in April. Five SBI science vans were loaded the first week, while the rest of the onload trickled in over the next three weeks. Deck force and the MSTs worked long hours to accomplish the onload, as usual, and were able to get few days off prior to sailing.

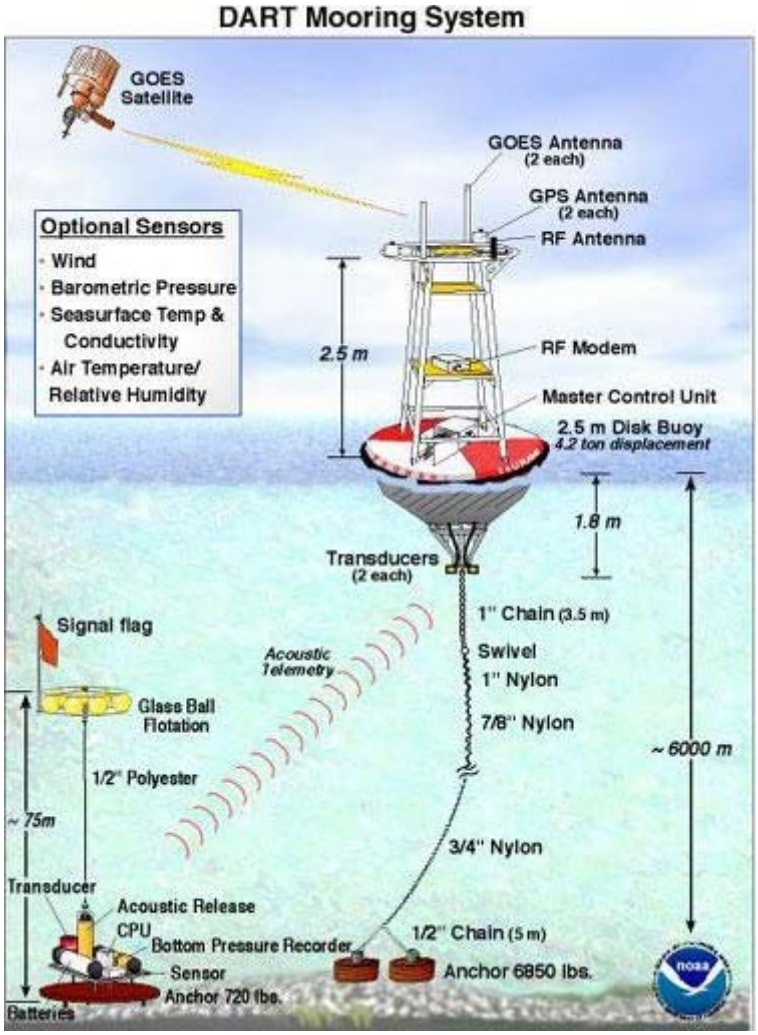
B. DART (Seattle) to Dutch Harbor to Nome

On April 30th, HEALY got underway as scheduled at 1000. AVDET 160 embarked from Port Angeles as we sailed through the Eastern Bank of Puget Sound. The first scheduled mission of AWS04 involved support for the Deep Ocean Assessment and Reporting of Tsunamis (DART) Project. The Chief Scientist, Shannon MacArthur, and four technicians from NOAA's National Data Buoy Center (NDBC) sailed with us from pier 36.

As part of the U.S. National Tsunami Hazard Mitigation Program (NTHMP), the DART Project is an ongoing effort to maintain and improve the capability for the early detection and real-time reporting of tsunamis in the open ocean. Developed by NOAA's Pacific Marine Environmental Laboratory (PMEL) and operated by NDBC, DART is essential to fulfilling NOAA's national responsibility for tsunami hazard mitigation and warnings. Project goals are the:

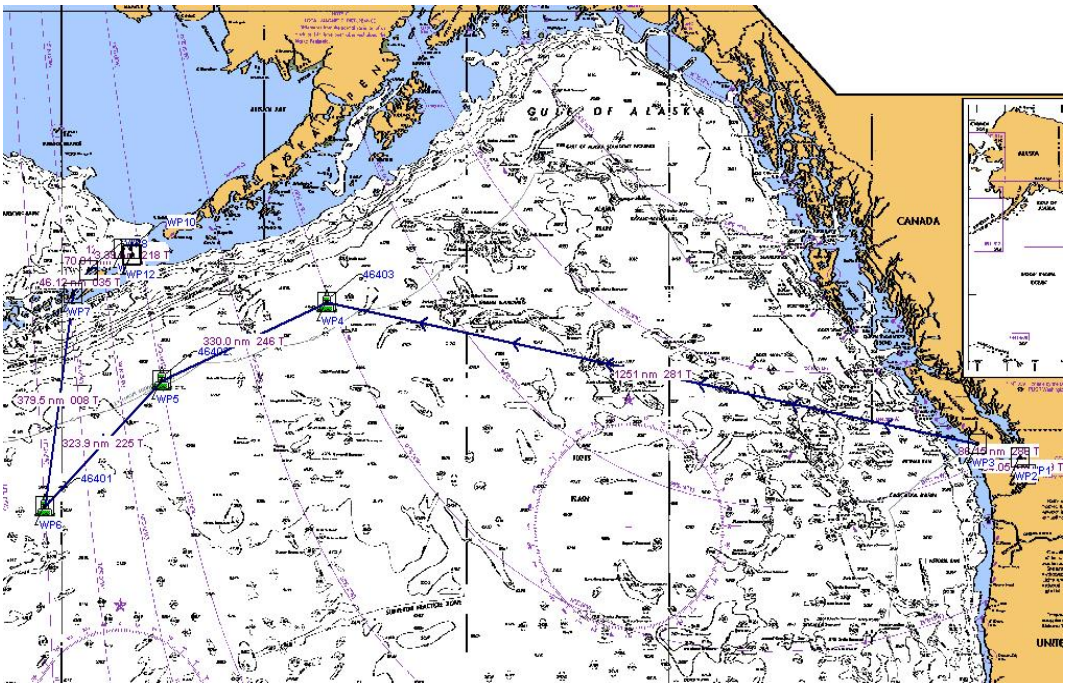
1. Reduction in the loss of life and property in U.S. coastal communities.
2. Elimination of false alarms, which result in high economic costs for unnecessary evacuations.

DART systems consist of an anchored seafloor bottom pressure recorder (BPR) and a companion moored surface buoy for real-time communications. An acoustic link transmits data from the BPR on the seafloor to the surface buoy. The data are then relayed via a GOES satellite link to ground stations, which demodulate the signals for immediate dissemination to several sites, including NOAA's Tsunami Warning Centers.



The DART mission was originally proposed in the three-week time window between the spring and summer SBI process cruises. NSF and CG planners thought this would be a good fit and would provide HEALY with a stop in Kodiak or Anchorage. However, as discussed earlier, this mission was shifted to the beginning of the deployment to provide efficiency and allow for a foreign portcall. DART stations have been sited in regions with a history of generating destructive tsunamis to ensure early detection of tsunamis and to acquire data critical to real-time forecasts.

The trackline on the map below shows the proposed order of operations, and shows the three buoys scheduled for turnaround. NDBC's highest priority was 46401, the westernmost buoy, which had gone two years since servicing. After working 46403, forecasted weather showed favorable conditions at 46401, and the decision was made to transit west and work 46401, then return and service the middle buoy, 46402. Approximately 12 hours after leaving the first buoy, 46403, water intrusion into one of the circuit boards on the BPR caused the unit to stop transmitting. After successfully working 46401, calculations showed we could return to 46403, re-work it, and still make our scheduled time in Dutch Harbor. This scenario worked successfully, the middle buoy was never worked. However, it is still operating properly and will most likely make it through its second year of operation until it can be serviced again.



The Chief Scientist was very pleased with HEALY's performance and flexibility to ensure the DART system working for the next year or even two.

A description of the deck evolution actually used is found in the Deck section of this chapter. For more information, as well as real time data, visit NDBC's DART website at http://www.ndbc.noaa.gov/dart.shtml.

A 50-hour stop in Dutch allowed the NDBC personnel to offload their equipment, and gave the crew a short break prior to the next phase. The AVDET had not flown since their embarkation, so they flew off the ship as we approached Dutch Harbor and remained at the airport until recovery after HEALY got underway. They accomplished strut maintenance to both HH65s and conducted test flights during the inport.

Favorable weather provided for a good transit to Nome. First ice was encountered 70 NM south of Nome. An abundance of Walrus were spotted on floes of ice. Looking to test the new science sea water system in the ice while JJMA technician was onboard, we attempted to drive through the thickest concentrations. No problems were encountered in the 8/10's coverage.

C. SBI I

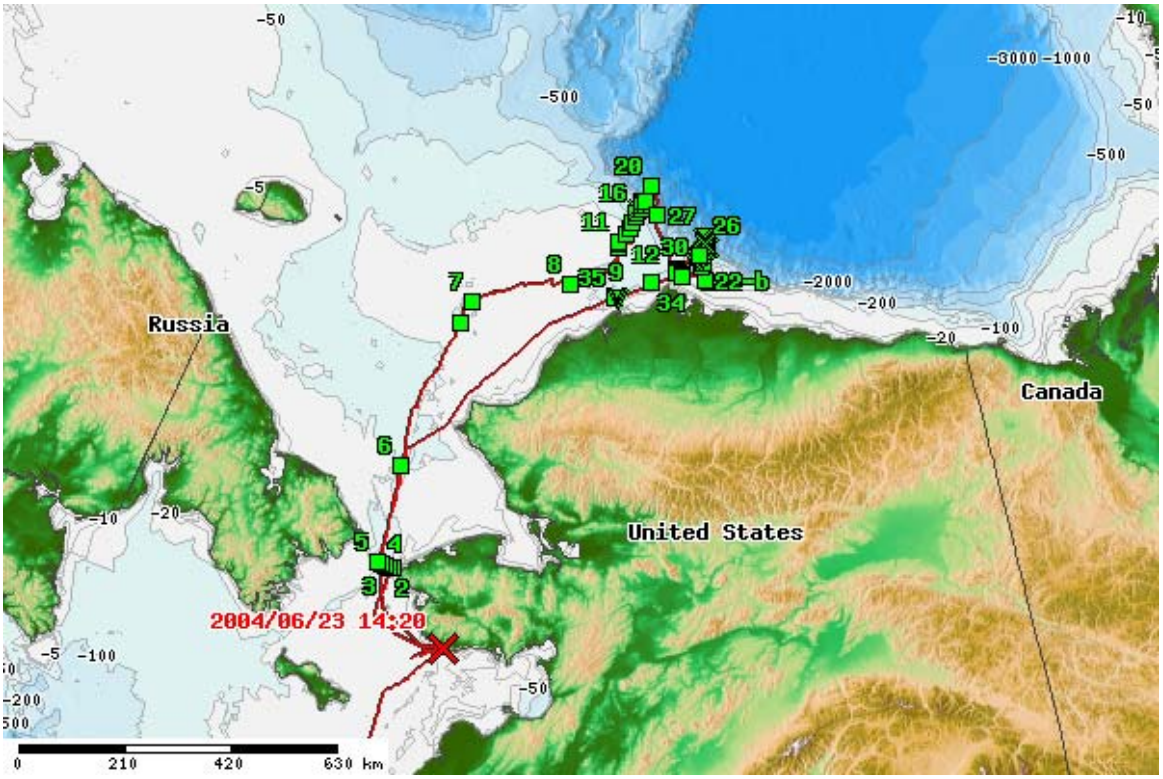
Commenced flight ops at 0800 on 15 May. There was still some ice in the Nome harbor, and small boat ops, while not entirely out of the question, were not recommended. Communications established with SBI shore party on VHF. SBI had their logistics person, Andy Heiberg in Nome to help coordinate the transfer.

At 0930, received a call from D17 Opcen that they were in receipt of a report of an overdue vessel IVO of St. Lawrence Island, and they requested our position and ability to respond to the case. D17 diverted a C130 from a regular log flight to commence an air search. Although we had only completed three sorties, at 0951 we were diverted to LKP,

to prepare to launch one of our 65s to effect a rescue if the vessel or people were located. We recovered both helos, secured from pax transfer and commenced making best speed toward St. Lawrence Island. At 1215, D17 released us from the case, stating that all vessels and whalers had been accounted for.

We returned to Nome and restarted our pax transfer. All flight ops were completed by 2036, having transferred 44 personnel aboard and 12 ashore. We utilized the DP system in the Joystick Auto Heading mode to maintain favorable relative winds for flight ops, without having to maneuver constantly.

One of the lessons learned from the 2002 SBI fieldwork was that operations near several Alaskan communities should not interfere with whale hunting. In the spring, that time frame is late May and early June. For that reason, a start date of May 15th was negotiated as the earliest acceptable for the conditions. Additionally, the ordering of stations was to place work near Barrow at the end of the cruise after the conclusion of the spring whale hunt. Therefore, the intended SBI phase I track line looked like this:



Just as in 2002, the community at Point Hope requested the ship stay 50 NM off shore when transiting north so as to avoid the migrating whales. This diversion to the west took the ship into Russian EEZ but no science operations were planned or conducted.

A total of 48 stations were planned for SBI-1, including 5 full multi-station lines: Herald Valley (HV), West Hanna Shoal (WHS), East Hanna Shoal (EHS), Barrow Canyon (BC), and East Barrow Canyon (EBC). During the cruise, ice conditions were the main limiting factor for occupying only half of the 5 transects outlined in the HLY-04-02 cruise plan. We worked initially in ice-free stations on the southern Chukchi Sea shelf reaching the first two stations in before heavy ice slowed our progress. The decision was made to move east and use the Barrow shore lead to reach the EHS line. Most of this line was

worked, but we terminated the EHS line at 2500m and proceeded SE past Barrow to occupy the East Barrow (EB) line, based on satellite imagery showing an open lead between the pack ice and the receding fast ice. Extremely heavy ice and dramatic ridging and grinding in the shear zone of the pack and fast ice precluded our occupation of the EB line. In fact, the ship was beset for two days in position 71-30N 154-44W. Once free we decided to work back over to the BC line via a shortened transect north of Smith Bay (SB) in the near shore Beaufort Sea. Despite the slow transits, thirty-five stations were occupied during this cruise, with an additional 11 XCTD and 4 Video Plankton Recorder deployments. The total time spent at stations was 345 hours (14.4 days).

Ship handling and station positioning dealt with similar issues from the 2002 spring cruise. While en route each station, we would verify with the chief scientist the estimated time on station and whether or not the ice sampling team wanted to deploy on ice at the next station. We attempted to find a position within a 5NM circle of the station position where we could maximize our drift time within the circle without having to reposition. If the ice team was to be deployed at the station, then we not only had to find a decent opening to place the ship in, but we also had to find such an opening near a floe that the ice team wanted to deploy on, i.e. there had to be a relatively flat edge along the windward side of the floe, on which to position the port side of the ship, and there had to be an open area of water next to it in order to conduct all of the water work. Additionally, water depth had to be within the acceptable range for the station (+/- 25%). However, due to the difficult ice conditions, the scientists would often take what they could get on the depth and make adjustments later.

Again, just as in 2002, helicopters were used often for ice reconnaissance flights on this 40-day mission. The National Ice Center (NIC) posted some form of satellite imagery (RadarSat, visual or infrared) in our folder on the NIC website almost daily, but the ice imagery, while great for planning purposes, usually didn't provide enough detail to be of sufficient use for navigation. The AVDET logged many more hours this deployment than expected, and details of can be found in the aviation section of this report.

On our transit back to Nome for the offload, we stopped by Little Diomede Island to pick up Gay Johnson, a Alaska Dept F&G biologist who frequently works on the island for several months at a spell. The village is on the western side of the island, and the best approach to the boat landing is from the south. HEALY loitered about 1 mile SSW of the island while both RHIs made trips to the village. Thirteen villagers were transported to HEALY for a visit of approximately two hours. Meanwhile, the morale and ship's store officers visited in the village and purchased locally harvested and carved ivory for sale and bingo prizes for the crew.

On 23 June we anchored at 0700 two miles from the Nome harbor entrance and commenced boat ops at 0800. The plan was to conduct the entire logistics schedule by with ship's boats, and not utilize the helos at all. The RHI started transferring personnel ashore, as well as the Supply Officer in the first run to organize the incoming cargo. At approx 1000, we launched the LCVP with a full load of science cargo going off the ship. Unfortunately the weather started to pick up. Winds in excess of 30 kts kicked up 8 ft seas and reached the point where we decided to suspend LCVP ops. All remaining cargo on shore was then ferried to the ship via the RHI, a process that worked fairly well, although considerable effort was made to break down the stores into the boats and then keep it relatively dry during the bouncy ride to the ship. Nevertheless, the entire operation was completed prior to 1700. After the evening meal the anchor detail was set and at 1807, HEALY was underway to Japan.

D. Nome to Yokosuka to Nome

Upon getting underway from Nome, we started the 2,800 NM transit to Yokosuka, Japan. Nine days were budgeted in the schedule for the transit, taking into account that Japan was 17 hours ahead of Alaska Daylight Time, and across the International Dateline. The Navigator's track was based on a speed of advance (SOA) of 13.5 knots, and we had no trouble making that speed, although we were surrounded by fog for the majority of the transit.

Typhoon Ting-Ting was raging to the south. We tracked this closely, using Navy websites. By the time it reached us two days out of Yokosuka, it had waned and 35 knots off the stern were all we felt. We received good weather support from NavMetoCen Yokosuka during this period and throughout the transit.

In Nome, we embarked six riders from Afloat Training Group Detachment Northwest for a Limited Team Trainer period. Knowing the Japan transit was the only opportunity for training in the science-packed schedule, we sent the request on the 3rd of April. Our first choice for the LTT was the transit from Japan back to Nome, to include more newly reported personnel, however, our second choice was what we got. It would be more advantageous to build more training time into the ships schedule, rather than squeezing it in during transits. This is difficult for several reasons but primarily due to the fact that adding time to the schedule for training increases the length of the already long deployments since reducing science days is not an accepted option.

Our track line took us through the eastern reaches of international waters of particular law enforcement interest, specifically to deter and detect illegal high seas driftnet (HSDN) and salmon fishing activity in the North Pacific. The Coast Guard is involved with several other countries to ensure compliance with the United Nations General Assembly HSDN Moratorium (UNGA Resolution 46/215) and the Convention for the Conservation of Anadromous Species in the North Pacific. We launched several helo flights to perform surveillance, but detected no fishing activity on our transit to Japan.

No CG or military operations were scheduled for Japan; the trip was primarily for crew rest and relaxation, although logistics were also completed. Yokosuka was a good choice for liberty in Japan in that access was good to Tokyo yet the crew could utilize base facilities that were very convenient and less expensive than on the economy. Additionally, force protection was a non-issue due to existing coverage by base operations. The only additional overhead for the crew was the requirement for one additional watch stander on shore patrol.

On return trip, we engaged in more flights for HSDN surveillance. Spot intel indicated several large groups of vessels near our track line. Were able to obtain photos of these vessels and fwd to D14 and Pacarea. Most of the fishing vessels encountered were legally fishing for squid, but photos were deemed very valuable in correlating on scene reality with intelligence. If icebreakers transit this area in the future, prior planning should include obtaining Oporders and intel briefs in advance. D14, D17, PACAREA and MIFC should all be consulted.

Fair weather marked our transit home, and once again we had no problem meeting our ETA at Nome for the on load of SBI phase II.

E. SBI II

On 18 July, hove to 2 NM off Nome for our third logistics day of AWS04. Trying to learn from past evolutions, a bi-modal approach was planned. Most cargo to be transferred in and out of Nome sits at, or needs to go to, the airport. The LCVP is a great platform for cargo, but does not do well in rough weather, and in Nome the cargo must be transported to the harbor. For this reason, we chose to run all the cargo on a helicopter while simultaneously transporting personnel with the RHI. The RHI works well with pax because they can be raised and lowered to the boat deck and there is no need for climbing a Jacobs ladder. This system worked well, and resulted in the entire evolution taking only 10 hours.

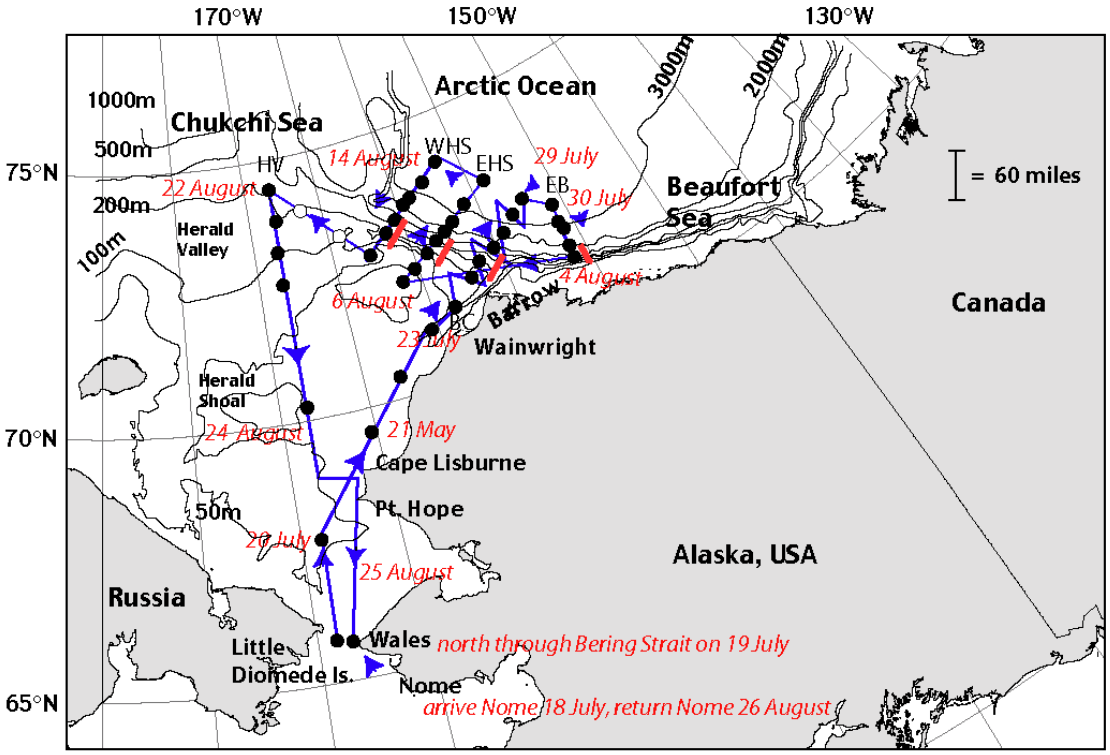
On the evening of the 18th, IVO King Island, we conducted a rendezvous with CGC ACUSHNET, who had been operating in the Bering. We conducted boat operations to swap five crewmembers for a few hours of professional exchange. HEALY's MPA was treated to a tour of the WMEC by his son, an EM3 on the Ketchikan based cutter.

On July 19th, while working the Bering Strait CTD section, received call from D17 command center requesting HEALY's location and ability to launch helo to search for an overdue vessel. One hour later, launched 6532 to search coastline from Shishmaref to Kotzebue and look for a 22-foot aluminum boat with a blue canopy. 6532 visually sighted vessel and operator aground approximately 15 miles east of Shishmaref. Helo lowered the additional flight mechanic to assess situation and found subject to be 81-year-old male in apparent good health whose vessel had become stuck in the mud. 6532 recovered subject, flew to Kotzebue to refuel, and delivered subject to Shishmaref.

On the 28th of July we started our second SAR case of the deployment. Again, a phone call from the D17 command center requested our location and ability to launch a search for overdue hunters near the Colville River delta. Although initially out of helo range for coverage of search area, at 1205 HEALY was diverted toward the search area, and at 1643 we launched an aircraft to search along the ice edge, which was approximately 50 NM off the delta. Searches by HEALY, Barrow SAR, and a C130 were all negative. The following day, D17 coordinated searches by various units. HEALY's launch was delayed due to heavy fog, but 6539 eventually got airborne and located the vessel and all four men in good condition. 6539 recovered the survivors and transported them to Nuiqsut, a small village at the head of the delta. Survivors stated they had reached the pack ice to conduct walrus hunting when they broke down due to a failed engine starter. They had been adrift for three days and arrived near shore just prior to discovery by the aircraft.

From an operational standpoint SBI phase 2 went very smoothly. As the fourth and final "process" cruise of SBI, this phase benefited from both the ship and the science party having lots of practice working together. Additionally, great weather and open water facilitated the collection of large amounts of data and occupation of nearly the entire proposed cruise plan. This is how Dr. Lee Cooper described the accomplishments:

"Of these four [process] cruises, this cruise occupied the most stations (60), obtained the deepest water and sediments from the most northern portions of the study area, and deployed the most diverse set of equipment. Approximately 180 CTD casts were made to support the scientific work, and a wide variety of oceanographic gear, including the rosette, three corers, grabs, varied nets, traps, video and optics instrumentation were deployed over the side of the ship a sum total of approximately 600 times over the 40-day cruise. Helicopter-supported sampling of the Colville River delta, numerous small boat operations in support of experimental floating sediment trap deployments and two successful search and rescue operations were some of the other accomplishments."



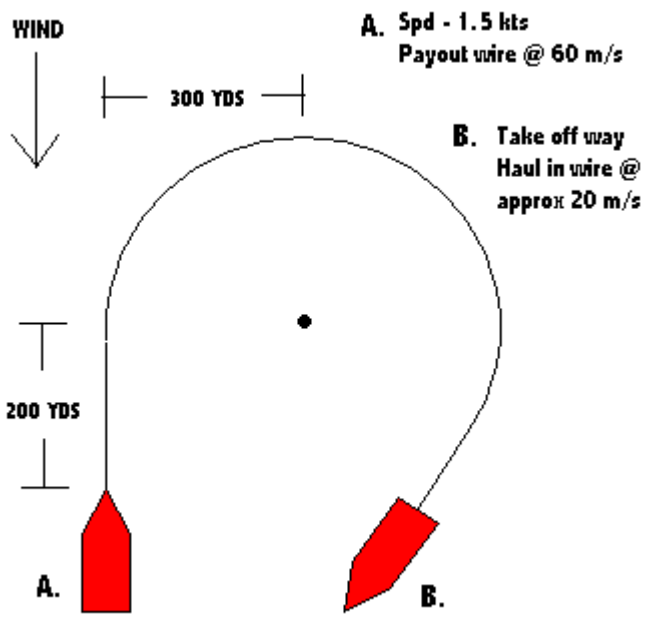
The only geographic area not visited on this phase was the Herald Valley transect, the westernmost line that runs close to the Russian EEZ. This section was ultimately not occupied as the principal investigators chose instead to spend more time on deep-water sampling in the Canada Basin and high-resolution surveys in several of the slope regions.

In the middle of this phase, we experienced a disabling engine casualty to the starboard RHI. On logistics day, having only one RHI required us to plan the cargo and personnel movements with helos. Logistics personnel were asked to attempt getting a replacement engine to the ship in time for the Mooring recovery phase, which required frequent RHI operations. On 26 August, the AVDET once again efficiently offloaded the whole SBI science party. Operations started early, around 0700, and by 1200 both aircraft were hangared and HEALY was underway toward Dutch Harbor.

F. SBI Mooring to Provideniya to Nome

The four-day in port in Dutch Harbor was a busy one. HEALY arrived late on the 28th from the Nome transit. Sunday, August 29th was very packed with MSTs and Deck force loading over 20,000 lbs of science gear. The engineering department also on loaded approximately 479,217gallons of propulsion fuel, and pumped on 3,250 gallons of lube oil.

On Thursday, September 2nd, we got underway with the final SBI field mission, mooring recoveries with Dr. Bob Pickart as Chief Scientist. This cruise was very similar to HLY-03-03, with the main purpose to recovery the main 12 moored sensor packages in the Beaufort and Chukchi Seas placed by WHOI, UW and UA. This cruise differed mostly in applying lessons learned from the previous two summers work. First, WHOI brought their own deck-mounted winch to speed recovery efforts. Secondly, work in the vicinity of Barrow was scheduled first and early enough to avoid conflict with the fall bowhead whale hunt. Dr. Pickart had told BASC that he would be finished and out of the whale target area by 16 September, which is precisely what happened. After this date, the whales affected our operations only by modification of flights to Barrow ensuring aircraft arrived and departed from the west.



On 13 September the Barrow Canyon mooring, BC1, did not surface even after both acoustic releases were tripped. UW mooring tech Jim Johnson described the dragging evolution and Deck and Science divisions set up to drag.

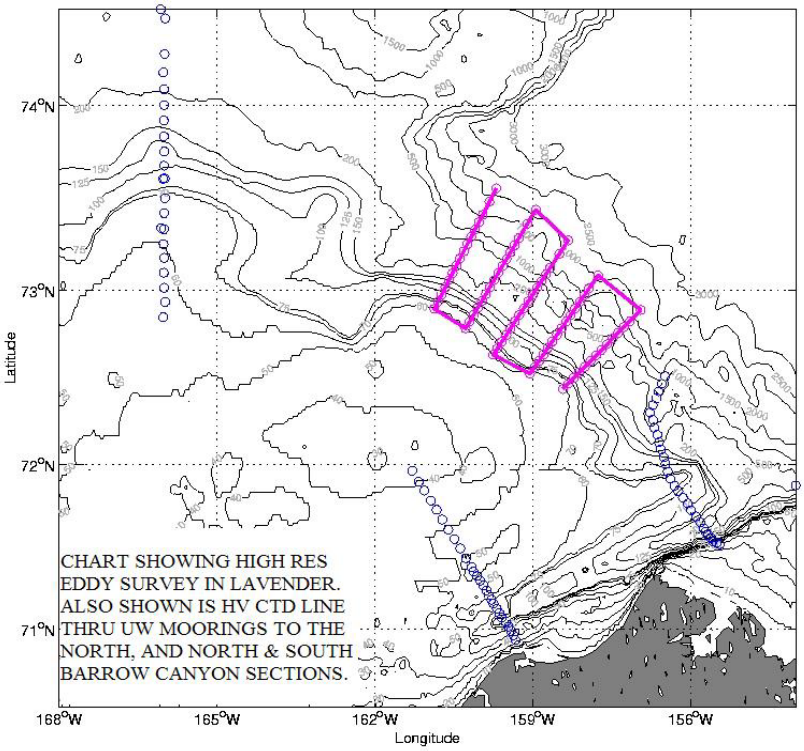
As shown in diagram, the idea is to pay out a hook and some sacrificial wire rope on the bottom of the ocean in a near circle around the mooring. When the wire is recovered, the circle closes like a noose and hopefully hits the mooring, dislodging it from its anchor. For this evolution, a large grappling hook and wire from WHOI was attached to the 9/16" wire on the trawl core winch. This method should put approximately 1500 meters of wire on the bottom, and for this effort, almost 2000 meters was paid out. The more wire paid out, the longer the evolution, but it was worth it this time as the mooring surfaced very shortly after recovery began, and the entire process only expended about three hours.

A mooring funded by NOAA and managed by Dr. Humphrey Melling, was also recovered and re-deployed in the northern Chukchi. In the end, 15 moorings were recovered, with only one failure; one of the three Acoustic Recording Packages placed on

the Beaufort Slope by Scripps experienced an acoustic release failure and could not be recovered.

After completion of the NOAA mooring turnaround, Dr. Pickart wanted to sample the boundary current running on the slope to the north. The proposed section of stations ran to the northwest and crossed the U.S. Russian Convention Line at about 76N. Although this is outside of the Russian EEZ, clarification was sought from PACAREA regarding the legality of collecting scientific data to the west of the line. PACAREA consulted with State Department reps and received a clear response that the current Russian claim extends north of their EEZ, and permission must be sought to conduct science west of the Convention Line.

One other lesson learned from previous SBI missions was the presence of eddy currents spinning off of boundary currents. Dr. Pickart was determined to find, define and sample one of these eddies. To that end he devised an XBT survey that will sample a 75km x 125km swath of the continental slope in the region where he had found the most eddies over the past two years. This will involve dropping XBT probes approximately every 15 minutes (over the 5 cross-slope lines) for roughly 25 hours. At the conclusion of the XBT survey, the results indicated an excellent candidate eddy, where we carried out a smaller, more highly concentrated survey using XCTDs to define the size, shape, and character of the eddy. Additionally, a line of full CTDs, VPRs and net tows through the heart of the eddy completed the comprehensive current analysis.



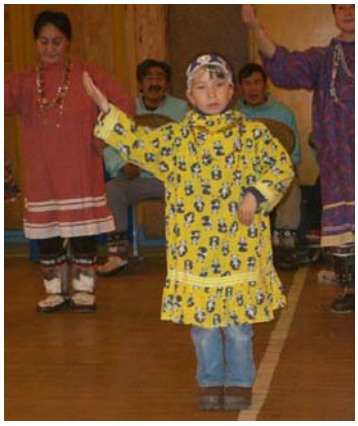
On October 1st, we arrived off of Nome and conducted flight operations to disembark the SBI Mooring science party. Using both helos once again proved efficient. We were delayed several hours waiting for stores, which were scheduled on the 0830 flight, but did not arrive until 1400. Despite this, we got underway at 1900, only slightly behind our scheduled departure time. Nome to Provideniya is a 19-hour transit at 12 knots, thus a SOA 13 knots made up for the lost hour.

Preparations for a groundbreaking port visit in Provideniya began many months prior to our arrival. It began with emails to D17 RLO (Russian Liaison Officer) and PACAREA Intl Affairs Officer in December and January to start gathering information. HEALY's official port visit request message was sent over seven months before the visit, to allow

for the long diplomatic process. PACAREA (Poi) worked the issue with COMDT and the State department. In July, Poi was given the okay to send official request to Moscow. In August, US Marine Attaché Officer, who would work as our POC for the visit, contacted Poi. We were warned that there was little chance of approval, for a variety of reasons, and that we should not expect a final answer until days prior to the visit.

In the end, we were notified of diplomatic approval four days prior to our visit. Although I don't know all the reasons for the approval, I believe Poi was very proactive and kept good contact with State Dept and USDAO in Moscow. From the shipside, we planned far in advance. We were quick to respond when asked questions concerning our logistics and security requirements, and our ability to pay for the visit. A large key to success of the port visit itself was the presence of our interpreters. While four interpreters may have been a little too conservative, two interpreters is a minimum for a successful visit to Provideniya. Our insistence on interpreters and the positive response by Poi and D17 RLO had a great impact.

No operations or official functions were planned, and no one knew what to expect, but Provideniya proved to be an interesting and enjoyable port for the crew. The husbanding agent arranged for crewmembers to tour a nearby native whaling village and glimpse a more traditional Chukotka lifestyle. Crew was treated to a performance from native musicians and school children and even participated in the dancing. The Cultural center located in downtown also provided several events for the ship's crew including Russian movies (with English subtitles), a performance of traditional dances and sporting events with games of soccer, basketball and volleyball.



In Nome we embarked the four Russian translators for our visit; LCDR Tom Gaffney, the D17 Russian Liaison Officer, LT Eric Johnson, a Russian speaker currently in command of SE Fisheries Training Center, and two Auxiliarists, Roger Bolles and Dave Ackerman. While it is possible that the translators could meet the ship in Provideniya, it was logistically easier and probably cheaper that they met the ship in Nome. Additionally, it is necessary to have an interpreter aboard for the transit, as all the radio communications with the harbor, pilot and tugs were in Russian.

The return transit to Nome was uneventful. It should be noted that Provideniya conforms to –12M time zone, yet observes DST making it 13 hours ahead of GMT during the summer. A 1000 departure time from Provideniya on 6 October put us off Nome at 0700 6 October using a 12 knot SOA.

G. NOAA Mapping to Barrow

Embarked final science phase of AWS04, the NOAA Mapping mission, by helo on 6 October. We waited until sunrise to commence flight operations, but with only 24 personnel to bring aboard we were still finished by 1400.

After completion on the operations, 6532 remained on deck in Nome. The following day they started a cross Alaska, cross country trip back to ATC Mobile. 6539 remained as our only aircraft, with 2 pilots and 3 flight mechanics. The primary reason was the accelerated re-engining program on HH65s, which was causing a shortage of airframes in Mobile. Since no flight ops were scheduled for the remainder of the deployment, having one helo only for emergencies was acceptable.

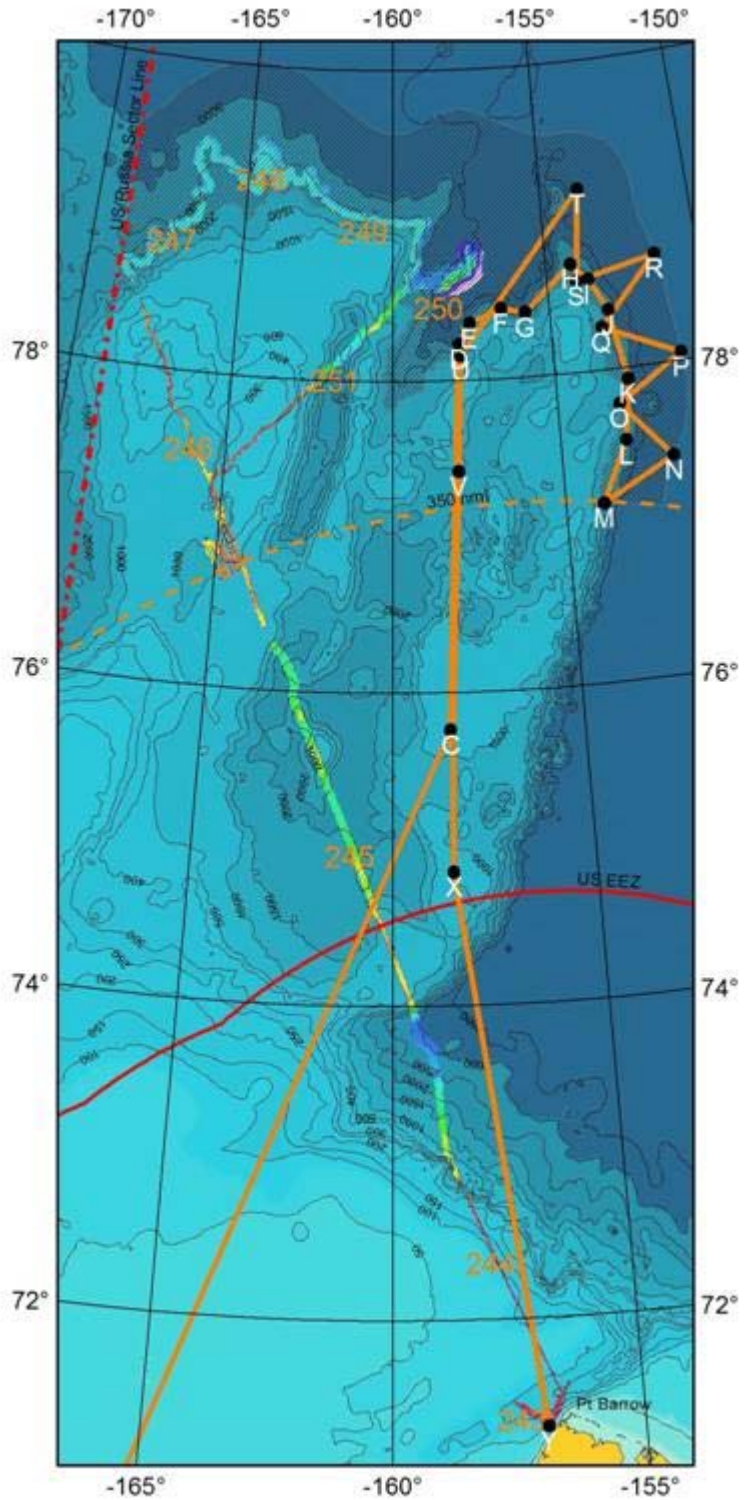
This mission was a continuation of the 10-day mapping mission in 2003**.** The target region was from 77N to 79N, 150W to 160W using multibeam mapping and sub bottom profiling to determine the position of the 2500 m contour and the foot of the continental slope in support of a potential claim for an extended EEZ under United Nations Convention on the Law of the Sea (UNCLOS) Article 76. NOAA was given the charge to contract for these ocean bottom surveys and they turned to the Center for Coastal and Ocean Mapping/Joint Hydrographic Center (CCOM/JHC) of the University of New Hampshire as research collaborators for the project. Dr. Larry Mayer heads the CCOM and was the Chief scientist for what we termed the NOAA mapping mission.

HEALY diverted west of intended trackline to attempt flight ops to Barrow for a crewmember to depart on emergency leave. However, 40 knot winds, 5 degrees of pitch and icing conditions near Barrow precluded flying. With no appreciable change in the weather predicted, flight ops were cancelled and HEALY proceeded north.

On the night of 8 October, the science party wanted to calibrate the Seabeam with two events called the roll and pitch bias tests. A CTD cast was required to obtain an accurate sound velocity profile. Several problems were encountered with the interface between the Seabeam 2112 and the inputs from the POS/MV. In the end, vertical reference data was obtained from the old system and normal operations were restored. Science support

personnel will work with Seabeam in the offseason to correct the POS/MV interface problem.

The northern transit toward NOAA's target area was resumed on the morning of the 9th approximately 74N newly forming grise ice was encountered. By 75-15N, HEALY entered the pack ice again. In the course of these 75 miles, the crew was treated to a fascinating and educational first-hand account of the various stages of new ice formation, from grise to large floes.



Due to the diversion for the potential flight operations to Barrow, the Chief Scientist changed the order of the mapping, heading first to point "M" on the map. On October 10th, we reached the 2500m contour at approximately 77N 150W and began mapping to the west. This operation was conducted with the OOD driving from aloft conn and with science party watch standers continually monitoring the Seabeam and Bathy 2000 from the computer lab. Watch standers would use the cursor to indicate where they wanted to go, and the OOD would try to strategically pick the best route through the ice. Cold temperatures, thickening ice and blinding snow caused us to turn around approximately one day early with about 70NM of the 2500M contour remaining to be mapped.

Dr. Mayer had an alternative objective planned that involved a complete coverage mapping of a large section of the Beaufort Slope northwest of Barrow. We spent the remaining six days of the cruise completing this mapping effort, designed to help determine the exact location of the foot of the continental shelf, a data set that is also used in the UNCLOS determinations. This evolution went well, thus despite some setbacks, overall the mission was deemed successful. It is highly likely that Dr. Mayer and his group will be back in either 2005 or 2006 to complete their work on the 2500M contour.

H. Barrow to Prince Rupert to Seattle

On October 25th, we flew the NOAA science party off at Barrow, and finally started turning South for the last time. At 1730 on October 26th we crossed the Arctic Circle for the eighth and final time on this deployment.

An emergency leave situation arose after leaving Barrow for which we diverted toward Nome and conducted flight operations. On the morning of 27 October, we completed transferring one member to Nome, where a CG C130 took him to Kodiak for better flight connections. A second emergency leave need arose shortly after passing through Unimak Pass. Airsta Kodiak's assistance was invaluable in this matter, as high winds exceeded our launch parameters. A HH60, just completing a fishing patrol, hoisted the crewmember off to Cold Bay, where further transfer home was arranged, also via a CG C130 and Kodiak.

HEALY loitered on Albatross Bank for an eight-hour fish call and we were blessed with a decent haul of Halibut. Once again, the weather held out just long enough for the fish call to be conducted safely, however, the stop was cut short based upon an ugly forecast. The ship did indeed experience winds in excess of 50 knots, and quartering seas over 20 feet on the transit across the Gulf of Alaska. Besides being uncomfortable and making a few sailors sick, the only damage was a pressed in door on the center fantail science van, apparently hit by water coming over the stern.

The original AWS04 tentatively scheduled a stop in Ketchikan Alaska on the last leg. This had been chosen due to a possible stop at the Navy's Southeast Alaska Acoustic Measurement Facility to conduct an underwater survey of HEALY's noise radiation. This effort was suspended due to lack of clear requirements and funding, thus the final portcall was flexible. The CO decided Prince Rupert would be an interesting stop, as well as an excellent starting point for a transit through the Inside Passage to Seattle.

In order to prepare for the Prince Rupert visit and the Inside Passage transit, a list of DWOs who qualified for the Canadian Pilotage waiver was sent to a contact at D17 who coordinates with the Canadian Pilotage Authority. On 22 July, received a faxed copy of waiver authority.

On 25 July a proposed change to HEALY's Concept of Operations was transmitted, indicating our intention for the Prince Rupert port call and intention to conduct a dependents cruise on the transit home. On 6 August, we sent a port clearance message to Canada for the visit. On 9 August we sent our request for an Orientation cruise to PACAREA, which was approved the next day, thus clearing the way for the dependents

to sail. Email was used to confirm both our Canadian Pilot Waiver (with Pacific Pilotage Authority) and an available berth and services (Prince Rupert Port Authority.)

HEALY tied up in Prince Rupert on 3 November, and details of the port visit can be found in our post visit message, included as Appendix G. On 6 November, departed Prince Rupert with 49 family and guests embarked for the transit to Seattle. We invoked our waiver of Pilotage to make the transit without pilots, which allowed us to plan our transit without consideration of their schedules and berthing requirements. The main planning factors of the currents, and trying to transit the tighter sections during the daylight, both for safety and scenery, stretched the 2-day trip to almost three days.

At first light on 9 November, 6539 launched from the flight deck and disembarked AVDET 160 just west of the VTS lanes near Oak Bay at the northern end of Hood Canal. 6539 flew to Port Angeles for maintenance before starting their cross-country flight the following day. At 1056 the same morning, HEALY tied up at Pier 36 Berth Delta and successfully completed AWS04.

2. Navigation Operations

A. Seattle, Washington: 30 April 2004

U/W @ 1017T From Berth Charlie, Pier 36, USCG ISC Seattle, WA. Neither pilot nor tugs were used. Due to problems with the computer manual steering, ship got U/W in manual mode. Winds were light (less than 10 knots) from the NW. Current was flooding at less than ½ knot. As conning officer got U/W, ship began backing toward port, against the predicted current. Once clear the pier conning officer twisted to starboard and

proceeded on the outbound track line. As ship was entering east-west ferry routes in Elliot Bay, closed cooling water valves caused overheating and tripped cyclo-converters offline. The starboard shaft lost power and control automatically transferred to ECC. Conning officer ordered 3 knots on port shaft and arranged eastbound ferry to pass north of HEALY, and westbound ferry to pass to the south. After valves were opened and cyclos reset, control was passed back to the bridge and conning officer proceeded.

B. Dutch Harbor, Alaska: 10-12 May 2004

Moored portside to Unalaska Marine Center USCG Dock, Dutch Harbor, Alaska @ 1348U on May 10. Conning Officer did a very good job of mooring with the assistance of two tugs and an experienced pilot. Track-lines laid out on our charts were similar to the route preferred by pilot. Winds were light and variable, as were currents. State of tide was +2.5 feet and rising. Range of tide during ship's stay averaged 3.7 feet. Good water leading up to pier allows for a port or starboard side landing. UMC Dock offered excellent services: cable, telephone, SWIII connectivity, sewage, potable water, etc. HEALY departed @ 1500U on the 12TH of May, with similar wind and currents. Tide was +1 foot and falling. Conning Officer used the same two tugs and the same pilot for departure.

C. Nome, Alaska (anchored) 23 June 2004

Anchored in position: 64-28.413N 165-24.974W in 56 feet of water over a sand and gravel bottom with 4 shots of chain on deck to the starboard anchor @ 0651U. Winds were from the southeast @ 15-20 knots, although toward the end of the afternoon the winds did gust upwards of 30 knots. In the condition given the anchorage did provide good holding ground. The actual chosen anchorage was missed by 175 yards due to a problem getting the brake to release, thus delaying the dropping of the anchor. Purpose of the anchoring was the passenger and cargo transfers at the conclusion of SBI 1 science

phase. Offloads were conducted using both RHIs and the LCVP. Ship's engines were originally secured for maintenance, but were brought back on line to assist providing a lee for boat operations when the wind and seas built. At 1807U weighed anchor en route Yokosuka, Japan.

D. Yokosuka, Japan: 03 – 10 July 2004

@ 0901I moored portside to the east face of the Harbor Master Pier, outboard of USS CHANCELLORSVILLE (CG 62) at COMFLEACT Yokosuka, Japan. Initial entry into Tokyo Wan, via Uraga Suido (US) Channel, was relatively uneventful, although there was a large volume of traffic, mostly large commercial carriers. HEALY checked in with Tokyo MARTIS on channel 16, and was shifted to 22 (international) for communications check-ins. Winds were from the NW at 15 – 17 knots, currents at the entrance to Tokyo Wan were negligible. Embarked three Navy Pilots (1 qualified pilot with 2 pilots under instruction) at the US line. Pilots were knowledgeable of the area and all three were U.S. citizens. Pilots were transported to HEALY via a Navy tug. For mooring evolution, two tugs were made up along HEALY's Starboard side. HEALY used NGA DNC charts for the evolution with no noticeable

discrepancies. Navy provided excellent services via the pier and over USS CHANCELLORSVILLE. HEALY departed @ 10:00 July 10TH, with the same two pilots under instruction and a new qualified pilot. Again, two Navy tugs were made up alongside to starboard of HEALY. Winds were from the west at less than 10kts, setting us slightly off the dock. Traffic was lighter upon our departure than arrival.

E. Dutch Harbor, Alaska: 28 August – 02 September 2004

Moored portside to Unalaska Marine Center USCG Dock, Dutch Harbor, Alaska @ 1350U on August 28. Conning Officer did a very good job of mooring with the assistance of two tugs and a pilot. Track-lines laid out on our charts were similar to the route preferred by pilot, and had been edited since our previous port call in Dutch Harbor. Winds were light and variable, as were currents. State of tide was +0.1 feet and rising. Range of tide during ship's stay averaged 3.8 feet. As before, the UMC facility is an excellent berth for USCG cutters. For both training purposes and to save money, the RHI was launched prior to mooring with coxswain, boat crewmember and two other crew to function as line handlers. Coxswain landed at the NE end of pier where a ladder is accessible. Similarly, crew acted as line handlers for the departure, and then returned to the ship via the RHI. HEALY departed @ 1000U on September 02, with similar wind and currents. Tide was +3 feet and falling. Conning Officer used the same two tugs and the same pilot for departure.

F. Provideniya, Russia: 03 October – 06 October 2004

Provideniya harbor proved to be an easy navigation detail, with excellent radar landfall for good quality fixes with noticeable ranges and a light to cut visual bearings for fixes. The harbor chart gives minimal charted detail about the pier/wharfs and is not set to the best possible scale for precision navigation once in the inner harbor. All charted ranges were visible and as charted. The ranges were of a solid concrete pillar construction and were white in color with a black center stripe. There was no charted or visible floating ATON. Depths were as charted on NGA paper charts. No appreciable current observed. The 2004 Sailing Directions called for a 2.5-meter tidal range, for the three-day period HEALY observed an approximate range of 4 feet. Both paper charts used, 96ACO96640 5th edition 1/95 and 96XHA96645 1st edition 1/88, had the WGS-1984 datum which was confirmed by radar/visual fixes being compared by GPS. The electronic NGA chart DNC-COA-27E edition 30 April 2004 was also supposed to use WGS-1984 datum, but upon standing into the harbor a difference of nearly 1000 yards was noticed between radar and the GPS fix data. Upon comparison of the radar overlay in VMS and the GPS data, the error was determined to be 357 deg true at 955 yards. Prior to departure the Russian datum of 1911 was entered into the GPS and the GPS - radar fix error was reduced to less than 50 yards. Any cutter entering

Provideniya harbor should exercise caution if using any form of ECS, ECPINS, or VMS system. Pilotage was compulsory. HEALY was delayed one hour for pilot's arrival; arrived via tug with the Husbanding Agent as translator. The language barrier and his insistence that we set the outboard anchor 50m from the pier complicated the mooring evolution. He stated that harbor regulations required such use of anchor. HEALY safely moored at 1100 local time, portside-to on the southwestern of two main wharfs at the entrance of the harbor. Lay of the wharf was 066T and had adequate bollards and bits and was a solid wall face. Pier was approx 1000 ft long and height above water at high tide was approximately 4 feet. There was plenty of water for HEALY's 30 ft draft. Provideniya is in –12M time zone, yet observes DST making it 13 hours ahead of GMT during the summer.

Two tugs were used; one with 300 hp and no bull nose or deck gear for the passing of lines and was used strictly as a pusher. The second tug was approximately 1,600 hp, had standard deck fittings, and was made up aft for pushing or pulling. For departure, the pilot embarked via ship's brow allowing for time to discuss the evolution prior to getting underway. Several of the pilot's actions were unfamiliar and potentially unsafe. It is unclear if that was due to the language barrier or inexperience, but either way we deviated from his recommendations on several occasions.

G. Prince Rupert, British Columbia, Canada: 03November – 06 November 2004

Moored portside to Northland Cruise Terminal in Prince Rupert, British Columbia, Canada @ 1520, 02 November 2004. Embarked Canadian pilot at the charted Triple Island pilot station @ 1230. Pilot was very knowledgeable, and polite. Upon review of the track lines we had laid out, the pilot concurred with them, but offered an alternate shorter route of the following:

1. From the pilot station, proceed east through the first gated pair of buoys.
2. Continue east, north of Kinehan Island and south of Petrol Rock.
3. Complete a 90-degree turn north into Prince Rupert Harbor.

This route is marked by IALA-B buoyage system, but only has buoys on the port hand side as you enter the harbor. The pilot allowed the ship's Navigator to coach a junior officer to alongside the pier and easily interacted when tug commands were needed. Two tugs were available and used. Pilot and tugs operated on channel 17. The VTS (Prince Rupert Traffic) worked on channel 11, and all check-ins were conducted at the charted positions. Although not mentioned in the NGA Sailing Directions, when checking in with VTS announce the current station and the ETA to the next VTS check-in. A mandatory 5kts traffic zone begins alongside the wharf/terminal just south of Pillsbury Point and continues through the entire harbor. The harbor has a plethora of visual aids and distinct radar points for a manual navigation plot. The Canadian DGPS signal was strong and the DNC charts used a WGS-1984 datum. DGPS and manual radar overlay showed no fix error whilst entering or exiting the harbor. Northland Cruise Terminal is located just west of the Cow Bay area of Prince Rupert in position 54-19.082N 130-19.418W. The lay of the pier is 260T with a length over all of 330 meters. Pier is concrete pile connected by steel catwalks with safety rails and a floating center section dock, seven ft above the water, designed for cruise ships that have a brow area amidships. Each concrete pile also had a large shock absorber fixed camel system. Due to the floating pier system, no brow was available, and the ship's accommodation ladder was utilized. During the mooring evolution winds were from the west at less than 10 knots with no significant current observed. The tidal range during the four-day port call averaged 12–15 feet. Due to

adverse weather conditions during the port call the mooring lines were tripled. HEALY departed Prince Rupert @ 13:00, 06 November 2004. Winds were light and variable and again no significant current was observed. HEALY did not embark a pilot or use tugs for getting underway, having obtained a waiver from Canadian Pilotage through previous communications with D17. The same route was taken outbound as taken in.

H. Seattle, Washington: 08 November 2004

Moored 1056U on 09 November 2004 @ Berth Delta, Pier 36, USCG ISC Seattle, WA. Current was slack, with light and variable winds. Conning Officer made a shallow approach to maximize room due to dredging operations in the vicinity of berth Alpha. Embarked pilot decided to make off one tug to the starboard quarter and leave the forward tug free, due to the lack of maneuvering room. Mooring was accomplished using standard commands on the engines and bowthruster, and tug assistance was minimized to pushing slightly up against the pier

3. Deck Operations

A. Pre-Deployment Preparations, Shakedown Cruise, and Victoria

During the Dry Dock and Dock Side, Deck Force provided inspectors and/or equipment operators for painting, weight handling and ground tackle work. Level 2 overhaul were completed on both A-Frames, both boat davits, the aft warping capstan and the bow crane. Level 1 inspections were also completed on both aft knuckle cranes. The 04 deck cranes were weight tested. Deck Force also supervised the paint contractor in prepping, priming and painting 70% of the superstructure above the 02 deck and forward of the flight deck. Deck also replaced the port anchor that was damaged during AEWS2003.

During the two week shakedown cruise, Deck Force completed the STAN visit, qualifying 1 LSO and 3 Tie-down crewmembers. Deck also conducted boatcrew and bridge watchstander training making good progress towards qualifications of 1 BM3 and 3 SN.

During the pre-deployment load-out preps, Deck Force worked with other departments to on load supplies and ship's stores. In addition, Deck loaded 5 science vans and assisted the MST's in the on load of Science gear and related equipment. Deck also provided crane operators and riggers to remove tools and related equipment for several civilian

contractors and NESU prior to the ship's departure. Deck also scheduled the range and qualified 22 personnel on 9mm, M-16, Riot Shotgun and Bear Rifle.

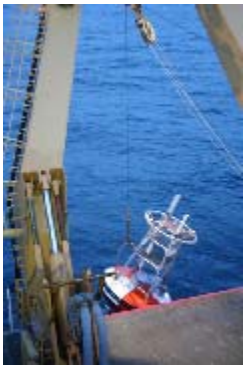
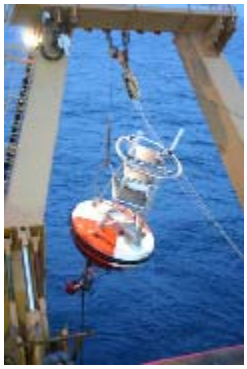
B. Seattle, Dart Mission to Dutch Harbor to Nome

Once again, we departed on deployment with only 3 qualified Bridge Watchstanders (BW), and Deck concentrated on watch stander PQS/JQR training and qualifications. Qualified 2 additional BW's during transit to Nome. After recovering the AVDET Helo's, deck provided LSO, Tie-downs and break-ins during flight evolutions. BM2 Giest conducted Use of Force and Judgmental (JPC) training for personnel who qualified on weapons during the inport.

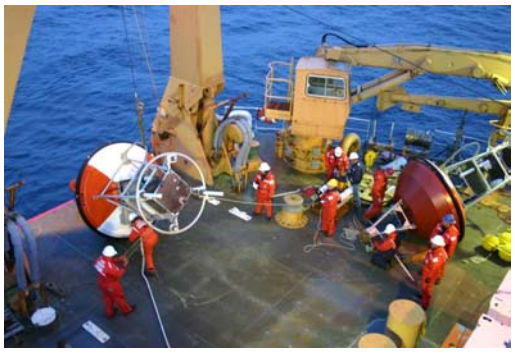
During the Dart Buoy recovery and deployments, Deck Force was extensively involved in all evolutions providing, deck supervisors, riggers, deck safety and boatcrews. In addition, Deck provided various deck equipment used in the recovery and deployment of these surface buoys. The relief process at each station consisted of the retrieval of the Bottom Pressure Recorder (BPR) first, followed by the swap-out of the 2.5 meter Disk Buoy that included the inspection of the mooring thimble, and then the redeployment of the BPR.

The BPR's were retrieved similar to the SBI moorings on AEWS 2003. A transducer was lowered into the water and after communications was established with the Acoustic Release, it was triggered. On average, it took over an hour for the glass floats to bring the BPR to the surface. After locating the floats on the surface, the ship made an approach on the floats using DP and Joy Stick Auto Head modes. The small boat (RHI) was launched and while the ship was bringing the floats down the starboard side, the RHI took the retrieval line from the stern out to the floats and hooked into a shackle between the floats. The retrieval line was rigged through a block (provided with the DART equipment) on the aft A-Frame and lead through another block on deck then to the capstan. The glass floats and BPR were then hauled in using the Capstan and A-Frame as the ship maintained headway into the wind and seas. A stopper chain with a hook was rigged to a cleat on the deck and used to "stopper off" and remove the floats as they were brought aboard. After all the floats were on board and removed, the retrieval line hook was removed, and the remaining 75 meters of line was shackled to the end of the retrieval line and hauled in through the blocks. A "lizard" tag line was also attached to the line to control the BPR once it was out of the water until placed on Deck.

Bringing the 2.5 meter disk buoys on board proposed a challenge. The problem was how to get the buoy on deck and far enough forward to be able to break (disconnect) the mooring from the buoy. The buoys were brought on board similar to a buoy deck. By using the 9/16 trawl wire with a safety hook attached to lift the buoy, and using a 3-inch double braded nylon line as a cross-deck line to pull the buoy forward. The trawl wire was rigged through the same block as the BPR retrieval line and approximately 50 meters were faked on deck in a figure eight. The cross-deck line was run from the capstan and through a block shackled to the deck, off-set to starboard, and as far forward as it could be placed. With the ship in DP/Auto-Head mode and heading into the wind and seas in order to reduce the motion on the aft deck, the ship backed up to the buoy while the RHI retrieved the trawl wire; this was done by passing a tag line to the boat and hand tending the faked out portion of wire until it was all paid out. Once the buoy was close enough to hook the trawl wire, the RHI passed a short (6ft) strap through the bale and "basket" rigged it on the safety hook. The trawl wire was hauled in while the ship continued to back to the buoy. Once the buoy was vertically under the fully extended A-frame, the buoy was lifted from the water and the A-frame boomed in while the ship held position using DP. With the A-frame fully boomed in, the buoy was set on the deck edge with the buoy foot outboard, the cross-deck line was attached to the buoy cage using a strap, basket rigged, to the safety hook on the cross-deck line. In addition, one or two tag lines were also attached to the upper cage to help control the buoy on deck. Once the cross-deck line was attached and slack removed, this configuration gave 3 control points on the buoy and allowed very little movement on deck. Next, while taking a strain on the cross-deck line, the trawl wire lifted the buoy disk off the deck. The buoy was then pulled forward and to starboard by hauling in on the cross-deck line and simultaneously and slowing paying out on the trawl wire. The key to this part of the evolution was the trawl wire operator "following" the cross-deck line in while keeping the buoy disk off the deck. The buoy foot was also left on deck and "dragged" across the deck as an additional safety control on the buoy; however, this did cause some damage to the non-skid. Once the buoy was hauled in enough to disconnect the moor, the stopper was attached and the cross-deck line was then paid-out while the trawl wire lifted the buoy to allow the stopper to take the load of the mooring. Once the load of the moor was completely on the stopper chain and the mooring chain was slack above the stopper, the buoy was set on deck and 4x4's placed on the sides of the disk to keep it from rolling. While still holding a strain on the cross-deck line, trawl wire and with the 4x4's in place, the DART crew was allowed in behind the buoy to disconnect the mooring. After the mooring was disconnected, the buoy was moved as far forward and starboard as possible to allow room to deploy the relief buoy. If the thimble was not far enough out of the water for inspection, the trawl wire was reattached to the mooring and it was pulled up enough to inspect the thimble.


Deploying the relief buoy was basically the reverse of bringing it on board. The relief buoy was moved into place using the crane. It was placed far enough aft to allow the mooring to be connected and also centered on the A-frame so the trawl wire could lift the buoy. The deck configuration and rigging needed some slight changes to allow for the deployment of the buoy. The cross-deck line was run through an additional block placed on the port stanchion of the tow bit to allow an unobstructed feed to the buoy. The safety hook on the trawl wire was replaced with a quick-release hook. The same 6ft strap was used on the bale and basket rigged to the quick-release, and the hogging line rigged with the same strap and hook as before. In addition, two taglines where looped through the cage and tended to help control the buoy. Once the buoy was rigged and ready to deploy, the slack was taken out of the cross-deck line and trawl wire and the buoy was connected to the moor. The trawl wire then lifted the buoy and the cross-deck line pulled the buoy forward until enough strain was taken off the stopper to remove it. Once the stopper was removed, the buoy was lifted by the trawl wire and the cross-deck line paid-out until the buoy was vertically under the trawl wire block. At this point, the buoy disk was set on deck and the cross-deck line removed. The buoy was then lifted off deck, the A-frame boomed fully out and then the buoy was lowered into the water. Once in the water, the quick release was tripped and the tag lines slipped through the cage releasing the buoy as the ship moved away.

The BPR was then re-deployed. The ship positioned down wind and sea, and as the ship made its approach to the drop position, the floats were hand tended out and trailed behind the ship. The BPR, quick release and anchor where then lifted using the in-haul line run through the block on the A-frame to the capstan, and boomed out over the water and then lowered into the water. Once the stern was over the drop position, the quick-release was tripped, releasing the BPR to the bottom.

There were several equipment casualties and problems that had to be overcome during these evolutions. The wrapping capstan developed a severe leak and had to be repaired. Rather than waiting an additional 2 hours for it to be repaired, we used the starboard knuckle crane to control the hogging line. The hogging line was run through the same block on deck, but instead of leading horizontally to the capstan it was run vertically to the crane hook. A bowline in-a-bite was tied just past the block and hooked on the crane's hook. This method worked extremely well as a backup to the capstan for the in-haul line. We also had a casualty to the 9/16 trawl wire winch that prevented its use during one entire evolution. We used the 3/8 inch wire as a substitute, but is not recommended because of the lower SWL. We also encountered a problem with the eye spice clips used during the first lift. As we were lifting the buoy out of the water, the U-bolt clips failed causing the buoy to drop back into the water. Fortunately, the buoy was over water, and only a few feet in the air when it gave way. Since it was the clips that failed and not the wire, we decided to use pressed (swaged) sleeves to secure the eye splice. After remaking the eye splice, we pull tested the spice to 5 times the weight of the buoy. Once we were satisfied the spice would hold, we successfully completed the evolution using the 3/8 inch wire. After the trawl wire winch was repaired, we used it for the remaining evolutions with no problems.

Prior to arrival in Dutch Harbor, Deck rigged the A-Comm brow at the hip. In Dutch Harbor, Deck provided crane operators and deck supervision of loading stores and supplies. Deck provided LSO, tie-downs and boat crew for the on-load of the scientists and gear off of Nome.

C. SBI Process Phase I

During SBI Process Phase I, Deck Force provided Crane operators, Deck Supervisors, Boat crews and Bear watches. Deck mainly assisted the Ice Scientists in getting on and off the ice. Using the Port 04 deck crane and the diving platform, the scientists and science gear was hoisted to the ice. During these stations, the ship hove-to at against a ice flow, while leaving open water off the stern and starboard A-Frame to allow for other science operations. This usually allowed easy reach for the 04 deck crane to the ice. We were able to set the dive platform 6 to 10 feet from the ice edge. On two occasions we used the aft port knuckle crane to put the ice party on due to the shape of the ice flow

and how the ship rested against the ice. On these occasions, it was decided that it would be an easier and safer reach with the aft crane. Deck provided a roving Bear Watch on the ice for each of these evolutions and a visual bear watch in the Aloft Conn to spot bears. On three occasions during the initial ice deployments, there were bears sighted within a few miles of the ship, but only once did it require the evacuation of the ice until the bear was determined to be no danger to the personnel on the ice. These ice deployments involved placing 5-6 personnel plus one bear watch on the ice. We usually put the bear watch and 2-3 personnel on the ice first, then loaded the platform with the sleds and gear. The personnel on the ice off-loaded the gear, then the remaining personnel were placed on the ice. They usually remained on the ice 3-4 hours, then were retrieved. At most of these stations, science gear was left on the ice for up to 12 additional hours and then retrieved just before we departed the science station. During two of these periods, bears showed up and "played" with the science gear. We tried to scare the bears away with MK-79 flares, but the bears were not deterred and even chased the flares. After one of the bears returned and was again "playing" with the gear, we fired one .375 rifle round into the air. The shot caused the bear to run about 20 feet, stopped and then meandered away. During several of these ice deployments, we also placed 3-4 additional personnel on the ice to secure and retrieve a sediment trap. The sediment trap was deployed from the stern of the ship, then floated to the ice edge where the trap line was secured to the ice by stakes driven into the ice 10-20 meters in from the ice edge. This was also retrieved just before departing station. On two occasions we used the RHI to take the science party out to the ice in order to retrieve their gear. This was due to the ship slipping away from the ice flow or because the wind shifted and did not allow the ship to remain resting against the flow.

Deck also provided coxswain and crew for the LCVP on two dive operations. It was launched to perform dives on the hull and for a science dive to film under the ice for the ice scientists. On two other occasions, Deck rigged the A-Comm brow for ice liberty. The AVDET provided personnel to stand bear watch during these ice liberties.

D. Nome to Yokosuka to Nome

The off-load of the science party and equipment and the on-loading of reporting crew, stores, supplies, mail and parts was accomplished utilizing all the ship's boats. After HEALY dropped anchor, both RHI's were launched and began transporting personnel. Most personnel were transported via the RHI's. The average RHI run involved taking 3-4 passengers and their luggage to Nome harbor for off-load at the floating "Barge" Dock. The RHI would then return with incoming crew, supplies, mail or stores.

Science gear and some luggage were also transported using the LCVP. The LCVP was loaded with the majority of science gear while on deck then put in the water. The LCVP made 2 runs before experiencing an engine over heat at about the same time as the weather began to deteriorate. It was decided to retrieve the LCVP to work on the engine overheat problem, however, once the casualty was repaired, the weather had deteriorated beyond safe operating limits for the LCVP and it was not used for the remainder of the evolution.

The remaining passengers and stores were transported using the RHI. With winds gusting over 30kts and the seas building to 8 ft, the RHI's traveled in tandem making the crossings of the harbor entrance where the worse breaking waves were encountered. The ship used the engines to maneuver on the anchor chain in order to give a lee for the boat recoveries. The entire evolution of transporting outgoing passengers, incoming crew, and several tons of stores and supplies, was completed in less than 9 hours.

On the transit to Japan, Deck continued training for qualification of bridge watchstanders, and conducted Flight Deck Training and Flight ops for qualifications, completing all required day and night evolutions for break-ins. Deck also provided LSO, boat crews and tie-downs for HSDN flights during the transit to and from Japan.

For the on-load of the science party, both the Helo's and RHI's were used. The RHI's transported the majority of passengers and their luggage. The Helo's transported the majority of science gear, parts and supplies. HEALY remained underway and the weather was much improved during this evolution. The only problems encountered were when the Starboard RHI experienced an engine casualty and had to be towed back to the ship by the Port RHI. The remaining runs were completed by the one RHI. Deck also provided LSO and tie-downs for the flight operations.

Also, during these evolutions, a spooling problem was noted on both Miranda Davits. The center wire was not spooling correctly on the drum, which in turn, caused the forward and aft wires to spool incorrectly. After numerous e-mails with NESU and Schat-Harding, it was determined that both davits were missing tensioning springs on the center wire sheave. It was also determined that the wire could be manually forced to spool correctly on the center drum and made for a temporary fix until the tensioning springs could be purchased, shipped and installed.

E. SBI Process Phase II

During SBI Process Phase II, Deck Force mainly provided Watch Standers and Boat crews. Using the RHI, Deck assisted in retrieving the Sediment Traps on 4 occasions. The Sediment Trap was deployed from the stern and set adrift with a transponder. During the third deployment, the sediment trap was lost due to high winds, fog and the failure of the transponder. Once the visibility approved, attempts to locate it with the ship and helo were unsuccessful. A second Sediment trap was constructed and a new float and marker was made out of materials found on board. The traps were recovered by the RHI towing it to the stern and attaching a retrieval line. The Marker float was detached and retrieved and brought on board via the RHI.

Deck force also completed several painting and space improvement projects in the Deck Machinery and Stores Handling spaces. Deck also concentrated on training during this phase conducting, Bridge Watchstander, JOOD, Deck, Boat Crew and Crain PQS/JQR.

F. Nome to Dutch Harbor and SBI Moorings

During the off-load of scientists, Deck provided LSO, tie-downs and stores handling personnel for the Helo evolutions. Deck also made one run into Nome harbor using the LCVP loaded with the majority of science gear being off-loaded.

In Dutch Harbor, Deck Division provided crane operators, deck supervisors and riggers for the on load of science gear, supplies and stores. Most notable was the on-load of a 7200lb winch for use in recovering the science moorings. Deck also launched the LCVP for training and dive-ops.

Deck Force was actively involved in all phases of the SBI mooring mission, providing Coxswains, Boatcrew, Boat Lowering Details, Riggers, Crane Operators, Helo-tiedowns, LSO, JOODs and assisted the MSTs as needed. However, Deck was most involved during the recovery and deployment of moorings either as Deck Safety, Deck Supervisors, Riggers or operating the boats during the recovery phase.

During the recovery of the moorings, Deck provided coxswains and boat crews, Deck Supervisor and riggers, and Deck Safety. Using the same techniques used last year to recover the 8 SBI moorings and 1 ARP mooring, the ship made an up wind approach, passing the mooring close aboard down the starboard side, then having the RHI retrieve the in-haul line from the stern, take it out to the mooring ball, and attach it as the ship's stern was abeam of the ball float, then driving the ship at a slow bell up wind while trailing the moor behind.

The biggest difference from last year was the use of the Woods Hole Institutes winch which allowed the 70 to 1400 meters long moorings to be recovered in a fraction of time compared to last year using the ship's mooring capstan. One other difference was that the 9/16 inch main block was left in place in order to accommodate the use of the Multi-net. At first, we were going to switch the blocks out each time, but after consulting with John Kemp of WHOI, we decided to use a riding block rigged off the trawl wire which was rigged through the big block. This worked alright and allowed an easy transition from the mooring recoveries to the multi-net or VPR.


The deck was also rigged a little different than last year in that the stopper was rigged through a snatch block (provided by WHOI) and shackled to the deck. The stopper was made off to a cleat bolted to the deck. This also worked really well because we could easily slacken or tighten it as needed.

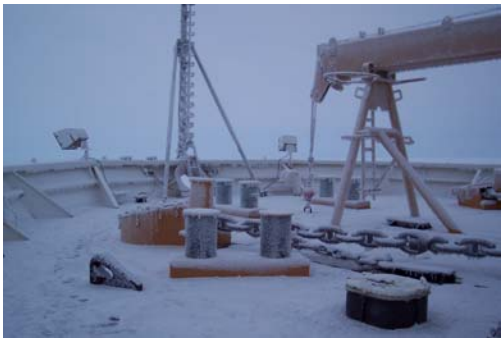

The only problem encountered during the recovery phase was that the BC1 mooring did not release and float to the surface. Using equipment provided by WHOI, 10 meters of drag chain with a 100lbs weight and 2 grapnel hooks were paid out on the trawl wire and then dragged along the bottom while circling the mooring position in order to force the mooring to release. It eventually released to the surface and was recovered. One NOAA mooring was recovered and redeployed using the anchor last method.

Deck also conducted several boat ops, while the ship was retrieving the moorings, to test a science beacon and direction equipment. The equipment did not perform correctly and the beacon was never deployed. In addition, deck took a photographer out on two occasions to photograph the ship and science operations. Deck also launched and tested HEALY 2 several times to break-in the new engine, however, the engine developed additional problems during these break-in runs, the boat was placed on the blocks so the engineers could work on it. This time, the boat was placed on the 02 deck aft of the trash van.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

During the off-load and on-load of science personnel and numerous logistic flights offshore Nome, both after the SBI mooring mission and before the NOAA mapping mission, Deck provided flight deck and stores handling personnel for all evolutions.

During the NOAA mission, Deck Division provided watchstanders, and Flight Deck personnel. Deck also conducted Division Training and worked on qualifications for OOD, JOOD and inport watchstanders. With heavy icing and snow conditions as the ship sailed further north, Deck worked to keep the decks clear of ice and snow, however, with temperatures below zero, it was difficult to keep the decks clear.



During the off-load and on-load of science personnel and numerous logistic flights offshore Barrow, Deck provided flight deck and stores handling personnel for all evolutions.

H. Barrow to Prince Rupert to Seattle

During the transit to homeport, Deck completed a fresh water wash down and continued watchstander qualifications. Deck also provided boat crew and shoreside line handlers for mooring and getting underway from Prince Rupert.

POST DEPLOYMENT OFF-LOAD: Deck assisted the MST's with the science off-load by providing crane operators and riggers. Deck also came in on a Saturday to off-load the five science VAN's. These VAN's were off-loaded by using a shoreside crane which proved to work well and significantly reduced the cost over the Barge Cranes used in the past. It also proved to be more stable, thus safer, because it was not affected by wakes.

The forward deck VAN's were picked directly off the deck by the shoreside crane and placed on trucks. The aft VAN's were moved out onto the Fantail by ship's force then off-loaded onto the pier using the shoreside crane. They were then loaded on the trucks as soon as they arrived. The entire evolution took about 4-hours.

I. Recommendations

BACK-UP/SECONDARY BROW: Recommend purchasing a lightweight 40 ft. aluminum brow. The current A-COMM brow system is a good one, but can take up to an hour to set up, requires personnel to work over the side to remove bracing, and is showing signs of wear and tear from its constant use as the ships only brow. There is currently no adequate back-up brow on board. The short brow that came with the original out-fit, is not long enough to reach most piers or the ice from the main or 01 decks. A 40ft brow could be set up in less than 15 minutes, would not require personnel to work over the side until it is "set in place", and would serve as an additional "back-up" brow in the event the A-Comm brow is damaged. In addition, the 40 ft. brow would give the ship the added options to place the brow on piers that are not suitable for the A-comm brow set-up. The cost of a 40 ft. lightweight aluminum brow is approximately $20,000.

DART BUOY: A crane with side pull capability and a cross-deck type winch would have made the buoy work easier and safer to perform. Recommend researching the feasibility to convert one crane to be side-pull capable. Also recommend science purchase a small winch that can be mounted on deck. It could be used for numerous science and buoy moorings applications, making the work safer and quicker to accomplish.

POLAR BEAR DETERRENCE: Deck has researched the use of non-lethal methods to prevent polar bears from damaging science equipment in the future. HEALY has forwarded a letter and requested the use of "Shell Cracker" type rounds that have been used elsewhere to deter bears from airports, bases and housing areas.

VAN ON/OFF LOAD: Recommend the use of shoreside crane service for all future on and off loading of Science VAN's. The shore crane proved to be effective and much safer than using the barge crane because it was not affected by the numerous "wakes" produced in Elliot Bay. It also eliminated the need for a seconded barge or to locate a staging area to place the off-loaded VAN's.

CHAPTER II – AIR OPERATIONS

1. AWS 2004 Operations Summary

A. Pre-Deployment Preparations, Overview

Personnel Assignments: Polar Operations Division (POPDIV) assigned Aviation Detachment (AVDET) 160 for HEALY's 2004 Arctic West Summer deployment. AVDET 160 formed on 16th of March 2004 with four (4) pilots LCDR Beale (Senior Aviator), LT Klatt (Engineering Officer), LT Naus (Admin support officer) and LT Hollinger (Operations Officer) and four (4) flight mechanics AETC Tolle, AMT1 Holt, AET2 Maghupoy, and AMT3 Justice. On 23 June, LCDR Fluitt replaced LCDR Beale as the senior aviator and LTJG Eller replaced LT Naus as the Admin support officer. LCDR Kenny replaced LCDR Fluitt as the senior aviator on August 28th. On 06 Oct, 2004 6532 departed CGC HEALY in Nome, AK enroute Mobile, AL to help facilitate the Charlie model transition of the HH-65 fleet.

Cross country flight crew from left: LT Naus, LT Klatt, AET2 Maghupoy, AMT3 Justice, LT Hollinger, LCDR Beale.

Maintenance: AVDET 160 received the 6539 & 6532 from ATC Mobile on the 22nd of March and 5th of April, respectively, for pre-deployment maintenance. The standard pre-deployment inspections were performed; along with 125/150-hour maintenance inspections and maintenance out for 6-month period were completed for pre deployment. The AVDET was augmented by an average of 2 people per day to assist.

Operations: Pre-deployment operations concentrated on completing pilot and aircrew proficiency minimums for the Jan – Jun 2004 semi-annual period and other pre-deployment training evolutions. AVDET members attended .375-magnum rifle training on 28th March to assist with science operations requiring polar bear watches, and for crew protection when on flights away from the ship. Additionally, they conducted blade folding/traversing training, ship indoc training, vertical replenishment training, deck landing qualifications, wet drills/SWET/egress/water survival training, Mode IV/IFF training, cold weather flying training and cross country procedures training.

Administration: All eight (8) deploying AVDET members completed training, medical, and administrative requirements through 31 December 2004. Arrangements were made for one AVDET member to take a CLEP test.

Cross-Country: Both aircraft departed ATC Mobile on the 23rd of April. Arrived in San Antonio, Tx the first night and ended up spending two nights repairing an alternator problem. On the 25th of April, the AVDET made it as far as Scottsdale, AZ. The aircraft made it to San Francisco, CA on the 26 April and finally arrived at Boeing field in Seattle on the 27th of April.

CG 6539 passing Alcatraz on cross-country flight to Seattle.

B. Embarkation, transit to Dutch Harbor DART/NOAA Phase

Embarkation and transit to Dutch Harbor: A rendezvous with HEALY was arranged offshore Air Station Port Angeles on 30 April 04. Both 6532 and 6539 suffered a left main landing gear (MLG) failure upon landing. Both aircraft were hangared and the AVDET stowed for sea.

No flight operations were conducted during the first science phase and transit to Dutch Harbor. On the morning of 10 May 2004, both aircraft were flown ashore to conduct a full service on both left MLG struts.

Operations: The ship had assigned the three AVDET members to duty sections, but the pace of maintenance did not allow them to serve in any useful capacity. A minimally manned AVDET only has enough personnel to support aviation operations when shore side maintenance is required. On 11 May, both aircraft flew to verify maintenance and conduct training. On 12 May, 6539 met HEALY immediately after getting underway to conduct DLQs and practice hot refueling procedures. The 6532 delayed in Dutch Harbor awaiting a tech rep arriving from Europe and the ship's MKCS who needed dental work. Attempts to contact the ship via sat phone never went through. On future missions the AVDET launched with contact numbers for COMSTA Kodiak who then relayed the helo status to HEALY on HF. Both aircraft were secured in the hangar by 2300.

Maintenance: The Dutch Harbor port call was a working port call for the AVDET. On 10 May, the 0630 rollout started a long day of flights and maintenance that finished well after 2000. AIRSTA Kodiak provided points of contact that assisted in arranging hangar space with Peninsula Air (PENAIR). The hangar was extremely valuable given the length of the maintenance day and severity of the outdoor environment. ALPAT also had staged a tow bar in the PENAIR hangar and the tenant provided a tug. The hangar cost $300 per night for both aircraft; normally this fee is charged for each aircraft. Kodiak also has a small CONEX box near the Marine Safety Detachment (MSD) with HH65 jacks. The MSD also provided cellular phones to the AVDET, they proved extremely valuable when tracking down mail and aircraft parts. The support provided by MSD Unalaska was what made this a successful port call.

C. SBI Phase I

Operations: Extensive planning led to a successful on load of the science party from Nome, Alaska on 15 May 2004 to begin SBI Phase I. The initial operation was halted after loading only 5 passengers due to HEALY being diverted for SAR, but completed in the afternoon & evening after the ship was released. 6532 was configured for passengers with a single seat next to the FM and a double seat in the RS position. 6539 was configured for cargo and baggage with standard seats. Using single pilot procedures, 6532 would deliver 4 personnel, then 6539 would deliver a 5th passenger and luggage for all five. This kept inbound people with their gear, and helped the flow of equipment aboard the ship. Outbound aircraft each took 2 passengers with their baggage, and empty survival suits & cranial's. Science equipment and ship's mail was loaded as space and weight allowed, with heavier loads possible as the aircraft burned fuel. With the ship an average of 10nm from the airport, each aircraft could complete 3 round trips before needing a hot refuel aboard HEALY. A large radio-equipped ground party (at least three) is essential to handle passenger movements and loading the

aircraft. The ground party should have adequate survival suits and cranials to load one helo and have the "on deck" passengers already outfitted. The ground party should also have markers, tape, and a scale for weight marking baggage and cargo. In all the science on load mission took 8 total hours, 11.8 flight hours for 2 aircraft, and transported 58 personnel with 5,850 pounds of cargo and baggage.

During this first science phase (to include on load) AVDET 160 flew a total of 51.7 hours, 40 sorties, transported 82 passengers and 9050lbs of cargo. Ice reconnaissance and site reconnaissance were the two primary missions and were conducted concurrently on 75% of the flights. Ice recon was critical to every aspect of the mission since real time data on ice cover determined transit time to science sites, suitability of the sites, and accessibility.

CG 6539 returning from Ice Recon flight

Maintenance: The AVDET aircraft were continuously plagued by strut problems. The left main strut replaced on the 6532 held up during all missions, however the mechanics routinely had to service the remaining 3 original main landing gear struts. Skis were installed on the 6532 in expectation for the need to land on ice in support of the British Broadcasting Company (BBC) filming. An actual man overboard emergency was piped and the 6539 was rolled out and in the process the nose wheel lock/unlock cable broke. Because of the efforts of the AVDET and HEALY crewmembers the 6532 was pushed out, staged, turned up and ready to launch in under 25 minutes. The crew then was stood down from the launch.

D. Nome to Yokosuka, Japan to Nome

Operations: PACAREA requested over flights of the high seas drift net area looking for possible targets of interest. Due to poor weather conditions, only three HSDN sorties took place during the transit to Yokoska.

During the transit back to Nome for SBI II, PACAREA again requested over flights of the high seas drift area. 4 sorties were made, a large concentration of Chinese squid fishing vessels were located. Photographs of the ships were sent electronically to PACAREA for analysis. A total of 7 sorties totaling 10.8 hours were flown in support of HSDN law enforcement.

Maintenance: While the ship docked in Yokosuka, the AVDET took advantage of the stability to replace the left strut of the 6539 and serviced the right strut. Upon departing Yokosuka, the AVDET replaced a cracked windscreen on the 6532. The cause of the crack was most likely the result of the aircraft being outside in above 90-degree heat for over 6 days.

AVDET members were called upon to fill the General Emergency billets of stretcher-bearer and AFFF Hose Room due to a lack of ship's personnel. This was done in order for the ship to complete its Long Term Training inspections during the transit to Japan.

E. SBI Phase II

Operations: The AVDET flew a total of 50.0 hours on a total of 37 sorties, transferred 96 passengers and moved 12,260 lbs of cargo. The missions were as varied as public affairs, logistics, SAR, and a search for missing sediment trap.

Two SAR cases were conducted during this period. UCN 002-04 was a search for an overdue boat with 1 POB. On July 19th, CG 6532 piloted by LCDR Fluitt and LT Klatt located the 81yr old man and his boat stranded in shallow water. Chief Tolle was taken along and deployed to identify the survivor, as he had no radio communications with the aircraft. Chief Tolle lost his boots during the case but convinced the man to have the aircraft take him to his village. Both were hoisted by basket, as the area was too muddy for the aircraft to land. The individual had been stranded for two days. 1 life assisted.

Overdue 81yr boater Unit Case Number 001-04

UCN 002-04 was another search for an overdue boat; this one had 4 hunters that did not return from a walrus hunt. Search conditions were hindered by poor visibility ¼ nm and low ceilings (100ft OVC). On the second day of the search CG 6539 again piloted by LCDR Fluitt and LT Klatt located the 4 missing hunters. They were recovered from a remote beach and returned to a local village. The 4 had been drifting for 3 days with little food. A total of 3 sorties and 8.6 hours were flown for SAR.

Overdue Hunters Unit Case Number 002-04

Other missions included logistics support for the ship, transferring personnel and cargo and flying a news crew working for the McNeil/Leher news hour on PBS. One mission to the Coleville River for science sample collection was also flown.

Maintenance: The beginning of Phase II, the AVDET replaced another strut, this time the right main of the 6539 was replaced while passenger/cargo on loads were conducted. The weather cooperated and the maintenance was performed on the ramp in Nome. The maintenance was completed rapidly due to the preparations made by the AVDET mechanics the day prior. Roughly two weeks later during an inspection, the 6539 was found to have a broken co-pilot windscreen, the mechanics worked through the night to meet the 2 aircraft requirement for cargo operations in Barrow two days later. Neither of the aircraft experienced any strut related problems after this point.


AVDET replaces right main landing gear strut at the Nome airport.

F. SBI Phase III

Operations: The avdet again conducted critical logistic, passenger transport, ice reconnaissance, and support flights for phase 3. Phase 3 included 14 flights, 32.2 flight hours with 22 sorties, transporting 74 people, and 12,015 lbs of cargo. The avdet also conducted flights to the Yukon and Colville rivers to gather water samples for testing. The avdet used Barrow airport as the primary point for logistics transfers. The avdet adjusted all flight routes in and out of Barrow to avoid disrupting the native bowhead whale hunting operations. The final personnel and cargo off load was conducted at Nome, AK on 01 Oct. The aircraft off loaded 26 personnel and 3K cargo. The aircrew also on loaded 12 personnel and 6K of supplies prior to departing for Providenyia, Russia.


NSF science party collects river samples at the Colville on 06 Sept 04.

Maintenance: The 6532 and 6539 operated exceptionally well during phase III; routine maintenance inspections revealed no noteworthy discrepancies during the period. A plan was developed to stagger flight hours on the aircraft to avoid having to perform a major 150-hour inspection underway. The 6532 was picked to be released back to ATC Mobile and preparations were made for the aircraft to depart in Nome after the port call. The 6532 experienced cracked windscreen when the windscreen anti-ice was energized upon encountering adverse weather enroute to Barrow, AK. Hangar space was secured from North Slope Borough Search and Rescue to effect repairs. Two pilots and three mechanics remained in Barrow overnight to return the aircraft to Bravo status by the next day.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

Operations: The initial on load of scientists and cargo was conducted on 06 Oct from Nome, AK. The AVDET transported 21 personnel and 2K lbs of cargo and baggage. On 06 Oct, 2004 6532 departed CGC HEALY in Nome, AK enroute Mobile, AL to help facilitate the Charlie model transition of the HH-65 fleet. The only direct aviation support required for this phase was for the onload and off load. The AVDET did fly one pilot proficiency flight on 18 Oct. The science party off load was conducted into Barrow, AK on 25 Oct. The 6539 off loaded 23 NSF and ships personnel and on loaded 8 personnel and 2000lbs of cargo.

Maintenance: The maintenance load was reduced during this phase due to the 6532 returning to ATC Mobile. The 6539 performed well and all routine maintenance was completed without incident. Prior to the offload flight on 25 Oct, the main gearbox fire detector was replaced after a faulty fire light was detected on preflight inspection. The right main landing gear tire went flat at the end of the offload and was replaced.

H. Barrow to Prince Rupert to Seattle

Operations: The AVDET conducted one sortie to Nome for passenger transfer of a HEALY crewmember departing on emergency leave.

Maintenance: All scheduled maintenance was completed and 6539 was prepared for the cross-country.

2. Air Crew Labor Hour Study:

Overview: An aircrew maintenance labor hour study was conducted during AWS04 starting 30 April and concluding 9 November. This study captured the amount of labor hours dedicated by 4 aircraft mechanics to perform aircraft maintenance tasks, flight operations, performing ship related work and in port duty. The following table represents the labor hours dedicated by AVDET 160.

Table: Aircrew Labor Hours

Deployment Summary
AWS 2004, CGC HEALY

Number of Days Deployed:		193	Total Aircrew Flight Hours:	172.0
Sorties:		145	Not Mission Capable Total:	6.1%
	6532	71		
	6539	74		
Dispatch Rate:		100%	Requested Missions Completed:	100%

Maintenance Labor Hour Summary

	Daily Average	Deployment Total	Percentage of Total
Daily MLH Total:	22.3	4334.0	
Maintenance	15.5	3007.0	69.4%
Operations	2.8	543.7	12.5%
Ship	2.8	542.3	12.5%
Total Days Exceeding 40 MLH (note 1):		16	8%
Maximum Daily MLH (note 2):		70	

Flight Operations Maintenance Labor Hour Summary

Number of Underway Days Flight Operations Conducted (note 3):	56	33.5%
Average Daily MLH During Flight Operations:	31.8	
Maximum Daily MLH During Flight Operations:	69.6	
Average MLH / Flight Hour:	9.6	

Note 1: 40 Man Labor Hour benchmark is based on four (4) Enlisted Mechanics working 10 hours each, excluding meals.
Note 2: A 40 MLH summary sheet is at the end of of this report describing those events.
Note 3: Days Underway 193 Days in port 26

3. Air Operations Statistics:

Overview: The table below lists all flights conducted by AVDET 160.

Table: Air Operations Statistics

Date	Hrs	Sorties	Helo	Pax	Cargo	Mission Remarks
30-Apr-04	1.2	2	6532	0	0 lbs.	CHOP Healy; Boeing Field to Airsta Port Angeles to Healy
30-Apr-04	1.1	2	6539	0	0 lbs.	CHOP Healy; Boeing Field to Airsta Port Angeles to Healy
10-May-04	0.5	1	6532	0	0 lbs.	Strut maintenance, Dutch Harbor
10-May-04	0.5	1	6539	0	0 lbs.	Strut maintenance, Dutch Harbor
11-May-04	2.0	1	6532	2	0 lbs.	Strut test/ Area Fam; Reser, Underdahl (MSD Unalaska)
11-May-04	2.0	1	6539	2	0 lbs.	Strut test/ Area Fam; Peloquin, Forsythe (Healy)
12-May-04	1.0	1	6532	0	0 lbs.	Embark Healy
12-May-04	0.6	1	6539	2	100 lbs.	Embark Healy; Huff (Healy)/ Leer (Scandanavian Boiler Co.)
Subtotal:	**8.9**	**10**		**6**	**100**	**End of DART/ NOAA Phase**
15-May-04	1.0	3	6532	9	550 lbs.	NSF/ Scientist onload (Total: 44 on, 12 off), Nome
15-May-04	0.9	1	6539	1	550 lbs.	NSF/ Scientist onload, Nome
15-May-04	4.1	2	6539	6	2,750 lbs.	NSF/ Scientist onload, Nome
15-May-04	5.8	3	6532	42	2,000 lbs.	NSF/ Scientist onload, Nome
18-May-04	3.8	2	6539	0	0 lbs.	Part pick-up in Kotzebue, AK
20-May-04	1.7	1	6532	1	0 lbs.	Ice recon; Peloquin (Ops)
23-May-04	1.8	1	6539	2	0 lbs.	Ice recon; Peloquin (Ops)/ Gradinger (NSF)
24-May-04	1.5	1	6532	2	0 lbs.	Ice recon; Peloquin (Ops)/ Cie (Teacher)
25-May-04	1.6	1	6539	2	0 lbs.	Ice recon; Peloquin (Ops)/ Grebmeier (NSF)
26-May-04	1.7	1	6532	2	0 lbs.	Ice recon; Peloquin (Ops)/ Smith (NSF)
28-May-04	1.6	1	6532	2	0 lbs.	Ice recon; Peloquin (Ops)/ Tateyama (NSF)
03-Jun-04	1.4	1	6539	2	0 lbs.	Ice recon; Peloquin (Ops)/ Brenner (NSF)
06-Jun-04	1.8	2	6532	1	650 lbs.	Pax/ Cargo transfer, Barrow; Gilick (Healy)
07-Jun-04	1.0	2	6539	0	350 lbs.	Pax/ Cargo transfer, Barrow
08-Jun-04	1.1	1	6539	2	0 lbs.	Ice recon; Peloquin (Ops)/ Daw (NSF)
08-Jun-04	1.4	2	6532	2	0 lbs.	Ikpikpuk River water/ mud samples; Brenner; Rearick (NSF)
11-Jun-04	2.4	3	6539	3	1,900 lbs.	Pax/ Cargo transfer, Barrow; Jopling (Healy)/ MacGuire, Gray (BBC)/ Food
12-Jun-04	2.6	2	6532	0	0 lbs.	Package pick-up Barrow; Camera equip test
14-Jun-04	1.5	1	6532	0	0 lbs.	BBC filming of wildlife
15-Jun-04	1.5	2	6539	2	250 lbs.	Pax/ Cargo transfer, Barrow; Keyes, Brock (Healy)
16-18-Jun-04	8.1	6	6532	0	0 lbs.	BBC filming 2 nights, land based in Barrow
20-Jun	2.6	1	6532	1	50 lbs.	Pax transfer, Barrow; Bowley (Healy); BBC filming of wlarus & Healy
Subtotal:	**50.9**	**40**		**82**	**9050**	**End of SBI Phase I**
27-Jun	0.5	1	6539	0	0 lbs.	High Seas Drift Net Search; Pilot & Healy crew day mins
29-Jun	2.6	2	6539	0	0 lbs.	HSDN Search; Pilot & Healy crew night mins
13-Jul	3.8	2	6539	0	0 lbs.	HSDN Search
14-Jul	3.9	2	6539	0	0 lbs.	HSDN Search
Subtotal:	**10.8**	**7**		**0**	**0**	**End of Japan Transit**
18-Jul-04	4.2	3	6532	9	4,200 lbs.	Pax/ Cargo transfer, Nome
18-Jul-04	1.7	2	6539	0	0 lbs.	Strut maintenance, Nome
19-Jul-04	4.0	2	6532	1	0 lbs.	SAR; Overdue found awash onshore. Hoisted and flown home
22-Jul-04	3.0	1	6532	4	400 lbs.	Pax/ Cargo transfer, Barrow; Som (Healy)
22-Jul-04	1.4	1	6539	0	600 lbs.	Pax/ Cargo transfer, Barrow

23-Jul-04	1.3	1	6539	5	900 lbs.	Pax/ Cargo transfer, Barrow
25-Jul-04	1.1	1	6532	2	0 lbs.	PBS filming of ice & Healy
27-Jul-04	3.0	2	6532	4	200 lbs.	Pax transfer, Barrow (aborted for wx); search for sience gear; Schmidt (NSF)
28-Jul-04	0.8	1	6539	3	150 lbs.	Pax/ Cargo transfer, Barrow
28-Jul-04	2.4	2	6532	5	700 lbs.	Pax/ Cargo transfer, Barrow
28-Jul-04	1.1	2	6539	0	0 lbs.	Test flight, Barrow; return to Healy
28-Jul-04	0.9	1	6532	1	50 lbs.	Pax/ Cargo transfer, Barrow
28-Jul-04	2.3	1	6539	1	0 lbs.	SAR; 4 overdue walrus hunters
29-Jul-04	2.3	1	6539	1	0 lbs.	SAR; Located/ returned 4 hunters; Haugk (Healy)
29-Jul-04	1.5	2	6539	3	100 lbs.	Coleville River water samples; Kaiser, Belicka, Davis (NSF)
04-Aug-04	3.7	3	6532	9	900 lbs.	Pax/ Cargo transfer, Barrow
04-Aug-04	1.9	2	6539	4	400 lbs.	Pax/ Cargo transfer, Barrow
09-Aug-04	2.5	2	6532	2	50 lbs.	Pax/ Cargo transfer, Barrow
13-Aug-04	2.7	2	6539	2	10 lbs.	Pax/ Cargo transfer, Barrow
16-Aug-04	3.0	2	6532	1	0 lbs.	Medevac, Barrow; Palomares (NSF)
26-Aug-04	3.6	2	6539	25	2,000 lbs.	NSF/ Scientist offload, Nome
26-Aug-04	1.6	1	6532	14	1,600 lbs.	NSF/ Scientist offload, Nome
Subtotal:	**50.0**	**37**		**96**	**12260**	**End of SBI Phase II**
02-Sep-04	1.4	2	6532	1	130 lbs.	Pax/ Cargo transfer, Dutch Harbor; Nieman (Healy)
04-Sep-04	1.8	2	6539	1	0 lbs.	Yukon River water samples; Mathas (NSF)
06-Sep-04	1.6	1	6539	5	500 lbs.	Pax/ Cargo transfer, Barrow
06-Sep-04	1.9	2	6539	2	0 lbs.	Colville River water samples; Mathas, Lindner (NSF)
08-Sep-04	1.5	1	6539	2	150 lbs.	Pax/ Cargo transfer, Barrow; Gillick, Bowley (Healy); Cracked windscreen
08-Sep-04	2.1	2	6532	0	0 lbs.	Maintenance support for replacement of cracked windscreen
09-Sep-04	1.9	2	6532	2	75 lbs.	Pax/ Cargo transfer, Barrow; Turnbull, Foster (NSF)
09-Sep-04	1.0	1	6539	1	0 lbs.	Maintenance complete, Barrow; return to Healy; Foster (NSF)
13-Sep-04	1.2	1	6532	4	300 lbs.	Pax transfer, Barrow; Leppo (Healy)/ Forcucci (USCG)/ Kemp, Ryder (NSF)
13-Sep-04	3.2	1	6539	4	860 lbs.	Pax/ Cargo transfer, Barrow
20-Sep-04	3.9	2	6539	2	0 lbs.	Ice recon; Noel, Smith (Healy)
30-Sep-04	1.9	1	6539	2	0 lbs.	Shoreline recon for scientists; Danielson, Linder (NSF)
01-Oct-04	5.5	2	6539	25	6,900 lbs.	NSF/ Scientist offload, Nome
01-Oct-04	3.3	2	6532	23	3,100 lbs.	NSF/ Scientist offload, Nome
Subtotal:	**32.2**	**22**		**74**	**12015**	**End of SBI Mooring Phase**
06-Oct-04	2.4	1	6539	19	820 lbs.	NSF/ Scientist onload, Nome
06-Oct-04	1.0	2	6532	8	800 lbs.	NSF/ Scientist onload, Nome; CHOP ATC Mobile
18-Sep-04	1.6	1	6539	2	0 lbs.	Ice recon/ training; Mortellaro, Wilson (Healy)
25-Oct-04	4.5	1	6539	31	4,600 lbs.	NSF/ Scientist offload, Barrow
27-Oct-04	0.7	1	6539	2	100 lbs.	Pax transfer, Nome; Franzoi (Healy)
09-Nov-04	0.5	1	6539	0	0 lbs.	CHOP ATC Mobile; Healy to Airsta Port Angeles
Subtotal:	**10.7**	**7**		**62**	**6320**	**End of Mapping Phase**
Total:	**163.5**	**123**		**320**	**39,745 lbs.**	**AVDET 160 AWS 2004**

CHAPTER III – COMMUNICATIONS

A. Deployment Preparations & Shakedown Cruise, Seattle to Victoria to Seattle

1. Communications:

Upon HEALY's arrival from AEWS 03 Mackay Communications upgraded the Inmarsat Mini-M including a re-SOVT.

A Satellite Communications (SATCOM) Groom was completed and the latest NAVMACS II system was installed during the 6 month in port. The keymat for circuits HEALY does not actively use (IE. CUDIX, Fleet Broadcast, HF/SAT RATT, Secure UHF) was acquired for the SATCOM groom and NAVMACS II install. Afterward, it was determined that although the communications equipment is on board, the keymat for these circuits is not required to be held on board HEALY and that in the future the keymat for circuits not used operationally will not be acquired for a groom. Pacific Area EKMS manager has eliminated support for several unused short titles until deemed necessary for operations on HEALY.

Secure Message Workstation was brought on line. This workstation enables HEALY to guard classified message traffic while in homeport relieving Group Seattle from this duty. CAMSPAC IT division provided excellent support for this task.

Successfully downloaded keymat via Inmarsat-B and Mini-M connections by connecting the STUIII telephone directly to the terminals with a 5 ft phone line. Previous attempts had been unsuccessful and it is suspected that the longer (25 ft) telephone line was the problem.

We stopped receiving comeback copies of our outgoing message traffic. Even when we INFO USCGC HEALY, we are unable to get a copy of the message in our outlook inbox. This is the way we confirm the message was transmitted to all addees. CAMSPAC informed us that this was due to the new COMMSHIFT procedure that was implemented in CGMS. The proposed solution is to send a copy of the outgoing message to CGMDD13Access@D11.uscg.mil and CAMSPAC will e-mail the message back to our healymessages inbox verifying that the message has been transmitted.

After submitting our COMMSHIFT for AWS-04, CAMSPAC questioned HEALY's non-standard method of receiving UNCLAS message traffic via Inmarsat-B/Outlook. Since commissioning Inmarsat-B has been Healy's primary means of sending and receiving record message traffic. HFDX is secondary for UNCLAS and primary for CLAS message traffic. We understand this is not normal and once explained to CAMSPAC they had no problem supporting us. HEALY was designed to operate with one billeted OS, and CAMSPAC's support of our non-standard methods makes it possible.

2. Electronics:

All electronic equipment in Radio was groomed.

Direct To Sailor (DTS) TV was installed. The stack antenna for Inmarsat-B was moved from the forward middle of the stack to the port side of the stack. The DTS antenna was installed on the starboard side of the stack. The stack Inmarsat-B antenna was installed 90 degrees offset.

Fiber optic backbone cable was installed. Once the crossover is complete the CG and Science Data Networks will be totally segregated and will centrally locate all network switches in the Radio room. HEALY will be up to TISCOM standards and casualty isolation/solutions will be improved. To complete this crossover, the remaining 10MB capable computers will be recapped with 100MB computers.

The disk drive for the Mitel telephone switch went bad and corrupted the software disks. The phone switch programming was deleted and HEALY's phone system was out of commission for a couple days until new software and disk drives could be located and purchased.

B. Seattle, DART Mission to Dutch Harbor to Nome

1. Communications:

Shift from landline to Inmarsat-B for internet and unclassified message traffic went relatively smooth. At first, connection was unsuccessful. Called Stratos Network Operations Center (NOC) who informed us that our terminal number was incorrect. They entered our correct terminal number and connection was established.

HFDX brought on line. Connection established and message traffic passed within first 3 hours of getting U/W. HFDX connection was good once established.

2. Electronics:

Direct To Sailor Television (DTS TV) works great. Big morale booster.

C. SBI Process I

1. Communications:

Unable to upload DTD Audit trails to the EKMS manager via Mini-M or Inmarsat-B. However, we did not try to download keymat, which is what previously worked. The ability to transfer EKMS material while underway remains unreliable.

Shifted classified message traffic guard from CAMSPAC to COMMSTA Kodiak. Unclassified message traffic guard remained with CAMSPAC via Inmarsat-B and Outlook. HFDX connection was good once established. Reminded COMMSTA Kodiak that HEALY does not have a 24X7 Radio watch stander and that communications coordination (HFDX Frequency shifts) should be accomplished 0800-2000 Alaska time.

2. Electronics:

Experienced intermittent Inmarsat-B connectivity for approximately one week. The frustrating thing was that we were well within the satellite footprint and when we did have connection the signal strength was great. Fortunately, while the ET's were troubleshooting another problem they identified gyro interface card casualties. The gyro casualty affected the Inmarsat -B system's ability to track the satellites. The system would search, find a satellite, and attain connection, but couldn't track the satellite without gyro input. Therefore, the connections were for very short periods and intermittent.

D. Nome to Yokosuka to Nome

1. Communications:

The Inmarsat-B changeovers to the 143.5E satellite and back to the 142W satellite were accomplished with no problems. CAMSPAC OSIC made the arrangements, kept us informed and followed through. The assistance and support is appreciated.

2. Electronics:

Although the new 100MB computers arrived in Seattle we were unable to get them shipped to HEALY during this phase. The cross-over is delayed until we get the required computers on board.

E. SBI Process Phase II

1. Communications:
2.

The science party was enabled to communicate with another research vessel via HF communications using 4125.0 kHz for a working frequency.

2. Electronics:

Experienced intermittent Inmarsat-B connectivity again as discussed in SBI Process Phase I. However, we were able to maintain a connection with one of the three gyro inputs used for the three Inmarsat-B terminals. So, to maintain a connection we connected the gyro input cable that worked to the terminal we wanted to use. This limited us to the use of only one Inmarsat-B terminal at a time. Although inconvenient, we were able to make it work.

DTS TV was unable to find a consistent signal from 23 July until 25 Aug when we started our return to Nome and got within the satellite footprint again.

F. Nome to Dutch Harbor & SBI Mooring

1. Communications:

Northernmost position during this phase was 77-08N. Although signal strength declined, we experienced steady connection via Inmarsat-B.

2. Electronics:

KYV-5 on the DAMA circuit displayed an E1 error code and would not work. The KYV-5 was swapped out with a spare which also displayed the same E1 error code. No solution was discovered. However, the following morning the ship experienced a total loss of power. Once power was regained, the E1 error code was no longer

present on the KYV-5 and it worked fine. During the Dutch Harbor in port, the KYV-5 once again displayed the E1 error and no solution was discovered. While shifting from shore power to ship's power we lost power, regained power, the E1 error was not displayed and the KYV-5 once again worked fine. Solution unknown.

During the Dutch Harbor in port, the gyro inputs for all three Inmarsat-B terminals were disconnected and NMEA inputs were installed and connected in their stead. All three Inmarsat-B terminals up and operational.

DTS-TV intermittent North of Barrow.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. Communications:

Inmarsat-B signal was strong in Port Provideniya.

Northernmost latitude during this phase was 82N. Although signal strength declined, we experienced steady connection via Inmarsat-B.

2. Electronics:

DTS-TV signal strong in Port Provideniya.

H. Barrow to Prince Rupert to Seattle

1. Communications:

142W Inmarsat-B satellite down without notice on 28 October. Shifted to 143.5E satellite for 24 hrs.

2. Electronics: NSTR

I. Recommendations:

1. Communications:

Reminder, HEALY does not have a 24X7 Radio watch stander. Communications coordination (HFDX Frequency shifts) instructions will be passed via service messages to servicing communications centers and noted in COMMSHIFT's.

2. Electronics:

Eliminate time and resource wasting grooms for equipment that is on board HEALY, but not used operationally. All NAVMACS circuits, including the Fleet Satellite Broadcast, CUDIX, HF RATT and Satellite RATT, are never used operationally.

3. Mail:

In response to continuing mail routing problems experienced on previous deployments, HEALY decided to bypass the military postal system. HEALY shore side SK support collects our mail at ISC Seattle as HEALY does in port. From there it can then be shipped along with other cargo anywhere we are for logistics. This change in procedure has been a great success. We are able to get mail at any/all logistics stops we choose, more often, and with fewer problems than with the Military Postal Service. The FPO addressed mail is routed to Seattle as if we were in port until further notice. Recommend all units use the following address on mail destined for HEALY:
Commanding Officer
USCGC Healy (WAGB-20)
1519 Alaskan Way South
Seattle, WA. 98134

J. Message Traffic Statistics

	Sent	Received
Inmarsat	495	5435
HFDX	6	1514
Total	**501**	**6949**

CHAPTER IV – SCIENCE

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

Planning and preparations for AWS 2004 began shortly after the conclusion of AEWS`03, as chief scientists began submitting cruise plans via the web-based planning guide. This again proved to be a highly effective tool for preparing for the cruise missions.

In February, HEALY made plans to modify the CTD console in Aft Conn as recommended by previous science parties. This modification created a workspace for a CTD monitor with real-time readouts to be used by the science watch-stander and was situated next to the winch controls. This allowed for close communications between the scientists and MSTs, and provided more accurate CTD sampling. A two-thirds height instrument rack was installed to support the CTD equipment. This height allowed for the surface to also be used for the temporary installation of mission-specific computers and instruments. These changes made the space much more user-friendly.

HEALY's MSTs spent the months inport ordering necessary equipment and expendables, and having instruments calibrated. Most expendables were ordered in

twice the quantities of previous years, yet there were numerous items that still ran in short supply by the end of the summer.

The goal of the 2004 Shakedown cruise was to operate all science and science related systems to verify and test normal operation. Of particular interest were those systems that received attention during the ship's off-season maintenance period and dry-docking, and those systems that were newly installed. To ensure that the short time at sea was used to the maximum efficiency, a day was set aside for pier-side pre-underway tests prior to departure. The intent was to operate as much science gear as possible prior to getting underway such that any major deficiencies could be identified, remedied and tested again while at sea. Instrument and system specific experts and contractors participated in the shakedown cruise to provide expertise and training, and to collaborate with the MST division for the testing and calibration of all pertinent equipment.

CTD: The primary CTD cable and slip rings were inspected for corrosion and damage. Signs of oxidation on the termination end of the conductors were found during visual inspection. This indicates that salt water has wicked up the conductor core, which happens when the core of the wire is not completely sealed. The affected portion of cable was removed and reterminated. Conductivity checks were performed on all three conductors. End to end resistance of each conductor was measured at the slip ring end of the drum to the termination end. Insulation breakdown tests were also performed on each conductor to the armor and on each conductor to the other conductors. All tests results were normal. At the time of testing, there was approximately 9395 meters of primary cable (.322). The same inspections and tests were conducted on the secondary .322 cable and all results were normal. The approximately length of this cable was 11,400 meter, which has never been used.

There are two CTD/rosette systems on HEALY. Performed pre-cruise calibration check on all sensors for both systems. The CTD acquisition computer was checked for proper hardware, software and .CON file that is used by the software for each of the CTD configurations. Spare CTD sensors were checked for current calibration dates.

The ship ran into heavy seas and 60-knot winds at the scheduled time and place for doing CTD casts. It was decided to head back into a sheltered area to do the casts. However, they were further delayed due to malfunctioning winches. The winch problems were repaired late in the day and the CTD casts were conducted that evening. Due to the relatively shallow water depth (175m), collected water samples were not

considered to be stable enough to check and/or calibrate the CTD conductivity sensors. The results of the first two test casts showed that all of the 30L bottles leaked. This may be due to the inability of the springs to support the weight of the water in the bottle. However, the third and fourth casts had no leaking bottles. After four test casts, the bottles were left full of water overnight. The next day the water level in each bottle was checked to determine if there was any long-term leakage. There was no detectable leakage found in any of the bottles. Spigots were opened with vents closed to check the seal of the top cap. All bottles checked ok.

If the bottles are consistently leaky in the future, it may be necessary to replace the springs that are currently installed. It may be worthwhile to consider converting the bottles to utilize an internal spring rather than the current external spring configuration. In the external spring arrangement the lanyard angle from spring to cap increases when the bottle is closed reducing the ability of the spring to keep the end cap closed tight.

Autosal (#65-715):
The following checks were performed:
1. Visual inspection
2. Bath temperature check
3. Pump operation
4. ACI 2000 interfaces
5. Conductivity Zero and Gain adjustment
6. Sample water analysis and stability of conductivity ratio

The following corrective actions were taken:
1. Repaired loose tubing connection to cell discharge (inside bath)
2. Replaced worn tygon tubing
3. Fixed broken ground strap – inside rear of cabinet
4. STD dial does not lock correctly – needs replacing
5. Replaced burned out heater lamp
6. Replaced Pump air filters
7. Replaced IC Z311 on Meter PCB

Bath temperature was measured using Seabird precision temperature sensor SBE35 on all ranges. Each of the two bath thermistors was checked for proper operation and measurements on all ranges met specifications.

XBT System: An improper ground connection was discovered on the handheld launcher junction box. There was no ground wire from seawater ground connected to the ground point connection on the Sippican junction box. Instead the ground is coming from the NMEA signal return line on the XBT PC's com port. When the NMEA connection is removed, the XBT system fails to operate. According to Sippican the XBT ground connection must be made to seawater ground. A proper ground point needs to be installed on the handheld launcher connection. The aft thru-hull launcher has a ground strap connected at the launcher. The XBT system tested normally when using T-7 XBT probes. Several tests were performed with normal

results. However, when testing the system using the XCTD-1 test canister, the acquisition program occasionally hangs up and the computer crashes. An extraneous program (DR. Watson) was found running in the background. It was removed and without it running, the XBT acquisition program operated normally with the XCTD-1 probe. No more crashes were observed.

A pre-cruise calibration check was performed by inserting a T-7 XBT, loaded into the hand launcher, into a calibration tank filled with salt water. Temperature readings were compared to an SBE35 secondary reference standard. During two of the CTD test casts, XBTs were launched to test precision of readings. In both cases, the differences in temperature were insignificant. These readings were obtained after a temporary seawater ground strap was placed at the launcher connection box.

Thermosalinographs (TSG): There are two TSGs onboard HEALY. The forward TSG, #1864, is located in the BIO-CHEM lab. It is considered the primary as it continuously monitors the uncontaminated seawater (UCW) line. The aft TSG, #3107, is located in the aft Fueling Hose Room. This TSG is used only when an intake hose is deployed off the fantail. Pre-cruise calibration checks were performed by inserting the sensors into a calibration tank filled with salt water. Temperature readings were compared to an SBE35 secondary reference standard.

Salinity samples were taken at the same time the conductivity readings were recorded. Samples were analyzed on the Autosal. The output interval rate for both the forward and aft TSGs was changed from 6 to 10 seconds to reduce occasional data glitches that tend to occur at faster rates. Neither instrument has a flowmeter or anti-foulant device.

On an SBE21, it is difficult to tell by looking at the data output if the SBE21 is getting proper flow from the science seawater system. If the water system is off, the SBE21 can still see water that is setting in its tank. It is recommended that HEALY add a flowmeter so that watch standers can tell if the TSG readings are valid, if the pump is shut down, or if there is water in the line. As noted above, there are no anti-foulant devices installed. These devices help keep marine growth from forming in the conductivity cell. Such growth can change the calibration of the cell over a short period of time. It is recommended that these devices be installed. However, one must be aware that these devices are poisonous. Proper handling procedures must be used which includes wearing gloves. Furthermore, there must be no instrumentation plumbed into the outflow of the TSG – especially fluorometers.

ADCP: The HEALY contains two Acoustic Doppler Current Profiler (ADCP) systems: a 75-kHz Ocean Surveyor phased-array and a 153-kHz Broadband discrete array. The latter was not operational, as a cable connecting the transducers to the controlling CPU was not yet installed. The 75 kHz system integrates acoustic data from the phased-array with the ship's gyro data, the aft P-code Trimble Centurion GPS data, and the AshTech attitude GPS data. A Microsoft's Windows-2000 XP Professional PC receives these data via serial connections. Data were stored on this machine only as the ship's science data network and servers were not yet operational.

This “stand-alone” data collection eliminates a major source of serious data collection problems caused by (a) insufficiently robust software (VMDAS), and/or (b) an insufficiently stable operating system (Windows), and/or (c) an insufficiently stable science data network.

The system performed exceptionally well in 2003 and the only change of the 75-kHz system during its winter 2003/2004 dry dock period was the installation of a new acoustical window (Sea Beam Orange) in front of the transducers and the addition of a gravitometer in the room housing the ADCP’s controlling deck box/CPU. The 75-kHz ADCP system received all needed inputs, and calibration coefficients were well within previously determined values; however, the major finding was a degradation of the water tracking range. Having eliminated oceanic and instrumental interferences, the possible sources of this degradation were either the newly installed acoustic windows of Sea Beam Orange, degradation of the transducers and their urethane cover (unlikely), and/or degradation/poor installation of rubber washers that were installed to minimize ship’s vibrations being transmitted to the transducer.

In so far as a shakedown cruise is designed to learn what things are not working correctly, this event and the week leading up to it were a great success. Items of particular note are summarized below:

- Repairs to the SeaBeam 2100 Sonar system seem to have been effective. Although the swath width is somewhat less than might be expected from a newly repaired system, the data quality is measurably better, and vertical reference calibrations were successful.
- Software upgrades to the winch control system rendered the system inoperable. Previous software was re-installed and tested satisfactorily.
- The newly installed and previously untested science data storage system was deemed inoperable due to an inability to consistently set and enforce permissions on data files and directories. This system was CASREP’d.
- The newly installed science seawater system was incomplete and could not be tested.
- The replacement 150KHZ ADCP transducer cable was not available prior to departure preventing testing of this system.
- The 75KHZ ADCP showed a marked decrease in SNR and effective range.
- Development on integration of the Iridium phone system into the existing mail system is incomplete and ongoing.
- The weather station electronics junction box was found to be wet and have corroded terminals.
- The XBT recording system was found ungrounded, causing malfunction of the Sippican electronics board when installed in some computers.

While there seems to be a staggering amount of work to do with several mission critical items to repair and test, it is worth noting that the process is working. The problematic items are being identified, these problems are being communicated throughout the ship and to shore, and measures are being taken to fix them, with an appropriate level of concern by the ship.

B. Seattle, DART Mission to Dutch Harbor to Nome

This phase largely revolved around servicing tsunami buoys in support of NOAA's Deep Ocean Assessment and Recording of Tsunamis project. For amplifying information, see Chapter 1 Ship Operations, Section B (pg. I-3).

C. SBI Process Phase I (SBI-I)

The 2004 oceanographic field phase of the Western Arctic Shelf-Basin Interactions (SBI) project began on 15 May 2004. There were 18 research projects included in the ship-based program, ranging from hydrographic measurements to biochemical tracers and biological studies of various trophic levels. Thirty-five stations were occupied during this cruise, where CTD sampling collected physical and hydrochemical samples; an additional 11 XCTD and 4 Video Plankton Recorder deployments were also conducted. A total of 48 scientists from 19 institutions in the United States, Bermuda, Canada, and Japan participated in this interdisciplinary scientific endeavor. In addition, a two-person BBC film crew embarked on June 11.

Various nets (vertical, bongo, multi-net) were used to collect zooplankton; benthic grabs and cores were used to collect benthic fauna and sediment samples. In-situ pumps were used to measure the radionuclide activities. Off-ship sampling was done to obtain ice measurements and to collect ice cores. Floating sediment traps were deployed and moored to an ice flow for 12-24 hrs. Limited helicopter operations were used for ice reconnaissance, river sampling and port logistics.

Bongo nets for zooplankton sampling

ADCP: David Huntley was on-board to monitor and collect data from the Acoustic Doppler Current Profilers (ADCP). The two ADCPs onboard HEALY are the 75kHz Ocean Surveyor (OS75) and the Broadband 153kHz (BB153). David Huntley provided valuable training to the MSTs with regard to maintenance and operation of the systems. Watch-standers were unable to monitor the system continuously due to commitments at science stations; consequently data was lost on a couple of occasions when errors occurred. The OS75 performed normally for most of the cruise, but both systems suffered intermittent power outages and system instability due to vibration during ice breaking; some of the instability may have been due to the Windows operating system. The BB153 had more system instabilities than the OS75, including system lockup that could only be corrected by "hard reboot" or restarting without any user input. Both systems have had numerous ADCPCOMM timeout errors, however this is simply a dropped ping and when/if it did not stop data collection, it was not an issue. Consistent NMEA buffer overflows were occurring on both systems. The problem was traced to the Ashtech GPS, which was sending data twice per second, too much too fast for the buffer to handle. Reducing the GPS output to once per second corrected the buffer overflow condition. The OS75 had intermittent operating system shut downs without user input. This was indicated by a blank blue screen and loss of data collection. The solution was to reboot the computer and restart data collection. There was no indication as to why this was occurring.

Sediment sampling near Barrow

SeaBeam: Dale Chayes primarily maintained the SeaBeam system. The MSTs checked on the system during watch rounds and periodically between rounds to ensure the system was operating properly. Currently, the MSTs have limited knowledge of the operation and theory of the system. They were able to look at it, take note if something was wrong, and conduct basic troubleshooting. For errors or problems beyond their capabilities, the MSTs notified Dale Chayes for further assistance.

Bathy 2000: The system operated satisfactorily up until the last few days of SBI-I. The power amplifier failed, and the system was subsequently CASREP'd. During

operational periods, the system had a tendency to lock-up and typically did not respond to a “ctrl-alt-delete.” MSTs would go to the IC Gyro room, shut down the system completely, then restart it at the deck unit; the main circuit breaker would often trip during start-up, requiring the process to be repeated. It was a test of one’s patience. Once the circuit breaker held, the system was powered up. This recurring problem led to the establishment of saving data twice a day at the work station so as to secure data acquisition; this was completed at 0000Z and 1200Z.

Knudsen: This system was not used until the end of the cruise when the Bathy 2000 was OOC. It seemed to operate properly; the SOP needs to be updated since new software was added to the system at the last groom.

XBT Computer: We dropped approximately ten XCTDs during this phase. A couple failed, one due to unknown reasons. Another failed due to the loss of power on a UPS in the SDN rack when the plug for the fiber converter vibrated free during the drop. It was plugged back into the UPS, and the system operated properly.

Multi-core sediment sampler

TOTCO: We had various problems with them during this phase. The TOTCO providing information on the .680 winch would not zero out, thus the operator was forced to manually enter the "zero" in the TOTCO vs. pressing the button on the winch control. This distracted the operator from concentrating on the equipment being deployed and required the operator to manipulate the TOTCO. They also dropped the calibration information on a couple of occasions, and the lurker panel was not operating until the end of the mission. The ETs were able to make corrections and/or replace bad TOTCOs as needed. The TOTCO would also flash dashes on the display occasionally; again, the ETs were notified and the problem corrected.

HPU’s: We suffered two casualties to the system, one of which had the potential to be catastrophic; fortunately the system was secured before further damage occurred. On the first occasion a gasket failed, releasing hydraulic fluid into the winch room under extreme pressure; this occurred while a CTD cast was in progress. The winch operator

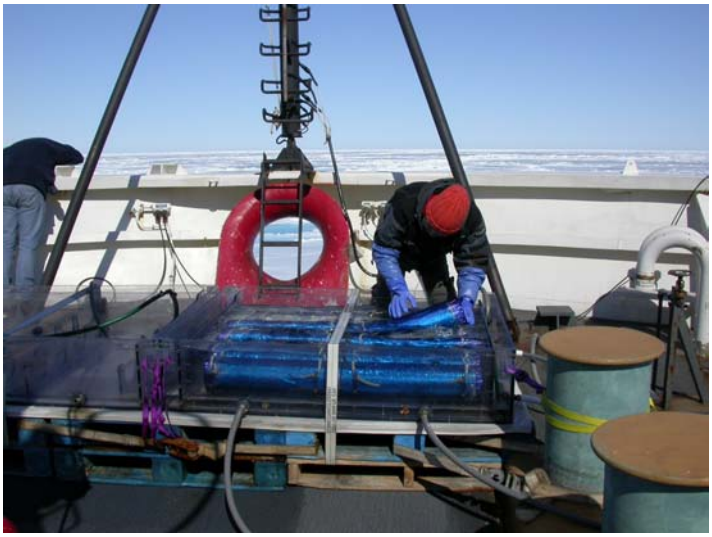
brought the CTD to the surface and onto the deck without incident. A-gang was able to identify the damaged gasket and make repairs. The cause of the incident was likely a human factor at the time of the gasket installation. Science operations were interrupted for approximately two hours as repairs were made. On the second occasion another gasket failed, the leaking hydraulic fluid was noticed before any equipment was put over the side, and repairs were made. Operators need to be extremely cognizant for leaks and notify A-gang immediately to reduce the impact to science operations. Also, options should be explored for dampening the noise produced during the operation of the HPUs. The corpsman was requested to conduct sound level readings during operations, focusing on the aft staging area, which is used as a working space. Noise levels were determined to be over 90 decibels, which requires hearing protection. It is recommended that this item receive further attention from ISC Health and Safety upon return to homeport.

Winches: The .322 winch operated successfully without incident, however Ocean Winch #2 (OW#2) didn't fair as well. It continually had problems with the coupling becoming separated. Although A-gang responded promptly and made repairs, it did hold up science operations on numerous occasions. A-gang will attempt to make more permanent repairs; they believe the drive shaft may be out of alignment, thus causing a slight wobble giving the coupling an opportunity to slide apart. When the ship lost power, the e-stop indicator was showing on the OW#2; the EMs were able to resolve the discrepancy. Also, during the first power loss, the codes for the winches were dumped; EMCM was able to re-load the codes, and no science op time was lost. The water-cooling unit for the Trawl Core (TC) winch control unit developed a leak. The control unit was tagged out and A-gang attempted to plug the leaking water tube. The first attempt was unsuccessful, but it allowed the MSTs to conduct a multi-net cast. A-gang returned to address the water cooler a second time and was able to make a temporary repair. Their intentions are to have another water cooler (radiator) available for installation when the SBI II science party is embarked. TC#4 would not operate when the proper check off procedures were completed; the wire was used for dredging. EM support was enlisted, and it was determined that the Video Display Terminal, which displays and inputs winch control information, would not retain the required parameter settings for the winch. Parameters were input and dredging operations were completed, but when the winch was set up to operate the next morning, the same problem was again discovered; operators re-entered parameters, and completed winch operations. Sea Mac (.25 inch winch used for optics) operated effectively throughout the whole evolution; it was used as a substitute for the .375 winch when the coupling had backed out so as not to delay science operations.

Science Seawater System: The new science seawater system operated effectively once we entered the ice, in that the sea chest did not freeze up. Once the ship entered the heavy pack ice, and the ship was breaking ice vs. pushing it out of the way, the separator removed the larger ice from the system. However, the smaller milled pieces would enter the system and clog up the ninety-degree angles in the water pipes throughout the aft portion of the vessel. Once the system was clogged, it could not provide science seawater (SSW) to the aft labs or to the incubators on the foc'sle. Hot potable water was back flowed through the system to melt the collection of slush in the pipe bends. To alleviate the problem, the aft portion of the ship was isolated while breaking ice and the new SSW would be used to fill the peak tank and provide water to the incubators. When the vessel was hove-to for a science station, there were no problems with the new SSW. During use of the new SSW, one of the couplings was damaged, but the design of the system allowed for an alternate alignment to work around the damaged pump. As a result of the clogging problems with the SSW, the forward thermosalinograph (TSG) in the bio-chem lab was not operated. Once we reached open water, the system was secured, and the old system was brought online to provide uncontaminated SSW throughout the science labs.

Incubators: To ensure that uncontaminated SSW was provided to the incubators on the foc'sle, a system was developed to coordinate the chief scientist, duty MSTs, and EOW. When we arrived at a station, the EOW would commence filling the peak tank with uncontaminated SSW; the chief scientist would let the duty MSTs know the incubators were in use, and they would call the EOW at three-hour intervals to determine tank level. It was determined that to maintain optimal temperatures the tank should be between twenty thousand and forty thousand gallons; more than that and the water temperature would begin to rise. The peak tank could be filled while underway

after the valve that isolated the aft end of the ship for uncontaminated SSW was closed.



D. Nome to Yokosuka to Nome

During the 23Jun – 18Jul mid-patrol break, the MST division took advantage of the time to reorganize and PMS spaces, systems, and instruments. SeaBeam, Bathy2000, TSGs, gravimeter, and ADCP were run during the transits to maintain the database, but were secured while in the foreign port of Yokosuka, Japan.

In Yokosuka, the POS M/V system was installed. This is a vertical referencing unit with attitude data for more precise use with the SeaBeam system. However, its software did not link with SeaBeam properly, so was not utilized for data collection.

The Climate Control Chamber #1 temperature began to rise a couple of days before arriving in Japan; A-gang worked on it, but were unable to bring the temperatures down to the preset levels of -1.6 C. This was likely associated with the warmer more humid conditions in the southern latitudes. The temperatures held at around 0C once HEALY was transiting through cooler climates.

On the transit back to Nome, the MST division took advantage of training offered by Dale Chayes to become more familiar with SeaBeam, ADCP, and XBT system. This training resulted in all members being more adept at using and troubleshooting these systems and uncovered discrepancies in start-up/shut-down documentations that were corrected.

E. SBI Process Phase II (SBI-II)

Approximately 180 CTD casts were made and a wide variety of oceanographic gear, including three corers, grabs, varied nets, traps, video and optics instrumentation were deployed over the side of the ship approximately 600 times over the 40-day cruise. Sampling of the Colville River delta sediments was made possible with helicopter

flights and numerous small boat operations were conducted in support of experimental floating sediment trap deployments.

Stations occupied during the cruise included a transect in Bering Strait (BRS-#) for limited water column measurements, a high productivity station north of Bering Strait (HV-1), sampling in Alaska Coastal Water enroute to Barrow (ACW-#), high-resolution (5 km spacing) sampling on two cross-Barrow Canyon lines, a transect in Barrow Canyon offshore to 3700 m (BC-#), and sampling along a shelf-deep basin transect east of Barrow (EB-#) also to a depth of 3700 m. During the latter portion of the cruise, work was completed on two offshore transects on the Chukchi Shelf into the deep (3700 m) basin (EHS-# and WHS-#).

Barnstead Purification System: This de-ionizer was producing low quality water of 15.2ppm, where the industry standard is 18.1ppm. Fortunately, the scientists from Scripps had brought a de-ionizer with them, so HEALY's was acting as a back-up. New filters were ordered and installed, then the system was allowed to recirculate for several days without use and the quality returned to the optimum level.

SDN: The Snap servers that record & back-up the SDN inputs crashed a couple times. The SDN administrator from ESU was able to work through it, though the first time the standard procedure did not work correctly. It was requested that ESU work directly with Snap Appliances to generate a case and obtain trouble-shooting assistance.

ADCP75: The ADCP failed twice; the first time appeared to be due to ship's vibration simply loosening the serial I/O card and extender so that they literally fell out of their ports. The second time, the com ports were not showing up for the reboot but a phantom mouse serial port was. After disabling and re-enabling the com ports, the reboot worked again.

Public outreach was accommodated for a broadcast group from the science unit of the News Hour with Jim Lehrer and a senior correspondent from U.S. News and World Report. A science teacher from Newman Catholic High School in Wausau, Wisconsin provided a daily posted web-based journal with photographs that was made available for internet-based viewing and was incorporated into a well-developed cruise web site developed and maintained by the Joint Office for Science Support (JOSS) of the University Cooperation for Atmospheric Research. Finally, a community observer from Barrow participated in the scientific work onboard and was reporting back to the

local community about his experience through a report to the Barrow Arctic Science Consortium.

More detailed information on all shipboard work, actual locations sampled, instrumentation deployed and the timing associated with these scientific operations is posted on the JOSS/SBI web page (http://www.joss.ucar.edu/sbi/catalog_hly-04-03/).

F. Nome to Dutch Harbor & SBI Mooring Cruise (HLY04-04)

During the Dutch Harbor port call, science equipment for the mooring cruise was on-loaded, including a 7,000lb winch that would prove to significantly reduce the time required to recover a mooring. Abundant progress was made on inport goals during a long-range science planning meeting on 31 August. Representatives from Electronic Support Unit Seattle (ESU), Pacific Area Command (PACAREA), and LDEO flew in to join HEALY members to discuss the Science Data Network (SDN) architecture, lab modifications, new fiber optic wiring, and a variety of other strategies to make the 2005 cruise more efficient.

Mooring Recovery: Twelve moorings had been previously deployed during AEWS03 to measure temperature, conductivity, and currents; another three moorings, called Acoustical Recording Platforms (ARP) were collecting acoustic signals from marine mammals. As discovered in 2003, the mooring evolutions ran most smoothly when the conning officer moved to Aft Conn to navigate the ship once the buoy had moved past the pilot house. A small boat and crew were launched to attach a towing line to the

buoy for the recovery. The Knudsen was used to send acoustic signals to trigger the mooring release. Last year it took upwards of 8 hours to recover one mooring from approximately 1500m with the HEALY's capstan; with the NOAA winch, even the deepest moorings were recovered within 2 hours.

Only one mooring was not recovered and that was one of the ARPs. It is not clear whether the hydrophone signal did not trigger the release mechanism or if the mooring itself had failed sometime during it's year-long deployment. HEALY towed a dredge over its last known position, but was unable to locate it. Otherwise, this section of AWS04 ran smoothly, without significant problems or set-backs; it was even completed early.

Once the mooring float surfaced, several pieces of equipment had to be pulled onboard & disassembled on the spot.

ADCP: Andreas Müenchow of the University of Delaware was onboard to maintain, collect and analyze acoustic data. He worked closely with Chief Scientist Bob Pickart in pursuit of eddies and water column anomalies.

Bathy 2000: LDEO representatives continued to trouble shoot the system to determine the reason for the frequent "lock-ups" experienced during HLY04-03. It was discovered that excessive heat build up in the IC Gyro Room may have aggravated the problem. Once the heat issue was resolved, it didn't completely stop the system from locking, but reduced it significantly. Also, LDEO conducted some trouble shooting on the Bathy 2000W, such as defragmentation, which also seemed to help. Operation of

the system was adjusted to only manipulate one parameter at a time and let it take hold before adjusting another parameter. Although this has not completely resolved the problems, it appears to have helped.

SeaBeam 2112: This system operated without problems for the most part. It has been discovered during operations in the ice and at depths of less than 250 meters, Seabeam has a tendency to "loose" the bottom in the auto mode. At this point the watch stander may be required to switch to the manual mode, adjusting the bottom parameters to allow the system to re-acquire it. Also, there were a couple of instances where operator error caused a loss of data, but the error was corrected.

XBT (Mark 21 Sippican Computer): Several dozen XBTs and XCTDs were launched in support of eddy-chasing. The system operated satisfactorily up until the time came to release the XCTDs, at which point the hand-held launcher experienced a casualty. After the ETs examined the system, they determined that the connection wire between the computer and the hand-held launcher was defunct. The ETs made quick and efficient repairs to get the system up and running again. During this casualty, it was determined that XCTDs could not be launched via the through hull connection in the aft fuel hose room as the angle was not great enough for the weight to gain momentum and pass through.

MST3 Klinesteker launched the XCTD from the fantail.

Pressure Housing Unit (on CTD): Some water intrusion on one of the connectors on the pressure unit on the CTD was discovered. Scripps-contracted CTD personnel changed out the bulkhead connectors and put the unit back in service.

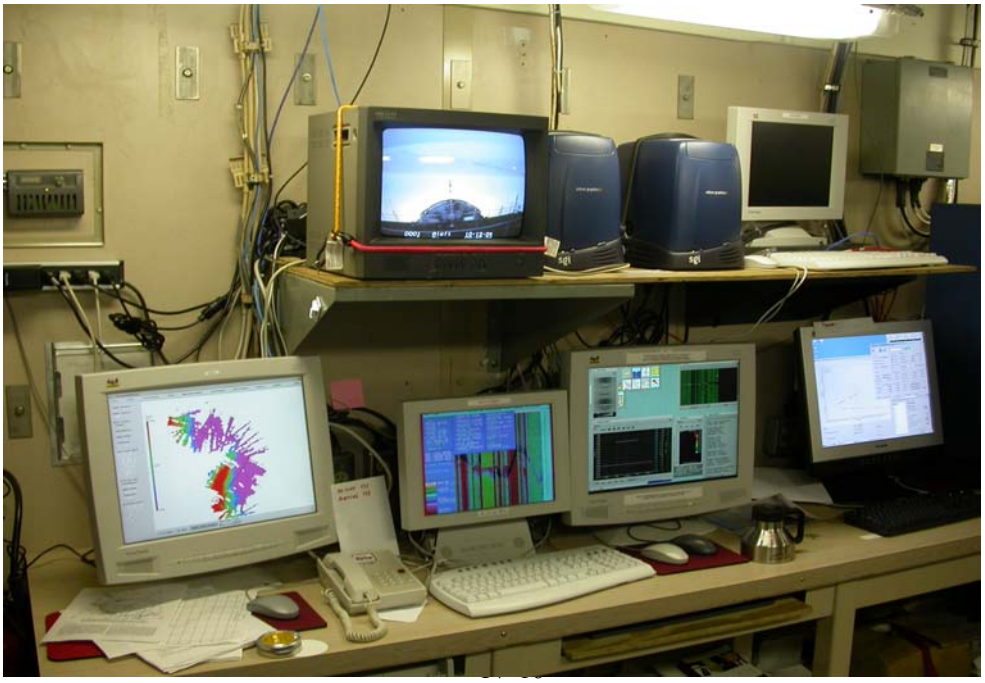
Altimeter Sensor: Once the CTD was at approximately six meters from the bottom, the altimeter sensor would suddenly give false readings. This altimeter was replaced with the altimeter off of the spare CTD and no further problems were experienced.

. 322 Cable: Due to the armor starting to separate and a small kink in the wire, some abnormal read-outs started being received during the casts. Approximately 50-meters of the .322 wire were removed and the cable was re-terminated. No further suspect readings were indicated.

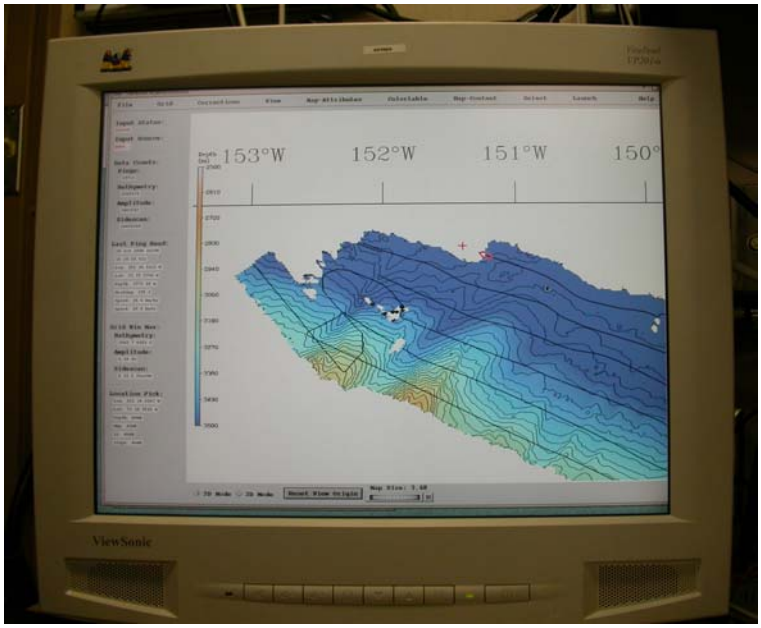
G. Nome to Provideniya to Nome, NOAA Mapping Cruise

While transiting Russian waters to and from Provideniya, all data collecting systems were secured (SeaBeam, ADCP, Bathy).

Under the United Nations Convention on the Law of the Sea (UNCLOS) Article 76, it is possible that the United States can claim jurisdiction over "submerged extensions of the continental margin" beyond the current 200 mile limit of the Economic Exclusive Zone (within defined guidelines). The collection of new, modern multibeam sonar data would substantially improve the quality of a potential claim under Article 76. Thus the primary mission of this cruise leg was to continue mapping efforts from AEWS`03 along the 2500m contour beginning at about 74°41'N 158°12'W where the line 350nm from the coast of northern Alaska intersects the 2500 m contour, and continue up near to the point that the 2003 cruise reached. Due to heavy ice conditions in the northern reaches of the track, HEALY headed back to an area around 75°N to thoroughly map a ridged area in the Chukchi Borderlands that would be pertinent to the potential US claim.



SeaBeam: This was the primary instrument used during this mission. The science watchstanders would monitor the collected data and move the curser on the SeaBeam display screen as a point for the OOD to aim for in following the 2500m contour. Due to the degradation of data at the edges of the swatch, the watchstander and OOD needed to ensure that about a 20% swath overlap was maintained. The OOD drove from the repeater monitors on the Bridge and in Aloft Conn. One lesson learned was that for the scientists, the overlap data they're watching is about ten minutes old, thus they don't know if there was a gap in the data until HEALY was well past it. Also, the ship's position and swath coloration on the display monitor only updates about once every three minutes, leaving the scientists often thinking the OOD was not paying attention to the cursor and subsequently making frequent calls to the bridge. Both parties need to be aware of the equipment limitations to avoid second-guessing and conflicts.



It was found that while transiting heavy ice the SeaBeam did not collect solid data. During backing and ramming little to no data was collected while moving forward through the ice, but it was filled in during the backing stage. There were occasions when the OOD was asked to back & ram every few hundred yards regardless of whether the ice had stopped the ship just to ensure solid coverage. This worked well. In ice, 5kts was about the maximum speed that allowed for good data collection; in open water, 10-12kts could be maintained.

CTDs/XBTs: In order to maintain the most accurate sound speed profile for the SeaBeam data, two CTD casts, one XCTD, and numerous scheduled XBTs were launched. The XBTs were launched every 6hrs; the CTDs and XCTD were used sparingly and primarily to obtain periodic (before, during and after mapping) calibration data. The number of CTD casts was limited most due to the extreme cold, icy decks, and heavy seas that were encountered during this mission. The XBTs and hand-held launcher worked fine, with only a few being duds.

H. Barrow to Prince Rupert to Seattle

During the transit back to homeport, the MSTs worked hard to organize and palletize the science equipment in Cargo Holds 1, 2, & 3, and to clean the science spaces. The

SeaBeam, ADCP, and Bathy continued to run in their transit modes. The MSTs were backing up the Snap server once a week.

I. Recommendations

Overall, each science mission of AWS`04 was a success, with just a few bugs to be ironed out. Most science groups were able to obtain more data than planned. As a division, the MSTs will continue to strive towards improved training and knowledge of HEALY's equipment, system techniques, troubleshooting and documentation.

During the `04-`05 inport, the Engineering Department will review noise reduction options in the Aft Staging area, as noise levels are often greater than 90 decibels during operations.

The MSTs do not receive the technical training they would need in order to fully support the electronics involved in the CTD package or for the Science Data Network, and their time is full with operating the science equipment during over the side evolutions. It was highly beneficial to the scientists to have dedicated support personnel for these types of systems. This practice of having personnel from LDEO, ESU, or a similar technical support contract should be continued.

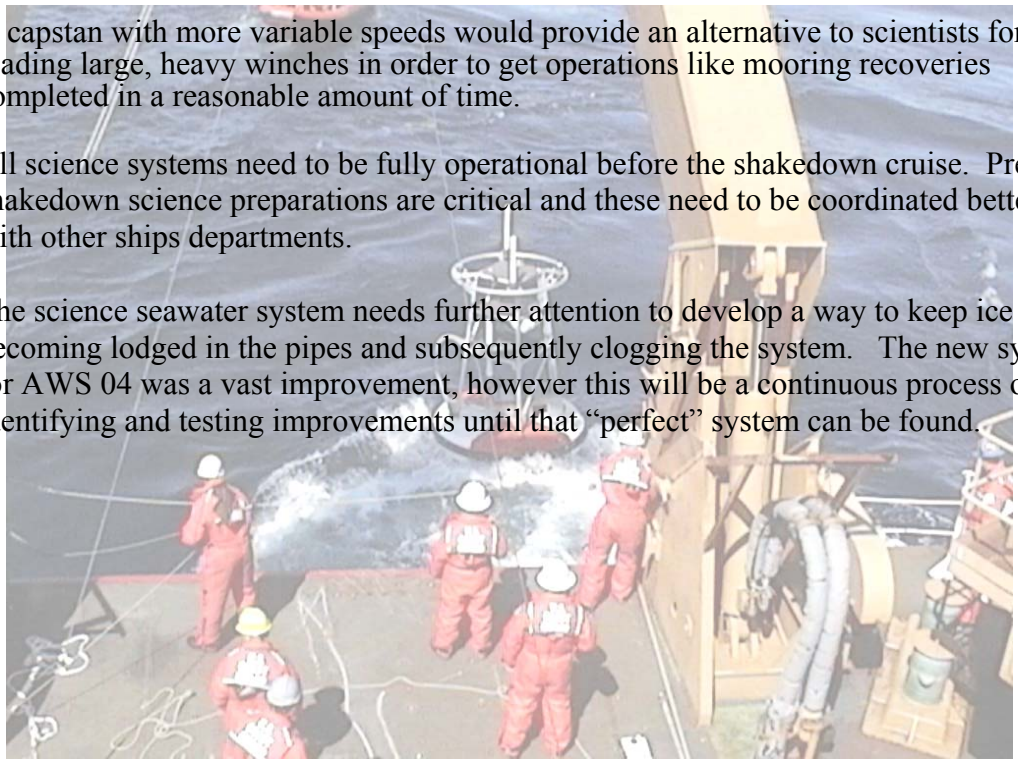
A temporarily assigned MST from another unit proved to be a valuable asset. Having additional personnel trained and available for support operations allowed all MSTs to take breaks and remain alert during their 12hr shifts.

The MSTs would always benefit from more training on basic research vessel technician skills and basic oceanography skills. This would allow the MST's to provide greater customer service support to the embarked science party.

A capstan with more variable speeds would provide an alternative to scientists for on-loading large, heavy winches in order to get operations like mooring recoveries completed in a reasonable amount of time.

All science systems need to be fully operational before the shakedown cruise. Pre-shakedown science preparations are critical and these need to be coordinated better with other ships departments.

The science seawater system needs further attention to develop a way to keep ice from becoming lodged in the pipes and subsequently clogging the system. The new system for AWS 04 was a vast improvement, however this will be a continuous process of identifying and testing improvements until that "perfect" system can be found.



CHAPTER V – ENGINEERING

1. Summary

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

1. As is becoming the norm in the Polar Program, Pre-Deployment Preparations started immediately after Special Sea Detail was secured upon mooring at Todd Pacific Shipyard in West Seattle, WA. HEALY moored on a Saturday afternoon, and post cruise work, and pre-Dry Dock (DD) contract work commenced promptly that following Monday morning. HEALY returned to Seattle with a 48% fuel load, most of which needed to be offloaded if HEALY was to be Dry Docked safely in Todd's ***Emerald Sea*** Dry Dock. In all 417,000 gallons of fuel, which included transferring all of the aviation grade JP-5 to the diesel storage tanks. One of the major items in the DD was the open and inspect of all the JP-5 tanks.

2. The DD Contract start date was Wednesday 5 Nov 03. HEALY was safely dry docked on Saturday 22 Nov 04. After a five (5) day delay HEALY was safely refloated on Wednesday 21 January 04. Several weeks of Dockside work remained. Todd management made a request for HEALY to remain at their facility, but this could not be accommodated as a Dockside contract had already been awarded to Puglia Engineering and that contract was scheduled to start on Tuesday 10 Feb 04. HEALY shifted berths from Todd to ISC Seattle on Friday 6 Feb 04. The Todd DD work continued on to Friday 9 April. Work was interrupted by a 2 week shakedown cruise between Monday 22 March 04 and Saturday 3 April 04. The shakedown gave Todd the opportunity to complete sea trial testing, however due to adverse weather conditions Todd's ship-riders were unable to disembark the ship as planned late on the evening of 22 March and spent an unplanned 18 extra hours as our guests. This extra time spent onboard by Todd employees was settled under a Work Request.

3. The DS Contract start date was Tuesday 10 Feb 04 and ended on time on Friday 12 March 04. Except for several isolated DD work items this gave HEALY a week to prepare for the upcoming shakedown cruise. Both the DD and DS availability contained work items that were deferred from a major DS that was scheduled for Jan-Mar 2003, but was cancelled due to the short notice Deep Freeze '03 tasking.

4. The DD awarded to Todd Pacific Shipyard was the first regularly scheduled DD for HEALY since delivery from Avondale Shipyards. As such this was the first opportunity to complete Level II overhauls of many systems. Major items that were included in the Dry Dock were:

a) Routine underwater body work included preserving the underwater body and underwater appendages, rudder stock bearing clearance checks, rudder inspect and repair and exterior rudder preservation, transducer well maintenance, hull plating preservation, freeboard preservation, underwater body inspect, voids (non-accessible) leak test, propulsion shaft bulkhead seals overhaul, propulsion shaft seals mechanical overhaul & inflatable renewal, external propulsion shaft bearings clearance checks, propellers clean and inspect and propeller hub cone renewal and redesign were all completed. HEALY had lost the PORT hub cone twice in the last 3 years. Several recommendations from the OEM (Rolls Royce) and Todd were incorporated in the hopes of preventing the PORT hub cone from falling off a third time. For continuity and configuration management, the same modifications were completed on the STBD cone as well.

b) As a standard DD work item, cathodic protection zinc anode renewal grew to include CASREP 03049 Aft Cathodic protection. HEALY's active electrical cathodic protection system was malfunctioning and was CASREPed. Upon inspection after dry-docking the OEM tech rep noted that several of the anodes mounted in the hull were not functioning properly and that the paint coating surrounding the anodes was inadequate. The availability afforded us the opportunity to upgrade our cathodic protection system and perform maintenance on the anode wells.

c) Most tanks were inspected, this included; main propulsion fuel stowage and overflow, JP-5 aviation fuel storage and service, ballast, dirty & waste oil. The following tanks were also preserved, forward gray water and the 5-33-0-W ballast tank.

d) A special watertight fitting project was undertaken to replace 8 QAWTDs. The 8 new doors are a new-patented WTD manufactured in The Netherlands by Mafo-Holtkamp. In place of tradition striker plates that the door dogs ride on, these doors have a unique roller, shims, and linkage mechanism that reduces the amount of friction and wear on the door. 18 of these doors were slated for CGC EAGLE, but due to their larger frame size they could not be installed. This excess GFE was sent to Seattle and is in storage at NESU Seattle pending further opportunities to be installed on HEALY.

e) A majority of HEALY's pumps are vertically mounted which leads to excessive vibration, and resulted in an abnormally high rate of bearing failure. An effort was made to stiffen 15 high volume vertically mounted pumps in the hopes that the failure rate would decease. Initial vibration measurements indicate decreased vibration, time will tell if bearing life improvement will follow.

f) As a routine DD work item, and depending on size, all sea valves, auxiliary seawater valves, main seawater valves, ballast and main drainage valve, and select fire main valves were replaced or overhauled. Both main seawater temperature regulating valves and both main seawater strainers were overhaul. Fuel oil valves, including manifold valves were overhauled.

g) A work item from build that was never delivered by Avondale was a Sea Beam 2112 transducer array precision survey. The purpose of this item was to perform a complete survey to establish the three-dimensional offset from the master monument (reference mark in the IC Gyro room) of each underwater transducer or array, each navigational antenna, and selected reference points throughout HEALY. In addition the orientation of each Sea Beam 2112 projector and hydrophone array with respect to ship's centerline was also measured. The offset of each motion reference unit from the Interior Communications Room benchmark was also determined. This item was subcontracted to and completed by Westlake Consultants, Inc.

h) To dampen the weather deck noise that was common when the Auxiliary Diesel Generator (ADG) was running, a sound-damping filter was installed on the ADG air intake. To stagger the cycle of flex hose renewals on the Main Diesel Engines all flex hoses on number 1 MDE where renewed. To prevent salt-water spray ingestion into ventilation supply systems in Fan Room 01-29-5-Q the starboard intake vent was altered. The vent hood was on the 01 deck forward of the doors leading to the foc's'le and in heavy seas would routinely ingest large amounts of salt water. This led to rapid corrosion of the forward supply systems fed by this intake. The intake was extended up a deck and capped with a gooseneck that turned inboard, lessening the chance of salt-water intrusion.

i) Under CASREP 01038 several steam heaters of various sizes had failed. Under this work item all the failed coils were renewed and the steam piping to the preheaters was modified. In conjunction, steam traps in fan rooms were changed, and the condensate return piping in six fan rooms and adjoining areas was modified. As a routine item, select ventilation ducts (galley, scullery, laundry, and Captain's pantry) were commercially cleaned.

j) Another routine dry dock item included anchor chain and ground tackle inspect and repair and chain locker clean and inspect. This item also cleared CASREP 03052, Port Anchor. The fluke on the Port anchor failed and snapped clean off when HEALY experienced unexpected hurricane force winds while at anchor off Thule Greenland during AEWS 2003. The anchor had to be fabricated and shipped over from Asia. The late

arrival of this GFE forced us to install the anchor ourselves at the ISC Seattle mooring.

k) A major scientific discrepancy from ice trials and as documented under CASREP 02040 was that the Uncontaminated Science Sea Water Sea Chest would routinely become ice bound when HEALY was operating in ice-covered waters. This severely limited the services HEALY could offer our scientific customers. A design was proposed after a ship check of the UNOLs vessel Nathaniel B. Palmer. The Palmer's system, while not functional ideally in ice, functioned much better than the HEALY system. The intent of this item was to install a new sea chest, new pumps, a centrifugal separator, and new piping connecting the new uncontaminated science seawater system to the existing uncontaminated science seawater system. Additionally, piping from approximately frame 110 to the foc's'le was replaced with larger diameter piping and foc's'le piping connections were added. The new uncontaminated science seawater system, in concurrence with the scientific community, was designed with Hastelloy C and glass reinforced plastic (GRP) piping, pumps, valves and fittings to minimize the chance of contamination in the Science Seawater System. Additionally, the entire piping system was lagged to minimize heat transfer into the system.

l) The Bow Thruster received its first general overhaul since the ship's commissioning. The overhaul included seal replacement, alignment verification, and steering vane overhaul. In the course of the overhaul several areas of pitting were noted. The areas were clad welded and coated with "splash-zone", an epoxy that is used to protect high flow piping. Also noted was erosion at the leading edges of the impeller blades. The conditions were not very severe and will be addressed during the next DD availability. The overhaul allowed us to CASCOR two outstanding CASREPs including 02028 frequent bow thruster trips, and 02042 bow thruster moment arm replacement and upgrade.

m) Since build, the A-Frame pivot pins showed a tendency to work their way out of both A-Frame hinges. The modification required line-boring the hinge boss of the boom assembly and shrink fitting government furnished Kamatics self-lubricatimg bushings. When the A-Frames were removed, and measurements were taken it was discovered that the A-Frame foundations were misaligned, possibly causing an axial force on the pins forcing them out of their bosses. To help keep the pins in place a groove was cut at the end of each pin and hinge pin keeper plates were welded to the foundations. A level two inspection of each A-Frame was also completed. This included fluid renewal, hydraulic valve inspection and testing, hydraulic cylinder overhaul, and static and dynamic load testing.

n) A level 1 inspection and repair was completed on the aft warping capstan. This capstan is usually used when working scientific moorings and appeared not to be working in 2 speed mode, the high speed could not be achieved, see CASREP 03057. After extensive CG and contractor troubleshooting it appears that several pipe runs leading to the deck controller reduce in size at the deck penetration and restrict the volume of fluid reaching the motor. Further repairs will be made to this capstan over the next inport under CSMP 04-012.

o) A level 2 inspection was completed on both Miranda davits and the bow 3-ton crane.

p) An optional item to modify deck sockets on the aft working deck was exercised. Fifty Monel deck socket inserts with sealing plugs were installed.

5. See Appendix H: Inter-Ocean Feb 2004 Groom.

6. The Dockside contract awarded to Puglia Engineering was much smaller in scope, and ended on time. The Dockside contract was awarded to Puglia Engineering, performance period of 10 Feb –12 Mar 2004, and ran concurrently with the extension granted to Todd Shipyard to complete work under the DD contract. Dockside work included both routine work, and corrective maintenance generated from the CSMP backlog. Work included the cleaning of both boiler day tanks, 1-71-1-F and the 1-71-2-F. Both tanks were in good condition with minor paint failure in each, which was documented in a CSMP and will be addressed at the next availability. Cooler and condenser cleaning and repair. Six condensers on the Number 1, 2, and 3 air conditioning units were cleaned, and their end bells, suffering from a combination of erosion and corrosion were repaired. Three saltwater coolers from the Number 1, 2, and 3 start air compressors were cleaned and their end bells were renewed. In an effort to improve the performance of the ship's incinerator, a work item to clean the interior of the incinerator exhaust stack was included. The contractor also performed repairs to the refractory within the incinerator. Repairs were completed to the bottom blow down and surface blow down flanges on the number 2 ship's boiler and annual maintenance was completed on the two ship's service boilers. The contractor inspected the hydraulic systems to 8 watertight hatches and renewed the hydraulic hoses and hydraulic fluid associated with those hatches. Significant improvements to the science container van monorail (SVCM) hoisting system were completed. The system is now much safer and easier to operate. A level one inspection, operational evaluation, maintenance, wire rope renewal, and weight test, of both aft working deck articulating boom cranes was completed. A level one inspection of the hangar bridge overhead crane, science staging area overhead crane and J-Bar davit was completed. Puglia renewed or repaired approximately 800 sqft of damaged decking in the following 10

shipboard compartments: Dry Stores 2-9-0-A, Mica Stores 2-48-0-A, AMR 5 2-63-0-E, AMR 6 2-75-0-E, AMR 7 2-84-0-E, AMR 8 2-93-0-E, Repair II 2-117-4-A, Winch Room 2-135-0-E, Aft Steering 2-147-0-E, and Bow Thruster Space 4-33-0-E. The damaged decking is a poured lightweight concrete with a hard topcoat.

7. Todd Shipyard was still completing install work on the new Science Sea Water (SSW) System and it was not ready for an operational test during the March Shakedown. This installation presented some unique challenges as the science community raised some serious concerns with running the system while moored, fearing that contaminates at the bottom of Elliot Bay would find their way into the pristine new system leading to irreversible contamination. A compromise was achieved. The vent pipe terminating on the 01 deck adjacent to the Port Quarter Deck was cut and flanged. This allowed us to pump firemain water from shore directly into the SSW Sea Chest. Running this jumper connection down to the Sea Chest clean-out was also possible but would have been much more complicated, including having to open and gas free a void. Using this arrangement we were able to test the 3 new SSW pumps at a low speed pierside. The three pumps are controlled by variable speed drives and are fully reversible, so system output and flow could be controlled. See Appendix I: Science Seawater Operating Instructions for the EOSS for the new Science Seawater System.

Science Sea Water Pumps 2 and 3

Science Sea Water Pump 4

8. HEALY sailed with the following outstanding CASREPS:

   a) 02040 - Uncontaminated Science Sea Water (SSW) System. One of the larger discrepancies from build. HEALY's uncontaminated science seawater system failed to operate while HEALY was engaged in heavy ice breaking. The science seawater sea chest would become obstructed with ice and would prevent the pump from taking suction. An evaluation of the UNOLS R/V Nathaniel B Palmer science seawater system was made and designs for a similar system were drafted by JJMA and Assoc. Naval Arch. The new system was installed during HEALY's Nov 2003 –Feb 2004 Dry Dock availability at Todd Pacific Shipyards. Total cost of improvements was just over $1,200,000.00. The new system is running well and significantly outperforms the old system. During ice trials in 9 and 10 tenths ice coverage we believe that we have achieved best possible operational parameters for the new system as installed, and intended repair under the initial CASREP had been met and the system was CASCORed during the SBI I phase. However some issues still remained. Small diameter piping leading to aft lab spaces continued to clog in heavy ice coverage if pumps are run continuously in transit. Small ice particles would pass through the pumps and centrifugal separator and get trapped in the piping clogging the system. This required labor intensive thawing with hot water. For supplying water forward to the foc's'le we still relied on the forepeak ballast tank as a reservoir that would be filled via the new SSW system and the ship's force installed secondary SSW pumping system supplied this water out of the 3-E-0-W tank to incubator experiments on the foc's'le. On several occasions when required by scientific demand we needed to run the system in transit. We would then isolate the aft system and even in the most severe ice condition the larger

diameter piping (3 inch) leading forward would not clog with ice. In ice-free waters the foc's'le experiments were fed directly from the installed SSW system spigots bypassing the 3-E-0-W tank entirely. On occasions when the aft and foc's'le experiments were fed simultaneously from the new SSW system, flow aft was barely adequate. Throttling the forward section corrected the problem, but was detrimental to the incubators in place at that time. Continuous input from science community on how to further improve system will be routed via the CSMP or ECR process as appropriate.

b) 03008 - Port Main Motor Slip Ring Plate: During the Deep Freeze 2003 Mission the Port Main Motor Slip Ring Plate arced due to a loose connection of the single bolt securing the terminal lug. A design improvement was attempted during the Integrated Propulsion Plant (IPP) groom, however due to stiffness of wire and limited amount of room in exciter enclosure the technicians were unable to bend wire to such a radius as to utilize both bolt holes on terminal lug. Only one bolt was installed to hold terminal lug to brush plate. Slip rings are inspected with greater frequency to prevent a similar casualty from occurring. CASCORed.

c) 03020 - Number 5 Central Fresh Water Pump: Vibration analysis report prepared by vibration monitoring support contractor, Vibration Specialty Corp (VSC), based on data collected by NESU Seattle HEALY MAT between 09 Jan 03 to 05 Feb 03 indicated that the coupled end pump bearing continued to show wear. This was thought to be an indication of imminent failure. To properly position ourselves for the failure and required overhaul we ordered all required parts. However the pump continued to run without fail for the entire AWES 2003 mission. There was a 4-month delay in receiving parts. The HEALY MAT overhauled pump after the Dry Dock availability and CASCORed during the first week of the AWS 2004 mission.

d) 03027 - Number 1 Science Freezer: Due to undocumented changes during build we experienced problems purchasing the correct flywheel. Mr. Don Chambers of ANTEON Corp researched the issue, and uncovered the documentation error. After securing the proper part, it still required machining. Completion of work under this CASREP will be completed after HEALY returns to Seattle from the AWS 2004 mission.

e) 03029 - Forepeak Tank 3-Way Valve: The fill and suction valve to the 3-E-O-W tanks leaked by excessively. The valve was removed for overhaul. The valve ball was found pitted beyond repair. New valve was installed by ship's force after departure for AWS '04 and was CASCORed during the first science phase of the mission.

f) 03042 - Number 1 Main Salt Water (MSW) Pump: NESU Seattle replaced the mechanical seal, impeller, and shaft on the pump. VSC analyzed three motor bearing data sets of vibration data and compared results to machine's historical data. VSC concluded that number 1 MSW and motor are running well. After 2 months of continual operation underway pump was CASCORed

g) 03043 - Aft Grey Water Tank Level Indicator (TLI): TLI would not properly display liquid level in tank. Extensive troubleshooting efforts by ship's force uncovered the fact that an E-Prom in the TLI had lost its memory, and the source of a stray voltage was found and eliminated from the circuit by lifting leads 5 and 6 on terminal 2-6 in RTU-9a. CASCORed.

h) 03052 - Port Anchor: As documented in the AEWS 2003 cruise report a fluke on HEALY's PORT anchor snapped off during sudden and unexpected winds of up to 86 knots while anchored off Thule Greenland. Delivery time for this type of anchor, which had to be cast in Asia, was 7 months. This GFE promised for delivery before the start of the November 2003 DD was delivered in March 04, and was installed pierside at ISC Seattle by CG Industrial and ship's force personnel. Anchor was CASCORed during first week of the mission.

i) 03056 - Starboard Staging Area Roller Door: Another holdover CASREP from AEWS 2003. Here again parts lead-time was over 7 months. Parts delivery missed HEALY's departure for AWS 2004 by 2 days. Due to bulk size of roller door slats shipping them to Alaska mid-mission was impractical and not cost effective. Wooden planking, while not aesthetically ideal is functional. Repairs will be completed upon RTHP in November.

j) 03057 - Aft warping Capstan: Another holdover CASREP from AEWS 2003. The aft warping capstan only works in slow speed mode. Capstan remains at low speed when high-speed mode is selected. The cause of the problem, extensively analyzed by NESU, ship's force, and hydraulics contractor personnel over the course of the entire 2003 – 2004 inport, is believed to be pipe size restriction, but remains unconfirmed. Further troubleshooting work for this system is planned for the 2005 Dockside Availability.

k) 03058 - Voyage Management System (VMS): HEALY's VMS would intermittently lock up. The system lock ups were due to time errors and memory faults. System lock was preceded by a time and date jump. The time and date jumps adversely effected SEABEAM 2112 multi-beam operations. During the inport HEALY's ETs installed a new configuration file that was provided by OEM Sperry Marine. After 2 weeks of

satisfactory operation without experiencing any time display errors VMS was CASCORed.

l) 03065 - Number 2 MSW pump: A VSC report stated that MSW pump #2 had marginal internal vibration and recommended overhaul. After Dry Dock, pump was overhauled by NESU MAT personnel. Pump was CASCORed during the first week of the mission.

m) 03066 - OE-82D Satellite Communications: In an effort to clear this CASREP, the following parts were received and installed, K2 relay, elevation data package assembly, electronic switch PCB, hybrid assembly, and synchro transmitter. Re-measuring of the pre-amp assembly during the SAT Comm groom team's second visit to HEALY determined that assembly is within specified tolerances and that a replacement preamp assembly was no longer need. System was CASCORed after the Japan mid-mission break.

n) 04002 - Number 2 Ship's Service Air (SSA) Compressor: An inspection of the number 2 SSA compressor's internal components revealed signs of major pitting, unusual wear, and overheating. The manufacturer, Nash Engineering Company, of Trumbull, CT recommended an in-house inspection and replacement of damaged components. Also, according to a VSC report, the compressor had a high vibration trend. Components involved in the overhaul included: rotor, lobe, cone, shaft, and bearings. The compressor was overhauled by the manufacturer and reinstalled by ship's force prior to sail away, however ship's force was waiting on the delivery of a solenoid valve to clear the CASREP. Due to an Auxiliary Saltwater Cooling pipe casualty (supply line) to number 1 SSA compressor (CASREP 04016), the required solenoid valve for number 2 SSA compressor was removed from 1 SSA compressor and was installed on number 2 SSA compressor. This allowed HEALY to maintain 2 out of 3 SSA compressors. CASCORed.

o) 04005 - Main Diesel Engine (MDE) Turbo Wash feed water piping: During an inspection of the turbo wash system on all four MDEs late in the inport, numerous holes were found throughout the turbo wash water supply lines due to chafing and corrosion. Repairs were completed prior to sail away and the system was CASCORed during the first week of the mission.

p) 04006 - Number 1 & 2 Lube Oil Purifiers (LOPs): During annual PMS of both LOPs both their bowls were found damaged and in need of repair. Number 1 LOP required the bowl body taper to be reamed. Number 2 LOP required the bowl body taper to be reamed and the nave liner in the sliding bowl bottom required replacement due to galling. All work was completed prior to sail away and the CASREP was cleared during the first week of the mission.

q) 04007 - Machinery Plant Control and Monitoring System (MPCMS) Console Monitors: MPCMS monitors were experiencing a high rate of failure. 2 of 4 monitors in the Engineering Control Center (ECC) failed in a 4-month period. HEALY consumed its allowance of spare monitors and there was a significant lead-time for replacement spares. Due to the high rate of failure, we immediately proceeded with an OEM Engineering Change Proposal (ECP) to upgrade the Cathode Ray Tube (CRT) monitors to Liquid Crystal Display (LCD) flat screens. Based on the status of the LCD monitor conversion ECP, we did not restock spare CRT monitors and continued down the ECP path. All MPCMS monitors in ECC and the one on the Bridge were replaced with a flat screen and the CASREP was cleared during the first week of the mission.

r) 04008 - Number 2 Fuel Oil Purifier (FOP): During start up of number 2 FOP, the FOWK noticed a strange odor emitting from the FOP and the bowl assembly was not rotating. The unit was secured and inspected. Ship's force found the coupling drum was hot, the bowl assembly was difficult to turn, a grinding noise could be heard, and it appeared that there was some scoring on the spindle bearing. Annual PMS and repairs had been completed to both FOPs prior to ship departing on shakedown cruise in mid-March. The FOP was still under a 90-day warranty from repairs completed by tech rep personnel. The same tech rep was already scheduled to complete work on both lube oil purifiers the following week. Tech rep personnel completed repairs and the CASREP was cleared during the first week of the mission.

s) 04010 - Bow Thruster Soft Start: During testing of the Bow Thruster shortly before the sail away, discovered that two Phase "B" SCRs in the Bow Thruster Soft Start had shorted. All 8 SCRs had to be replaced due to the unavailability of identical SCRs through original manufacturer. The Bow Thruster was operational without the soft-start, but using the across-the-line starter is not recommended due to the large current draw on the HV Bus. Replacement parts were received and installed shortly before sail away, and the CASREP was cleared shortly thereafter.

B. Seattle, DART Mission to Dutch Harbor to Nome

1. 04011 - Oceanographic Winch Drive Number 2 (OC 2): During routine operation OC 2 was E-stopped while the winch operator was hauling in. Three faults showed on the Sigma display: 1st fault was bridge "A" fault, bridge "B" fault, and E-stop fault. Ship's force determined that the trip was caused by bridge A and B faults, and attempted to reset. The control available indicator lit up, the main LCN closed then immediately opened resulting in drive shutting down and displaying the initial faults (with the exception of the E-stop). Troubleshooting continued but with only several days before the start

of the SBI Phase I mission, Alstom Drives specialist flew into Dutch Harbor to assist with repairs. Repairs were completed, with renewal of a gate card, before the Nome Logistics stop and after 2 weeks of use and op testing the system was CASCORed.

C. SBI Process I

1. 04012 - Digital Compass: The digital compass failed shortly before departure from homeport. The display unit would only show the letters 'ah' and the degree symbol. Heading and menu items would not display. The system is a backup-heading indicator for helmsman on center bridge console. Replacement unit was received, installed, tested and CASCORed during 18 July Nome Logistics Stop.

2. 04013 - TOTCO Display: A faulty TOTCO remote display was causing data collisions over the display network resulting in display data loss at all remote TOTCO display locations. Repairs required hand over hand tracing of wiring in Luker Panel and TOTCO controllers. Discovered reference voltage between two neutral terminals to be 4.5 volts, allowable limit is 5 volts. This caused intermittent errors when the system was operational. Wires were properly terminated and voltage difference decreased to under 1 volt. Op test Sat. System was CASCORed shortly after 18 July Nome Logistics Stop.

3. 04014 - Voyage Management System (VMS): Shortly after we reached our Op Area above Barrow, HEALY's VMS would lock up when voyage plan editor was opened on four of nine computer nodes and experienced intermittent lock ups when the Electronic Bearing Line (EBL) function was accessed. After repeated troubleshooting efforts, supported by a continuous E-Mail exchange with OEM tech reps ashore, HEALY requested a Tech Rep meet the ship in Nome and transit to the Yokosuka Japan logistic stop. The Sperry Marine tech rep installed version 7.3.2 of HEALY's voyage management systems. System ran successfully without lockups on the transit to and from Japan. A true test of the system was conducted at high latitude regions where polyconic projections charts are required to be used, and was thought to be the source of the problems. CASCORed 23 Jul 04.

4. 04015 - Port Rudder Actuator: Discovered hydraulic oil leak from valve block on the outboard side of port rudder post housing. Information available in tech pubs on HEALY and at NESU Seattle were incomplete, making it difficult to positively identify required parts. The valve was believed to be the rudder actuator's overhaul relief valve. NESU Seattle Port Engineers worked with OEM C. S. Controls, to positively identify affected valve and required replacement parts for steering gear. Digital pictures and descriptions were forwarded to NESU via E-Mail. After disassembling valve ship's force discovered that one of two required o- rings was missing. Ship's force

installed two new o-rings and reassembled valve. Op tests were Sat. This CASREP was cleared in 6 days.

5. 04016 - Number 1 Ship Service Air Compressor cooling water supply piping: Watch stander discovered a steady stream of water coming from pinhole leaks on both supply and return auxiliary seawater (ASW) piping for the no. 1 ship service air compressor. Temporary repairs were not effective and pipe needed to be cut and plugged. Lack of proper piping support and heavy vibration due to heavy ice breaking appears to have contributed to the failure. Casualty occurred a month before HEALY's arrival in Japan. This allowed for sufficient planning for the repairs to be completed by the Naval Station's Ship Repair Facility (SRF) at the Yokosuka. Repairs were completed quickly and were of the highest quality. System was CASCORed the following week.

6. 04017 - MPCMS Keyboard: Similar to the obsolescence problem with the MPCMS CRTs as noted in CASREP 04007 above the MPCMS unique keyboards are closely following suit. One of the Engineering Control Center's (ECC) primary MPCMS keyboard became unresponsive. HEALY had no spare keyboards onboard, one had been on back order for several weeks before HEALY departed. Lead time was 8 weeks. The EMs temporarily replaced the keyboard in MPCMS with the keyboard from the training console. Parts still not received by end of mission.

7. 04018 - Number 2 MSW Pump couplings: Watchstander secured pump after noticing black rubber brake dust on top of and inside the pump's coupling guard. Ship's Force determined that the pump's upper and lower couplings had sheared. Parts had a 6-8 week lead time. Received parts in Dutch Harbor, installed and tested. CASCORed 12SEP04.

8. 04019 - Bathy-2000 Sub Bottom Profiler: Blown fuse indicator activated on the LPA-5KVA module of the linear power transmitter and the 220Vac equipment rack circuit breaker tripped. Inspection revealed shorted power transistors on bridge driver of the LPA-5KVA module. Ship's force replaced shorted transistors and blown fuse. After re-applying power and activating transmitter, fuse blew and power transistors in the LPA-5KVA module shorted again. LPA-5KVA power amp was received and installed during port call in Yokosuka, Japan. Op test was sat and the system was CASCORed. Ship's Force will work with OEM and ESU Seattle to get damaged power amp repaired for onboard spare.

D. Nome to Yokosuka to Nome

1. 04020 - Digital Marine Interface: System works unreliably. Continuing conversion of equipment receiving input from the digital marine interface to use the NMEA 0183 "HDT" data word directly from the gyro. Status update of digital marine interface systems that are-were fed by the DMI: dynamic

positioning system was converted to NMEA 0183 "HDT" RS-232, TERASCAN was converted to NMEA 0183 "HDT" RS-422. INMARSAT B 1@60HZ 90X and INMARSAT B 2@60HZ 1X can use NMEA 0183 "HDT", parts received and installed by ships force and ESU Seattle while in Dutch Harbor, all 3 INMARSAT Systems 100% operational for 7 days. ADCP-150 1@60HZ 1X researching possible input conversion. MF-HF ADF 1@60HZ 1X removed (NOTE 1). UHF ADF 1@60HZ 1X not labeled but used (NOTE 1). ECDIS 2@60HZ 1X not used (NOTE 1). ADCP-75 1@60HZ 1X, OE-82 1@400HZ 1X, TV-DTS 1@400HZ 1X, and TACAN 1@60HZ 1X researching possible input conversion. NOTE 1: MF-HF ADF and UHF ADF and ECDIS outputs do not seem to be used any more; we are researching whether we will need to convert these at all. NOTE 2: for systems that cannot be converted to NMEA 0183 intend to provide synchro inputs via discrete converters. HEALY, ESU Seattle, and ELC are working this issue. Alstom Technician rode from Nome to DH and installed software for DPS input directly from gyro vice via the DMI. Final migration pends.

2. 04021 - Number #2 Evaporator Brine Pump Motor: Motor had low resistance readings to ground. Having the motor inspected and rewound by SRF Yokosuka, Japan was not cost effective. No onboard spares. New motor received in Nome on 18 July 04. Op test sat, and system CASCORed.

3. 04022-MSW piping: Discovered 2 quarter inch diameter holes in MSW piping spool piece leading to number 3 Central Fresh Water cooler. Temporary repairs did not hold. Even though this casualty occurred shortly before HEALY's arrival in Japan, SRF Yokosuka was still able to properly target the flanges and fabricate a spool piece from new 8-inch diameter pipe. Again quality of service by SRF personnel was outstanding. CASREP was cleared shortly after departing Japan.

4. 04023 – Flight Deck Line up Lights: Troubleshooting revealed an open winding in the system's variable transformer motor. Parts received in Nome on 18 July, and CASCOR sent out shortly there after.

E. SBI Process Phase II

1. 04024 - Continuous Test and Evaluation System (CTES) Keyboard: Similar to, but not exactly the same as the keyboard listed in CASREP 04017 above, the CTES keyboard started to experience malfunctions. Awaiting parts. CASCOR pends.

2. 04025 – Condensate Cooler Temp. Reg Vlv: Due to the failure of the temperature-regulating valve, the ASW used to cool the steam via the cooler has to be manually regulated hourly using two bypass valves. If the valves are not adjusted properly a significant volume of steam produced by HEALY's boilers would be lost to cooling water which would result in the reserve feed

water tank needing to be continuously filled. Valve received in Dutch Harbor. SF installed and tested, Test SAT, CASCORed.

3. 04026 – Bow Thruster: SF attempted bow thruster temporary seal installation. Vane shaft roller bearing inner race caught on vane shaft halting roller bearing carrier removal. To avoid damage to roller bearing carrier or roller bearing and because no spare parts are on board, SF opted to reassemble unit. Unit is operational, and will be repaired during upcoming inport period.

4. 04027 – Evap #2: SF attempted to light off evap after replacement of evaporator no. 2's brine pump motor and found evap to be inoperable. Pump's wear rings were also replaced. General symptom is overheating with little steam input. When steam pressure is increased over five psi, normal 15 psi, vacuum is lost. Distillate discharge from the second effect chamber is high at 180F, normal temp is 168F. Troubleshooting revealed that the two eductors (water jet exhausters) are corroded but do not believe this to be the source of the casualty as evap operated acceptably earlier. Inspected and found the first and second effect chamber's crossover tube strainer and the sea strainer to be clean. Tightened down bolts on evap's first and second effect chambers to prevent steam leakage. Brine pump impeller and wear ring reinspected. All with neg results. Troubleshooting revealed one-inch crossover check valve flapper shaft eroded away. Valve not seated properly. Replacement parts not on board. Fabricated and installed temporary crossover tube using available check valve. Op test conducted, maximum output could not be achieved. Further investigations revealed seized S.W. control valve. Valve cleaned and reassembled. Final op test SAT. Received pumps in Barrow and installed. System CASCORed 07Aug04.

5. 04028 – RHI: MLCPAC ordered and shipped TAMD41P-A Volvo Penta Long Block to replace existing irreparable engine in HEALY I. Received engine in Dutch Harbor. SF installed engine. One hour and 15 mins into underway break-in of new engine in HEALY 1, boat crew heard loud knocking from engine. Engine secured and boat towed back to HEALY. Investigation revealed the exhaust pushrod of Nr 6 cylinder misaligned with the rocker arm due to stripped threads on ball stud. Valve was also stiff to move by hand. NESU Seattle purchased new head gasket for SF to continue troubleshooting by removing cyl head. Found moderate damage to the #6 piston crown. Disassembly of the cylinder head found pieces of the glow plug heating element stuck in the #6 cylinder intake valve. The damage to the piston crown and intake valve was caused by pieces of the element and valve contact with the piston. Repairs to be completed during upcoming inport period.

6. 04029 – Instrumented Sheave: Remote display network crashed. Troubleshooting identified that the trawl core winch instrumented sheave speed sensor was intermittently shorting to ground and causing the remote

display network to crash. Ship has no spare sensors. Temporarily replaced shorted sensor with another sensor from an alternate sheave. Received one speed sensor from CGC POLAR SEA. Installed and tested on .680 inch instrumented sheave. Op test sat. Received one speed sensor from OEM. Installed and tested on 9-16ths inch sheave. Network crashed when conducting op test. OEM sent another speed sensor under warranty. SF is sending defective sheaves back to OEM. Received another speed sensor from OEM. SF installed sensor and tested remote display network. Op test SAT and system CASCORed.

7. 04030 – Reefer Lock-in Alarm: Troubleshooting lock-in alarm revealed an intermittent contact in the push button switch. Alarm activates in ship's thaw and chill boxes. Thaw and chill boxes alarm without button being pushed. Received and replaced push button switch. Op test sat. CASCORed.

8. 04031 – RHI Boat Davit: Discovered an intermittent problem with center wire spool taking most of the tension when hoisting the boat out of the water. Center spool is specifically a guide wire spool while aft and fwd spools should take equal amounts of tension. Tensioning assembly for sheave has a stack of washers in place of a spring. Operating the davit with tension on the center spool causes a hazard to surrounding personnel by loading center cable and slacking fwd and aft cables. Manufacturer reported 8-9 week delivery at ~$2500 for qty 32 spring dampers per davit (essentially a stack of "dished" washers that exert a "k" stiffness when compressed). MLCPAC ordered parts 30Aug04, still 8-9 week lead-time. Added to DS05.

9. 04032 – No. 2 MDE Leak Off Pipe: A fuel leak was reported on the #2 MDE fuel leak off line on the #5A cylinder. Once line was removed, found line was welded in the past at the banjo fitting. Ships force temporarily re-brazed fitting and replaced line for test. Test SAT. Awaiting Part.

10. 04033 – MPCMS Simulator: While troubleshooting training console, found programs not running on simulator. Stopped programs and rebooted CPU. CPU rebooted and ran scan check. Numerous errors appeared indicating files could not be read or found. Upon completion of scan check, a message stated that a physical memory dump was completed and to contact system administrator. Ships IT1 determined that the hard drive was corrupted. Parts ordered through Service Contract, to be received aboard at the conclusion of the mission. Received manual for MPCMS trainer from ALSTOM tech rep in Dutch Harbor.

11. 04034 – STBD Cycloconverters: Experienced 23 trips in 7 days. SF changed out gating supply PN: GD2012, relay output card M75-2 PN: 20X4356, and contactor KHVGU on 1CC2. Changed out fiber optic card in the SIGMA processor on SCC1, card was faulted and had obvious surface damage. 1CC2 was then switched to master control. Powered down 2CC1 and 2CC2 and

brought up with 2CC1 as master, resetting the SIGMA units and clearing the fibre optic faults. STBD cyclos were powered down and brought back with 1CC1 as master. Configuration worked successfully for 72 hours and CASCORed on 11Sep04. 186 man-hours expended to correct casualty.

F. Nome to Dutch Harbor & SBI Mooring

1. 04035 – No. 1 Boiler: Boiler reserve feed water consumption increased dramatically. Troubleshooting of the online #1 boiler revealed steam expelling from boiler exhaust stack. Boilers shifted. #1 boiler fire doors removed revealing two failed tubes. DCs installed and welded plugs. Operational test SAT, CASCORed

2. 04036 – No. 1 FOP: Problem originally started during AEWS-03, FOWK took a fuel oil sample for a clear and bright test from #1 FOP. Sample was cloudy, indicating water intrusion. Secured #1 FOP and removed bowl assembly for inspection. Placed #2 FOP on 4-72-2-F service tank to clean up the cloudy fuel. Tested clear and bright on #2 FOP. No broken or worn parts were found in the #1 FOP. Replaced all o-rings using the intermediate o-ring kit. Conducted an operational test. #1 FOP failed to produce a clear and bright sample. Scheduled and completed annual PMS and repairs to both FOPs during last inport prior to shakedown cruise in March 2004. During first phase of this patrol, removed all fuel from 4-72-2-F and inspected tank. No damage to tank was found. Contacted Case Marine tech rep to discuss possible causes. Tech rep suggested looking at the water sensor. Conducted an open-air test and found the sensor in normal range. Renewed circuit card on water sensor. #1 FOP still failed clear and bright test. With the conditioning water disconnected from the FOP and we haven't had any problems with excess water. Had the EM's check the water transducer. The water transducer measures the amount of free water in the fuel and initiates a sludge discharge if the water content reaches a certain level. Everything seemed to check out fine. The final two options are rebuilding/replacing the conditioning water supply solenoid & flow valve or replacing the paring/flow control discs. Replaced condition valve with no changes. Paring disc on order. CASCOR pends.

3. 04037 – PCC2 Cycloconverters: When HEALY test rolled shafts in Dutch Harbor, SF discovered that PCC2 trips when a throttle position change is made to port shaft. SF recently replaced a damaged current transformer (CT) in PCC2. The old CT is damaged, with insulation and windings badly burned. The old CT resistance is infinity, indicating an open winding. SF replaced burned CT with new CT received from ALSTOM. The new and old CT's have different PN's and characteristics. ALSTOM engineers suspect the new CT causing the problem. NESU Seattle removed a CT from the spare cycloconverter and shipped it to Dutch Harbor. CT installed in 2CC2 cyclo, operating SAT. CASCORed 03SEP04.

4. 04038 - #2 MDE JW Keep Warm Pump: Mechanical seal on No. 2 MDE JW Keep Warm Pump failed. Received part on 01 Oct log run to Nome. CASCORed 06Oct04.

5. 04039 - #2 MDE AMOT Valve: NO. 2 MDE AMOT valve fails to actuate for full range of motion causing NO. 2 MDE to overheat. Valve operated manually to maintain correct engine temperature. This CASREP is a repeat of 03039 that was for NO. 1 MDE. Received valve during Nome Logistics Run 06Oct, will install and test once #2 MDE is repaired.

6. 04040 – SAILCOMP: Problem originally started during AEWS-03. After a shipboard power loss, the magnetic sensor failed to operate. Ship's force experienced this problem before, and replacing the sensor is the only fix. Unit is already on a UPS, ship's force is researching a new power source. ESU Seattle purchased Digital Fluxgate Compass and shipped to HEALY's next logistics stop. Replacement onboard, but not cold weather grade. ECR to be submitted for upgrade, CASCORed.

7. 04041 – No. 2 Lube Oil Purifier: LOP failed to self-clean and caused uncontrolled dumping of engine lube oil. Pumped 400gals from online engine sump before alarm sounded and purifier could be secured. Troubleshooting revealed sludge buildup caused by a bad conditioning water flow valve. Cleaned and repaired LOP with an intermediate service kit but will fail again without a replacement flow valve. Requested MLCPAC procured and shipped part to Nome, AK. Installed and op test sat. CASCORed 07Oct04.

8. 04042 – No. 1 Boiler: Boiler reserve feed water consumption increased dramatically in 24 hours. Troubleshooting of the online no. 1 boiler revealed steam expelling from boiler exhaust stack and water in drain plugs. After this casualty, expended approx 420 man-hours this deployment to correct casualties to the no. 1 boiler relating to blown tubes. This labor expense while on patrol is unacceptable, with a trend indicating more to come. Initial tube for this casrep and ninth overall was plugged. While pressure testing the no 1 boiler, three others started leaking. All other tubes visually inspected with no further signs of leakage. Of note is that all twelve tubes that have leaked are on the first pass through the water drum. CASCORed 14Oct04. Requested MLCPAC include complete retubing of no. 1 boiler in DS05 package.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. 04043 – AN-URN 25 TACAN: While attempting to bring the TACAN on-line, the unit's plate voltage did not come up after the necessary 2.5 minute time period. Ship's force commenced troubleshooting efforts and found the filament regulator had failed. MLC purchased part and sent to ship. Cost with turn in is $9507.00. Next problem was identified by SF, when the lightning

rod was found on the 06 deck, separated from the arrester assembly, and bent from the fall. Due to the way the lightning rod separated from the arrester, the entire lightning arrester will need replacing. Due to the orientation of the lightning arrester on the antenna, SF will need a crane to safely make the necessary repairs. SF has ordered part and will install upon return to homeport.

2. 04044 – No. 2 MDE 3B Cylinder: During start of no. 2 MDG, start air valve for B3 cyl ejected from head due to failed bolts on the retaining flange. Flange collapsed the back side of the rocker gear assembly and wedged against the auxiliary rocker arms. Removed casting fragments and inspected affected parts. NO. 2 MDG is unavailable for further use this deployment. Requested assistance from MLCPAC to verify identification, purchase and ship required parts to Seattle. MLCPAC added repair of No. 2 MDG to upcoming Wartsila Groom.

3. 04045 – PCC2 MDU: While closing the port motor disconnect unit (MDU) for Cycloconverter PCC1, the "stop plate weldment" broke and "linkage actuating bolt" fell causing the center contactor to jam. The contactor, although jammed in the closed position, traveled beyond its normally closed position and resulted in a TR 111 trip message on the PCC1 sigma regulator. Ships force removed the broken “linkage actuating bolt” and repositioned the contactor to a normal position, clearing the trip message on PCC1. Without the “linkage actuating bolt” the contactor may shift into an incorrect position because of vibration. Awaiting parts for correction.

4. 04046 – No. 1 MDG Make-Up Fan Motor: Received a No.1 MDG cooling fan failure alarm on MPCMS. SF found a seized motor. Removed fan motor from previously CASREPed no. 2 MDG and installed on No.1. Awaiting part.

5. 04047 - Steam Heater Coils: Following return to warmer temp weather, discovered water leaking in various duct work from the rupture of steam coils. First is SS-87, supply for propulsion transformer rooms. Vent temp trend showed no freezing temps in system, but did dip into 30's. Second and third are in two systems, SS-31 and SS-79, which have previously ruptured preheaters that are already scheduled for renewal in upcoming DS. The last two are two of four reheaters in SS-95, suspect reheaters failed due to lack of steam to preheaters. Have initialized alarm set points in MPCMS to provide warning of dangerous inlet temps. The preheater for supply system 34 serving the hangar also failed. Repair added to DS05.

6. 04048 - No. 2 MSW Pump Motor: MSW pump no. 2 secured automatically concurrent with a fire alarm activation in AMR 3. MSW pump no. 3, the standby pump, came on line. Upon investigation, Watchstander discovered that MSW pump no. 2 was inoperable from both remote and local controls. There was black charring coming out of pump’s vents and electrician

determined the motor had 10,000 OHMS of resistance to ground. Requested NESU Seattle remove, clean, dip, bake, test, and reinstall motor. CASCOR pends.

7. 04049 - SA-2112(V)1-STQ Switching Matrix: Bit Fault A05 was identified during ET daily round. Troubleshooting commenced and discovered a bad LIM card. Upon further investigation, the battery box was bad also. SF experienced this battery problem before, and replacing the battery has been determined to be the only fix. Parts ordered and ETs will install once ship returns to Seattle.

H. Barrow to Prince Rupert to Seattle

1. 04050 – No. 4 MDE J/W Internal Leak: Noticed no 4 MDE losing 15-20 gal of J/W per day. Inspected and removed cylinder leak-off-line and suspect faulty o-ring on cylinder liner. Continued to operate and monitor engine due to no 2 MDE OOC. Requested MLCPAC add repair of J/W leak on no 4 MDE to Wartsila annual maintenance contract for 2005.

2. 04051 - Aft Warping Capstan Control Console: During heavy seas aft warping capstan control console cover came off breaking both control handles, damaging the start, stop, and emergency stop pushbuttons, and soaking electrical components with salt water. Aft warping capstan inoperable. Requested MLCPAC purchase and arrange installation of part. CASCOR pends.

3. 04052 - Aft Port Van Receptacle: During heavy seas, a wave came over the fantail and forced four pallets forward in between the science van receptacle and the van itself, destroying the van receptacle beyond repair. Requested MLCPAC purchase part and ship to Seattle for SF installation. CASCOR pends.

I. Recommendations

1. SRF Yokosuka was outstanding in assisting with the pipe casualty repairs, and should be used again if the need arises.

2. Main Prop Summary

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

1. Prior to HEALY's deployment the items listed below were completed during a major dry dock and dockside:

   a. Ships Service Boilers: cleaned, tuned and submitted to an eddy current test.

   b. Condensate Cooler: rebuilt due to ruptured cooler gaskets.

c. Wartsila Engines:
   1) Cylinder heads on MDEs # 1, 2, and 4 were changed out.
   2) Turbo rotor assembly on the MDE #1 was changed out.
   3) MDE #2's cylinder 6A had the piston and liner inspected and the fuel injection pumps upgraded.
   4) Wartsila completed various PMS items.
   5) Eagle hydraulic replaced all hoses on the #1 MDE.
   6) Engines were test ran at the dock and found to operate within acceptable parameters.

d. Lube Oil Heat Exchangers for the Main Diesel Generators: Disassembled and cleaned. No major debris was found with the cleaning.

e. CFW Pump Overhauls: #1, #3, #7 CFW pumps were rebuilt by NESU personnel. Pumps have been operating satisfactorily since.

f. Bow Thruster: rebuilt by Todd shipyard personnel. Leaks on forward on end of seal persist. Further testing to be completed.

g. Propulsion Shaft Seals: rebuilt and tested by Todd shipyard personnel.

h. All MSW Valves: removed and tested by Bay Valve Company. Valves reinstalled and tested.

2. Additionally, NESU personnel completed a significant amount of PMS items.

3. Supply purchased a significant number of spare parts during HEALY's in port period.

4. Shakedown Cruise: starboard shaft forward pedestal bearing lift pump was not producing enough pressure. Replaced of #3 lift pump without results. Further investigation determined that the flex hose in bearing had separated from the end plug. Consequently, pressure could not build up to lift shaft. NESU and ships force fixed fitting and operational tests were sat.

5. During in port following shake down cruise the following casualties occurred:
   a. #1boiler had two leaking tubes. Frazer Boiler Inc. welded tube bundle. Ships force operational tests of boiler were satisfactory.
   b. #2 boiler had one ruptured tube. Ship's force welded tube. Operational tests were satisfactory.
   c. #1 boiler feed water valve was found to be leaking by into the boiler. Parts not on board prior to HEALY departing Seattle, Wa.

B. Seattle, DART Mission to Dutch Harbor to Nome

1. #1 boiler feed pump developed a leaking pump seal. Spare seal wasn't in inventory, replaced with entire pump. Operational test satisfactory.

2. During the beginning of patrol, #2 boiler began to run erratically. Problem corrected by replacing a leaking main nozzle, pilot nozzle, and inoperative fuel oil solenoid valve.

3. Conducted the following work on MDE #1 and #2: changed out Boll & Kirch back flush filters, replaced filter candles and repaired fuel leaks.

4. Tightened loose exhaust hardware and minor fuel leaks on MDE #3.

C. SBI Process I

1. MK1 Serfass and MK1 Fitzpatrick were transferred to the Main Propulsion Division and MK1 Rogers was transferred to the Auxiliary Division for cross training purposes.

2. LTT conducted engineering basic engineering casualty control exercises (BECCE) training, evolution training and engineering administration inspections.

3. #1 boiler main fuel nozzle replaced due to original nozzle leaking.

4. The following casualties occurred:

    a. The propulsion plant was operating in standard science configuration with MSW pumps #2 and #3 on line. The sea chest became clogged with ice, resulting in the sea bay losing suction. As the MSW system pressure dropped MSW pumps #1 auto-started and the three pumps emptied the sea bay of all water. The EOW secured MSW pumps #2 and #3. The ice shifted and MSW pump #1 developed suction. MSW pump #2 auto-started but did not develop suction. After running dry for forty-five minutes to an hour MSW pump #2 began to smoke and set off a fire alarm in lower AMR # and the pump was secured. A member of the EM division tested motor with satisfactory results. Main Prop completed necessary overhaul and replacement of impellers and bearings.
        i. Overhauling of #2 MSW pump due to the above casualty also revealed that the motor coupling had parted. Coupling on order. Anticipate receiving in Nome, Ak, 18 Jul 04. Additionally, the pump's wear ring was found to have been improperly installed and was replaced.

ii. Furthermore, during casualty described above, the sea bay temperature regulating valves were found to be inoperative. Both valves were overhauled.

5. Fuel samples from the 4-72-2-F service tank indicated possible water intrusion. Tank was drained but inspection revealed no source of water leakage. Fuel samples have since cleared up. FOWK drawing and inspecting sample daily.

6. Replaced back-flush filters and tightened various minor fuel leaks on MDE #1 and #2.

7. Main motor oil cooler developed a seawater leak on the supply side piping. Piping removed, welded pipe, and reinstalled.

8. #1 CFW pump developed a knocking noise. Secured, disassembled, and found a failed upper bearing. Replaced bearings, mechanical seal and gaskets.

9. Starboard injector cooling water expansion tank water developed a cloudy condition. Corrected condition by draining system, refilling with distilled water and adding proper amount of MBT.

10. Replaced banjo fitting on #3 MDE fuel line.

11. Replaced MDE #3's Boll & Kirch backflush filter.

12. Conducted routine PMS on ADG including:
    a. Draining and flushing governor several times.
    b. Replacing all fuel filters.

13. All MDE governors tested high on copper metal readings on hourly oil spectro-analysis PMS. All MDE governors were drained, flushed, and refilled. Samples will be drawn and tested after departure from Japan.

14. An approximately 1cm by 1cm hole developed in an MSW line in lower AMR #3. System drained and DCs repaired hole by welding. System re-pressurized and fully operational.

15. MDE #3 cylinders 1B and 4B had jacket water and a milky solution draining from the air box leak off line. Leak due to failure of cylinder liner o-ring. Source of milky solution not positively determine. Wartsila was contacted via email to determine life expectancy of ring.

16. #1B injector cooling pump mechanical seal found to be leaking water. EM Division will unwire pump for seal replacement during next port call.

D. Nome to Yokosuka to Nome

1. Replaced injector cooling pump mechanical seal. Ships force tested. Tested sat.

2. Still awaiting word from Wartsila on the #3 MDE. Engine has since stopped leaking J/W from leak off line.

3. Awaiting parts from MSW pump #2.

4. Conducted water wash on all 4 MDES.

5. Conducted DEMPs on all 4 MDES.

6. Had Yokosuka Naval Base fabricate new piping on #3 MSW/CFW cooler and section of pipe for MSW duplex strainer. Ship tested systems, tested sat.

7. Conducted water wash on #1 and #4 MDES.

E. SBI Process Phase II

1. Changed out fuel oil return line on the #3 MDE, #3A cylinder. Ships force tested for leaks. Tested sat

2. On the #1 MDE changed out back flush filter, back flush filter cats eye, and fuel oil leaks on the #2A, #3A and #4B cylinders. Ships force tested, engine tested sat

3. #1 boiler had 2 tubes ruptured. Ships force drained boiler down, removed doors and fuel nozzles and had ship's DC'S weld new plugs into tubes.

4. Water washed all 4 MDES .

5. Conducted DEMPSs on the #4 MDE

6. Replaced rubber inserts on coupling on the #3 CFW pump

7. Replaced back flush filter and fuel oil filters on the #4 MDE

8. Tested #1 boiler, tested sat. Placed on line.

9. Replaced Temp reg valve for the condensate cooler, test sat.

10. MK2 Bowley was transferred to the Main Propulsion Division from the Auxiliary Division for cross training purposes

F. Nome to Dutch Harbor & SBI Mooring

1. Found leak on the MSW line from the #3 and #5 MSW coolers in AMR 1, Ships force patched line with soft patch. Tested system held. Ship will weld patch in Provideniya.

2. Ships #1 boiler tube ruptured again. DCs' welded tube. While pressure testing, found a second tube ruptured. DCs will weld tube.

3. Water washed all 4 MDEs'.

4. Conducted DEMPS on all 4 MDEs for Wartsila.

5. Failure of the #2 MDE J/W AMOT valve. Removed motor for test, rotated valve and tested. Attached motor. Test sat.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. Changed out F/O Coalescers on the #4 MDE. Tested system. Test sat.

2. Ships Force welded MSW line in AMR 1, Tested system. Test sat.

3. Had catastrophic failure of the #2B cylinder head, #2 MDE. While trying start #2 MDE, the air distributor cover bolts severed and the cover inbedded itself into the upper half of the cylinder head. CASREP sent out for Wartsila to repair at home port.

4. Failure of 2 more boiler tubes on the #1 boiler. Ships force plugged tubes, test ran and placed back into service.

5. #2 J/W circulating pump seal had failed. Ships force replaced seal, test ran and placed back into service.

6. Ships force noticed #4 MDE J/W level was slowing dropping in level, check system and found that the #5A cylinder has a jacket water leak. Believed to be a o-ring on the cylinder liner dripping water into the charge air box. Casrep sent out on #4 MDE.

7. Replaced back flush filters on #1 and #4 MDEs'

8. Replaced F/O coalescor drain valves on the #1, #3, and #4 MDEs.

9. Ships force found an ASW leak on the discharge side of the #2 Start air compressor cooler. Ships force welded pipe and placed back into service.

H. Barrow to Prince Rupert to Seattle

1. Conducted turbo water wash on #1, #3, and #4 MDEs.

2. Completed DEMPs on #1, #3, and #4 MDEs.

3. DCs' repaired ASW leak on #2 start air compressor, discharge side cooler. Ships force tested, test sat.

4. Replaced second stage relief valve on the #3 start air compressor. Ships force tested, test sat.

5. Repaired fuel oil leak on the #4 MDE header. Leak was drip. Replaced gasket. Tested ran engine with sat results.

6. Secured ships service boilers due to pulling into Seattle.

I. Recommendations

1. Ensure complete cylinder head for MDGs is carried aboard.

3. Auxiliary Summary

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

1. DD-03 Major projects included reworking of both STBD and AFT A-frame hinge pin, reset alignment. Removal of STBD rudder and realign line bearing.

2. Completed DS-04.

3. CWO Mills went TAD to Panama City Florida to attend Navy Dive School

4. Underway for shakedown tested both STBD and Aft A-frames. Aft tested satisfactory but STBD has a problem with the creep back in the extended position will follow up after shake down.

5. NESU personnel Cleaned OWS during dry dock. Under way test failed ships force cleaned OWS while underway. OWS tested satisfactory and is operable.

6. NESU personnel re-gasketed both evaps. Both evaps tested satisfactory and are operable.

7. During pier side weight test STBD knuckle crane was not able to operate with rated dynamic load. Crane is operable but at reduced capacity.

8. Port knuckle crane tested satisfactory and is operable.

9. Steering gear tested satisfactory and is operable.

10. Boat davits tested satisfactory and are operable.

11. CWO Mills returned successfully completing dive school.

B. Seattle, DART Mission to Dutch Harbor to Nome

1. Conducted op test on science seawater tested in normal operation only. Test was satisfactory.

2. Problem developed with aft warping capstan. Hydraulic oil was filling the planetary gear case which would leak thru capstan vent. Fluid would cover top of stbd steering hydraulic tank. Aux division personnel discovered check valve on hydraulic motor case drain installed backwards during DS 2003-2004.

3. Installed new distillate dump valves on #1 and #2 Evaporators. Eliminating the water leaks on both units.

4. Peter Leer tech rep for Scandinavian Boiler Service arrived onboard to conduct training and evaluate our incinerator system operating procedures. Refractory was in good condition. Exhaust ventilation hood installed by SF on the 04 deck was not hindering operation of exhaust gases. Ventilation was hindered by the lack of air flow caused by the long exhaust run between the incinerator and 04 deck. Mr. Leer recommended a supply fan be installed in the incinerator exhaust piping outside #2 boiler room in the 63 passageway. An ECR will follow. Mr. Leer believed S/F had the wrong size F/O nozzle installed in unit. Causing the units flame failures. Mr. Leer convinced SF to order larger nozzles. Nozzles ordered and received. SF discovered Mr. Leer was incorrect. The nozzle in the unit was actually larger than the two sizes ordered. Mr. Leer hasn't been reached for comment. Mr. Leer also assisted in troubleshooting the incinerator dosing pump. Incinerator is operating but cannot burn sludge without constant monitoring.

C. **SBI Process I**

1. #2 S/S air compressor ASW supply check valve failed internally. Valve seat eroded away. New valve ordered and installed. Op test sat.

2. Newly installed science sea water system developed a problem while in operation. Pump coupling on #4 science seawater pump failed, due to large ice chunks ingested by the pump. Spare parts were in Seattle. Supply had four couplings delivered to HEALY. Coupling installed. Op test sat. Remaining couplings placed in stock.

3. Two steam preheater coils cracked during cold weather operation. Location 03-91-6 Helo Hangar and 01-29-5 laundry. Units can not be repaired. CSMP generated to replace during next inport.

4. Port rudder actuator supply piping flange developed a hydraulic leak. Ship Tech pub parts information was sketchy. NESU Port Engineers were contacted to assist verification of replacement o-ring part number NESU verified the correct o-ring part number. Ship did have the replacement o-rings onboard. SF replaced o-rings. Op test sat.

5. Auxillary division personnel painted decks in the Auxiliary shop, AMR 1 upper level, and after steering.

6. Auxiliary saltwater system piping in upper AMR #1 developed a leak. ASW secured while temporary repairs were administered. System op test sat. #1 SS air compressor OOC until piping repairs can be made in Yokosuka Naval Base, Japan.

7. Auxillary division assisted EM's with trawl cord winch control cabinet cooler repair. Defective tube ends were threaded for pipe plugs. Tube was filled with epoxy and plugged off. Op test sat.

8. While HEALY 2 RHI was underway the lower unit failed to trim down. After RHI was recovered Auxillary division replaced the trim down solenoid. Op test sat.

9. STBD LCVP engine had 2 SW pump failures. Initial failure was due to air bound S/W pump. Second impeller failure developed due to the failure to retrieve all broken impeller pieces.

D. Nome to Yokosuka to Nome

1. Received outstanding repair service on piping leaks in Japan on the aux salt water supply to the #1 SS Air compressor.

2. On loaded 800,000 gal of fuel oil in Japan. Two day operation from two different suppliers.

3. AC plant had a difficult time keeping up with the AC demand, hot day with high humidity being the main factors.

4. Offloaded 4000 gals of waste oil to a Navy SCOW.

5. After Japan on the transit to Nome repaired trawl core winch piping leak.

6. #3 SS Air compressor developed a leak in the aux salt-water return piping. Had to secure ASW and weld in a new section of pipe.

7. Had a problem with lighting off the OWS, the system over pressurized and caused the gasket to blow out. Opened OWS to replaced gasket and cleaned the plates.

8. Still having problems with entrained water on the 4-72-2-F service tank. Took #1 FOP off line to see if problem is with the FOP. Using #2 FOP and finding sample coming out clear and bright.

9. The # 2 evap failed to make water after EM's installed a new brine pump motor. Trouble shot evap found the prime pump motor turning backwards. Evap still failed to make water after pump motor rotation was corrected, went in-depth to find the problem. Problems found: As steam is added to the evap the evap would lose vacuum. Temperature on the 1st stage distillate cooler, located in the second stage, could not be lowered to the proper temperature. This led us to pressure hydro test the first stage steam coil heater. Steam coil test good. Removed air ejectors. Air ejectors found to be eroded, but still not the primary cause. Tightened fittings on the evap to increased vacuum. Still no joy. Found check valve missing the flapper in the crossover tube. Replaced flapper, still not making water. Vacuum is still dropping and temp on distillate cooler not regulating. Removed CashCo regulating valve and found valve frozen in the closed position. Freed up valve and placed back into service, evap making rated output.

10. HEALY 2 RHI had a power output problem reported by the Coxswain. Coxswain notice no boost pressure on the turbo boost gage. A-gang replaced the turbo with no result. Engine would run fuel filter dry and stall out. Replaced fuel pump. Still engine would not make power. Removed valve covers to run the valves and check timing. Found the #5 cylinder rocker arm adjustment screw had broken off. Inspected the rest of the valve train and found no other apparent damage. Barred over engine. Engine rotated. New rocker arm adjustment screw arrived. MK1 began to tune-up the engine and found the #2 valve exhaust spring loose. The valve moved freely ¼". Removed cylinder head, found extensive damage to #1 cylinder piston and to the cylinder head. CASREPed engine. NESU Seattle ordered new engine for RHI.

11. Changed hydraulic oil return filters on aft general services HPUs. #1 Aft HPU had high differential pressure.

12. On loaded 500,000 gallons of fuel in Dutch Harbor.

E. SBI Process Phase II

1. Still having problems with entrained water on the 4-72-2-F service tank. Took #1 FOP off line to see if problem is with the FOP. Using #2 FOP and finding sample coming out clear and bright.

2. The # 2 evap failed to make water after Em's installed a new brine pump motor. Trouble shot evap found the prime pump motor turning backwards. Evap still failed to make water after pump motor rotation was corrected, went in-depth to find the problem. Problems found: As steam is added to the evap the evap would loose vacuum. Temperature on the 1st stage distillate cooler, located in the second stage, could not be lowered to the proper temperature. This led us to pressure hydro test the first stage steam coil heater. Steam coil test good. Removed air ejectors. Air ejectors found to be eroded, but still not the primary cause. Tightened fittings on the evap to increased vacuum. Still no joy. Found check valve missing the flapper in the crossover tube. Replaced flapper, still not making water. Vacuum is still dropping and temp on distillate cooler not regulating. Removed CashCo regulating valve and found valve frozen in the closed position. Freed up valve and placed back into service, evap making rated output.

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4. Changed hydraulic oil returned filters on aft general services. #1 Aft HPU had high differential pressure.

F. Nome to Dutch Harbor & SBI Mooring

1. On loaded 500,000 gallons of fuel in Dutch Harbor.

2. Received new engine in Dutch Harbor. Installed engine test ran in cradle for an hour. Test run sat. Launched boat to break-in engine. Engine started knocking 15 minutes into break-in. Pulled boat out of the water, placed on blocks and inspected engine. Found that the #6 intake pushrod disconnected from the rocker arm. Pulled cylinder head, found the intake valve bent and a

piece of glow plug heating element lodged in the intake valve. Removed valve used an old valve from the original engine cylinder head and lapped valve-to-valve seat. Assembled engine and test ran in engine in boat cradle. Took engine out for break-in run engine is running good. After twelve hours of engine operation boat engineer notice oil coming from the dip stick and excessive blow by. Inspected crank case breather. With the DC's assistance fabricated an injector puller and compression tester from a new injector. Compression test indicated low compression on the #6 cylinder the same cylinder that had the valve replaced. Removed cylinder head and found excessive scoring on #6 cylinder liner. Ordered a new liner kit.

3. After extensive troubleshooting of #1 FOP, found that the conditioning water valve was injecting water into the bowl. Removed conditioning water line problem went away. Conditioning water valve is the suspected cause, new parts on order.

4. During the 0400 to 0800 watch the TOW noticed that the fresh water from the water fountain had a salty taste. TOW inspected more fountains with the same results. Water was secured. Evaps were secured to investigate possible source. The cause was found to be a faulty dump valve on the #1 Evap. #1 evap was being acid cleaned at the time. Estimated that 1100 gal of salt water went into the 2-48-2-W tank. Tank was tested by the Corpsman and found to have no bacteria. Tank was pump down and filled with fresh water.

5. Incinerator began to act-up, would not go into sludge mode. Drained sludge tank, cleaned nozzles, and the inside of the main nozzle burn chamber. Lit-off the incinerator place in sludge and all is well.

6. Had a major lube oil leak on the #2 LOP. The LOP dumped 150 gals of lube oil from the #2 MDE sump in the bilge of AMR 4. Disassembled the LOP for inspection. Found an extremely high amount of sludge built up on the discs and in the bowl. Cleaned discs and bowl reassembled. Test ran, test sat.

7. During the testing of the LOP found that the E-stops and the high vibration safety switch had never been connected. Inspected the other LOP and the FOP's and found the switches also disconnected. Had EM's connect and test e-stop and the high vibration safety switch. Test was sat on LOP's and FOP's

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. Shifted the #2 chill water on loop to heating with hot water. Secured the chiller coil to the mess deck to increase the heat. The mess deck, laundry , gym and IC gyro are on the #1 chill water loop which has to stay on the chill side to remove heat from radio, ECC, computer lab and IC gyro. Reduced flow to the #3 loop to keep the future lab and EM shop cool.

2. Opening the OWS for cleaning of the plates. Plates require cleaning every time the suction for the OWS drops into the tank's oil interface. To alleviate the cleaning of the plates so often, we established a process. First, measure the oil water interface to determine the quantity and level of oil and water. Run the OWS leaving at least 1000 gal. of water and never running the OWS into the oil. Once the oil level reached 1500-2000 gal pump the oil into the aft waste oil tank. Let it settle for a couple of days then strip the reaming water off back to the oily water holding tank. Once the water has been stripped from the waste oil tank, pump it forward to the FWD waste oil tank to be burned in the incinerator.

3. Fixed problem on the # 2 LOP. The conditioning water valve was not supplying a sufficient amount of water.

4. Replaced a relief valve on the #2 aft general service HPU.

5. Had several preheaters burst due to the extreme cold temperatures. Believe some of the problems are with the volume of air passing over the preheater coils. The Steam condenses too quickly and then freezes in the coil. Setting the internal air diverters to winter mode once the air temperature drops to 40 degrees might alleviate the problem. Additional recommendation is to manufacture intake covers like the ones used on truck radiators. To help prevent this problem in the future we have entered set points for the preheaters in MPCMS to alarm at 40 degrees. This will alert us to a preheater malfunction and give us an opportunity to investigate the problem before the preheater freezes.

6. Set low temp alarms for all the hydraulic units to 60 degrees on MPCMS.

H. Barrow to Prince Rupert to Seattle

1. Had vibration analysis completed by contractor, waiting for results.

2. Shifting ventilation back to summer mode as interior of the ship getting a little warm. Secured the #2 HW/CW loop to chill water place an additional AC online. Secured steam to the house.

3. Had a reheater coil blowout, #23 reheater on SS-34 Helo hanger. No indication why.

4. Had storm damage from rough weather in the Gulf of Alaska. The Cover for the Aft Warping Capstan came loose breaking off the hydraulic control handles for the warping capstan.

5. OWS would not process the oily water holding tank. Took a sample of the oily water and had oil suspended in the water column. Aux conducted an

experiment and found that the boiler water has a surfactant in the water, probably from the chemicals added to the boiler.

I. Recommendations

1. Install a cross connect in the chill water loop between #1 and #3 loop so that the future lab can be cool by the #1 chiller loop.

2. Install a cross connect in the chill water loop between #1 and #2 loop so that the mess deck can be operated on the #2 chill water loop.

3. Install a stand alone cooler unit in IC gyro that operates on the #1 chill water loop.

4. Install an exhaust fan in the incinerator stack to assist in pulling a vacuum in the incinerator. Incinerator has too long of a stack so it does not have the ability to create sufficient draft to operate the incinerator.

5. Keep boiler water out of the bilges and oily water holding tank. The water from the boiler has surfactant properties. When cleaning engineering spaces remind people not to let soapy water from the mop bucket go down any drains. Find a different location to put the water until it can be properly disposed of.

4. Electrical

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

1. Groom 2004.
   a. MPCMS changes. See IPP Groom 2004 report.
   b. Cycloconverter modifications and repairs. See IPP Groom 2004 report.

2. Electrical Training (Alstom & Cadick)
   a. Alstom completed training for MPCMS Operation & Maintenance (2007C & 2007F), Cycloconverters Operation & Maintenance (2007K & 2007L), and Science Winch Drives Operation & Maintenance (2007H & 2007I). Specific emphasis on GEM 80 theory and operation, SIGMA theory and operation, and troubleshooting.
   b. Cadick completed training on Power Generation & Distribution System Fault Analysis (2007B), and Test/Cal of Protective Relays (2007D).

3. Motor Generator #1 rotor rebuild and #2 rotor replacement. See Dry Dock 2004 report for details of the rotor rebuild and rotor replacement.
   a. Test of #1 SSMG resulted in a failure to start. Found two loose leads in the motor synchronous motor circuit disconnected and grounded to the field discharge resistor. Repairs made and test sat.

b. Found several loose and incorrectly landed terminals on # 2 SSMG heater circuit. Corrected and tested circuit. Test sat.

4. #1 SSTF closing circuit repair.
   a. SSTF #1 low voltage (LV) circuit breaker (CB) failed to close on command from MPCMS, ships service (S/S) switchboard (SWBD) auto sync, and permissive modes.
   b. Found open circuit between SWBD and CB. Mechanical contact blocks failed to connect when CB placed in racked-in position.
   c. Removed mechanism and connected contact blocks. Test sat.

5. ABT installation for MCC 4 & 6. See Dry Dock 2004 report for details.

6. MPCMS plant sequencing mimic change.
   a. Changed the hove to – underway sequence on the plant sequence mimic because of the way the system operated during AEWS 03.
      i. During the AEWS 03 mission the plant operated contrary to the plant sequence. I.E., the ships non-sensitive (SNS) to auxiliary bus (SA) bus tie CB opened before the auxiliary generator (AG) CB. Following the sequence resulted in loosing the sensitive (SS) and SA bus, all lighting and electronic loads.
      ii. The sequence change prevented the EOW from opening the wrong CB causing a blackout.
   b. After the groom was completed, the actual plant sequence returned to the original sequence. I.E., the AG CB opens first instead of the SNS/SA bus tie CB.
   c. Maintenance personnel performed insulation resistance test on SSMG 2 without disconnecting the field from the excitation circuit. Ships force (SF) replaced automatic voltage regulator (AVR) anticipating problems with the voltage regulator circuit resulting from the improperly performed test. Adjusted AVR set points on the new AVR to those of the old AVR and sent old voltage regulator to commercial shop for testing. Tests sat, no problems found.

7. Shakedown
   a. Vital Alarm System (VAS) and uninterrupted power supply (UPS) loss of power casualty.
      i. Loss of power to VAS caused throttles to fail to operate in ECC or Pilot House positions; MPCMS stopped in a suspended state and failed to complete sequence of opening MDG CB's and placing standby MDG on line. The VAS alarm panel failed to respond or illuminate faults.
      ii. During a routine IR inspection of panel 133 (located behind sensitive (SS) SWBD the CB powering VAS was opened. The system shifted to the UPS and continued to operate normally until the UPS failed due to

low battery power. The entire VAS system failed because of the UPS failure.

b. Pcc1 trips & repairs.
   i. Alstom tech rep Peter Martin found four cold solder joints on four separate thyristor gate cards.
   ii. Made repairs to gate cards and tested system. Test sat.
c. Cadick conducted CPP Operations (2007A) training for OOD's (4hours), EOW's (4hours), and EM's.
d. Found instability in the AVR circuits for both SSMG sets.
   i. Voltage fluctuations of about 10 volts occurred with or without a load on the SSMG.
   ii. Stability sometimes improved when the regulator was turned off (no load) and returned to automatic position.
e. MPCMS alarm notified EOW of a high voltage condition on the HV bus. Voltage in excess of 7200 volts was noted.
   i. Attempts to lower bus voltage from MPCMS while MDG 3 remained on line failed.
   ii. Removed MDG 3 from the bus and used MPCMS manual adjust to lower voltage.

8. Post Shakedown
   a. SSMG AVR instability.
      i. Determined that firmware for SSMG AVR's required different settings because of a firmware upgrade.
      ii. Set both SSMG AVR's to new settings received from Basler rep. No further testing completed.

B. Seattle, DART Mission to Dutch Harbor to Nome

1. SSMG voltage instability.
   a. Voltage on both SSMG's became very erratic.
   b. Voltages fluctuated >15 volts.
   c. Contacted Basler rep. and received new settings.
   d. Inputted new settings and made a small adjustment to the stability setting and the voltages stabilized.

2. Trawl/Core Winch failure.
   a. Motor failed to turn either drum 3 or 4.
   b. SIGMA keypad indicated system healthy.
   c. System intact.
   d. Reloaded old code (dated Nov 2003) and disconnected newly installed circuitry for the sheave pin and cooling water interlocks. Test sat.

3. Oceanography Winch #2 failure.
   a. During operation of the winch, the E-stop was activated.

b. After resetting the drive, the following message appeared on the SIGMA keypad. First alarm was Bridge "A" fault, Bridge "B" fault, and Estop alarm.
c. Tech pub alarm and trip table referred SF to Module 91 for further information and test procedures.
d. Testing found L9134 Bridge B1 Blue Lower Trip faulty.
e. Reloaded old code (dated Nov 2003) and disconnected the newly installed circuitry by pulling the fuses to the power supply and the same faults appeared on the SIGMA keypad.

4. SSTF 1 failed to close to the low voltage (LV) bus from MPCMS.
   a. MDG 3 went into overload >8000 KW.
   b. MDG 1 lost load, <2000 KW.
   c. HV bus voltage and frequency fluctuated causing LV bus (SSMG) voltage to drop off.
   d. MDG load balanced and LV voltage and frequency stabilized once MPCMS timed out and the SSTF 1 LV CB failed to close alarm sounded.

5. Stand-by MDG started when central fresh water (CFW) over temperature alarm sounded.
   a. Temperature reading on MPCMS became erratic.
   b. SF found bad temperature sensor in CFW system.

6. Bow Thruster hydraulic pump failed to start in automatic.
   a. Found faulty low lube oil sensor.

C. SBI Process I

1. Science Seawater System pump 3 loss of control from MPCMS

2. Loss of HV bus voltage control.
   a. Attempted to raise HV voltage because MPCMS was indicating a HV bus voltage of 6425 to 6475.
   b. Placed Auto Control in off position and selected manual voltage control button.
   c. P3200 alarm appeared in upper right corner of VDT screen and no raise or lower pushbuttons appeared in the Manual Control box.
   d. Unable to make any adjustments at all, either up or down.
   e. Closed Manual Control box and placed Auto Control in Auto position. P3200 alarm cleared immediately. No problems manipulating other control buttons from MPCMS.

3. Cycloconverter Faults
   a. Experienced several cycloconverter trips on Pcc1 during transit through heavy ice conditions.

    i. Operating at 12-pulse starboard and 6-pulse port. This caused frequent trips on both shafts.
    ii. Replaced Type "C" Interface Card on Pcc1.
  b. Experienced several cycloconverter trips on Pcc2 during transit through heavy ice conditions.
    i. Found damaged CT (1CT2). High resistance readings (> 1.6 m Ω) and charred insulation around terminal connector.
    ii. No replacement readily available.
  c. Checked cycloconverters Pcc1 and Pcc2 further for loose connections, resister value, and changed Type "C" Power Interface Board again at the recommendation of Alstom.

4. MDG Trips
  a. Experienced loss of electrical power three times because three MDG CB's opened.
  b. Cutter backing and ramming in heavy ice.
  c. Cycloconverters tripped just prior to power failure. Fuel and Control Air sat.
  d. Following the loss of Cycloconverters the HV Bus frequency increased and then decreased. The sudden loss of load appears to cause the MDE's to over compensate.

5. Low HV Bus Voltage
  a. Found HV Bus at 5930 volts.
  b. This occurred after switching between MDG's several times.
  c. Raised voltage using both voltage Set Point buttons on Power Management page of MPCMS.
  d. Shifted to AVR 2 on all MDG's.

6. P3200 Alarm – upper right hand corner
  a. Alarm occurred everytime the operator attempted to use the Manual Voltage control, located on MPCMS Power Management page, to control HV Bus voltage.
  b. Alstom notified.

7. Standby-2 SSMG parallels with on-line SSMG at approximately 75% full rated load.
  a. Traced ladder logic rungs in GEM "A" (24244 – 24253) and found the variables set at 560 kW and 920 Amp (80 - 82% of full load).
  b. Alstom Tech Manual indicates these settings are set at 95% of full load (665 kW, and 1125 Amp).
  c. Alstom notified. Awaiting explanation of reason for the change to MPCMS ladder logic.

8. Trawl/Core Winch Cooler Failure
  a. No spare cooler available in stock.

b. Auxiliary Division plugged ruptured tube and installed cooler.
c. Test sat.

9. Current instabilities of MDG 1 & 4 when bus voltage adjustments made through MPCMS.
   a. Amperes fluctuate between the two paralleled generators after the HV Bus voltage is adjusted using the set point voltage regulation on MPCMS Power Management page.
   b. KVAR on one generator goes to zero with the other increases to greater than 3000 KVAR.
   c. Alstom notified.

10. Trawl/Core Winch Failure
   a. Trawl/Core winch failed to operate after the operator shifted to the 9/16" wire.
   b. No alarms on the SIGMA keypad located on the door.
   c. Red alarm at local control station.
   d. All line tension settings were cleared when the cable selector switch was operated.
   e. The winch will work when the settings are manually inputted at the Aft Con workstation.
   f. Made corrections to the per Alstom instructions. Changed instruction 415 from @F0 to @70.
   g. Test Sat.

11. Brine pump motor on Evap #2 seized.
   a. Found one bad bearing and insulation resistance between 2-5K ohms.
   b. New pump motor due at next Nome port call.

D. Nome to Yokosuka to Nome

1. RTU 4 isolator and analog card failure.
   a. Op Amp on one of the MDE pyrometer isolators failed and damaged the analog card in the process.
   b. Symptoms: all the pyrometers went into alarm (1500 ° F) and burning odor.
   c. Replaced isolator and analog card. Test sat.

2. Continuous failure of cycloconverter 2cc1.
   a. Found cabinet display Thyristor LED 2B on Bridge 2 illuminated all the time.
   b. Checked gate card and found voltage to anode LED illuminated all the time and the gate pulse LED failed to illuminate.
   c. Checked all fiber optic cables and connectors.
   d. Replaced gate card. Test sat.

3. Replaced Evaporator 2 brine pump and control circuit fuses. Test Sat.

4. Replaced Helo landing lights variable transformer. Test Sat.

5. Computer for MPCMS simulator failed. Suspect faulty hard drive. Requested quote from Alstom for a new hard drive with applications already loaded and backup CD's.

6. Bow thruster failure to operate vanes properly and vane position bar graph inoperative on the port vane. In addition, neutral position on MSCC console joystick does not place vanes in neutral.
   a. Found connectors for vane position feedback potentiometers covered in oil. Cleaned connectors, test sat. Vanes move properly and bar indicator working correctly.
   b. Replaced MSCC joystick. Forcing the potentiometer beyond its stops damaged old joystick.

7. Measured dB of fiber optic cables that run between cyclo cabinets.
   a. Found three of the four cables that run between the four suites with a high dB.
   b. Readings ranged from 0.55 to 19.0 dB.
   c. After connecting all the cables, (no corrective action taken at this time) the cyclos gave us AL 140 and AL 172 Fiber Optic alarms.
   d. Plan to replace all the fiber optic cables in next Groom or sooner if it becomes necessary because of trip histories.

8. Cyclo unit SCC2 failed to power up after the fiber optic cable inspection.
   a. Phase Modulator Relay (DET 2) failed.
   b. Exact replacement was not available. Old unit inhibited the over voltage ability of the unit. The new unit has a manual set point for the over voltage protection.
   c. Set the over voltage protection at 15%.
   d. System test was sat.

9. Frequent trips on Scc1 and Scc2 prompted SF to replace the Type "C" Power Interface Board (PIB) and a Pulse Distribution Card (PDC). Trip Message: TR 5 R Conv Trip.
   a. Installed PIB in Scc2 regulator cabinet.
   b. The PIB was a used spare taken from Pcc2. No new spares were available.
   c. Replaced PDC in Bridge 1 of Scc2.
   d. Test unsatisfactory, problems still exist.

10. Replaced intra-suite (Scc1-Scc2) fiber optic cables. Test unsatisfactory no change in trip messages.

11. Attempted to replace fiber optic card in SIGMA controller.

a. Replacement of card failed because the new card (provided by ALSTOM) was missing a jumper (JP1) and four EPROMs.
b. Installed old card.
c. System ran 24 hours without trip. Conclude that either the connectors were loose (none observed) or the contacts were dirty.
d. Failures have returned but the frequency has decreased (one every 48-72 hours).

12. Another loss of electrical power occurred.
    a. MDG 3 on HV bus with MDG 1 idling.
    b. Ship drifting in science mode. No turns on shafts and all cyclos functioning properly.
    c. Trends of Bus and Generator voltage, frequency, current, kilowatts, kilovolt amps, kilovolt amps reactive, engine speed, rack position, throttle positions, and CB commands revealed no abnormalities.
    d. There were no MDG 3 CB trip indicator lights to indicate the cause of the trip.
    e. Cause unknown.

13. Oceanographic Winch 2 failed to start.
    a. Accidentally E-stopped Oceanographic Winch Drive Number 2 (OC 2).
    b. Sigma displayed two faults: E-stop fault and Permissive Interlock.
    c. Ship's force reset E-stop but control available failed to light; the main Line Connector (LCN) did not close.
    d. Further troubleshooting found that Sigma ladder logic variable L2619 did not go high (1).
    e. Determined that the Power Interface Board (PCB) had malfunctioned. Replaced Power Interface fault did not reset.
    f. Further trouble-shooting lead SF to the Customer I/O board and the LCN. Replaced both and the fault did not reset.
    g. Contacted Alstom Hotline and talked to Mark Demyan. He e-mailed the next day and advised us that L2619 was set by bit G982.7. After looking this up in EDW, we determined that the Sheave Pin sensor drives G982.7.
    h. Removed Sheave Pin and OC 2 was operational.
    i. Sheave pin permissive code incorrectly programmed during last inport. Code is written as a start permissive instead of a run permissive.
    j. Instructed winch operators to remove sheave pins prior to starting drives.
    k. Alstom is contracted to fix the code during the next Groom.

14. Replaced fiber optic cables between cycloconverter suites.
    a. Replaced intra-suite cables for Starboard shaft.
    b. Replaced inter-suite cables between Port and Starboard shafts.
    c. Cable replacement cleared all inter-suite and reduced the number of intra-suite fiber optic alarms.

E. SBI Process Phase II

1. Replaced faulty current transformer (CT) in cycloconverter Pcc2.
   a. CT showed signs of overheating at the S1terminal.
   b. Operational test of repair failed because the new CT had different electrical characteristics.
   c. NESU Seattle removed two CT's from the spare cyclo cabinet in Seattle and shipped them to Dutch Harbor.
   d. Replace CT for the second time and conducted operational test.
   e. Test sat.

2. Replaced fiber optic drivers in starboard shaft cycloconverters.
   a. Replaced old fiber optic drivers 20x4492 Com 20 cards.
      i. Installation failed static test.
   b. Replaced fiber optic drivers with new 20x4492 Com 10 cards.
      ii. Installation passed static test.
      iii. Jumpers on JP1 were differed on new cards from cards in the other suites.
      iv. The missing jumper causes the inter-suite alarms initiate.
      v. Made jumper connections on new cards identical to all the other cards.
   c. This is the second time a failed isolator has damaged an analog card in RTU 4. Requested that ALSTOM engineers determine cause of failures.

F. Nome to Dutch Harbor & SBI Mooring

1. Replaced analog card in RTU 4.
   a. Isolator of MDG 4 temperature sensor failed causing analog card (P/N 8165-4004) position R1/7 to fail.
2. Failure of Scc1 and Scc2. Several trips occurred over a three-hour period.
   a. Both cycloconverters tripped as soon as a throttle command was given.
   b. Replaced gate card for 1A, Bridge 1 of Scc2 because thyristor LED indicated a voltage across the thyristor anode was always present.
      i. Card replacement did not correct problem.
   c. Unable to reset Scc1 while it is in master mode.
   d. Placed Scc2 in master mode and reset both cycloconverters.
   e. Operational test sat.

3. Requested ALSTOM drive engineer to troubleshoot cyclo trips.

4. ALSTOM engineer reported aboard to troubleshoot cycloconverter trips, fiber optic faults, and to replace SIGMA regulator in Scc1 per ALSTOM Pittsburgh recommendation.
   a. ALSTOM Service Tech inexperienced with HEALY system and had a steep learning curve.
   b. Replaced fiber optic driver 20x4492 Com 10 card in Scc2. Corrected a fiber optic link alarm that occurred during the previous night.

c. Replaced SIGMA regulator using one fiber optic driver that came with the regulator, one existing FIP card and one existing fiber optic driver. Test unsat. Unable to keep both master and slave running.
d. Replaced Gating Supply PSU, PN: GD2012, at recommendation of Service Tech. Tech departed the next day because of a prior commitment.
e. SF replaced Lockout Relay (LOR) for Scc1 cyclo transformer (unable to reset Scc1 transformer contactor).
f. Replaced relay KHVGU, and relay output card M75-2 PN: 20X4356 in Scc2. Test of Scc2 sat.
g. Replaced fiber optic driver 20x4492 Com 10 card in Scc1. Failure of card produced a fiber optic link fault between the master and slave units. Test sat.

5. SF conducted the following checks to Pcc1 in an attempt find the reason behind the TR 91 External Trips.
   a. Replaced Lockout Relay (LOR), P/N 7803D, on Pcc2 transformer CB.
   b. Performed the following checks looking for a cause for the TR 91 trips. Checked connection tightness on relays 3 (cooling pump relay), 4 (M84 trip relay), 7 (converter fault relay), 9 (emergency stop relay), and 10 (over speed trip relay) of Pcc2. Nothing conclusive found.
   c. Attempted to follow Sid's (ALSTOM Drives Engineer) directions to poke the M3.2 etc., but an "Online error, controller busy. Only one connection permitted on a single user controller or multi-drop link." message appeared everytime we attempted to enter the ladder logic editor. I found the data gatherer giving an on line error also for Pcc1. Secured power to both drives, no change; restarted data gatherer and Pilot, no change; rebooted EDW and error messages cleared.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. Embarked Mark Demyan Engineering Program Manager for ALSTOM-HEALY at first Nome. Disembarked Mark at second Nome.
   a. Mark Demyan found that the permissive for the EDW administrator were disengaged. Therefore, we are unable to correct the clock on EDW. The clock is 19 minutes behind MPCMS. Expect to correct problem once we return to Seattle.
   b. Also found CTES is missing files/drivers from the “C” drive. Expect to correct problem once we return to Seattle.
   c. Corrected Science Seawater pump operation from MPCMS. Found bad connection in ABS motor drive unit.

2. Embarked four ALSTOM engineers/service techs at second Nome.
   a. Embarked Dave Smith, Senior Engineer; Sid Pant, Drives Engineer; Nick Elliot, Design Engineer; and Steve Phillips, Drives Technician.
   b. Purpose of the visit is to correct existing Cycloconverter problems and to find ways to improve the systems.

3. Corrective action to starboard cyclo suite.
   a. Replaced Fiber Optic Driver cards in Scc1 and Scc2 SIGMA regulators with upgraded cards. Replaced combination 10 cards with combination 20 cards.
   b. Replaced fiber cables between Gating Distribution card and 3B Gating Supply Card. Also replaced fiber cable between Gating Distribution card and 1A Gating Supply Card. Both cable replacements performed in Scc2 cyclo unit.

4. Corrective action to port cyclo suite.
   a. ALSTOM tech, Steve Phillips, upgraded the Fiber Optic Drivers removed from starboard SIGMA regulators.
   b. Replaced all four Fiber Optic Drivers in the Pcc1 and Pcc2 SIGMA regulators.
   c. Replaced Type "C" Power Interface Board in Pcc1. No anti-parallel faults since replacing this board.
   d. Thyristor mimic 4A in Pcc2, bridge 3 does not operate. System operates properly. Static test showed the thyristor is good. Replaced mimic card but did not fix problem. Replaced Pulse distribution card to no avail.

5. Downloads of new cycloconverter programs
   a. M-tables for triggering histories on speed/power control mode transitions and line over/under voltages
   b. The following poked variables were made permanent
      1. M86.7 = 0
      2. L2005 = 2.500%
      3. L11202 = 115.00%
      4. L23505 = 73
      5. L23507 = 335
   c. Alteration of 2CC2's transition from speed control mode to power control mode:
      1. Altered pre-set torque limit/reference from being based on the cube of speed to being based on actual torque reference on transition from speed control mode to power control mode.
      2. Adjusted pre-setting modification to get correct peak/rated torque conversion.
      3. Improvements verified by multiple tests and analysis of histories.

6. Program code added to all cycloconverters.

7. Changed fault message code to accurately reflect the cause of the trip.

H. Barrow to Prince Rupert to Seattle

1. Embarked EM1 Shaffer and EM1 Stevick from NESU Seattle to conduct IRs on the following pieces of equipment:
    a. Both main motors.
    b. Both ship service motor generator sets.
    c. Both the 1P and 2P switchboards.
    d. All four cycloconverter units.
    e. No. 1, 3, and 4 main diesel generators.
    f. Auxiliary diesel generator.
    g. All motor control centers and various motor controllers.
        1. All test results were satisfactory with the exception of an indication of a lose connection on CFW pump #5.

2. LT King added VOLTAGE_CONTROL pop up window to the 4 MPCMS computers in ECC using directions sent by ALSTOM. LT King also received training from ALSTOM Technicians on UNIX code for MPCMS.

I. Recommendations

1. Conduct fine-tuning and testing of Woodward 721 governers and Basler AVR's on shakedown cruise.

5. Electronics

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

1. Experienced several time errors on VMS during shakedown cruise. Installed two configuration files supplied by Sperry on 19April and again on 24April. Time problem was solved with second patch file. System was CASCORed during Dutch Harbor Port Call.

2. All exterior CCTV cameras were replaced by color units

3. The Aft A-frame Pan/Tilt unit was replaced.

4. The video feed to the Aft Working Deck CCTV Camera was repaired.

5. The control circuitry was repaired to the Starboard Working Deck CCTV Camera. Camera will now zoom and focus.

6. Spawar out of Charleston, SC installed Direct To Sailor (DTS) system.

7. Ship's force troubleshot and repaired numerous cabling problems with Ship's Entertainment System. Cables were re-terminated or re-routed IAW with system drawings. The majority of the external CCTV cameras are now sent

over the ship's entertainment system and sufficient signal is now being delivered to all TV drops throughout the system.

8. Two TOTCO display units failed during the Shakedown cruise causing the network to continuously go into self-test mode. Failed units were removed and spares out of supply were installed. Failed units are on order.

9. ESU/NESU Seattle replaced both aft 35' whip antennas prior to departure.

10. Completed the following Electronics Grooms: EMI, IFF, FCIP, NAVMAX install, Knudsen, TACAN system alignment and onsite training. Tera-Scan, limited onsite training. Bathy 2000, limited onsite training. IBS Upgrade onsite training. ESR all comms equipment in radio w/exception of the satellite systems. 1MC groom no training provided. SATCOM, all satellite comms equipment in radio. Seabeam 2112 limited training onsite.

B. Seattle, DART Mission to Dutch Harbor to Nome

1. Installed ADCP transducer cable and re-terminated the equipment end of the cable. Test sat.

2. Ron Hippi from RDI and ETCM Perron Commissioned both the ADCP 150 and ADCP 75. Both systems had software upgrades, specifically; version 1.3 of VMDAS removed and version 1.42 installed and version 1.1 WINADCP removed and version 1.13 installed. Both updated versions of software were tested satisfactorily. Calibration runs were made for both systems and new alignment angle data was entered for both. ADCP 150 alignment angle number is 47.8 deg., and the ADCP 75 alignment angle number is 42.77 deg. Ron Hippie wrote a set-up script for Ship's force to help with basic data collection. Both systems were operationally tested and passed OEM specifications.

3. Digital Compass on the bridge failed. Troubleshooting was inclusive as to where the problem may lie. Manufacturer recommends replacement of both the Sensor unit and the display unit. Will continue to troubleshoot further by swinging the ship to see if the heading will display correctly.

C. SBI Process I

1. Almost immediately after the ship's departure from Nome we began experiencing VMS application lockup errors when the EBL function or Voyage Plan Editor were accessed. Sperry requested ship's force send copies of each VMS computer node's Application and VMS log file and a copy of the Voyage plan that was running when problems were incurred when accessing the editor. As a temporary solution Sperry suggested ship's force shut down two of the nodes and update each node's menu.ini file with an

updated version sent by Sperry to the ship on 19May. The update removed the Cursor Status function from VMS and the problems with the EBL ceased. On May 26 we deleted the existing voyage plan and created another to determine the source of the voyage plan editor lockups. Although the system seemed to operate more smoothly we still can't access the editor on four of the computer nodes. A casrep was sent out on 01 June requesting Sperry tech reps to meet the ship in Nome on June 23rd.

2. 17 May, swung ship to test the Digital Compass on the bridge. Test failed, ordered new digital compass.

3. 18 May, a TOTCO remote display unit failed in the Lurker Panel. Removed unit and reconfigured the network. Unit CASREPed and placed on order.

4. Installed additional shelves in the equipment racks for the CCTV and ship's entertainment system. Equipment is securely mounted and cables appropriately labeled. Ordered a broadband distribution amplifier, on-air TV antenna and several more video splitters for the ship's entertainment system.

5. 21 June, multitude of VMS lock-ups during both entering voyage plan editor and EBL use. Sperry software engineer to join us on Wednesday 23 June.

6. 22 June, the digital marine interface failed, found to be the 1X 60hz card. No synchro data to the INMARSATS, DPS, TACAN, ADCP 150 and 75. 12 week lead time for the part. Some work a-rounds were found, but in general, this is a show stopping CASREP for some systems.

D. Nome to Yokosuka to Nome

1. 23 June, ETCM O'Brien and ET1 Martin depart PCS…fair winds and following seas mates! ET2 Kosydar reports in PCS, welcome aboard mate! Mr. Ray Lubinski, software engineer from Sperry is aboard to repair the IBS/VMS problems. He loaded the new modified VMS software and made new images of all 9 nodes. System had no further problems associated with the CASREP. CASCOR pends operations on a polyconic projection for a few days. This will occur during SBI Phase 2.

2. Glonass GG24 receiver was replaced during this phase.

3. Flux Gate compass CASREP, the new compass is now expected at second Nome stop.

4. Terascan in not receiving good passes, noticed it does not have a valid position, researching GPS input.

5. During the Yokosuka port call, Dale Chayes and Japanese contractors began work on installing the POS-MV. An antenna mast was installed on top of the HCO Shack, POS-MV software configuration was started, new cable runs were made, and electronics racks were installed in the HCO Shack.

6. Iridium phone; three transmission line-to-antenna pigtails made from parts supplied by ESU SEATTLE, replaced 3 weather damaged pigtails and 2 failed antennas, found and replaced a bad sim card in one unit. Iridium is fully operational.

7. ET2 Matt Regele reported aboard PCS, Welcome aboard mate!

8. Received and installed LPT-5 power amp for Bathy 2000. CASCORed.

9. Terascan was fixed and is operational.

10. Received and installed fluxgate compass. CASCORed

11. ET1 Shane Hyde reported aboard PCS, Welcome aboard mate!

12. VMS system CASCORed.

13. ESU Seattle Elex MAT sent parts for the digital Marine Interface in support of the CASREP. The parts that were received either did not work or did not solve the problems. There are compatibility and documentation problems with this system.

E. SBI Process Phase II

1. Trawl Core winch instrumented sheaves had speed and payout sensor problems. We did not have an allowance for these parts. Supply was able to procure parts from vendor and POLAR SEA. We received 1 bad sensor from the vendor that was returned by supply. ACR's for speed and payout sensors as well as load pins for all instrumented sheaves were submitted to the supply department.

2. Project to migrate the DPS to NMEA-0183 heading inputs from the DMI synchro inputs is approved and funded. Techrep will be onboard during transit to Dutch Harbor to install and test. Changes were implemented during the transit and tests were conducted to verify operation. All tests were successful and the DPS now gets heading input from the Gyro via IBS in the native NMEA 0183 format. Copies of software and initial drawing changes were supplied by Alstom and filed by Elex division.

F. Nome to Dutch Harbor & SBI Mooring

1. ESU Install of ADU-5. The ADU-2 3DGPS was removed and the ADU-5 3dgps was installed by ESU Seattle Elex MAT team during the Dutch Harbor port call. System was installed, new antennas were installed, and 4 pierside surveys were completed to get correction data. Correction data was entered and system is operational. New Admin and monitoring software was installed on the ET shop laptop and the pos/mv computer in the Helo control shack.

2. ESU digital hdg to inmarsats. ESU Seattle Elex MAT brought connectors and port expanders to attempt to migrate the heading input to the INMARSATS from synchro via the Digital Marine Interface (casrep'd with no immediate repair in sight) to the native NMEA 0183 digital format from the gyros. A temp cable was run and the expander installed, 3 pigtails were made for the NMEA input to the INMARSAT. The system was re-initalized and all 3 INMARSATS came up and were operational.

3. ET3 Leppo attended fiber optics training.

4. ETC Rodda departed to attend the CPO Academy.

5. Recording power data for the Bathy 2000.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. ET1 Hyde qualified as an inport EOW.

2. TACAN Failure and CASREP of the filament supply and lightning rod. Using procedure provided by ETCM Passalacqua at ESU techs wired around bad power supply and restored low power (150w) operation. On a flight this period pilots reported TACAN signal available to 32NM.

3. Connected DM-II datalogger to load center 19 and began logging data in 5-hour intervals in support of the SS bus study. Sony laptop was ruined in the flooding of the main lab on 12 Oct. Stopped regular collection 22 Oct. Will continue monitoring in a loop mode.

4. One reported VMS problem. TTG to next waypoint is locked at 00:00. need to attempt a reboot but have to wait until mapping is complete. Cannot boot around the cpu that sends the ship heading, position, and time etc. to the SeaBeam.

H. Barrow to Prince Rupert to Seattle

1. ETC Rodda returns from CPOA.

2. Successful re-boot of IBS system and system is functioning to specification.

3. EIR Inventory started.

4. ET2 Regele and ET2 Kosydar qualified as Inport Security Watchstander.

I. Recommendations

1. Migrate all equipment that uses synchro gyro to NMEA-0183 inputs. Any that cannot be migrated should have a dedicated discrete converter with spares.

2. Complete the ADU-5 install.

3. Complete the POS/MV install.

6. Damage Control Summary

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

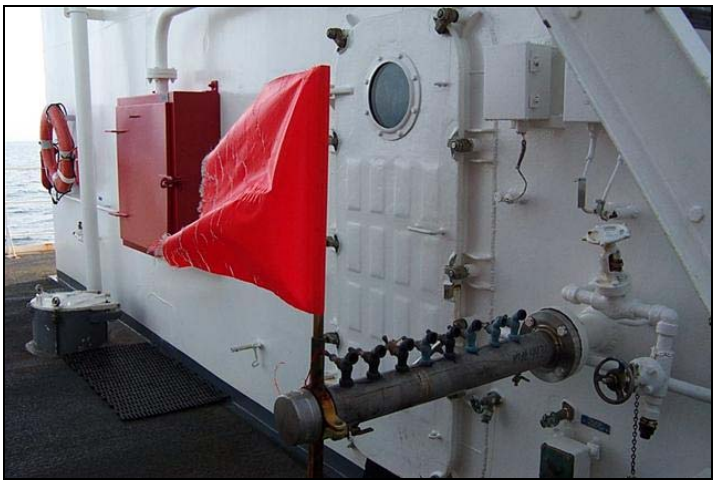
1. Major work items completed during DD-04
   a. Cleaning and inspecting of chain locker
   b. Leak tests of 21 non-accessible voids
   c. 5-33-0-W ballast tank cleaned and inspected
   d. Eight QAWT doors were replaced
   e. The removal, overhaul, testing, and reinstallation of twenty sea valves
   f. Repositioning of three fire main valves, including the addition of wipers and drip shields to reduce moisture damage
   g. Removal, overhaul, testing, and reinstalling of forty fire main valves
   h. Repositioning of two motor main drainage motor operated gate valves to reduce moisture damage
   i. Removal, overhaul, testing, and reinstallation of twenty two flanged ballast and main drainage valves
   j. Preparation, inspection, and coating of the interior of the forward gray water tank
   k. Installation of a new sea chest, three new pumps rated at two hundred gpm, a centrifugal separator, and new piping connecting the new uncontaminated science seawater system to the existing uncontaminated science seawater system

2. Contracted out the cleaning of sixteen fan spaces onboard.

3. The following 18 systems were reviewed with representatives from ELC to make revisions to the DC book:
   - CCOLs
   - WTDs, NTDs, ATDs

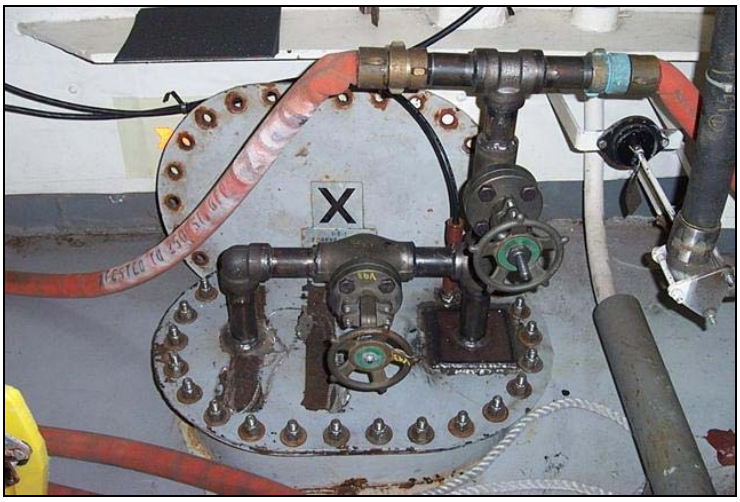
- Ventilation
- F/O filling and transfer valves
- JP-5 filling and transfer valves
- Ventilation fans
- Controllers and power panels for ventilation
- Fire dampers
- Ballast system
- Main drainage system
- Fire main system
- Manholes
- Secondary drainage valves
- Sounding tubes and fittings
- Plumbing cut out valves
- Hot and chill water valves
- Low pressure air valves
- Received electronic version of updated CCOLs

4. Installed sea water manifolds on the port and starboard sides of the forecastle for hoses to be connected to in the event the permanent science sea water system failed and science required sea water on the forecastle.



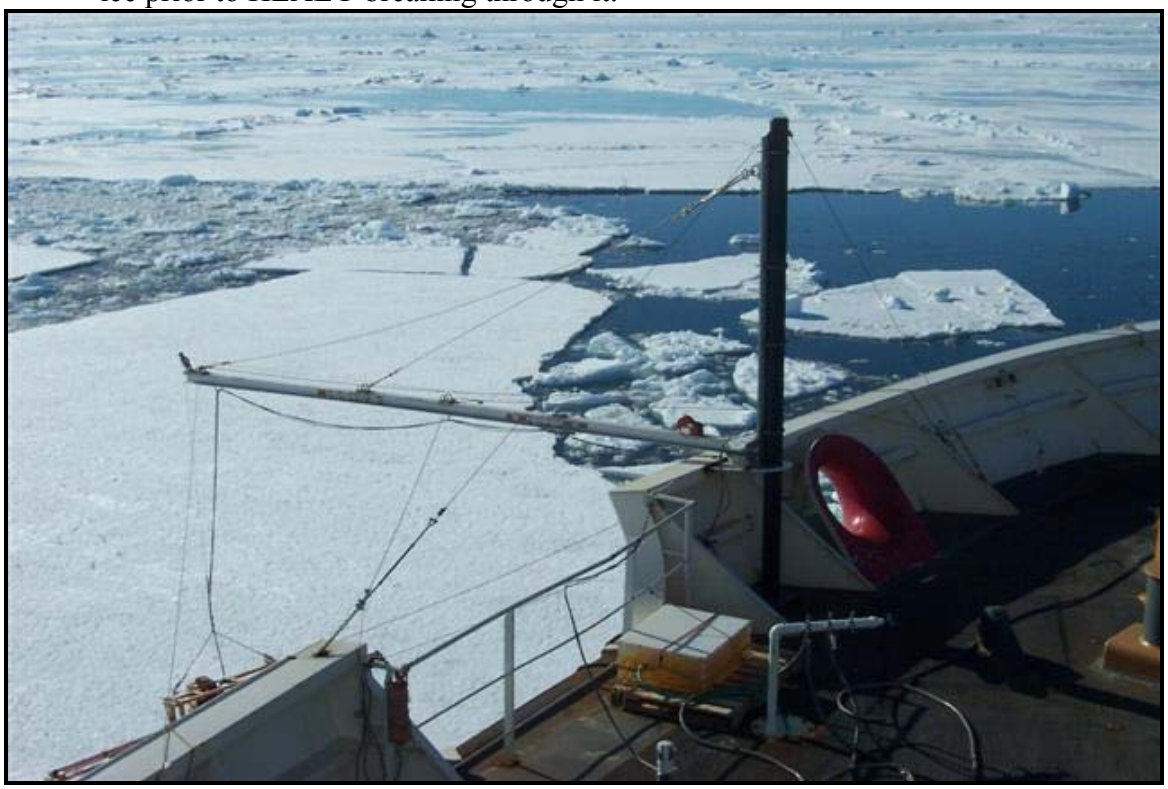
Seawater Manifold On Forecastle

5. Installed 200 gpm capacity pump to supply seawater from the 3-E-0-W tank to manifolds on the forecastle in the event that the science seawater system in inoperable



Seawater Pump to Service Forecastle Manifolds

6. The following was conducted during HEALY ’04 Shake Down Cruise
   a. Training with flight deck fire fighting parties during STAN
   b. All hands man-up, toxic gas, and main space fire drill DCs construction and installed an approximately 10 foot tall pole on the starboard side of the forecastle for the attachment of a device to measure the thickness of ice prior to HEALY breaking through it.



Forecastle Pole

7. ENS Young assumed the responsibilities as the Damage Control Assistant. Additionally, DC2 Thomas remained shore side to complete dental work and will meet the ship in Dutch Harbor, AK, 10 May 04.

8. Prior to departing on AWS ’04 85% of HEALY personnel are basic DC PQS qualified and approximately 15% are advanced DC PQS qualified.

B. **Seattle, DART Mission to Dutch Harbor to Nome**

1. Conducted the following drills:
   a. Man-up
   b. Class Charlie fire
   c. Main space fire drills

2. JQR training given Monday, 3 May 04, and Tuesday, 4 May 04, following departure from Seattle

3. DC PQS classes given nightly

4. Assisted main prop with boiler repairs
   a. Dime sized holes in firing tubes resulted in water leakage and inability of boilers to maintain steam header pressure
   b. DCs have repaired eight holes as of 8 May 04

5. 13 May 04 Winterized affected fire main connections.

C. SBI Process I

1. DC PQS classes given nightly.

2. The following DC drills were conducted:
   a. Toxic Gas Leak (3)
   b. Flooding (2)
   c. Alpha Fire (3)
   d. Main Space Fires (3)
   e. High Voltage Fire (2)
   f. Mass conflagration (1)

3. DCs installed three-way motor operated valve for 3-E-0-W tank

4. Replaced seawater manifold on starboard side of forecastle with a flange and a fitting for a hose to be attached to.

Refitted Fitting on Forecastle

C. SBI Process I

1. DC PQS classes given nightly.

2. The following DC drills were conducted:
   a. Toxic Gas Leak (3)
   b. Flooding (2)
   c. Alpha Fire (3)
   d. Main Space Fires (3)
   e. High Voltage Fire (2)
   f. Mass conflagration (1)

3. DCs installed three-way motor operated valve for 3-E-0-W tank

4. Replaced seawater manifold on starboard side of forecastle with a flange and a fitting for a hose to be attached to.

5. Mounted brackets for vidmars in AMR #5 cage

6. Fixed approximately six fuel line covers for the main diesel engines by tigging on new tabs. (The old tabs were determined to have broken down due to vibration and fatigue.)

7. Fixed leak for MSW in motor room.

8. Plugged tube on science winch cooler to stop a leak.

9. Welded main diesel engine fuel line for main prop.

10. Installed an airline from CTES lab to incinerator room to facilitate the running of a rag press.

11. Constructed and welding in shelf in ET storeroom

Shelf in ET Store Room

D. Nome to Yokosuka to Nome

1. LTT transited on HEALY from Nome, AK, 23 July 04, to Yokosuka, AK, 03 July 04, and conducted training with DCTT and ECTT members through various drills, meetings, system checks.
   a. Feedback from LTT included that briefing meeting turned into planning meeting, that more realistic drills and extensive drills could be conducted.
   b. Overall LTT indicated that HEALY crew performed well.

2. An ASW leak and two MSW leaks were found prior to entering Yokosuka, Japan, and all three were fixed in Yokosuka by Naval Base's SFR personnel.

3. DC2 Gillick departed from Yokosuka to attend a health and wellness seminar to become HEALY's health and wellness representative.

4. Made repairs to scientists staterooms: Fixed 1 faucet, 1 shower, 2 towel racks, and 2 drains

5. Re-welded supports for start air compressor #3's counter balance.

6. Conducted PMS

7. Stood GFE duty in Yokosuka and acted as POCs for SIMA Yokosuka.

E. SBI Process Phase II

1. Initiated, organized, and conducted the following helo training:

   a. Sections 101, 102, 103, 108, 109, 114, 206, 209, 210, 211, 212, 213, and 215
   b. Completed a crash on deck drill for all personnel working on flight deck qualifications
   c. Training led to the qualification of tie-downs (3), fire party members (36), on-scene leaders (15), landing safety officers (2), and a proximan.

2. Initiated, organized, and conducted 2 hours of training for approximately 25 crewmembers on the PECU and hose handling (covering requirements for the DC PQS 300s sections).

4. Start air piping developed a crack, DCs temporarily repaired via welding. Line cracked once more and DCs intend to use a liquid metal patch with syntho-glass to repair until HEALY returns to homeport.

Start Air Compressor #3 Counter Weight

5. As a division have spent, on average, 10 hours per week working on the sewage system.

6. Built a storage box for the 3-E-O-W ballast tank sump pump used to be connected to forecastle hoses.

3-E-O-W Sump Pump Storage Box

7. Repaired the inlet fuel oil line to the #1 main diesel engine fuel oil coalescer.

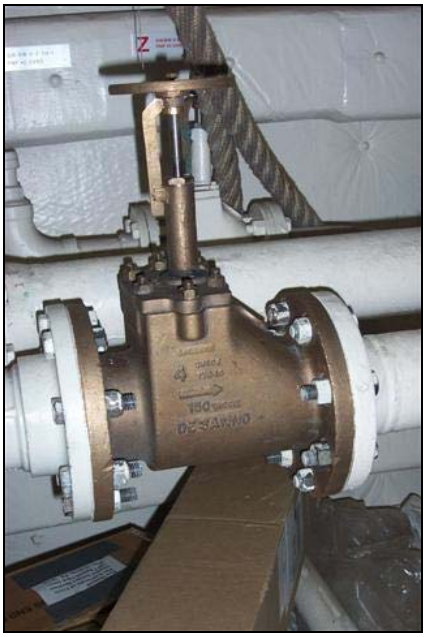
8. Welded on brackets for the mounting of Vidmars in AMR #5.

Vidmars in AMR #5

9. Repaired trawl core winch ASW line.

10. Capped one of three sinks in the laundry room.

11. Installed a sewage valve in Cargo Hold #3.



Replaced Sewage Valve

12. Fixed a broken handrail in the 01 deck athwart ships passageway.

13. Mounted brackets for the permanent securing of the Boll and Kirsch Filter Element Cleaning Unit.

14. Completed the following to assist the EMs
    a. Mounted a plate for a receptacle box in the gym
    b. Mounted a J-box for the starboard fo'scle spotlight
    c. Welded on a bracket for a junction box in Boiler Room #2
    d. Mounted a receptacle in Boiler Room #1

15. Fixed rusted bolts on O_2 tank rack hold down brackets.

16. Welded on tabs for an air hose reel in the starboard passageway.

17. Submitted the following CMAs:
    a. Have bow crane exhaust and supply vents extended to be above the main deck, face aft, be cleaned, a second joint be added approximately 6 feet above the deck and the current joint be replaced.
    b. The draining and cleaning of existing sludge tank ventilation piping, the removal of 10 tac welds, the cleaning of the affected joint surfaces, the welding of respective joints with full socket welds, and the conducting of a soap bubble test at each weld to ensure air tight integrity.

18. Repaired a life ring holder

19. Conducted investigator training for approximately 25 crewmembers.

20. Welded two plugs in place in boiler #1.

21. Conducted monthly and quarterly PMS (e.g. of repair locker equipment).

F. Nome to Dutch Harbor & SBI Mooring

1. Welded a line rack for bosn mates in the Stores Handling Room.

2. Customized a deck connection for LO on load.

3. Created a tool to remove injectors from RHIs to assist A-gang with repairs.

4. Soldered together a tool to allow A-gang to non-destructively determine that the firing chamber for one of the RHI's six cylinders was not sealing properly.

5. Repaired 1.5" long crack in the outlet line from Start Air Compressor #2.

6. Repaired pressurized leak in MSW piping.

7. Re-enforced the supports for Start Air Compressor #3's hundred and fifty pound counterbalance.

8. Conducted miscellaneous repairs in scientist and crew rooms.

9. Inventoried Repair Locker II and III and found all equipment present and accounted for.

10. Conducted JQR training and DC PQS training.

11. Conducted the following drills: Bravo fire in ADG Compartment, flooding from an MSW line in AMR #5, high voltage fire in the soft start, Class Alpha fire in the centerline fan space on the 01 deck.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. DC2 Gillick departed from ship on E-leave for five days and then spent approximately two weeks TAD at NESU Seattle prior to returning to HEALY in Nome, Alaska, on 1 October 04.

2. Welded three tubes and three holes in Boiler #1. Boiler repaired, tested, and placed back in operational status.

3. Repaired ASW pinhole leak on Start Air Compressor #2.

4. Assisted in renovating the library to accommodate more standard workstations and to make the area more workable for crewmembers.

5. Constructed MICA Vidmar Stands and trash chute holder. The trash chute will help alleviate the sanitary problems associated with all hands trash call.

H. Barrow to Prince Rupert to Seattle

1. Completed final DC PQS lessons. Approximately 87% of all crewmembers onboard are basic DC PQS qualified.

2. Final working 4-gas analyzer was rendered inoperable after a battery, O2 sensor, and pump replacement were conducted.

I. Recommendations

1. Consider adding to HEALY's compliment of DC's. Throughout the patrol, the 4, sometimes 3 DC's have worked odd hours to complete sewage system troubles and other various repairs. With the addition of an additional DC, the underway worklist could be 100% completed as opposed to 75%.

7. Fueling Summary

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

1. 08 March 04: On loaded 531,910 gallons F-76 on 08 March 04 via a barge from Manchester, Washington. The average transfer rate was 200 gallons per minute. This brought HEALY's fuel capacity to 621,329 gallons (50.5% of full capacity).

2. 09 March 04: On loaded 56,159 gallons JP-5 on 09 March 04 via a barge from Manchester, Washington. The average transfer rate was 200 gallons per minute. This brought HEALY's JP-5 capacity to 57,113 gallons (94.8 % full capacity).

3. 10 March 04: On loaded 18,978 gallons grade L06 lube oil from Manchester Fuel Department via trucks. The transfer rate was approximately 200 gallons per minute. This brought HEALY's lube oil capacity to 23,202 gallons (92.7% of full capacity).

4. 11 March 04: On loaded 4,592 gallons Mobil DTE hydraulic oil from Rainier Petroleum Corporation. This brought HEALY's hydraulic oil capacity to 4,592 gallons (50.9% of full capacity).

5. 12 March 04: Off loaded 5,182 gallons of oily water to Emerald Services Inc.

6. 18 March 04: Off loaded oily water to Emerald Service Inc.

7. 22 March 04 – 02 March 04 (Shakedown Cruise): Expended 93,243 gallons of F-76. Daily average: 7,173 gallons per day.

8. 22 March 04 – 02 March 04 (Shakedown Cruise): Expended 144 gallons of JP-5. All 144 gallons were consumed on 31 March 04 during STAN training.

9. 05 and 06 April 04: On loaded 605,730 gallons of F-76 via barge from Manchester, WA. This brought HEALY's fuel capacity to 1,170,238 gallons (95.8% of full capacity).

10. 19 April 04: On loaded 3,960 gallons Mobile DTE hydraulic oil via truck from Rainier Petroleum Corporation. This brought HEALY's hydraulic oil capacity to 7,442 gallons (82.5% to full capacity).

11. 26 April 04: Off loaded oily water to Emerald Services Inc. on 24, 25, and 26 April 04.

12. 27 April 04: Off loaded oily water to Emerald Service Inc. on 27 April 04.

13. ENS Young relieved LTJG Hasselman as the fueling officer.

B. Seattle, DART Mission to Dutch Harbor to Nome

1. Expended 210,152 gallons F-76. Average consumption: 18,287 gallons per day.

2. Main prop has had to replace fuel oil coalescers six times during 14 day underway period. Samples from service tank 4-72-2-F are approximately 30% water. Ship's force is investigating the following possible sources of contamination: storage tanks, both fuel oil purifiers, crack in bulkhead between ballast tank 5-63-4-W and the affected service tank.

3. 13 May 04: 111 gallons of JP-5 were transferred to CG 6532 and CG 6539.

C. SBI Process I

1. In attempt to determine the source of the water apparent in samples from the 4-72-2-F service tank ballast tank 5-63-2-F was emptied and inspected, as was the service tank its self. No source was determined.

2. HEALY expended 618,155 gallons of fuel. Daily consumption averaged 12,615 gallons per day. For the majority of this transit, HEALY ran on one engine during science stations, generally lasting between two to 18 hours, and two to three main diesel engines when transiting. For the majority of the SBI Phase 1, HEALY was breaking ice in 8/10th to 10/10th ice.

3. 2,180 gallons of JP-5 was transferred to CG6539 and CG6532.

D. Nome to Yokosuka to Nome

1. Approximately 12,800 gallons of fuel transferred from the aft overflow tank prior to entering Yokosuka. Into the 4-72-2-F storage tank and the 5-75-1-F and 5-75-2-F storage tanks prior to the Dutch Harbor on load. The fuel was originally transferred to the aft overflow tank from the 4-72-2-F tank when it was determined to be contaminated with water prior to HEALY's Yokosuka, JA, port call.

2. 8-9 July 04: Yokosuka, JA, HEALY on loaded 793,726 gallons on F-76 (per barges' soundings) via 5 barges at a rate of 1,000 gal/min on the 8 July 04 and 1,500 gal on 9 July 04. At the conclusion of fueling HEALY had 89.9% total capacity of fuel on board.

3. 9 July 04: HEALY offloaded approximately 5,500 gallons of waste oil and oily water. HEALY expended 323,204 gallons of fuel. Daily consumption

averaged 14,691 gallons per day. HEALY ran on two to three main diesel engines when transiting to and from Yokosuka.

4. 1,927 gallons of JP-5 was transferred to CG6539 and CG6532.

5. HEALY expended 258,524 gallons of fuel. Daily consumption averaged 6,629 gallons per day. HEALY ran on two to three main diesel engines when transiting to and from Yokosuka.

6. 2,532 gallons of JP-5 was transferred to CG6539 and CG6532.

E. SBI Process Phase II

1. FOP#1 was determined to be the source of water founding 4-72-2-F service tank. FOP #1 op tests were successfully completed with the reserve water line disconnected (-supplies water to assist in the separation of particles and fuel in the FOP bowl).

2. HEALY expended 267,489 gallons of fuel. Daily consumption averaged 6,524 gallons per day. HEALY ran on two main diesel engines for the majority of the SBI II Phase.

3. 2547 gallons of JP-5 was transferred to CG6539 and CG6532.

F. Nome to Dutch Harbor & SBI Mooring

1. On loaded 483,041 gallons F-76 in Dutch Harbor, AK at the Western Fuel Pier. Original gpm was estimated to be 1,300. Pier only provided around 600 gpm. This extended the evolution from 0700 to 2200 (approximate).

2. On loaded approximately 5,000 gallons of lube oil in Dutch Harbor, AK. Due to the small pumping rate of the ship's acquired lube oil pumps, the fueling company used their lube oil pumps and greatly expedited the lube oil onload.

3. HEALY expended 322,421 gallons of fuel. Daily consumption averaged 9,212 gallons per day. HEALY ran on two diesels for the majority of this phase of the deployment.

4. Transferred 1623 gallons of JP-5 to CG6539 and CG6532.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. CG6532 departed on October 6 for ATC Mobile.

2. Transferred 1,278 gallons of JP-5 to CG6539 and CG6532.

3. HEALY expended 316,897 gallons of fuel during the Nome to Provideniya to Nome Transit and NOAA Mapping Mission. An average of 12,188 gallons of F-76 were used per day. In this phase, an average of two diesels were online and the majority of this phase was spent in heavy ice.

4. When ADG was online powering the low voltage busses, the fuel consumption decreased by approximately 5,000 gallons per day.

H. Barrow to Prince Rupert to Seattle

1. CG6539 departed on November 9 for ATC Mobile.

2. Transferred 274 gallons of JP-5 to CG6539

3. HEALY expended 136,808 gallons of fuel during the Nome to Provideniya to Nome Transit and NOAA Mapping Mission. An average of 9,121 gallons of F-76 were used per day. In this phase, an average of two diesels were online

4. HEALY entered homeport with 31.4% of F-76 and 75.8% JP-5.

I. Recommendations

1. Conduct Fueling Brief day prior to fuel onload/offload.

2. Have one FOWK per week who doesn't stand duty when on FOWK duty.

3. Obtain larger/faster lube oil pump for lube oil barrels. Also consider a barrel heater for colder climates.

CHAPTER VI - ADMINISTRATION

1. Personnel

A. Seattle, Washington to Dutch Harbor, Alaska. (30APR-10MAY), DART

1. All the crew and both AVDET crews deployed with HEALY on April 30, 2004 with the exception of the following permanent personnel:

LCDR Gregory Stanclik, TDY
LTJG Kevin Hasselman, TDY to "C" school, pending PCS
LTJG Darain Kawamoto, TDY
ENS Jason Plumely, TDY to "C" school
EMC Frank Donze, medical
MK1 Michael Weaver, medical
BM1 Patrick Morkis, TDY to "C" school, pending PCS
SK1 Robert Pierce, TDY pending PCS
SK1 Susan Peterson, medical
DC2 Paul Thomas, medical
BM3 Adam Gunter, medical
EM3 Dustin Black, medical
FN Robert Brock, medical

2. The following TDY personnel were on board to augment the crew:

LT Brian Demio, ISC Kodiak
HSC James Connors, TRACEN Petaluma
IT1 Mikel Potts
SA Jacob Aulner, USGCC POLAR SEA
SN Brian Walsh, USGCC POLAR SEA
SA Patrice Wilson, USGCC POLAR SEA

3. MK2 Richard Titus advanced to MK1 on 1MAY04

B. Dutch Harbor, Alaska to Nome, Alaska.(12MAY-15MAY)

1. The following personnel returned to HEALY in Dutch Harbor, Alaska:

LCDR Gregory Stanclik
LTJG Darain Kawamoto
ENS Jason Plumley
FN Robert Brock
DC2 Paul Thomas

2. The following personnel reported TDY the CGC HEALY:

MST1 Elridge McFadden, ESU Seattle
1/C Benjamin O'Loughlin

3. The following reported PCS:

SK1 Jacques Faur

4. Brought on 13 scientists in Nome, Alaska via helo.

5. Roberta Chang and Vina Fejeran from ISC Seattle Worklife Staff rode onboard from Dutch Harbor to Nome to conduct annual training.

C. Nome, Alaska to Nome, Alaska(15MAY-23JUN), SBI PROCESS 1

1. The following personnel dpted HEALY via helo

FN Chapin dpted PCS to DC "A" school on 15 May 2004
ENS James Cooley, TDY
SNFS Theresa Barnes, TDY, medical

2. Brought on 48 scientists via helo in Nome.

3. Conducted NJP on 14 May 2004. FS3 Theresa Barnes was reduced in rate to SNFS.

4. Conducted NJP on 3 June 2004. SN Jonathan Bilby was reduced in rate to SA, forfeiture of ½ pay for one month, restricted to HEALY for 15 days (suspended for 6 months), extra duties for 30 days.

5. Submitted BM2 Giest's, BM2 Bresnahan's and MST2 Gaona's names to be put on the BM1 Supplemental List and MST1 Supplemental list, respectively.

6. SN Garlick arrived TDY on 06 June 2004 to cover FS3 billet.

7. EM1 B. Jopling flown off for possible broken wrist to ISC Seattle on 11 June 2004.

8. FN Robert Brock flown off for medical with SKC Karl Keyes as an escort from Barrow, Alaska to Seattle, Washington. FN Brock will be TDY to ISC Seattle and SKC Keyes will be working at HEALY Support (CST).

9. Conducted NJP on 21 June 2004. FN Robert Brock was reduced in rate to E2, forfeiture of ½ months pay for two months and awarded to 30 days of correction custody at Naval Submarine Base Bangor, Silverdale, Washington.

10. Flew MK2 M. Bowley on 20 June out of Barrow, Alaska for dental at Elmendorf Air Force Base, Anchorage, Alaska.

D. Nome, Alaska to Yokosuka, Japan(23JUN-03JUL)

1. Debarked 48 scientist in Nome, Alaska on 23 June 04

2. Solicited for a TDY FS to meet the ship in Japan.

3. The following personnel reported PCS:

   LT Laura King
   LTJG Jessica Noel
   DC1 Phillip Smelser
   ET2 Saul Kosydar
   SN Manuel Ponce

4. The following departed PCS:

   LTJG Darain Kawamoto
   ETCM James O'Brien
   ET1 Chris Martin
   DC1 Bianca Witkowski
   EM1 Benjamin Garrett

5. The following returned from TDY:

   ENS James Cooley
   EMC Frank Donze
   BM3 Adam Gunter
   MK2 Martin Bowley

6. The following TDY members departed HEALY to return to their unit:

   LCDR Edward Beale
   LT Gary Naus

7. The following arrived TDY to augment HEALY:

   LCDR Mark Fluitt, ATC Mobile (AVDET)
   LTJG Ken Eller, ATC Mobile (AVDET)
   LT B. Strickland, LTT
   DCCS D. Johnson, LTT
   MKC R. Stewart, LTT
   GSMC E. Cordova, LTT
   DC1 J. Brymer, LTT
   HM1 R. Navarro, LTT

E. Yokosuka, Japan to Nome, Alaska(03JUL-18JUL)

1. The following personnel reported onboard PCS to HEALY in Yokosuka, Japan:

   ENS Keidi Niemann
   MK1 Diane Wallingford
   BM1 Thomas Hines
   ET2 Matthew Regele
   MK2 Andrew Benigno
   FN Ashley Smith

2. The following personnel departed PCS on the CGC HEALY in Yokosuka, Japan:

   LT Neal Amaral, RELAD
   LT Robert Clarke, NESU Seattle
   MSTCS Glen Hendrickson, RELAD
   SN Gaylin Swibold, AET "A" School
   SA Steven Sanchez, OS "A" School

3. The following returned TDY

   SKC Karl Keyes

4. The following departed TDY:

   DC2 Todd Gillick, Unit Wellness Promotion Coordinator

5. The following personnel reported TDY:

   FS2 Crystal Hill, ISC Seattle
   SN Michael Jackson, USCGC POLAR SEA
   FN Christopher McBrayer, USCGC POLAR SEA

6. The following departed HEALY to return to their units:

   LT B. Strickland, LTT
   DCCS D. Johnson, LTT
   GSMC E. Cordova, LTT
   MKC R. Stewart, LTT
   HSC James Connors
   DC1 J. Brymer, LTT
   HM1 R. Navarro, LTT

F. Nome, Alaska to Nome, Alaska:(18JUL-26AUG)

1. The following personnel reported in PCS in Nome, Alaska:

   LCDR J. Reeves
   IT2 M. Bigsby
   ET1 S. Hyde

2. The following personnel departed PCS in Nome Alaska:

   LCDR G. Stanclik
   MK1 R. Titus
   ET1 R. Retzlaff
   MST3 S. Scriven

2. The following personnel departed HEALY for TDY in Nome, Alaska 18 July 2004:

   ENS K. Niemann
   OS1 E. Neill

3. The following returned from TDY in Nome, Alaska:
   DC2 T. Gillick
   MST2 E. Rocklage

4. The following departed HEALY back to their units in Nome, Alaska:

   MST1 E. McFadden, ESU Seattle
   O/1 Cadet B. O'Loughlin, CGA
   SN C. Garlick, ISC San Pedro
   SN B. Walsh, POLAR SEA

5. FS3 Som departed the CGC HEALY for emergency leave on 21 July 04 out of Barrow, Alaska.

6. FA Brock returned from TDY on 28 July 2004 via Barrow, Alaska.

7. The following departed HEALY for medical appointments on 28 July 2004 via Barrow, Alaska to Elmendorf Air Force Base, Anchorage, Alaska:

   FS1 Jason Gaulke
   MK3 M. Nesvold

8. FS3 D. Som returned from emergency leave in Barrow, Alaska on 28 July 2004.

G. Nome, Alaska to Dutch Harbor, Alaska: (26AUG – 01SEP)

1. The following personnel reported TDY in Nome, Alaska:

   LCDR Steven L Souders

2. The following personnel returned from TDY in Nome, Alaska:

   SK1 Peterson
   SK2 Joseph

3. The following personnel departed HEALY for TDY in Nome, Alaska:

   ET3 Leppo

4. The following personnel departed HEALY back to their units in Nome, Alaska:

   LCDR Fluitt

H. Dutch Harbor, Alaska to Nome, Alaska: (01SEP – 01OCT)

1. The following personnel returned from TDY in Dutch Harbor, Alaska:

   OS1 Neill
   EM3 Black
   MK1 Weaver
   ENS Niemann
   EM1 Fratto

2. The following personnel reported TDY in Dutch Harbor, Alaska:

   BMCS T. Sullivan
   YN2 S. Hollis
   ENS T. Irwin
   MST3 I. Falon
   HSC K. Kowzic
   CDR Kenny
   FS2 T. McBride

3. Embarked 32 scientists in Dutch Harbor, Alaska.

4. The following personnel departed HEALY for TDY in Dutch Harbor, Alaska:

   ETC Rodda
   SK1 Peterson
   HSC Anderson
   YNC Kirby
   FS1 Gaulke

5. The following personnel departed HEALY back to their units in Dutch Harbor, Alaska:

   LCDR S. Souders

6. SN V. Rodriguez reported PCS on 05 September in Barrow, Alaska.

7. SN Peelman was flown off PCS on 13 September 2004, to Barrow, Alaska.

8. ET3 Leppo was returned from TDY by helicopter on 13 September, in Barrow, Alaska.

9. The following personnel returned from TDY on 30 September 2004, in Nome, Alaska:

   YNC Kirby
   SK1 Peterson
   FS1 Gaulke

10. The following personnel reported TDY to augment HEALY on 30 September:

    YN3 Kephart
    ENS Carr

11. The following personnel reported PCS on 30 September:

    FS3 Elliot

12. The following personnel returned from TDY on 24 October 2004, in Barrow, Alaska.

    ETC Rodda
    HSC Anderson

I. Nome, Alaska to Nome, Alaska: (01OCT – 06OCT)

1. The following personnel reported PCS:

   FS3 E. Elliot

2. The following personnel returned from TDY:

   YNC Kirby
   HSC Anderson
   FS1 Gaulke
   DC2 T. Gillick

3. The following personnel reported TDY to augment HEALY:

   YN3 Kephart
   ENS M. Carr
   EM2 J Marlin
   EM3 A. Franzoi
   LCDR T. Gaffney
   LT E. Johnson
   Dave Ackerman (CG Auxiliary)
   Rodger Bolles (CG Auxiliary)

4. The following personnel departed TDY:

   SR Brock
   SK2 Sisson
   BM1 Hines (leave)
   MSTC Snider
   EM1 Fratto

5. The following TDY personnel departed to return to their unit:

   LT Demio

6. Flew off 27 scientists by helicopter in Nome, Alaska.

J. Nome, Alaska to Barrow, Alaska: (06OCT – 25OCT)

1. Brought on 19 scientists in Nome, Alaska via helicopter.

2. The following personnel reported TDY in Nome, Alaska:

   IT2 C. Burroughs

3. The following personnel departed PCS in Nome, Alaska:

   FS2 Hill

4. The following TDY personnel departed HEALY to return to their units:

   FS2 McBride
   HCS K. Kowzic
   LT Klatt
   LTJG Eller
   PO Maghupoy
   LT E. Johnson
   LCDR T. Gaffney
   Rodger Bolles (aux. Translator)
   Dave Ackerman (aux. Translator)

K. Barrow, Alaska to Prince Rupert: (25OCT – 03NOV)

1. Flew off 19 scientists in Barrow, Alaska.

2. The following personnel reported TDY:

   CDR Swanson
   EMCS Podhora
   EM1 P. Stevick
   EM1 H. Shaffer

3. The following personnel reported PCS to HEALY in Barrow, Alaska:

   FN Rose

4. The following personnel returned from TDY in Barrow, Alaska:

   ETC Rodda

5. The following personnel departed TDY in Barrow, Alaska:

   HSC Anderson
   SK1 Faur

6. The following TDY personnel departed HEALY to return to their units:

   IT2 C. Burroughs

7. BM1 Hines was flown off for emergency leave on 04 October 2004.

L. Prince Rupert, Canada to Seattle, Washington (03NOV-09NOV)

1. The following personnel departed HEALY back to their home units in Prince Rupert, Canada:

   CDR Swanson
   EMCS Podhora
   EM1 P. Stevick
   EM1 H. Shaffer
   YN2 Hollis

2. The following personnel departed for leave in Prince Rupert, Canada:

   ET1 Hyde
   MST2 Robinson

3. The following personnel departed HEALY by helicopter on 09 November to return to their unit:

   CDR Kenny
   LT Hollinger
   AMT1 Holt

2. Morale Summary

A. Pre-Deployment Preparations (1 Nov 03 – 29 April 04)

1. 04 Jan 04: ENS Young departed to DCA school and ENS Hasselman relieved as the morale fund custodian.

2. 23 February 04: Upon completion of DCA school ENS Young relieved LTJG Hasselman as the morale officer.

3. Major Non-Appropriated Expenditures:
    a. Beer purchase for AWS '04 ice parties (960 cans): $476.40
    b. All hands Christmas Luncheon: $1,350
    c. Soda purchases (5,208 cans): $1,611
    d. Bingo purchases: $2,293.21

4. Major Non-Appropriated Contributions:
    a. Soda machine proceeds: $927.69
    b. Quarterly allowances: $1,427.10
    c. Navy League Donation: $1,500

5. Total Non-Appropriated Funds upon HEALY's departure on AWS '04: $4,054,67.

6. 2004 Appropriated Funds: $16,000

7. Appropriated funds purchases:
    a. Life Fitness 9100 Treadmill
    b. 42" Plasma screen TV
    c. Refurbish of all gym machines
    d. Mountain bike
    e. Six DVD players
    f. Four outdoor speakers
    g. Amplifier for outdoor speakers
    h. Basketball hoop
    i. Two one man tents
    j. Three sets of snowshoes
    k. Two one man tents
    l. Back extension bench
    m. Four magazine prescriptions to the following magazines:
        1. Maxim
        2. Field and Stream
        3. People
        4. ESPN
        5. Navy Times
        6. Outdoors

7. Popular Mechanics
8. Time

8. Excess or broken equipment removed from HEALY:
    a. Rowing machine (1)
    b. Cassette players (2)
    c. FM/AM Receivers (3)
    d. TVs (2)
    e. Benches (3)
    f. DVD players (2)

9. Events:
    a. Various purchases of pizza for members on duty and live-aboards
    b. 05 December 04: All hands Christmas Party at Tito's Restaurant
    c. 23 April 04: Pizza and bowling party at West Seattle Bowl

10. Other:
    a. Awarded MK3 Schreck a $50.00 savings bond for being chosen the Sailor of the Quarter

B. Dart Buoy Mission (Seattle, WA – Nome, AK)

1. Soda machine proceeds: $142
2. Commenced facial hair growing contest (hair down and finger nail painting for females). Eighty-three crewmembers are participating, proceeds: $415

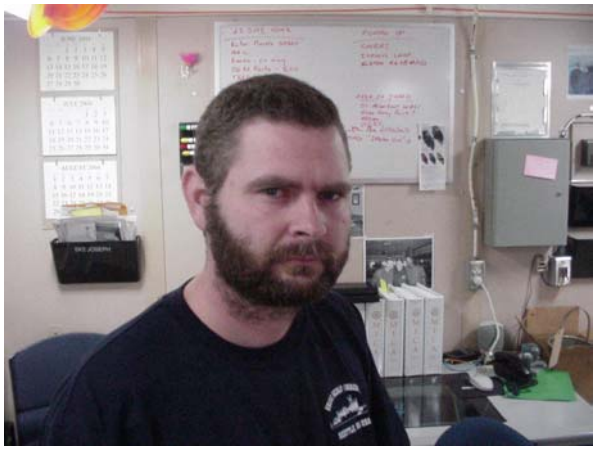
C. SBI Phase 1 (Nome, AK – Yokosuka, Japan)

1. Held bingo each Saturday evening

2. Ice liberty
    a. Soccer game, football game, snowball fights, polar bear swim (approximately 30 participants)

3. Beard growing contest concluded on 23 June 04 with the following categories:

    a. Most with the least effort.
    b. Least with the most effort.
    c. Most creative.



4. Polar Bear Initiation held on 16-17 Jun 04

D. SBI Phase 2 (Yokosuka, Japan – Dutch Harbor, AK)

1. EMC Donze wired up treadmill purchased during last in port to be functional
2. Beard growing contest
3. Held Casino Night on 21 August 04
    a. Featured the following games:
        1. Roulette
        2. Craps
        3. Texas Hold'em
        4. Rock Paper Scissors
            a. Approximately 45 crewmembers participated
            b. Raffled off the following prizes at the following HEALY money prices:
                i. Cooler
                ii. 1 Night at Dutch Harbor's Grand Aleutian Hotel
                iii. 1 Portable camping chair
                iv. Three pieces of ivory
                v. Sleeping bag
                vi. DVD player

E. SBI Mooring Cruise (Dutch Harbor, AK – Nome, AK)

1. 7 September: Started third beard growing contest of the trip
2. Held a Ho Down
    a. One of the scientists was a professional banjo player and put on a performance
    b. Approximately 25 scientists and crew came out to listen to the music and even dance a little
    c. Provided soda, popcorn, candy, disco ball, and black lights
    d. XO granted civilian attire

3. Held Shipmate Fued. Approximately 35 people attended and/or participated.
    a. Polled crew on approximately 50 questions.
    b. Approximately 50 crewmembers responded to questions
    c. EM3 Haugk won the door prize
    d. First place = Operations
    e. Second place = Scientists
    f. Third Place = Engineering
    g. Fourth Place = Aviators
4. Held bingo every Saturday night.

F. NOAA Mapping Cruise (Nome, AK – Barrow, AK)

1. Showed the movie Troy in the helo hanger
    a. Hang canvas from hooks approximately 30 feet up on the helo hanger door.
    b. Projected movie from forward, port entrance to fan space.
    c. Rolled out a rubber matt from the gym for persons to sit on.
    d. Approximately 35 people attended.
    e. Provided candy, popcorn, and sodas.
    f. XO granted gym gear.
2. Held a Polar Bear Initiation
    a. Approximately 25 PCS and TAD crewmembers, scientists, and ALSTOM representatives participated

3. Held bingo every Saturday night.
4. Showed the movie Dodge Ball in the helo hanger.

G. Barrow, AK– Seattle, WA

1. Purchased dinner for duty section two nights in Prince Rupert.
2. Played bingo first two nights of Dependence Cruise.
3. Showed Spiderman II in helo hanger.
4. Had Casino Night on third night of cruise.
5. Showed cruise video.

CHAPTER VII – PUBLIC RELATIONS

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

1. One month prior to HEALY getting underway, the PAO visited with the conservator at the CG History Museum at ISC Seattle. PAO presented the conservator a copy of the ship's cruise t-shirt design for AWS-04, which he then sent out to be used as the ship's cachet for philatelists' requests. This process worked well and benefits both the ship and the museum; recommend using this same process for future deployments.

2. Since planned port calls for AWS-04 included Japan and Russia, efforts were made to obtain suitable translations of the Welcome Aboard pamphlet. The PAO utilized local resources at the University of Washington to provide the translation into Japanese. Further digging revealed that the pamphlet was already translated into Russian for a prior planned visit to Russia that didn't occur. Electronic copies of all translations were placed into the Public Affairs folder on the ship's computer system.

3. While moored in Victoria, B.C. during the shakedown cruise, 12 crewmembers of Canadian icebreaker SIR WILFRED LAURIER visited and toured the ship.

4. On the final day of the shakedown cruise, HEALY hosted a dependant's cruise from Port Angeles, WA. In addition to friends and family, members of the Lake Washington Chapter of the Navy League were also invited. In all, 142 guests enjoyed a BBQ on the flight deck and the five-hour ride to Pier 36.

B. Seattle, DART Mission to Dutch Harbor to Nome

Hosted Jim Paulin from Unalaska Community Broadcasting for a taped interview with the Executive Officer, CDR William Rall.

C. SBI Process I

Little Diomede Island: Local villagers were invited aboard and a few crewmembers were invited ashore. Crewmembers ashore were given the opportunity to purchase local crafts to be sold onboard in the ship's store and to be given away at morale events as prizes. The Chief Scientist, Lee Cooper, coordinated this visit to foster positive relations with Alaskan native communities.

D. Nome to Yokosuka to Nome

1. Welcomed Ms. Mihoko Shirai, from Public Affairs Office, Commander, U.S. Naval Forces, Japan. With her were members from the local media.

2. In Nome, we embarked members from KNOM to conduct an interview of crewmembers to be broadcasted on KNOM's talk radio show.

ENS Young visiting Little Diomede Island

E. SBI Process Phase II

Embarked a local assistant to the science community, Jimmy Jones, an initiative to help foster better relations with local residents. Jimmy Jones assisted members of the embarked science party understand what the local concerns are as well as becoming more familiar with the interests from the science community.

F. Nome to Dutch Harbor & SBI Mooring

Deborah Foster was invited by the science party to gain an understanding of life in the Arctic and at sea. Ms. Foster is a co-author of an upcoming book about the Arctic overland expedition. In addition to Ms. Foster, Chris Linder rejoined HEALY from Woods Hole Oceanographic Institute to help document science operations in the Arctic.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. A stop in Nome was to include a tour with a local school, but tour was canceled due to inclement weather. The PAO put together a care package consisting of several hats and pamphlets as a consolation.

2. In Provideniya, Russia, HEALY hosted local officials in the cabin for a small reception. Special permission was obtained from PACAREA for the consumption of alcohol – paving the way for a series of goodwill toasts.

3. HEALY also sponsored a tour to the local high school. Twelve students were in attendance. After the tour, refreshments were served on the messdeck. The students really enjoyed the sweets, particularly “Gummy Bears” .

H. Barrow to Prince Rupert to Seattle

1. Lynda Lafleur from the Daily News in Prince Rupert, B.C. Canada, interviewed the Captain on the ship during our port call. The article ran in the next day's edition of the paper.

2. Welcomed aboard 48 friends and family for a dependant's cruise through the scenic Inside Passage from Prince Rupert to Pier 36 in Seattle.

I. Summary

1. Due to continuing advancements in technological communications, most of HEALY's public relations were conducted over the Internet. An archive of the weekly updates are at HEALY's home site: http://www.uscg.mil/pacarea/healy/ under "Past and Present Deployments", then "AWS 2004". See below for a hard copy of the final deployment page from the website.

AWS '04

Press Releases

Helicopter Crew From Seattle Coast Guard Cutter Saves 81-Year-Old Man

Helicopter 6539 Rescues Four Overdue Hunters From Nuiqsut, Alaska

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The United States Coast Guard Cutter HEALY sailed on April 30th from her homeport in Seattle, Washington. She is underway to commence Arctic West Summer (AWS) 2004 deployment. The overall deployment is divided up into five separate missions. General summaries of each mission are provided below, with links to more specific information.

XO'S Updates

Every week, CDR William Rall (HEALY's Executive Officer) sends out HEALY Updates to friends and family back home. Below is a continuing archive of weekly updates:

May 09, 2004	**May 16, 2004**	**May 23, 2004**	**May 30, 2004**
June 06, 2004	**June 13, 2004**	**June 20, 2004**	**June 27, 2004**
July 11, 2004	**July 18, 2004**	**July 25, 2004**	**August 1, 2004**

August 8, 2004	August 15, 2004	August 22, 2004	September 5, 2004
September 12, 2004	September 19, 2004	September 26, 2004	October 10, 2004
October 17, 2004	October 31, 2004	November 08, 2004	November 09, 2004

NOAA Ocean Floor Mapping

The final science phase of AWS04 is a 20-day ocean bottom mapping effort of the ocean floor near the Northwind Ridge, Chukchi Plateau and the Canada Basins. This project builds on research collected last year on AEWS03, and is integral data required for the U. S. to make claims on the sea bottom in conjunction with the United Nations Convention of the Law of the Sea (UNCLOS). The National Oceanic and Atmospheric Administration (NOAA) (http://www.noaaa.gov/) is working with the Center for Coastal and Ocean Mapping/Joint Hydrographic Center (CCOM/JHC) (http://www.ccom.unh.edu/) of the University of New Hampshire as research collaborators for the project. To read about some of the previously collected data, click on Law of the Sea Reports at (http://www.ccom-jhc.unh.edu/unclos/html/reports.htm).

Chris Linder: Woods Hole Oceanographic Institute (WHOI)

For the third and final year, a multidisciplinary group of scientists battles the Arctic Ocean to recover their moored instruments. Read as Chris Linder provides daily dispatches and view photos that document the on-going research in the Arctic at the Arctic Edge Website (http://www.whoi.edu/arcticedge/arctic_west04/expedition/index.html).

A Quest For Knowledge

School teacher Patty Cie was a member of the science party on SBI Phase I . Her introduction web page is called Patty Cie Studies Ocean Ecosystems on the Healy Icebreaker 15 May - 23 June 2004 (http://www.arcus.org/TREC/phpbb/portal_healy.php). She updated the web with a Daily Journal Entries (http://www.arcus.org/TREC/phpbb/viewforum.php?f=19), and even includes pictures, highly recommended. Both sites also have email links to ask her or the scientists questions, check it out!

Another web link with a very good overview of the project, and of course more links, is called: Shelf-Basin Interactions Research on the Healy Icebreaker 15 May to 23 June 2004 (http://www.arcus.org/TREC/phpbb/portal_healy_project.php).

SBI Phase I, II, & III

These phases will continue support of the Western Arctic Shelf Basin Interactions (SBI) project, similar to research conducted off of Healy in the summers of 2003 and 2002. The SBI project is a multi-year, interdisciplinary program to investigate the impact of

global change on physical, biological and geochemical processes over the Chukchi and Beaufort Sea shelf basin region in the Western Arctic Ocean. This summer, scientists will recover data from sensors that have been moored to the ocean floor since previous year's deployment off of Healy. The SBI project is jointly sponsored by the National Science Foundation and the Office of Naval Research, and consists of many ongoing research projects.

For more complete information, visit the SBI Website (http://sbi.utk.edu/).

DART

As part of the U.S. National Tsunami Hazard Mitigation Program (NTHMP) (http://www.pmel.noaa.gov/tsunami-hazard), the Deep Ocean Assessment and Reporting of Tsunamis (DART) (http://www.ndbc.noaa.gov/dart.shtml) Project is an ongoing effort to maintain and improve the capability for the early detection and real-time reporting of tsunamis in the open ocean. Three DART buoy stations were exchanged off the coast of Alaska during this mission. DART systems consist of an anchored seafloor bottom pressure recorder (BPR) and a companion moored surface buoy for real time communications. An acoustic link transmits data from the BPR on the seafloor to the surface buoy. The data is then relayed via a satellite link to ground stations, which demodulate the signals for immediate dissemination to NOAA's Tsunami Warning Centers (http://www.noaa.gov/tsunamis.html).

HEALY is moored in Seattle, WA.
USCG | US Coast Guard-Pacific Area | Disclaimer
Contact:
Webmaster regarding content and web-related issues.

2. Each science phase also maintained their own website, some with detailed updates and summaries of their respective studies.

    1. D.A.R.T. – Deep Ocean Assessment and Reporting of Tsunamis: http://www.ndbc.noaa.gov/dart.shtml

    2. SBI Phase I – Shelf Basin Interaction
       http://www.joss.ucar.edu/sbi/catalog_hly-04-03/index.html

    3. SBI Phase II – Shelf Basin Interaction
       http://www.joss.ucar.edu/sbi/catalog_hly-04-03/index.htm

    4. SBI Phase III – Shelf Basin Interaction / Mooring Cruise
       http://www.whoi.edu/science/PO/arcticedge/arctic_west04/expedition/index.html

    5. NOAA – Ocean Floor Mapping Cruise
       http://www.ccom.unh.edu

CHAPTER VIII - SUPPLY/LOGISTICS

1. Supply Summary

A. Pre-deployment Preparations, Shakedown Cruise, & Victoria

1. HEALY Supply Division started re-supplying upon returning to home port after the Arctic East West Summer 2003 deployment. Prior to departing on the trip, 80% of the annual budget had been executed.

2. Fuel and Lube Oil was procured from DESC Manchester Fuel Department, P.O. Box 8. Manchester WA. 98353. 1,400,000 gallons of F-76 fuel was received at $0.84 per gallon, and 19000 gallons of 9250 Lube Oil at $2.70 per gallon. The Fuel was delivered by DESC Barge, and the Lube Oil was delivered by truck. In addition, 8869 gallons of Hydraulic Oil was procured via MIPR through the Military Sealift Command.

3. HEALY got underway for Shakedown Cruise on 22Mar04. Tugs were arranged through Crowley Marine Services (2401 Fourth Ave, Seattle, WA. (206)443-8100). Pilot service was arranged through Puget Sound Pilots (101 Stewart St., Suite 900, Seattle, WA. (206)728-6400). The same vendors were used for our return to home port on 03Apr04.

4. For the portcall at Victoria, BC on 24-28MAR04, all logistics were handled through King Brothers Limited, (P.O. Box 577, 401-1208 Warf Street, Victoria, BC. (250)384-1174). The LOGREQ was submitted to MARPACHQ ESQUIMALT, who arranged for the Husbanding Agent. King Bros and was very responsive and provided outstanding service.

5. On 03APR04, HEALY stopped at Port Angeles to embark dependants for a cruise. Line handlers were arranged through SSA Marine, 640 Marine Dr., Port Angeles, WA. 98363 (425)239-1190. Pilot services were arranged through Puget Sound Pilots, 101 Stewart St., Suite 900, Seattle, WA. (206)728-6400. Tug service was arranged through Foss Maritime Company, 600 W. Ewing, Seattle, WA. 98134 (206)281-3800. Foss was utilized for tugs versus Crowley (which has a Navy Contract), because the contract does not cover Port Angeles, and Foss has tugs stationed there, while Crowley's would have had to transit from Seattle.

B. Seattle, DART Mission to Dutch Harbor to Nome:

1. HEALY got underway for AWS04 on 30APR04 from Seattle, WA without the assistance of a Pilot or Tugs. Supply personnel consisted of SKC Karl Keyes, SK2 David Joseph, and SK2 Chris Sison. SK1 Peterson manned the HEALY Shore Support Office.

2. On 10MAY04 HEALY made a port call at Dutch Harbor, AK. Pilot services were arranged through the Alaskan Marine Pilots (907)581-1240; Tug service was arranged thought Pacific Coast Maritime (206)447-3060 and Dunlap Towing (425)259-4163. Line Handlers where arranged thought Pacific Stevedoring 907-581-8648. A vehicle for ships use was arranged thought B.C. Vehicle Rental (907)581-1589. Approximately 1200lbs of freight was shipped to meet us via Alaskan Airlines.

Even though Alaskan no longer has flights themselves to Dutch, they do maintain a cargo office there, and utilize the other carriers. SK1 Jacques Faur reported aboard.

3. During the portcall at Nome on 15May04 several small packages were received for critical repairs that were shipped via Alaskan Airlines.

B. SBI Process I:

1. HEALY Departed Nome on 15 May 2004 for SBI Process I. During this time we were able to ship freight to Nome and Barrow AK. Using Alaskan Airlines, shipments normally took a total of four days, one day to pack and manifest, and three days to ship to the destination.

2. On 15 June 2004 SKC Keyes departed the ship to act as a medical escort for a HEALY crewman that needed to return to Seattle. While in Seattle awaiting transport back to the ship, SKC Keyes worked at the HEALY Shore Support Office.

C. Nome to Yokosuka to Nome

1. On 23 June 2004 supplies where received in Nome AK during the disembarkation of the science party. The majority of the science cargo offload took place via small boat. Having a member ashore coordinating cargo and passenger movement greatly assisted the process.

2. On 03 July 2004 the HEALY made a portcall in Yokosuka, Japan. We moored at the U.S. Naval facility outboard of one of the ships homeported there. All logistics and maintenance needs were arranged through the U.S. Navy. Repairs to the ASW line of the ship's service air compressor. These repairs were accomplished in a very timely manner at an extremely reasonable cost. Due to the Navy's agreement with the government of Japan, part of all labor costs for work performed on the base are paid by the Japanese Government.

3. Another advantage of utilizing the Navy base was the ability to utilize shore power; extremely unusual for the HEALY. The Navy provided all the cables and manpower to hook-up the shore tie. The cost of the labor and power were minimal.

4. On 18 July 2004 HEALY arrived at Nome to onload the next science party. Needed

supplies where received there. SKC Keyes was sent ashore to coordinate activities on the beach. A van was rented from Stampede Ventures INC. (907)443-3838 to assist in movement of personnel and cargo.

D. SBI Process Phase II

Nothing significant to report.

E. Nome to Dutch Harbor & SBI Mooring

1. The offload of science personnel in Nome AK on 26AUG04 went smoothly.

2. On 28AUG04 HEALY made a portcall at Dutch Harbor, AK. Pilot services were arranged through Alaskan Marine Pilots (907)581-1240. Tug service was arranged through Pacific Coast Maritime (206)447-3060 and Dunlap Towing (425)259-4163. Ship's force was used for line handling. A vehicle for ships use was arranged through B.C. Vehicle Rental (907)581-1589. Moorage was made at the Marine Center Pier, which is a much better facility than what has been available in the past. Mooring fees, garbage, water, and telephone services are paid for by ISC Kodiak.

3. 64 drums of 9250 lube oil were purchased from ISC Kodiak HAZMIN Pharmacy. Transportation of these drums was arranged by MLC Pacific. This is the second year that HEALY had to arrange this, and the cost is almost prohibitive. In the end, HEALY paid approximately $24,000 for 3520 gallons of lube oil, after factoring in transportation fees, barrel disposal, and fees to pump the lube oil aboard.

4. Fuel was arranged through Petro Star Inc (907)581-1350, under DLA contract. Their POC, Norman Bautista (email: NDBautista@petro-star.com) was very helpful, also arranging for an oil containment boom to be put in place for the fueling evolution. Also Petro Star provided a pump and operator to pump the 9250 lube oil on board and also provided a forklift and operator to move stores on the pier. It was determined that Petro Star can only delivery approx 900 gallons per minute, which meant our onload took approximately 10 hours.

F. Nome to Provideniya to Nome, NOAA Mapping Mission

1. On 3Oct2004 HEALY made a portcall at Provideniya, Russia. The Defense Attache's Office in Moscow arranged for all services to be coordinated by a Russian HA, Inflot Worldwide 7-812-251-5857. INFLOT subcontracted the work to a local agent, YurTransServices, who's Director and sole representative was Vladimir Bychkov (email: v_bychkov@hotmail.com). Mr. Bychkov met the ship with the Pilot and acted as translator for the transit in, and throughout the portcall.

2. Minimal pier services were available. There are no phone lines available because all communications outside the town are via radiotelephone. There is no sewage shore tie, and the only sewage truck available was owned by the local utility company, and the HA was unsure that it was available. Potable water was available, but due to health hazards identified in the threat assessment, HEALY opted not to take on water. Garbage was offloaded via two trucks, but each bag was required to be closely inspected by the local customs official. We opted to offload the first day only.

3. Overall Providenya was a very enjoyable portcall. The local cultural board made arrangements to show two movies, and a cultural show highlighting Russian music and dance. The agent was also able to arrange a couple of trips to an Inuit village who also put on a dance show, and had bone carvings and fur items available for sale.

4. Money changing was an issue. Per Russian law all transactions are required to be completed in Russian currency. However, the Mayor indicated that the non-government stores would accept USD. This not only bore out to be true, they actually preferred USD. The state stores still required Rubles. When we requested to change money, the HA made arrangements with the bank, but they were only willing to change $2000 that day. They also requested that it be in one lump sum, versus 30 individuals showing up with $75. The process was time consuming because they visually check each bill, refusing any that are old, torn, or marked on. Then they scan each bill under an ultraviolet light. The entire process took almost three hours. The exchange rate was approximately 30 Rubles to the Dollar.

G. Barrow to Prince Rupert to Seattle

1. On 02NOV04 HEALY arrived at Prince Rupert, British Columbia, Canada. The LOGREQ was submitted to Esquimalt, who arranged for an HA. All arrangements were made through Rupert Marine Shipping (PO Box 848, Prince Rupert, BC, Candaa V8J 3Y1, (250)624-5339). Their POC, and owner, was Douglas Moore who provided outstanding service. Payment for all services received were made to Rupert Marine with the exception of the rental van; payment was made directly to National Car Rental (250)624-5318.

2. HEALY moored at the Northland Cruise Terminal, a recently constructed pier. The pier consists of a center floating section, with Dolphins on either side. There was no charge for mooring or pier fees. There are no services currently available on the pier. Water was arranged through the city by connecting to a fire hydrant ashore. The city provided the necessary hose to deliver the water to the floating pier. A trash container was arranged ashore, but due to the distance from the ship it was used minimally. After arrival the HA informed us that a garbage barge could have been arranged for approximately $2500.

3. Mail and small packages where shipped to meet HEALY via FEDEX. It turned out that FEDEX does not service Prince Rupert. The shipment went as far as Prince George, 500 miles east of Prince Rupert. From there, FEDEX turned it over to a sub-contractor for delivery. With customs clearance and the sub-contractor, it took about 4 days to get the shipment delivered.

4. On 9Nov04 HEALY completed AWS04. For the arrival in Seattle, Pilots and Tugs were arranged with the same companies utilized for the departure.

H. Recommendations

This year was the second year that HEALY needed to procure lube oil after its departure from Seattle. Costs for delivery of oil in Dutch Harbor are extremely high, and alternatives need to be sought, well in advance, to keep costs down.

Date	Port	Steam	Water	Trash	Electricity	Oily Waste	Emergency Services	Vehicles	Cranes	Telephones
22 Mar 2004	Seattle, WA.									
27-28 Mar 2004	Victoria, BC.		$257.58	$900.00						
2 Apr 2004	Port Angeles, WA.									
30 Apr 2004	Seattle, WA.								$1,400.00	
10-12 May 2004	Dutch Harbor, AK.							$361.00		
3-10 Jul 2004	Yokosuka, JP.		$24.29		$650.00			$4,000.00		$288.07
28 Aug - 2 Sep 2004	Dutch Harbor, AK.							$567.75		
3 - 6 Oct 2004	Provideniya, RS.			$325.00				$1,360.00		$325.00
3-6 Nov 2004	Prince Rupert, BC.		$1,008.40	$210.08				$700.00		$117.64
9 Nov 2004	Seattle, WA.									
	Totals	$0.00	$1,290.27	$1,435.08	$650.00	$0.00	$0.00	$6,988.75	$1,400.00	$730.71

Date	Port	Tugs	Husbandary Fee	Berthing Fee	Harbour Fee	Cable TV	Sewage	Line Handlers	Other Services	Total Port Services Cost
22 Mar 2004	Seattle, WA.	$1,670.00								$2,056.20
27-28 Mar 2004	Victoria, BC.	$4,903.20		$1,761.28				$2,554.00	$2,242.52	$14,409.78
2 Apr 2004	Port Angeles, WA.	$3,100.00						$1,400.00		$4,500.00
30 Apr 2004	Seattle, WA.	$1,736.00								
10-12 May 2004	Dutch Harbor, AK.	$8,308.00						$925.00		$13,064.10
3-10 Jul 2004	Yokosuka, JP.			$1,894.20			$20.40			$6,876.96
28 Aug - 2 Sep 2004	Dutch Harbor, AK.	$6,310.00							$3,880.76	$13,945.99
3 - 6 Oct 2004	Provideniya, RS.	$7,678.97	$2,600.00		$280.00			$324.00	$21,955.00	$41,519.97
3-6 Nov 2004	Prince Rupert, BC.	$5,266.81	$1,260.50							$11,504.61
9 Nov 2004	Seattle, WA.									$0.00
	Totals	$38,972.98	$3,860.50	$3,655.48	$280.00	$0.00	$20.40	$5,203.00	$28,078.28	$107,877.61

Date	Port	Waste Oil	Hydraulic Oil	Ship Fuel	Aviation Fuel	Lube Oil	Engineering Services Total
22 Mar 2004	Seattle, WA.		$20,700.00	$420,000.00	$53,940.00	$51,300.00	$545,940.00
27-28 Mar 2004	Victoria, BC.						$0.00
2 Apr 2004	Port Angeles, WA.						$0.00
30 Apr 2004	Seattle, WA.			$756,000.00			
10-12 May 2004	Dutch Harbor, AK.						$0.00
3-10 Jul 2004	Yokosuka, JP.			$243,600.00			$2,123.50
							$0.00
28 Aug - 2 Sep 2004	Dutch Harbor, AK.					$14,031.36	$14,031.36
3 - 6 Oct 2004	Provideniya, RS.						$0.00
3-6 Nov 2004	Prince Rupert, BC.						$0.00
9 Nov 2004	Seattle, WA.						$0.00
	Totals	$0.00	$20,700.00	$1,419,600.00	$53,940.00	$65,331.36	$562,094.86

2. General Mess

A. Pre-deployment Preparations, Shakedown Cruise, & Victoria

1. The General Mess was fully prepared for the upcoming deployment. The total amount of food stores onloaded for the deployment was $261,802.03.

2. Division personnel:

   Permanent Duty – FSCS Forsythe – FS1 Gaulke – FS2 Agosto - FS3 Mortellaro – FS3 Som – FS3 Barnes

B. Seattle, DART Mission to Dutch Harbor to Nome:

1. The food stores replenishment for this phase was set up prior to arrival in Dutch Harbor using the Alaska Prime Vendor, which is Food Service of America (FSA). Their POC: was Jody Hodgins (email: Jody_Hodgins@fsafood.com). FSA needed only a few days advance notice for this order, totaling $1116.39, consisting of produce and minor dairy products. While in Dutch Harbor a few last minute substitutions were purchased from the local supermarket. This purchase was made with the Impact Visa, totaling $567.47.

2. Division personnel:

   Permanent Duty – FSCS Forsythe – FS1 Gaulke – FS2 Agosto - FS3 Mortellaro – FS3 Som – FS3 Barnes

C. SBI Process I:

1. The food stores replenishment for Nome was handled through FSA for a total of $5486.22. One small shipment of produce was flown to the ship from Barrow while underway during our operation north of Barrow. The rest of the total order was brought onboard via the ship's Rigid Hull Inflatable's (RHI) on our return to Nome.

2. Division personnel:

   Permanent Duty – FSCS Forsythe – FS1 Gaulke – FS2 Agosto - FS3 Mortellaro – FS3 Som

   TAD – SN Garlic

D. Nome to Yokosuka to Nome

1. The food stores replenishment for Yokosuka, Japan was handled through

Defense Supply Center Philadelphia (DSCP) POC: was Ray Denny, email Ray.Denny@dla.mil. This order was set up 14 days prior to mooring to accommodate any substitutions needed. Total cost of this order was $21,416.81. Also, the provisions were onloaded by personnel provided by the Navy. These personnel were very hard working and speeded the process significantly, since the stores had to be brought from the pier, across the Navy ship, onto the HEALY, and then struck below.

2. The food stores replenishment for Nome was handled through FSA. The total cost of stores $2187.05. This order was placed to cover the short falls of the DSCP order in Yokosuka, Japan.

3. Division personnel:

   Permanent Duty – FSCS Forsythe – FS1 Gaulke – FS2 Agosto - FS3 Mortellaro – FS3 Som –

   TAD – FS2 Hill – SN Garlic

E. SBI Process Phase II

1. No stores replenishment

2. Division Personnel

   Permanent Duty – FSCS Forsythe – FS1 Gaulke – FS2 Agosto – FS3 Mortellaro – FS3 Som

   TAD – FS2 Hill

F. Nome to Dutch Harbor & SBI Mooring

1. The food stores replenishment for Dutch Harbor was handled through FSA, Eagle market and Alaska Ship Supply. The orders totaled: FSA $35,178.28, Eagle market $3340.42 and Alaska Ship Supply 411.20.

2 Division Personnel

   Permanent Duty – FSCS Forsythe – FS1 Gaulke – FS2 Agosto – FS3 Mortellaro – FS3 Som

   TAD – FS2 Hill- FS2 McBride

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. The food stores replenishment for Nome was handled through FSA. The total

cost of stores was $5338.09.

2. Division Personnel
   Permanent Duty – FSCS Forsythe – FS1 Gaulke – FS2 Agosto – FS3 Mortellaro – FS3 Som – SNFS Elliott

H. Barrow to Prince Rupert to Seattle

1. The food stores replenishment for Barrow was handled through FSA. The total cost of stores $2319.95

2. Division Personnel
   Permanent Duty – FSCS Forsythe – FS1 Gaulke – FS2 Agosto – FS3 Mortellaro – FS3 Som – FS3 Elliott

I. Recommendation

1. Continue to use DSCP stores replenishment for upcoming deployments outside the United States.

2. Continue to push for and keep one FS3 or FS2 over billet to cut out the need for TAD personnel. AWS04 deployment required three different TAD personnel. One each from ISC Seattle, ISC San Pedro and Group San Francisco for a total of five months TAD time.

3. Ship's Exchange

A. Pre-deployment Preparations, Shakedown Cruise, & Victoria

1. Preparations for AWS '04 began during HEALY's previous deployment. Recommendations from last trip (AEWS 2003), as well as lessons learned with respect to re-supply while deployed were incorporated into the planning stages for AWS '04.

2. Developed the "AWS '04" Logo and placed it on the AWS '04 T-shirts.

3. The exchange purchased new items to conform to changing crew habits. New items purchased were ship's paintings, Red Bull energy drinks, Snapple Fruit drinks, Monogrammed Watchcaps, and "Polar Operations" T-shirts.

4. All major exchange on-loads were scheduled to arrive on two different periods – prior to shakedown and prior to AWS 2004. Final major purchase breakdown is as follows:

   Northstar Sportswear (Ballcaps/Shirts/Coffee Cups): $13,252
   Tully's Coffee Corporation (Coffee/Syrups/Cups/Lids): $3,344
   Cloud Trading Company (Tobacco): $6,020
   H&H Studios (Ship's Plaques): $1,550
   Sysco Food Corporation (UHT Milk): $3,021
   Admiral Exchange: (Zippo Lighters): $791
   Uniform Distribution Center (Uniform Articles): $255
   Misc Vendors: $1,995
   Total Purchases: $30,228

5. During the shakedown cruise, the exchange totaled $6,018.05 in sales. 15% of the sales were coffee related, 17% tobacco related, and 32% T-shirt related. The T-shirt sales were bolstered by a new "Polar Operations" T-shirt.

6. The employees are: IT1 Chipman.

B. Seattle, DART Mission to Dutch Harbor to Nome:

1. Prior to leaving port for the AWS 2004 cruise, the exchange received the Arctic West Summer 2004 T-shirt, coffee supplies, tobacco products, and the HEALY monogrammed watchcaps.

2. During the DART phase of the cruise, the Exchange totaled $3354.75 in sales. 13% of the sales were coffee related, 10% tobacco related, 37% T-shirt related, and 16% were sweatshirt related. The T-shirt sales were bolstered by a new "Arctic West Summer 2004" T-shirt.

C. SBI Process I:

1. During the SBI Phase 1 phase of the cruise, the exchange totaled $11,764.95 in sales. 25% of the sales were coffee related, 14% tobacco related, 12% sweatshirt related, and 15% was T-shirt related.

2. During this phase, the Exchange Officer went to Little Diomede Island and acquired memorabilia from the island to sell to the crew. All items sold instantly.

3. The employees are: IT1 Chipman and OS1 Neill. The exchange officer sent out a solicitation asking for volunteers to work in the ship's store, and OS1 Neill was selected as the new helper to replace IT1 Chipman.

D. Nome to Yokosuka to Nome and SBI Process Phase II

1. During the SBI Phase II phase of the cruise, the exchange totaled $11,557.00 in sales. 28% of the sales were coffee related, 16% tobacco related, 10% sweatshirt related, 12% shirt related, and 5% was Zippo® related.

2. When in Japan, the Japanese contractors bought numerous items, namely Zippo® lighters. The lighters and global calling cards were the most popular items sold in Japan.

3. With access to a commissary at the Yokosuka Naval Base, the exchange purchased various items to sell in the exchange. The best sellers were: salted snacks, flavored lemonades, and ready-to-eat soups. HEALY exchange will continue to try different items to appeal to different tastes.

4. After inventory, the exchange ordered more HEALY monogrammed watch caps, XXL HEALY CREW sweatshirts, profile ballcaps, Chai Tea, Hot Sleeves, various syrups, stamps, and Red Bull Energy drinks.

5. The employees are: OS1 Neill, YNC Kirby, and HSC Andersen. HSC and YNC are working voluntarily.

E. Nome to Dutch Harbor & SBI Mooring

1. During the SBI Mooring Cruise, the exchange totaled $6362.63 in sales. 28% of the sales were coffee related, 17% tobacco related, 14% sweatshirt related, and 9% shirt related.

2. Ordered more candy products due to low quantities in stock.

3. The employees are: OS1 Neill. YN2 Hollis helped at the store while TAD for YNC Kirby.

F. Nome to Provideniya to Nome, NOAA Mapping Mission

1. During the NOAA Mapping Mission, the exchange totaled $5872.84 in sales. 32% of the sales were coffee related, 16% tobacco related, 11% shirt related, and 9% sweatshirt related.

2. Received recommendations from the annual audit and other crewmembers on ship's store renovation and operating policies. Exchange Officer will consider proposals and enact if feasible during the inport period.

G. Barrow to Prince Rupert to Seattle

1. During the Barrow to Prince Rupert to Seattle phase, the exchange totaled $4,046.32 in sales. 19% of the sales were coffee related, 17% tobacco related, 17% shirt related, and 21% sweatshirt related.

2. While in Prince Rupert, the store acquired Caramel, Blackberry, and Almond flavored syrups. These syrups were depleted from the patrol, and required restocking for the dependents' cruise.

3. Employees are: OS1 Neill and YNC Kirby. Both individuals volunteered to assist the store while inport.

4. The store totaled $42,957.99 in total sales for AWS 2004.

H. Recommendations

1. Order more personal items, candy, and soda prior to getting underway to prevent ordering and paying shipping costs to HEALY's port-of-calls while underway.

2. Obtain recommendations from crew members for possible gifts during the Christmas and holiday seasons.

3. Supply crewmembers with more hard to acquire supplies while underway, such as salted snacks and various drinks.

CHAPTER IX – MEDICAL

A. Pre-Deployment Preparations, Shakedown Cruise, & Victoria

1. HSCS Gordon was permanent HS assigned. Retired prior to ships departure.

2. LT. Brian DeMio and HSC James Connor were the TAD health care providers for the Arctic West Summer 2004 patrol.

3. Pharmaceuticals and supplies were ordered and received through the ISC Seattle Pharmacy. HSC Connor entered into inventory, all drugs received.

4. Four crewmembers left on shore for medical treatment.

5. Began Inventory and restocking all medications and medical supplies as were able.

6. Collected medical history screening forms from science members.

B. Seattle, DART Mission to Dutch Harbor to Nome

1. 30APRO4– Underway to Dutch Harbor. Sailed with all crewmembers but four. Crew in good spirits, ready to assume responsibilities of the mission. Proceeded underway to Dutch Harbor, AK.

2. 30APR-08MAY04- Ten patients were treated with various medical conditions. Two were put on limited duty status. No significant ailments. Inspections complete without discrepancies

3. 09-15MAY04 – Three patients evaluated. One referred to homeport for Adjustment Disorder and Suicidal Tendencies. Inspections complete. No significant discrepancies. Continued inventory of pharmaceuticals. Determined numerous medications were expiring prior to end of Arctic trip. Sent to ISC Seattle to restock some medications. **List as follows:**

Amoxicillin	Iron	Various
Gentamycin	supplements	catheters and
Opthalmic	Meclizine	infusion sets
Bretyllium	Cyproheptadine	Ranitidine
Cortisporin Otic	Neomycin	Ketorolac
Flagyl	Maalox	Tramadol
Prophylactics	Tolnaftate	Aspirin
Epi-pens	Tetracaine HCL	Saline spray
Surgical gloves	ophthalmic	Flonase
		Penicillin

C. SBI Process I

1. 16-22MAY04 – Three patients evaluated. Two put on a limited duty status. Began inventory and restocking of gun bags and Battle Dressing Station. Inspections complete. No significant discrepancies.

2. 23-29MAY04 – One patient evaluated. FFFD. Inspections complete. No significant discrepancies. Advanced Cardiac Medical bag was determined to be outdated and requiring new meds and updated protocols. Meds were ordered and protocols generated.

3. 30MAY-05JUN04- No patients were evaluated. Inspections complete. No significant discrepancies.

4. 06-12JUN04- Four patients evaluated. One referred out for fractured metacarpal after falling while playing basketball on flight deck. Inspections complete. No significant discrepancies.

5. 13-19JUN04 – Seven patients seen. One patient was referred to Anchorage for severe tooth pain. Two were put on a limited duty status. One was referred to Homeport due to Impulse control/maturity issue. Inspections complete. No significant discrepancies.

D. Nome to Yokosuka to Nome

1. 20-26JUN04 – One patient evaluated. Inspections complete. No significant discrepancies.

2. 27JUN-03JUL 04 – One patient evaluated. Inspections complete. No significant discrepancies.

3. 04-10JUL04 – Nine patients evaluated. One put SIQ for 24 hours. Full complement of medical services in Yokosuka. Was able to complete two dive physicals to include lab work, and dental exams. Inspections complete. No significant discrepancies.

4. 11-17JUL04 – One patient evaluated. Inspections complete. No significant discrepancies.

E. SBI Process Phase II

1. 18-24JUL04 – Seventeen patients evaluated. One referred to Anchorage for wide excision biopsy and one for dental work. Patient HS liaison in Anchorage is an excellent source for care. Dermatology completed punch biopsy on patient recommending wide excision. Due to time constraints of vessel and cost to patient and Coast Guard it was determined to transfer him to homeport for evaluation. Inventoried and organized alphabetically all Pharmaceuticals. Inspections complete. No significant discrepancies.

2. 25-31JUL04 – Two patients evaluated. One scientist severely dehydrated with probable pneumonia or bronchitis. Treated with IV NS 2 liters monitored overnight and put on antibiotics. Patient had a slow recovery.
   Inspections complete. Completed an Inventory of BDS stations and PML lockers. No significant discrepancies. Some medications ordered from ISC Seattle:
   a. Depo Provera
   b. Naproxen 500MG

   Also requested assistance from with the Anthrax program, ISC will attempt to send Anthrax in proper container to maintain temperature.

3. 01-07AUG04 – Six patients evaluated. Inspections complete. No significant discrepancies. De-Rat certificate has been extended to expire Jan05.

4. 08-14AUG04 – Three patients evaluated. One patient returned from ISC Seattle but discussed needing to return home due to wife's mental health condition. Discussed with Executive Officer. Did not recommend he return due to non-emergency. Patient requested a humanitarian. Inspections complete. No significant discrepancies. Water tanks were flooded accidentally with Citric Acid. Tanks were secured and flushed. No untoward effects occurred.

5. 5-21AUG04 – Four patients evaluated. One patient was medically evacuated for kidney stone to rule out obstruction. Patient returned next day.

6. 22-28AUG04 – Five patients evaluated. Inspections complete. No significant discrepancies. Medications received from ISC Seattle- Naproxen and Depo Provera. HSC Andersen departs for CPOA Academy

F. Nome to Dutch Harbor & SBI Mooring

1. 29AUG-04SEP04 – HSC Kowzic arrived for relief.

2. 05SEP-11SEP04 – Eight patients evaluated. Inspections complete. No significant discrepancies. All other Inspections complete. No significant discrepancies.

3. 12-18SEP04 – Nine patients evaluated. Inspections complete. No significant discrepancies.

4. 19-25SEP04 – Seven patients evaluated. Inspections completed. No significant discrepancies.

5. 26-SEPT-02OCT- Inspections completed. No significant discrepancies. HSC Andersen returns from TAD.

G. Nome to Provideniya to Nome, NOAA Mapping Mission

1. 03-09OCT04- Eighteen patients evaluated. Controlled Drug Inventory completed. Inventory BDS Supplies #2 completed- No significant discrepancies. All other Inspections complete. No significant discrepancies. HSC Kowzic departs. Noted Refrigerator in Sickbay is inoperable; Temp log indicates that

temp was 52 degrees on Sept 15 all immunizations will be disposed of due to temperature. Inventory is as follows:

a. #15 single dose TWINRIX- Hep A/B
b. #12 1ml vials Recombinant/Recombivax Hep B
c. #12 1ml vials Hep A
d. #2 5ml vials Tetanus and Diphtheria Toxoid.
e. #2 1 ml vials Tuberculin PPD
f. #3 5ml Diltiazem 25mg/ml
g. #1 Anthrax FAV087 Exp May/05
h. #2 Novolin N-Insulin
i. #2 Novolin R- Insulin

2. 10-16OCT- Fifteen patients evaluated. Food Service sanitation report completed, scored 97%. Quarterly Inventory of consumables and EMT kits completed. No significant discrepancies. Provided training to stretcher Bearers and ENS Carr on proper procedures for transporting injured personnel throughout the ship, and reviewed all critical items on drill sheets.

H. Barrow to Prince Rupert to Seattle

1. 17-23OCT- Eleven patients evaluated. Inspections complete. No significant discrepancies. Weigh-ins completed for 2/3rds of the crew. Physical Characteristics entered in Direct Access on all members weighed in. Members not weighed will follow up Oct 31st. Food Service sanitation report completed, scored 92%.

2. 24-31OCT- Twelve patients evaluated. Inspections complete. No significant discrepancies. HSC Andersen departed 26OCT04 for the Air Force Academy. One crewmember med-evac'd for a broken hand. Weigh ins completed for delinquent members.

3. 1-9NOV04- Embarked dependants for dependants cruise.

I. Recommendations

1. Continuity of medical personnel. PA and HS need a minimum of one-month preparation prior to deployment in order to determine the Ship's medical needs and requirements underway. A two-week notice is insufficient.

2. Medical personnel should work on a list of medical contacts for local hospitals and clinics in op areas. The HS liaison at Elmendorf AFB is a good example. At a minimum e-mail and phone contacts should be made for easy reference.

3. Ship needs a dental kit for temp fillings and tooth repair.

CHAPTER X - DIVING

A. Pre-Deployment Preparation

Prior to deployment, dive team members attended classes on inspecting and rebuilding the APEK regulators, Zeagle buoyancy compensators (BC), and steel tanks at Underwater Sports, a local dive company. These classes enabled the team to conduct thorough preventative maintenance on crucial dive gear. The EXO-26 face masks were also disassembled, inspected, and reassembled. The tanks were hydrostatically tested in addition to the visual inspections. The air from the air compressor tanks tested satisfactory. Dry suits, wet suits and other personal gear were inspected for cracks, tears, holes, and overall repair.

The dive team conducted a few proficiency and working dives during the `03-`04 in port season, including hull inspections on CGC MELLON and CGC ACTIVE and a shore dive to practice maintaining neutral buoyancy. During these dives, the team also tested the new underwater camera for the first time.

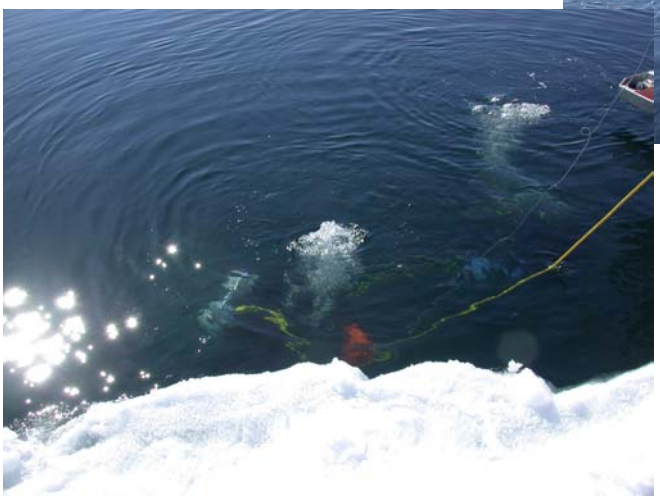
The team did group physical training several times a week to maintain good physical fitness and swimming proficiency. A new diver, CWO Rich Mills, joined the team after successful completion of the SCUBA course at the Naval Diving and Salvage Training Center (NDSTC). The dive team consisted of LTJG Neal Amaral (dive officer), CWO Rich Mills, SCPO Mike Huff, PO2 Daryl Bresnahan, PO2 Todd Gillick, and PO3 Suzanne Scriven.

B. Seattle to Nome

No dives were required during this phase.

C. SBI Phase I

One scientific dive was conducted to study the flora and fauna along the under-side of an ice floe. The bottom of the Arctic sea ice harbors a unique community that has rarely been studied. The divers video recorded roughly 50m of ice bottom



at a distance of 0.5m. The video will be analyzed for absence or presence of ice flora and fauna. All team members were able to dive. A second dive to inspect the sonar transducers on the hull was attempted but aborted due to excessive current (> 1 knot).

The new dive officer, LTJG Jessica Noel, arrived on board and began learning the ropes of the HEALY's dive locker. LTJG Amaral departed after this phase.

D. Nome to Yokosuka to Nome

No dives were required during this phase.

E. SBI Phase II: 18 July – 26 August 04

No dives were conducted during this phase. Some minor maintenance was done on personal gear. PO3 Scriven departed at the end of this phase. The team attempted to plan an ice dive but after a week of uncooperative weather, had to cancel it.
Plans are being made for redesign of the dive locker to make it more user-friendly and diver accommodating. The plans will create ample space for suit, glove, and bootie drying, hanging storage for BCs and regulators, and cubicle-type storage space for dive bags and dry personal gear.

F. Nome to Dutch Harbor: SBI Mooring

During the between-phase port call in Dutch Harbor, Alaska, the team did a wreck dive for training and qualification purposes. All members were able to log multiple dives. The LCVP was utilized, proving again to be an excellent dive platform, except that the lowering ramp at the bow was not working so divers had to exit via steps around the motors at the stern. The HEALY is fortunate to have the necessary coxswain and engineer required for small boat operations within the dive team, so no additional personnel were needed. However, a non-diver break-in coxswain and a prospective diver joined the team for this excursion.

One dry suit cuff tore prior to the dive, but the member dove with it marginally repaired. Although it leaked during the dive, the water was relatively warm at about 52° F and did not prevent the dive. This was a latex cuff; closed-cell neoprene cuffs are more durable and will be used to replace the torn cuffs during the inport. Two new dry suits have been ordered.

A new diver, ENS Keidi

Niemann, joined the team after successful completion of the SCUBA course at NDSTC. Due to time constraints, she was not able to complete the CG-specific dry suit training after graduation, however this will be accomplished during the inport. The team members all contributed input for the FY2005 budget.

G. Provideniya and NOAA Mapping Mission

No dives were required during this phase. All dive team members have completed their minimum number of dives to maintain their active diver status.

H. Prince Rupert to Seattle

No dives were required during this phase.

I. Recommendations

- Due to the HEALY primarily operating in Arctic waters, the dive team, specifically new members, should dive as often as possible in dry suits to become familiar with how the suits function underwater once filled with air. Dry suits are not as easy to maneuver in as wet suits. The Dive Officer will ensure the team completes several familiarization/training as well as working dives during the inport.
- During the inport, the team will replace the current latex cuffs with closed-cell neoprene cuffs due to their durability.
- Once back in port, team should train on surface supplied diving (SSD) equipment. SSD allows for greater bottom times and is less bulky than SCUBA, an important consideration when diving in dry suits. HEALY has the required equipment and the Dive Officer is qualified to train the team members on the SSD console and umbilicals, technique, and preventative maintenance.
- The Dive Officer will re-instate regular training sessions to keep team members proficient in using dive tables, recognizing the symptoms of diving illnesses, and first response/ neurological exams for apparent diving incidents.

DATE	DIVER	MAX DEPTH	BOTTOM TIME	DIVER	MAX DEPTH	BOTTOM TIME
09MAR04	Amaral	26’	:22	Scriven	27’	:10
09MAR04	Amaral	20’	:15	Scriven	27’	:12
11JUN04	Noel	50’	:30			
16JUN04	Mills	27’	:20	Bresnahan	27’	:20
16JUN04	Scriven	40’	:20	Huff	40’	:15
16JUN04	Gillick	37’	:29			
01SEP04	Noel	44’	:15	Mills	40’	:15
01SEP04	Huff	40’	:16	Bresnahan	40’	:15
01SEP04	Gillick	40’	:15			
01SEP04	Mills	35’	:10	Noel	35’	:10
01SEP04	Huff	35’	:10	Bresnahan	35”	:10
01SEP04	Gillick	35’	:10			
01SEP04	Mills	20’	:10	Huff	20’	:10
01SEP04	Bresnahan	15’	:10	Gillick	15’	:10

Appendix A

AWS 2004 CHRONOLOGY OF MAJOR EVENTS

DATE	TIME	EVENT
30APR04	1017T	Underway from USCG ISC Seattle, Washington, for AWS-04 En route NOAA DART Buoy Mission. NPOC Dutch Harbor Alaska, ETA 10MAY04.
30APR04	1508T	Embarked CG 6532 and 6539, AVDET 160.
01MAY01	0001T	Stood into the North Pacific Ocean.
02MAY04	1600T	Adjusted ship's clocks to conform to +8 Uniform.
04MAY04	0700U	Arrived @ NOAA Buoy 46403, commenced 7 day DART Mission, (AWS-04-01).
10MAY04	1348U	Moored UMC Dock, Dutch Harbor, Alaska. Completed DART Mission (AWS04-01).
12MAY04	1500U	U/W En Route Nome, Alaska for SBI-Phase 1, on-load.
15MAY04	0800U	Arrived Nome, AK commenced science on-load for SBI-Phase-1.
18MAY04	0254U	Crossed north of the Arctic Circle.
18MAY04	0331U	Stood into the Chukchi Sea.
22JUN04	1300U	Crossed south of the Arctic Circle.
23JUN04	0400U	Stood into Norton Sound.
23JUN04	0630U	Anchored off Nome, Alaska in Norton Sound for SBI Phase-I Science off-loads.
23JUN04	1807U	U/W in Norton Sound, en route Yokosuka, Japan.
24JUN04	0400U	Stood into the Bering Sea.
24JUN04	1200U	Stood into the North Pacific Ocean.
26JUN04	0400Y	Adjusted ship's clocks to conform to +11X.

27JUN04	0400X	Adjusted ship's clocks to conform to +15.
28JUN04	0001I	Adjusted date to 29JUN04 to conform with –9I time zone.
03JUL04	0700I	Stood into Uraga Suido Channel.
03JUL04	0900I	Moored portside to, outboard of USS CANCELLORSVILLE, COMFLEACT, Yokosuka, Japan.
10JUL04	1000I	U/W en route Nome, AK. Stood into Uraga Suido Channel.
10JUL04	1200I	Stood into the North Pacific Ocean.
11JUL04	0001(+15)	Adjusted ship's clocks to conform to +15.
11JUL04	1500(+15)	Adjusted ship's clocks to conform to +14.
12JUL04	1500(+14)	Adjusted ship's clocks to conform to +13.
13JUL04	1500(+13)	Adjusted ship's clocks to conform to +12Y.
14JUL04	1500Y	Adjusted ship's clocks to conform to +11X.
15JUL04	0100X	Stood into the Bearing Sea.
15JUL04	1500X	Adjusted ship's clocks to conform to +10W.
16JUL04	1500W	Adjusted ship's clocks to conform to +9V
17JUL04	1500V	Adjusted ship's clocks to conform to +8U.
17JUL04	0344U	Stood into Norton Sound.
18JUL04	0800U	Hove to off Nome, AK for SBI Phase II(AWS04-03) on-load.
19JUL04	0300U	Stood into the Bering Strait.
19JUL04	2015U	Crossed north of the Arctic Circle.
19JUL04	2100U	Stood into the Chukchi Sea.
28JUL04	1205U	Diverted by CCGD17 for SAR, to search for overdue F/V.
29JUL04	1348U	F/V found by 6539, 4 POB safely recovered. Released from SAR by CCGD17.

25AUG04	0400U	Crossed south of the Arctic Circle.
26AUG04	0400U	Stood into Norton Sound.
26AUG04	0600U	Arrived off-shore Nome, AK for SBI II off-load.
26AUG04	1022U	U/W en route Dutch Harbor, AK for port-call.

28AUG04	1350U	Moored UMC Dock, Dutch Harbor, AK.
02SEP04	1000U	U/W for SBI-Mooring Phase (AWS04-04).
05SEP04	0400U	Crossed north of the Arctic Circle.
05SEP04	0445U	Stood into the Chukchi Sea.
30SEP04	1730U	Crossed south of the Arctic Circle.
01OCT04	0600U	Stood into Norton Sound.
01OCT04	0800U	Hove to off Nome, AK for science off-load of SBI Mooring Phase.

01OCT04	1700U	U/W en route Provideniya, Russia for port call.
01OCT04	1700U	Adjusted ship's clocks to conform to +11 X.
03OCT04	0432(-13)	Crossed International Date-Line stood into Russian Territorial Seas. Stood into the Bering Sea.
03OCT04	0900(-13)	Stood into Bhukta Provideniya.
03OCT04	1100(-13)	Moored Port Side to, SW Wharf Provideniya, Russia.
06OCT04	1000(-13)	U/W from Provideniya, Russia en route Nome, AK. Stood into Bhukta Provideniya.
06OCT04	1200(-13)	Stood into the Bering Sea.
06OCT04	1500(-13)	Adjusted ship's clocks to conform with +8 U.
05OCT04	1851U	Crossed International Date-Line, standing into U.S. Territorial seas.
06OCT04	0900U	Hove to off Nome, AK for science on-load of NOAA Mapping Mission. (AWS04-05)
06OCT04	1253U	U/W for NOAA Mapping Mission (AWS04-05). CG 6532 disembarked HEALY en route ATC Mobile, AL.
07OCT04	0030U	Crossed north of the Arctic Circle.
07OCT04	0115U	Stood into the Chukchi Sea.
25OCT04	1032U	Hove to off Barrow, AK for NOAA Mapping off-load.
25OCT04	1552U	Completed science off-loads, completed NOAA Mapping Phase. U/W en route Prince Rupert, British Columbia, Canada via Albatross Banks.
26OCT04	1730U	Crossed south of the Arctic Circle.
26OCT04	1930U	Stood into the Bering Strait. Diverted toward Nome, AK for pax off-loads for emergency leave situation.
27OCT04	0511U	Stood into Norton Sound.
27OCT04	0700U	Hove to off Nome, AK for pax off-loads.

27OCT04	1135U	U/w en route Prince Rupert, via Albatross Banks.
28OCT04	0600U	Standing into the Bering Sea.
29OCT04	0540U	Stood into Unimak Pass.
29OCT04	0800U	Stood into the Gulf of Alaska.
29OCT04	1404U	Transferred one crewman to CG-6012 for emergency leave for further transport to Cold Bay, AK.
30OCT04	1300U	Arrived Albatross Banks for fish-call.

30OCT04	1948U	U/W en route Prince Rupert, British Columbia, Canada.
02NOV04	0700U	Stood into Dixon entrance.
02NOV04	1100U	Stood into Brown's Pass.
02NOV04	1520U	Moored portside to Northland Cruise Terminal, Cow Bay, Prince Rupert, British Columbia, Canada.
06NOV04	1300U	U/W en route home-port via the Canadian Inside Passage.

06NOV04	1600U	Stood into Hecate Strait.
07NOV04	0730U	Commenced northern run of the Canadian Inside Passage. Stood into Principe Channel.
07NOV04	1745U	Exited northern run of the Canadian Inside Passage. Stood into Queen Charlotte Sound.
08NOV04	0430U	Stood into Gordon Channel, commenced southern run of the Canadian Inside Passage.
08NOV04	1500U	Passed safely through Seymour Narrows, en route homeport.
08NOV04	0730U	CG 6539 Disembarked HEALY en route ATC Mobile, AL.
08NOV04	1056U	Moored USCG ISC Seattle, WA completed AWS04.

Appendix B

1200 Positions

USCGC HEALY (WAGB 20)

ARCTIC WEST 2004 TRACK HISTORY

DATE/TIME	1200 POSITION	DAILY NM	CUMULATIVE
301017T APR 2004	DEPARTED SEATTLE, WA	0.0	0.0
301200T APR 2004	47-51.5N 122-27.4W	20.0	20.0
011200T MAY 2004	49-21.2N 131-23.1W	377.0	397.0
021200U MAY 2004	50-33.2N 140-27.9W	359.0	756.0
031200U MAY 2004	51-45.9N 149-53.8W	366.0	1122.0
041200U MAY 2004	52-39.3N 156-55.6W	269.0	1391.0
051200U MAY 2004	51-07.2N 162-34.6W	234.0	1625.0
061200U MAY 2004	47-47.3N 168-56.7W	323.0	1948.0
071200U MAY 2004	47-49.6N 168-10.2W	242.0	2190.0
081200U MAY 2004	51-33.1N 159-36.5W	401.0	2591.0
091200U MAY 2004	53-05.6N 159-52.5W	240.0	2831.0
101200U MAY 2004	54-01.7N 166-23.3W	251.0	3082.0
111200U MAY 2004	Moored Dutch Harbor	7.8	3089.8
121200U MAY 2004	Moored Dutch Harbor	0.0	3089.8
131200U MAY 2004	57-44.3N 167-20.4W	258.0	3347.8
141200U MAY 2004	62-51.9N 167-30.4W	311.0	3658.8
151200U MAY 2004	64-12.9N 166-31.7W	229.0	3887.8
161200U MAY 2004	64-22.7N 165-14.7W	216.0	4103.8
171200U MAY 2004	65-39.8N 168-13.6W	195.0	4298.8
181200U MAY 2004	67-33.9N 168-48.1W	171.0	4469.8
191200U MAY 2004	68-26.6N 168-59.8W	101.0	4570.8
201200U MAY 2004	70-06.3N 167-35.9W	115.0	4685.8
211200U MAY 2004	70-42.8N 167-10.8W	51.0	4736.8
221200U MAY 2004	71-15.6N 162-01.1W	131.0	4867.8
231200U MAY 2004	71-42.9N 159-32.4W	89.0	4956.8
241200U MAY 2004	72-00.4W 159-38.9W	49.0	5005.8
251200U MAY 2004	72-01.8N 159-55.9W	26.0	5031.8
261200U MAY 2004	72-04.8N 159-35.9W	50.5	5082.3
271200U MAY 2004	72-05.3N 159-03.9W	27.0	5109.3
281200U MAY 2004	72-21.9N 159-02.0W	60.0	5169.3
291200U MAY 2004	72-31.4N 158-46.8W	47.0	5216.3
301200U MAY 2004	72-40.2N 158-45.3W	27.0	5243.3
311200U MAY 2004	72-42.8N 158-24.2W	34.0	5277.3
011200U JUN 2004	72-46.5N 158-24.3W	9.0	5286.3
021200U JUN 2004	72-51.3N 158-16.1W	41.0	5327.3
031200U JUN 2004	72-53.9N 158-15.5W	6.0	5333.3
041200U JUN 2004	73-08.5N 157-46.9W	39.0	5372.3
051200U JUN 2004	73-01.9N 157-36.0W	28.0	5400.3
061200U JUN 2004	72-37.5N 157-24.8W	52.0	5452.3
071200U JUN 2004	71-54.3N 156-32.1W	72.0	5524.3
081200U JUN 2004	71-26.3N 154-18.3W	92.0	5616.3
091200U JUN 2004	71-24.5N 154-10.4W	43.0	5659.3
101200U JUN 2004	71-28.2N 154-35.2W	9.0	5668.3

111200U JUN 2004	71-41.0N 154-42.8W	42.0	5710.3
121200U JUN 2004	71-46.8N 154-50.0W	32.0	5742.3
131200U JUN 2004	72-05.2N 154-18.1W	43.0	5753.3
141200U JUN 2004	72-09.4N 154-36.6W	20.0	5773.3
151200U JUN 2004	72-16.6N 154-35.0W	29.0	5802.3
161200U JUN 2004	71-55.3N 154-51.9W	41.0	5843.3
171200U JUN 2004	71-56.1N 154-54.6W	8.0	5851.3
181200U JUN 2004	71-37.8N 156-04.9W	44.0	5895.3
191200U JUN 2004	71-36.6N 155-47.5W	47.0	5942.3
201200U JUN 2004	71-24.2N 157-29.1W	62.0	6004.3
211200U JUN 2004	71-04.2N 159-38.4W	89.0	6093.3
221200U JUN 2004	66-40.0N 168-48.9W	350.0	6443.3
231200U JUN 2004	64-28.5N 165-24.8W	197.0	6640.3
241200U JUN 2004	61-24.0N 172-16.9W	270.0	6910.3
251200U JUN 2004	57-27.6N 178-57.0E	529.0	7439.3
261200X JUN 2004	53-04.5N 170-59.9E	382.0	7821.3
271200(+15)JUN 2004	49-25.8N 163-38.2E	357.0	8178.3
291200I JUN 2004	45-48.2N 157-32.7E	342.0	8520.3
301200I JUN 2004	42-10.2N 151-50.1E	332.0	8852.3
011200I JUL 2004	38-47.0N 146-48.2E	307.0	9159.3
021200I JUL 2004	35-41.8N 142-25.2E	281.0	9440.3
031200I JUL 2004	Moored Yokosuka, Jp	204.5	9644.8
041200I JUL 2004	Moored Yokosuka, Jp	0.0	
051200I JUL 2004	Moored Yokosuka, Jp	0.0	
061200I JUL 2004	Moored Yokosuka, Jp	0.0	
071200I JUL 2004	Moored Yokosuka, Jp	0.0	
081200I JUL 2004	Moored Yokosuka, Jp	0.0	
091200I JUL 2004	Moored Yokosuka, Jp	0.0	
101200I JUL 2004	35-00.9N 139-40.5e	24.0	9668.8
111200I JUL 2004	37-48.1N 145-23.3E	370.0	10038.8
111200(+15)JUL 2004	41-28.9N 150-47.5E	344.5	10383.3
121200(+14)JUL 2004	44-02.4N 154-43.9E	566.0	10949.3
131200(+13)JUL 2004	48-03.4N 161-16.8E	381.0	11330.3
141200Y JUL 2004	51-40.7N 167-38.3E	330.0	11660.3
151200X JUL 2004	54-54.8N 173-58.4E	310.0	11970.3
161200W JUL 2004	58-33.8N 178-41.4W	327.0	12297.3
171200V JUL 2004	61-59.5N 170-51.0W	312.0	12609.3
181200U JUL 2004	64-28.7N 165-24.9W	224.0	12833.3
191200U JUL 2004	65-42.0N 168-41.9W	166.0	12999.3
201200U JUL 2004	67-25.4N 168-44.6W	151.0	13150.3
211200U JUL 2004	70-09.0N 163-47.7W	204.0	13354.3
221200U JUL 2004	71-03.9N 159-24.4W	142.0	13496.3
221200U JUL 2004	71-25.3N 157-21.8W	78.0	13574.3
241200U JUL 2004	71-39.0N 156-03.0W	83.0	13657.3
251200U JUL 2004	71-56.2N 154-52.2W	65.0	13722.3
261200U JUL 2004	71-57.5N 154-55.9W	20.0	13742.3
271200U JUL 2004	71-59.9N 154-43.0W	42.0	13784.3
281200U JUL 2004	72-16.2N 154-21.8W	81.0	13865.3
291200U JUL 2004	71-26.0N 152-26.9W	102.0	13967.3
301200U JUL 2004	71-34.4N 152-28.3W	75.0	14042.3
311200U JUL 2004	71-33.5N 152-20.5W	73.0	14115.3
011200U AUG 2004	71-56.0N 152-04.5W	55.0	14170.3
021200U AUG 2004	72-24.9N 152-04.9W	25.0	14195.3

031200U AUG 2004	72-30.5N 152-10.0W	80.0	14275.3
041200U AUG 2004	71-58.2N 152-12.4W	66.0	14341.3
051200U AUG 2004	71-37.9N 152-13.1W	37.0	14378.3
061200U AUG 2004	71-38.4N 152-18.5W	68.0	14446.3
071200U AUG 2004	72-08.1N 154-07.4W	33.0	14479.3
081200U AUG 2004	72-28.7N 153-26.2W	59.0	14538.3
091200U AUG 2004	72-46.0N 152-47.6W	33.0	14571.3
101200U AUG 2004	72-10.2N 159-04.0W	135.0	14706.3
111200U AUG 2004	72-37.2N 158-38.3W	57.0	14763.3
121200U AUG 2004	72-44.8N 158-26.0W	29.0	14792.3
131200U AUG 2004	72-50.2N 158-17.0W	29.0	14821.3
141200U AUG 2004	72-52.0N 158-22.5W	31.0	14852.3
151200U AUG 2004	72-59.6N 158-12.9W	24.0	14876.3
161200U AUG 2004	73-26.2N 157-20.0W	49.0	14925.3
171200U AUG 2004	73-45.6N 156-47.4W	39.0	14964.3
181200U AUG 2004	73-55.4N 157-48.9W	29.0	14993.3
191200U AUG 2004	73-31.8N 159-29.2W	51.0	15044.3
201200U AUG 2004	73-19.8N 160-01.2W	32.0	15076.3
211200U AUG 2004	73-20.2N 160-13.8W	29.0	15105.3
221200U AUG 2004	73-06.1N 160-30.4W	41.0	15146.3
231200U AUG 2004	72-58.5N 160-39.6W	35.0	15181.3
241200U AUG 2004	70-01.5N 165-09.6W	208.0	15389.3
251200U AUG 2004	65-56.9N 168-26.6W	267.0	15656.3
261200U AUG 2004	63-59.9N 165-46.8W	282.0	15938.3
271200U AUG 2004	58-15.0N 167-43.7W	360.0	16298.3
281200U AUG 2004	54-07.6N 166-18.0W	271.2	16569.5
291200U AUG 2004	Moored Dutch Harbor	0.0	
301200U AUG 2004	Moored Dutch Harbor	0.0	
311200U AUG 2004	Moored Dutch Harbor	0.0	
011200U SEP 2004	Moored Dutch Harbor	0.0	
021200U SEP 2004	54-05.1N 166-31.9W	16.0	16585.5
031200U SEP 2004	58-39.8N 167-41.2W	278.0	16863.5
041200U SEP 2004	62-49.8N 166-51.0W	263.0	17126.5
051200U SEP 2004	68-32.9N 167-14.8W	357.0	17483.5
061200U SEP 2004	71-38.9N 156-16.2W	317.0	17800.5
071200U SEP 2004	71-31.7N 151-53.8W	135.0	17935.5
081200U SEP 2004	71-33.2N 151-52.3W	59.0	17994.5
091200U SEP 2004	71-40.2N 151-47.8W	76.0	18073.5
101200U SEP 2004	71-26.3N 151-59.6W	70.0	18143.5
111200U SEP 2004	72-33.3N 155-22.6W	122.0	18265.5
121200U SEP 2004	71-23.4N 160-11.1W	60.0	18325.5
131200U SEP 2004	71-03.2N 159-32.3W	112.0	18437.5
141200U SEP 2004	71-34.2N 155-38.7W	126.0	18563.5
151200U SEP 2004	71-45.5N 156-04.7W	78.0	18641.5
161200U SEP 2004	72-28.0N 156-35.3W	58.0	18699.5
171200U SEP 2004	73-20.4N 166-04.1W	217.0	18916.5
181200U SEP 2004	73-36.8N 165-59.0W	137.0	19053.5
191200U SEP 2004	75-11.5N 167-58.4W	119.0	19172.5
201200U SEP 2004	76-21.9N 168-49.4W	58.0	19230.5
211200U SEP 2004	77-08.4N 163-25.6W	103.0	19333.5
221200U SEP 2004	72-58.2N 160-44.3W	265.0	19598.5
231200U SEP 2004	72-35.5N 157-55.5W	237.0	19835.5
241200U SEP 2004	73-26.1N 160-17.7W	198.0	20033.5

251200U SEP 2004	73-29.8N 160-30.5W	166.0	20199.5
261200U SEP 2004	73-15.2N 160-30.5W	43.0	20242.5
271200U SEP 2004	70-41.9N 168-48.8W	242.0	20484.5
281200U SEP 2004	70-53.30 167-08.94	91.0	20575.5
291200U SEP 2004	70-39.3N 166-04.7W	163.0	20738.5
301200U SEP 2004	67-33.5N 167-01.2W	261.0	20999.5
011200U OCT 2004	64-25.7N 165-27.6W	248.0	21247.5
031200(-13) OCT	Moored Provideniya	253.2	21500.7
041200(-13) OCT	Moored Provideniya	0.0	
051200(-13) OCT	Moored Provideniya	0.0	
061200(-13) OCT	64-12.0N 173-35.6W	18.0	21518.7
071200U OCT 2004	69-05.9N 166-47.6W	326.0	21844.7
081200U OCT 2004	72-24.6N 157-53.2W	284.0	22128.7
091200U OCT 2004	74-44.2N 158-08.0W	230.0	22358.7
101200U OCT 2004	76-59.2N 154-16.6W	153.0	22511.7
111200U OCT 2004	77-44.6N 152-47.5W	73.0	22584.7
121200U OCT 2004	78-12.9N 153-10.0W	64.0	22648.7
131200U OCT 2004	78-29.3N 153-16.4W	56.0	22704.7
141200U OCT 2004	78-42.4N 154-13.7W	57.0	22761.7
151200U OCT 2004	78-29.9N 154-40.2W	64.0	22825.7
161200U OCT 2004	76-53.8N 155-20.7W	115.0	22940.7
171200U OCT 2004	75-01.9N 157-44.5W	122.0	23062.7
181200U OCT 2004	72-03.1N 150-07.4W	267.0	23329.7
191200U OCT 2004	72-17.8N 149-49.6W	232.0	23561.7
201200U OCT 2004	72-40.0N 150-52.8W	260.0	23821.7
211200U OCT 2004	71-45.4N 149-47.2W	297.0	24118.7
221200U OCT 2004	72-08.5N 153-26.8W	281.0	24399.7
231200U OCT 2004	71-20.0N 149-15.1W	293.0	24692.7
241200U OCT 2004	72-24.9N 151-40.6W	302.0	24994.7
251200U OCT 2004	71-12.3N 157-08.2W	284.0	25278.7
261200U OCT 2004	67-51.2N 167-40.4W	348.0	25626.7
271200U OCT 2004	64-19.5N 165-31.2W	289.0	25915.7
281200U OCT 2004	58-44.6N 167-26.5W	354.0	26269.7
291200U OCT 2004	54-19.5N 162-13.4W	348.0	26617.7
301200U OCT 2004	56-11.5N 153-38.4W	272.0	26889.7
311200U OCT 2004	55-44.3N 146-06.0W	316.0	27205.7
011200U NOV 2004	55-57.6N 139-36.5W	243.0	27448.7
021200U NOV 2004	54-18.9N 131-00.9W	315.5	27764.2
031200U NOV 2004	Moored Prince Rupert	27.3	27791.5
041200U NOV 2004	Moored Prince Rupert		
051200U NOV 2004	Moored Prince Rupert		
061200U NOV 2004	Moored Prince Rupert		
071200U NOV 2004	53-12.4N 129-40.1W	216.0	28007.5
081200U NOV 2004	50-25.1N 125-58.5W	240.0	28247.5
091056U NOV 2004	Moored Seattle, WA	249.7	28497.2

Appendix C

EMBARKED PERSONNEL AWS04

A. OFFICER PERSONNEL ABOARD	ARRIVE	DEPART	ARRIVE	DEPART
CAPT DANIEL OLIVER	30 Apr 04			
CDR WILLIAM J. RALL	30 Apr 04			
LCDR DARYL PELOQUIN	30 Apr 04			
LCDR GREGORY STANCLIK	10 May 04	18 Jul 04		
LCDR JOHN REEVES	18 Jul 04			
LT ROBERT CLARKE	30 Apr 04	10 Jul 04		
LT LAURA KING	23 Jun 04			
LTJG NEAL AMARAL	30 Apr 04	10 Jul 04		
LTJG JESSICA NOEL	23 Jun 04			
ENS DARAIN S. KAWAMOTO	10 May 04	23 Jun 04		
ENS JAMES COOLEY	30 Apr 04	15 May 04	23 Jun 04	
ENS SARA YOUNG	30 Apr 04			
ENS JASON PLUMLEY	10 MAY 04			
ENS KEVIN A. BEAUDOIN	30 Apr 04			
ENS KEIDI NIEMANN	03 Jul 04	18 Jul 04	02 Sep 04	
CWO2 RICHARD MILLS	30 Apr 04			
CWO4 JAMES A. ROBSON	30 Apr 04			
CWO2 WILLIAM LEVITCH	30 Apr 04			
B OFFICER PERSONNEL TDY	**ARRIVE**	**DEPART**	**ARRIVE**	**DEPART**
LCDR EDWARD BEALE	30 Apr 04	23 Jun 04		
LCDR MATT FLUITT	23 Jun 04			
LT GARY NAUS	30 Apr 04	23 Jun 04		
LT JOSEPH KLATT	30 Apr 04			
LT ERIC HOLLINGER	30 Apr 04			
LT BRIAN DEMIO	30 Apr 04			
LT B. STRICKLAND, LTT	23 Jun 04	10 Jul 04		
LTJG KEN ELLER	23 Jun 04			
1/C BENJAMIN O'LOUGHLIN	10 MAY 04	18 Jul 04		
C. ENLISTED PERSONNEL ABOARD				
BMCM JOSEPH GISPERT	30 Apr 04			
EMCM JOHN P. MOSPENS	30 Apr 04			
ETCM JAMES L. O'BRIEN	30 Apr 04	23 Jun 04		
ETCS PETER PERRON	30 Apr 04			
FSCS SHAWN FORSYTHE	30 Apr 04			
MSTCS GLEN T. HENDRICKSON	30 Apr 04	10 Jul 04		
MKCS MICHAEL HUFF	30 Apr 04			
BMC JAMES W. BRIDE	30 Apr 04			
DCC PETER A. SCHAFFNER	30 Apr 04			
EMC FRANK DONZE	23 Jun 04			
ETC JOEL RODDA	30 Apr 04			
MKC JOSEPH DIAZ	30 Apr 04			

MSTC DONALD SNIDER	30 Apr 04		
OSC LEWIS WINNINGHAM	30 Apr 04		
SKC KARL KEYES	30 Apr 04	15 Jun 04	03 Jul 04
HSC DENISE ANDERSEN	23 Jun 04		
YNC MARIA KIRBY	30 Apr 04		
DC1 PHILLIP SMELSER	23 Jun 04		
DC1 BIANCA P. WITKOWSKI	30 Apr 04	23 Jun 04	
EM1 BENJAMIN GARRETT	30 Apr 04	23 June 04	
EM1 BRAD JOPLING	30 Apr 04	11 Jun 04	
EM1 DEVIN D. PRITCHARD	30 Apr 04		
EM1 JOSEPH FRATTO	30 Apr 04		
ET1 RYAN P. MACNEIL	30 Apr 04		
ET1 ROGER J. RETZLAFF	30 Apr 04	18 Jul 04	
ET1 CHRIS MARTIN	30 Apr 04	23 Jun 04	
FS1 JASON GAULKE	30 Apr 04	28 Jul 04	
IT1 STEPHEN A. CHIPMAN	30 Apr 04	23 Jul 04	
MK1 CHAD J. SERFASS	30 Apr 04		
MK1 JUSTIN P. FITZPATRICK	30 Apr 04		
MK1 GARRETT ROGERS	30 Apr 04		
MK1 RICHARD TITUS	30 Apr 04	18 Jul 04	
OS1 ELIZABETH NEILL	30 Apr 04	18 Jul 04	
SK1 JACQUES FAUR	10 May 04		
BM1 THOMAS HINES	3 Jul 04		
MK1 DIANE WALLINGFORD	7 Jul 04		
ET1 SHANE HYDE	18 Jul 04		
IT1 MARK BIGSBY	18 Jul 04		
BM2 JAMES GEIST	30 Apr 04		
BM2 DARREL L. BRESNAHAN	30 Apr 04		
BM2 JOHN C. LOBHERR	30 Apr 04		
DC2 TODD A. GILLICK	30 Apr 04	5 Jul 04	18 Jul 04
DC2 PAUL THOMAS	10 May 04		
ET2 SAUL KOSYDAR	23 Jun 04		
MK2 MARTIN A. BOWLEY	30 Apr 04	20 Jun 04	23 Jun 04
MST2 JOSHUA T. ROBINSON	30 Apr 04		
MST2 DANIEL GAONA	30 Apr 04		
MST2 ERIC ROCKLAGE	30 Apr 04	23 Jun 04	18 Jul 04
SK2 CHRISTOPHER SISON	30 Apr 04		
SK2 DAVID M. JOSEPH	30 Apr 04		
FS2 VANESSA A. AGOSTO	30 Apr 04		
ET3 MATTHEW REGELE	7 Jul 04		
BM3 SAMUEL TRAVER	30 Apr 04		
EM3 NOAH HAUGK	30 Apr 04		
BM3 ADAM GUNTER	23 Jun 04		
BM3 PHILLIP DAWALT	30 Apr 04		
ET3 LEROY LEPPO	30 Apr 04		
FS3 KRISTINA MORTELLARO	30 Apr 04		
FS3 DEREK SOM	30 Apr 04	22 Jul 04	28 Jul 04
MK3 MICHAEL J. LUND	30 Apr 04		

MK3 MALINDA A. NESVOLD	30 Apr 04	28 Jul 04		
MK3 RICHARD ERICKSON	30 Apr 04			
MST3 SUZANNE SCRIVEN	30 Apr 04	18 Jul 04		
MST3 CHAD KLINESTEKER	30 Apr 04			
SNFS THERSA BARNES	30 Apr 04	15 May 04		
FN TOMASZ M. DAWLIDOWICZ	30 Apr 04			
FN SHAWN CHAPIN	30 Apr 04	15 May 04		
FN ROBERT BROCK	10 May 04	15 Jun 04	28 Jul 04	
FN MEGHAN WOLF	30 Apr 04			
SN JONATHAN BILBY	30 Apr 04			
SN JOHN HANNON	30 Apr 04			
SN GAYLIN SWIBOLD	30 Apr 04	10 Jul 04		
SN JOSHUA PEELMAN	30 Apr 04			
SA STEVEN SANCHEZ	30 Apr 04	04 Jul 04		
SN ASHLEY SMITH	7 Jul 04			
D. ENLISTED PERSONNEL TDY	**ARRIVE**	**DEPART**	**ARRIVE**	**DEPART**
HSC JAMES CONNORS	30 Apr 04	10 Jul 04		
AETC RONNIE TOLLE	30 Apr 04			
AMT1 JASON HOLT	30 Apr 04			
IT1 MIKEL POTTS	30 Apr 04			
MST1 ETHRIDGE MCFADDEN	10 May 04	18 Jul 04		
AET2 JOHN MAGHUPOY	30 Apr 04			
FS2 CRYSTAL HILL	7 Jul 04			
AMT3 DANIEL JUSTICE	30 Apr 04			
SN JACOB AULNER	30 Apr 04			
SN BRIAN WALSH	30 Apr 04	18 Jul 04		
SN PATRICE WILSON	30 Apr 04			
SN CARRIE GARLICK	06 Jun 04	18 Jul 04		
SN MICHAEL JACKSON	03 Jul 04	10 Jul 04		
FN CHRISTOPHER MCBRAYER	03 Jul 04	10 Jul 04		
DCCS D. JONHSON, LTT	23 Jun 04	10 Jul 04		
MKC R. STEWART, LTT	23 Jun 04	10 Jul 04		
GSMC E. CORDOVA, LTT	23 Jun 04	10 Jul 04		
DC1 J. BRYMER, LTT	23 Jun 04	10 Jul 04		
HM1 R. NAVARRO, LTT	23 Jun 04	10 Jul 04		
E. CIVILIANS	**ARRIVE**	**DEPART**	**ARRIVE**	**DEPART**
VAL SCHMIDT	30 Apr 04	10 May 04		
GERRY YATES	30 Apr 04	15 May 04		
LEE TRETBAR	30 Apr 04	10 May 04		
MICHAEL BREWER	30 Apr 04	10 May 04		
RUSSEL SPIERS	30 Apr 04	10 May 04		
PAT BERGIN	30 Apr 04	10 May 04		
SHANNON MCARTHUR	30 Apr 04	10 May 04		
STEVE ROBERTS	30 Apr 04	23 Jun 04		
PETER LEER	10 May 04	15 May 04		
DON CHAMBERS	10 May 04	15 May 04		
ROBERTA CHANG	12 May 04	15 May 04		

VINA FEJERAN	12 May 04	15 May 04		
LEOPOLDA LLINAS	10 May 04	23 Jun 04	18 Jul 04	26 Aug 04
PETER LANE	10 May 04	23 Jun 04	18 Jul 04	26 Aug 04
ROBERT WOLF	10 May 04	23 Jun 04		
JEREMY MATHIS	10 May 04	23 Jun 04		
RON HIPPE	10 May 04	15 May 04		
PETER MARTIN	10 May 04	15 May 04		
GARY SEDLACKE	10 May 04	15 May 04		
DAN SCHULLER	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
ROB PALOMARES	15 May 04	23 Jun 04	18 JUL 04	26 Aug 04
DAVE RUBLE	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
ZIAOJU PAN	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
RICHARD DAW	15 May 04	23 Jun 04		
ROB PALOMARES	15 May 04	23 Jun 04		
DAVE RUBLE	15 May 04	23 Jun 04		
ZIAOJU PAN	15 May 04	23 Jun 04		
RICHARD DAW	15 May 04	23 Jun 04		
VICTORIA HILL	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
HEIKE MERKEL	15 May 04	23 Jun 04		
CHRISTINE PEQUIGNET	15 May 04	23 Jun 04		
ARIANNE BALSOM	15 May 04	23 Jun 04	22 Jul 04	05 Aug 04
REBECCA PIRTLE-LEVY	15 May 04	23 Jun 04	22 Jul 04	26 Aug 04
CATHERINE LALANDE	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
LAURA BELICKA	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
RACHAEL REARICK	15 May 04	23 Jun 04		
BONNIE CHANG	15 May 04	23 Jun 04		
TINA SENFT	15 May 04	23 Jun 04		
KATE HAGSTROM	15 May 04	23 Jun 04		
SYBILLE PLUVINAGE	15 May 04	23 Jun 04		
REX MALMSTROM	15 May 04	23 Jun 04		
ROBERT CAMPBELL	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
STEPHANE PLOURDE	15 May 04	23 Jun 04		
ROGER KELLY	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
CARIN ASHJIAN	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
KRISTIN SANBORN	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
JENNIFER SHELDON	15 May 04	23 Jun 04		
SUSAN SCHONBERG	15 May 04	23 Jun 04	18 JUL 04	05 Aug 04
PATTY CIE	15 May 04	23 Jun 04		
SARAH STORY	15 May 04	23 Jun 04		
CRAIG AUMACK	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
DOUG MASTEN	15 May 04	23 Jun 04		
DAVID HUNTLEY	15 May 04	23 Jun 04		
JIM SWIFT	15 May 04	23 Jun 04		
DEAN STOCKWELL	15 May 04	23 Jun 04	18 Jul 04	??
JACKIE GREBMEIER	15 May 04	23 Jun 04	23 Jul 04	26 Aug 04
LEE COOPER	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
MARK STEPHENS	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
EV SHERR	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04

SHARON SMITH	15 May 04	23 Jun 04	18 Jul 04	26 Aug 04
RON BENNER	15 May 04	23 Jun 04		
DAVE KIRCHMAN	15 May 04	23 Jun 04		
ROLF GRADINGER	15 May 04	23 Jun 04		
KAZU TATEYAMA	15 May 04	23 Jun 04		
AL DEVOL	15 May 04	23 Jun 04		
DALE CHAYES	15 May 04	23 Jun 04	10 Jul 04	18 Jul 04
DAVID HASSILEV	23 Jun 04	02 Sep 04		
RAY LUBINSKY	23 Jun 04	03 Jul 04		
RICHARD PERRY	10 Jul 04	18 Jul 04		
WILL HANDLEY	10 Jul 04	18 Jul 04		
JUSTIN MACGUIRE	11 Jun 04	28 Jul 04		
ANTHONY GRAY	11 Jun 04	28 Jul 04		
DAVID STEPHEN	23 JUL 04	28 JUL 04		
THOMAS BEARDEN	23 JUL 04	28 JUL 04		
JIM VAN VRANKEN	23 JUL 04	28 JUL 04		
KEVIN SANCHEZ	23 JUL 04	28 JUL 04		
CHARLES PETIT	22 Jul 04	28 JUL 04		
PHILIP ALATALO	18 Jul 04	26 Aug 04		
KARL KAISER	18 Jul 04	26 Aug 04		
JENNY DAVIS	18 Jul 04	26 Aug 04		
JOHN CHRISTENSEN	18 Jul 04	26 Aug 04		
MELANIE LETTAU	18 Jul 04	26 Aug 04		
CRAIG AUMACK (second listing)	18 Jul 04	26 Aug 04		
MEGAN ROADMAN	18 Jul 04	26 Aug 04		
MATT COTTRELL	18 Jul 04	26 Aug 04		
ALEX PARKER	18 Jul 04	26 Aug 04		
ELLY SPEICHER	18 Jul 04	26 Aug 04		
STEPHEN SCHMIDT	18 Jul 04	26 Aug 04		
BERIT RABE	18 Jul 04	26 Aug 04		
AARON HARTZ	18 Jul 04	26 Aug 04		
ALEX OSUNA	18 Jul 04	26 Aug 04		
LOUIS CODISPOTI	18 Jul 04	26 Aug 04		
ERIK QUIROZ	18 Jul 04	26 Aug 04		
REBEKAH DUNCAN	18 Jul 04	26 Aug 04		
STEVE ROBERTS	18 Jul 04	26 Aug 04		
ADAM LUCEY	18 Jul 04	26 Aug 04		
KYLE FARMER	18 Jul 04	26 Aug 04		
GRANT MASSEY	26 Aug 04	25 Oct 04		
DREW DUVAL (ALSTOM DPS)	26 Aug 04	29 Aug 04		
JANET HUFF	26 Aug 04	02 Sep 04		
DON CHAMBERS	26 Aug 04	29 Aug 04		
DAN TORRES	02 Sep 04	16 Sep 04		
DAVE FORCUCCI	30 Aug 04	16 Sep 04		
BOB PICKART	28 Aug 04	01 Oct 04		
TOM WEINGARTNER	28 Aug 04	01 Oct 04		
JIM JOHNSON	28 Aug 04	01 Oct 04		
SETH DANIELSON	28 Aug 04	01 Oct 04		

ANNA NIKOLOPOULOS	28 Aug 04	01 Oct 04
RYAN FRAZIER	28 Aug 04	01 Oct 04
MAUREEN TAYLOR	28 Aug 04	01 Oct 04
JIM SCHMIDT	28 Aug 04	01 Oct 04
ANDREAS MUENCHOW	28 Aug 04	01 Oct 04
VAL SCHMIDT (LDEO)	30 Aug 04	01 Oct 04
DAVE KADKO	30 Aug 04	01 Oct 04
JERMEY MATHIS	30 Aug 04	01 Oct 04
CHRIS LINDER	30 Aug 04	01 Oct 04
DEBORAH FOSTER	30 Aug 04	01 Oct 04
ELLEN NAUGHTER	30 Aug 04	01 Oct 04
JULIA LINKE	30 Aug 04	01 Oct 04
MIFAYA DEL TORO PETERS	30 Aug 04	01 Oct 04
ANDREA PIEHL	30 Aug 04	01 Oct 04
CELIA MARTIN PUERTAS	30 Aug 04	01 Oct 04
DAVID ROQUE ATIENZA	30 Aug 04	01 Oct 04
AARON SILVERMAN	30 Aug 04	01 Oct 04
JESSIE CHERRY	30 Aug 04	01 Oct 04
ETHAN GOLD	31 Aug 04	01 Oct 04
JIM RYDER	31 Aug 04	01 Oct 04
LEOPOLDO LLINAS	31 Aug 04	01 Oct 04
ERIK QUIROZ	31 Aug 04	01 Oct 04
DAN SCHULLER	31 Aug 04	01 Oct 04
SARAH ZIMMERMAN	05 Sep 04	01 Oct 04
DEAN STOCKWELL	05 Sep 04	01 Oct 04
MARK DEMYAN	01 Oct 04	06 Oct 04
JAMES CASE	06 Oct 04	25 Oct 04
ANDERS FERTIN	06 Oct 04	25 Oct 04
LARRY MAYER	06 Oct 04	25 Oct 04
ANDY ARMSTRONG	06 Oct 04	25 Oct 04
BRIAN CALDER	06 Oct 04	25 Oct 04
JOHN K. HALL	06 Oct 04	25 Oct 04
MASHKOR MALIK	06 Oct 04	25 Oct 04
MONICA CISTERNELLI	06 Oct 04	25 Oct 04
CALEB GOSTNELL	06 Oct 04	25 Oct 04
BERNARD COAKLEY	06 Oct 04	25 Oct 04
JOHN TALIAFERRO	06 Oct 04	25 Oct 04
DENNIS NOBLE	06 Oct 04	25 Oct 04
DALE CHAYES	06 Oct 04	25 Oct 04
BOB ARKO	06 Oct 04	25 Oct 04
STEVE PHILLIPS	06 Oct 04	25 Oct 04
NICK ELLIOT	06 Oct 04	25 Oct 04
SID PANT	06 Oct 04	25 Oct 04
DAVE SMITH	06 Oct 04	25 Oct 04
DON CHAMBERS	06 Oct 04	25 Oct 04
JEFF MCGUCKIN	25 Oct 04	03 Nov 04
AL BOWLEY	06 Nov 04	09 Nov 04
ALBERT AULNER	06 Nov 04	09 Nov 04

ANGELA GICK	06 Nov 04	09 Nov 04
BILL KLINESTEKER	06 Nov 04	09 Nov 04
CARRIE WINNINGHAM	06 Nov 04	09 Nov 04
CASPER COOPER	06 Nov 04	09 Nov 04
DAVID KING	06 Nov 04	09 Nov 04
DAWN ZIMMERMAN	06 Nov 04	09 Nov 04
ELIZABETH HUFF	06 Nov 04	09 Nov 04
GARY GUNTER	06 Nov 04	09 Nov 04
HEATHER JOSEPH	06 Nov 04	09 Nov 04
IAN FITTON	06 Nov 04	09 Nov 04
JAMES SULLIVAN	06 Nov 04	09 Nov 04
JOAN YOUNG	06 Nov 04	09 Nov 04
JOHN LOBHER	06 Nov 04	10 Nov 04
JOSEPH ROCKLAGE	06 Nov 04	09 Nov 04
JOYCE MCBRAYER	06 Nov 04	09 Nov 04
JUDY BROOKS	06 Nov 04	09 Nov 04
JUDY MATTHEW	06 Nov 04	09 Nov 04
KATHRYN DONZE	06 Nov 04	09 Nov 04
KAYLA BRESNAHAN	06 Nov 04	09 Nov 04
KENNETH GROVER	06 Nov 04	09 Nov 04
LARRY GOERSS	06 Nov 04	09 Nov 04
LINDA HAUGK	06 Nov 04	09 Nov 04
LORRAINE SMELSER	06 Nov 04	09 Nov 04
MARGARET CAMPBELL	06 Nov 04	09 Nov 04
MARK CAMPBELL	06 Nov 04	09 Nov 04
MELBA DIAZ	06 Nov 04	09 Nov 04
MICHAEL MCBRAYER	06 Nov 04	09 Nov 04
NANCY FOSTER	06 Nov 04	09 Nov 04
NIKOLAS PERRON	06 Nov 04	09 Nov 04
PAT LAYNE	06 Nov 04	09 Nov 04
PATRICK HANNON	06 Nov 04	10 Nov 04
PAULETTE EDGBERT	06 Nov 04	09 Nov 04
PHYLLIS GREGG	06 Nov 04	09 Nov 04
ROB ZIMMERMAN	06 Nov 04	09 Nov 04
ROBERT OLIVER	06 Nov 04	09 Nov 04
RON MATTHEW	06 Nov 04	09 Nov 04
TORY MOSPENS	06 Nov 04	09 Nov 04
TRENA PELOQUIN	06 Nov 04	09 Nov 04
WARREN CAMPBELL	06 Nov 04	09 Nov 04
WILLIAM GREGG	06 Nov 04	09 Nov 04
WILLIAM NEILL	06 Nov 04	09 Nov 04
ZACHARY PERRON	06 Nov 04	09 Nov 04

Appendix D

FUEL CONSUMPTION

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
30-Apr	2	95.10%	6,497	1,163,741	0	56,206
1-May	3	93.20%	25,367	1,132,171	0	55,649
2-May	3	91.10%	25,272	1,106,899	0	55,649
3-May	2	89.50%	19,567	1,087,332	0	55,649
4-May	2	87.70%	18,711	1,068,621	0	55,649
5-May	2	86.30%	16,899	1,051,722	0	55,649
6-May	2	84.80%	17,605	1,034,117	0	55,649
7-May	2	83.60%	15,615	1,018,502	0	55,649
8-May	3	80.40%	38,258	980,244	0	55,649
9-May	2	80.00%	5,756	974,488	0	55,649
10-May	2	79.00%	11,510	962,978	0	55,649
11-May	2	79.00%	0	962,978	0	55,649
12-May	2	79.00%	7,500	955,478	0	55,649
13-May	3	77.40%	12,165	943,313	111.2	55,538
14-May	2	76.10%	15,550	927,763	0	55,538
15-May	2	75.20%	10,776	916,987	252	55,286
16-May	2	74.30%	12,043	904,944	256	55,030
17-May	2	73.70%	7,071	897,873	0	55,030
18-May	2	73.00%	8,524	889,349	0	55,030
19-May	2	72.30%	8,754	880,595	143	54,887
20-May	2	71.00%	15,269	865,326	0	54,887
21-May	3	70.20%	10,416	895,308	0	54,887
22-May	3	69.97%	10,304	854,234	104	54,783
23-May	3	68.62%	16,498	837,736	0	54,783
24-May	3	67.57%	12,763	824,973	0	54,783
25-May	3	66.51%	12,897	812,076	232	54,551
26-May	3	65.98%	6,565	805,511	0	54,551
27-May	3	65.15%	10,062	795,449	128	54,423
28-May	3	63.78%	16,778	778,671	129	54,294
29-May	3	62.33%	17,691	760,980	0	54,294
30-May	3	61.63%	8,495	752,485	0	54,294
31-May	3	60.09%	18,777	733,708	0	54,294
31-May	------	59.26%	------	723,477	------	------
1-Jun	3	58.87%	14,916	718,792	0	53,657
2-Jun	3	57.76%	13,577	705,215	0	53,657
3-Jun	2	57.43%	4,082	701,133	93.5	53,564

Appendix D

FUEL CONSUMPTION

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
4-Jun	3	56.09%	16,283	684,850	0	53,564
5-Jun	3	54.83%	15,390	669,460	0	53,564
6-Jun	3	53.79%	12,700	656,760	0	53,478
7-Jun	3	52.22%	19,197	637,563	94	53,384
8-Jun	3	51.25%	11,842	625,721	133.5	53,303
9-Jun	2	50.09%	14,212	611,509	0	53,303
10-Jun	2	48.93%	14,066	597,443	0	53,303
10-Jun	------	48.11%	------	587,360	------	------
11-Jun	2	47.01%	13,357	574,003	184	53,119
12-Jun	3	46.09%	11,320	562,683	0	53,119
13-Jun	3	44.60%	18,129	544,554	0	53,119
14-Jun	1-2	43.92%	8,350	536,204	0	53,119
15-Jun	1-2	43.17%	9,116	527,088	208.4	52,910
16-Jun	2	42.15%	12,487	514,601	44.2	52,866
17-Jun	1-3	41.73%	5,169	509,432	0	52,866
18-Jun	2-3	40.69%	12,641	496,791	0	52,866
19-Jun	2-ADG	39.92%	9,435	487,356	0	52,866
20-Jun	2	39.44%	5,836	481,520	0	52,866
21-Jun	2	38.57%	10,573	470,947	146.8	52,719
22-Jun	2	37.06%	18,487	452,460	0	52,719
23-Jun	2	36.27%	9,614	442,846	0	52,719
24-Jun	2	34.60%	20,465	422,381	0	52,719
25-Jun	2	33.00%	19,488	402,893	0	52,719
26-Jun	2	31.63%	16,775	386,118	0	52,719
27-Jun	2	30.35%	15,530	370,588	0	52,719
28-Jun	2	30.35%	0	370,588	0	52,719
29-Jun	2	29.10%	15,311	355,277	0	52,719
30-Jun	2	27.73%	16,714	338,563	125	52,719
1-Jul	2	26.48%	15,275	323,288	0	52,719
2-Jul	2	25.35%	13,805	309,483	0	52,719
3-Jul	2	24.48%	10,651	298,832	0	52,719
9-Jul	--------	89.54%	----------	1,093,246	---------	---------
4-10 Jul	0	89.24%	3,664	1,089,582	0	52,719
11-Jul	2	87.70%	18,873	1,070,709	0	52,719
11-Jul	2	86.24%	17,739	1,052,970	0	52,719
12-Jul	2	85.25%	12,181	1,040,789	118	52,719

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FUEL CONSUMPTION

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
13-Jul	2	84.25%	12,163	1,028,626	315.9	52,719
14-Jul	2	82.71%	18,861	1,009,765	151	52,719
15-Jul	2	81.46%	15,204	994,561	0	52,719
16-Jul	2	79.73%	21,175	973,386	0	52,719
17-Jul	2	78.77%	11,691	961,695	0	52,719
18-Jul	2	78.03%	8,965	952,730	326	52,601
18-Jul	--------	78.07%	---------	953,216	----------	----------
19-Jul	2	77.34%	8,990	944,226	158	50,511
20-Jul	2	76.53%	9,878	934,348	0	50,511
21-Jul	2	75.65%	10,670	923,678	0	50,511
22-Jul	1/2	75.17%	5,890	917,788	330	50,181
23-Jul	1/2	74.72%	5,550	912,238	108	50,073
24-Jul	1/2	74.22%	6,104	906,134	0	50,073
25-Jul	1/2	73.69%	6,491	899,643	0	50,073
26-Jul	1/2	73.35%	4,089	895,554	55	50,018
27-Jul	1/2	72.72%	7,749	887,805	216	49,802
28-Jul	2	71.97%	9,171	878,634	251	49,551
29-Jul	1/2	71.44%	6,354	872,280	301	49,250
30-Jul	1/2	70.94%	6,223	866,057	0	49,250
31-Jul	1/2	70.68%	3,143	862,914	0	49,250
31-Jul	--------	70.03%	--------	855,051	--------	--------
1-Aug	1/2	69.38%	7,962	847,089	0	49,250
2-Aug	1/2	68.84%	6,599	840,490	0	49,250
3-Aug	1/2	68.21%	7,734	832,756	0	49,250
4-Aug	1/2	67.79%	5,040	827,716	228	49,022
5-Aug	1/2	67.32%	5,857	821,859	0	49,022
6-Aug	1/2	66.82%	6,019	815,840	0	49,022
7-Aug	1/2	66.44%	4,615	811,225	0	49,022
8-Aug	1/2	65.81%	7,790	803,435	0	49,022
9-Aug	1/2	65.28%	6,479	796,956	141	48,881
10-Aug	1/2	64.56%	8,787	788,169	0	48,881
11-Aug	1/2	64.14%	5,071	783,098	0	48,881
12-Aug	--------	65.02%	--------	793,867	--------	--------
12-Aug	1/2	64.67%	4,245	789,622	0	48,881
13-Aug	1/2	64.21%	5,721	783,901	121	48,760
14-Aug	1/2	63.78%	5,178	778,723	0	48,760

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FUEL CONSUMPTION

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
15-Aug	1/2	63.38%	4,902	773,821	0	48,760
16-Aug	1/2	63.05%	4,051	769,770	0	48,760
17-Aug	1/2	62.66%	4,695	765,075	69	48,691
18-Aug	1/2	62.28%	4,730	760,345	0	48,691
19-Aug	1/2	61.84%	5,342	755,003	0	48,691
20-Aug	1/2	61.47%	4,509	750,494	0	48,691
21-Aug	1/2	61.05%	5,146	745,348	0	48,691
22-Aug	1/2	60.55%	6,099	739,249	0	48,691
23-Aug	1/2	60.10%	5,481	733,768	0	48,691
23-Aug	--------	59.26%	--------	723,516	--------	--------
24-Aug	2	58.26%	12,168	711,348	0	47,488
25-Aug	2	57.37%	10,880	700,468	109	47,379
26-Aug	2/3	56.30%	13,122	687,346	134	47,245
27-Aug	3/2	54.67%	19,873	667,473	0	47,245
28-Aug	2/3	53.59%	13,126	654,347	0	47,245
28-Aug	--------	93.92%	--------	1,146,690	--------	--------
29-Aug	ADG	93.70%	2,720	1,143,970	0	47,245
30-Aug	ADG	93.47%	2,720	1,141,250	0	47,245
31-Aug	ADG	93.25%	2,720	1,138,530	0	47,245
1-Sep	ADG	93.03%	2,720	1,135,810	0	47,245
2-Sep	ADG	92.81%	2,720	1,133,090	0	47,245
3-Sep	ADG/2	92.27%	6,494	1,126,596	89	47,156
4-Sep	2	91.29%	12,078	1,114,518	0	47,156
5-Sep	2	90.21%	13,177	1,101,341	244	46,912
6-Sep	2	88.41%	21,898	1,079,443	0	46,912
7-Sep	2	87.29%	13,678	1,065,765	261	46,651
8-Sep	2	86.81%	5,841	1,059,924	0	46,651
9-Sep	2	85.98%	10,192	1,049,732	293	46,358
10-Sep	2	85.66%	3,868	1,045,864	65	46,293
11-Sep	2	85.09%	6,988	1,038,876	0	46,293
12-Sep	2	84.39%	8,505	1,030,371	0	46,293
13-Sep	2	83.60%	9,633	1,020,738	0	46,293
14-Sep	2	82.98%	7,627	1,013,111	205	46,088
15-Sep	2	82.24%	9,037	1,004,074	0	46,088
16-Sep	1/2	81.69%	6,753	997,321	0	46,088
17-Sep	1/2	80.95%	5,007	988,323	0	46,775

Appendix D

FUEL CONSUMPTION

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
18-Sep	2/1	79.87%	13,194	975,129	0	46,775
19-Sep	2/1	78.50%	16,770	958,359	0	46,775
20-Sep	2/1	78.00%	6,024	952,335	0	46,775
21-Sep	2/1	78.91%	5,112	963,457	300	45,715
22-Sep	2/1	78.40%	6,206	957,251	0	45,715
23-Sep	2	77.42%	11,959	945,292	0	45,715
24-Sep	2	76.68%	9,115	936,177	0	45,715
25-Sep	2	75.88%	9,714	926,463	0	45,715
26-Sep	2	73.86%	24,730	901,733	0	45,715
27-Sep	2	73.22%	7,818	893,915	0	45,715
28-Sep	2	72.48%	9,029	884,886	0	45,715
29-Sep	2	71.89%	7,184	877,702	0	45,715
30-Sep	2	71.18%	8,678	869,024	0	45,715
1-Oct	2	70.93%	8,628	865,984	166	45,119
2-Oct	2	70.41%	6,292	859,692	469	44,650
3-Oct	2	69.48%	11,409	848,283	76	44,574
4-Oct	ADG	69.48%	0	848,283	0	44,574
5-Oct	ADG	69.48%	0	848,283	0	44,574
6-Oct	ADG/2	68.63%	10,395	837,888	0	44,574
7-Oct	2	67.04%	19,326	818,562	234	44,340
8-Oct	2	65.93%	13,654	804,908	0	44,340
9-Oct	2	64.86%	12,998	791,910	0	44,340
10-Oct	2	64.23%	7,675	784,235	0	44,340
11-Oct	2	62.77%	17,078	766,316	0	44,450
12-Oct	2	61.67%	13,428	752,888	0	44,450
12-Oct	2	60.39%	15,576	737,312	0	44,450
13-Oct	2	59.20%	14,497	722,815	0	44,450
14-Oct	2	57.96%	15,138	707,677	0	44,450
15-Oct	3	56.03%	23,626	684,051	0	44,450
16-Oct	2/3	54.58%	17,615	666,436	0	44,450
17-Oct	2	54.00%	7,119	659,317	0	44,450
18-Oct	2	52.64%	16,646	642,671	116	44,334
19-Oct	2	51.72%	11,215	631,456	0	44,334
20-Oct	2	51.17%	6,719	624,737	0	44,334
21-Oct	2	49.29%	15,461	601,751	0	44,197
22-Oct	2	48.33%	11,734	590,017	0	44,197

Appendix D

FUEL CONSUMPTION

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
23-Oct	2	47.22%	13,487	576,530	0	44,197
24-Oct	2	46.16%	12,939	563,591	0	44,197
25-Oct	2	44.99%	14,242	549,349	247	43,950
26-Oct	2	43.55%	17,648	531,701	0	43,950
27-Oct	2	42.22%	16,174	515,527	192	43,758
28-Oct	2	40.59%	19,970	495,557	0	43,758
29-Oct	2/3	39.06%	18,692	476,865	82	43,676
30-Oct	2	37.42%	19970	456,895	0	43,676
31-Oct	2	37.33%	10,168	455,797	0	45,046
1-Nov	2	35.65%	20,480	435,317	0	45,046
2-Nov	2	34.50%	14,074	421,243	0	45,046
3-Nov	ADG	34.50%	0	421,243	0	45,046
4-Nov	ADG	34.50%	0	421,243	0	45,046
5-Nov	ADG	34.50%	0	421,243	0	45,046
6-Nov	ADG/2	33.45%	12,906	408,337	0	45,046
7-Nov	2	32.72%	8,827	399,510	0	45,046
8-Nov	2	31.94%	9,508	390,002	0	45,046
9-Nov	2	31.37%	7,053	382,949	0	45,046
	Total Fuel Consumed:		2,047,225			
	Average Daily Use:		10,553			
	Total JP-5 Consumed:		8,555 gal			

Appendix E

PROVIDENIYA, RUSSIA MESSAGE REPORT

R MODIFIED FOR WIDE DISEMENATION 17OCT2004
FM USCGC HEALY
TO COMPACAREA COGARD ALAMEDA CA//PO/PCC/POF//
INFO COMCOGARD MLC PAC ALAMEDA CA//MDL//
CCGDSEVENTEEN JUNEAU AK//P/O//
USCGC ALEX HALEY
USCGC STORIS
USCGC ACUSHNET
BT
UNCLAS //N03120//
SUBJ: POST-VISIT REPORT FOR PROVIDENIYA, RUSSIA
1. MISSION: WORKING PORT VISIT FOR MID PATROL BREAK
2. TASK ORGANIZATION: NONE
3. INTELLIGENCE SUPPORT: N/A
4. LOGISTICS:
A. HUSBANDING AGENT:
INFLOT WORLD WIDE

190020 ST-PETERSBURG	660 SUITE
OBVODNY CANAL QUAY 142/16 B	110 EAST BROWARD BLVD
RUSSIAN FEDERATION	FLORIDA, 33301 USA
PHONE: +7-812-251-5857	PHONE: +1-954-832-0506
FAX: +7-812-320-8393	FAX: +1-954-236-0437

B. LOCAL HA WAS VERY HELPFUL, ALWAYS AVAILABLE AND PROMPT AND PROVIDED EXCELLENT SERVICES AS AN ADDL INTERPRETER:
VLADIMIR BYCHKOV
LLC YUR TRANS SERVICE CHUKOTSKIY
689251 RUSSIA, CHUKOTKA, PROVIDENIYA
DEZHNEVA STR. 53-32
PHONE: +7 427-352-2238
V_BYCHKOV(AT)HOTMAIL.COM
5. SERVICES:
A. LINE HANDLERS: LINE HANDLERS WERE ARRANGED BY HA FOR BOTH ARRIVAL AND DEPARTURE. LINEHANDLERS WERE ON TIME AND COMPETENT.
B. SECURITY: PIER SECURITY AND WATERSIDE SECURITY WERE ARRANGED BY HA. LOCAL TUG UNDERWAY FROM 1800-0600 EACH NIGHT PROVIDED WATER PRESENCE. PIER WAS SEMI-SECURE WITH A MANNED GATE ENTRANCE. ADDITIONALLY, BORDER GUARDS WERE PRESENT NEXT TO SHIP IN BORDER PATROL STATION ON THE PIER. COMMS WERE AVAILABLE WITH BORDER GUARD ON VHF. THE DEPUTY COMMANDER OF THE PROVIDENIYA BORDER GUARD MET SHIP TO DISCUSS SECURITY ISSUES AND ENSURE MEASURES WERE SUITABLE.
C. GARBAGE REMOVAL: TWO TRUCKS ARRIVED ON TIME TO REMOVE GARBAGE. A CUSTOMS OFFICIAL INSPECTED BAGS VERY THOROUGHLY AS THEY WERE CRANED OFF THE SHIP. DUMPSTERS WERE NOT LEFT ON PIER FOR CONTINUAL USE.
D. POTABLE WATER: CHOSE NOT TO RECEIVE POTABLE WATER BASED ON THREAT ASSESSMENT DESCRIPTION OF PROBLEMS WITH REGIONAL WATER SUPPLY. IT IS ALSO UNCLEAR THAT COMPATIBLE CONNECTIONS WERE AVAILABLE. MAINTAINED UNDERWAY WATER CONSERVATION MEASURES AND SECURED LAUNDRY DURING VISIT.

E. SEWAGE: CHOSE TO RETAIN SEWAGE DURING STAY. THERE IS NO SEWAGE SHORE TIE AND HA WAS SKEPTICAL THAT SEWAGE TRUCK WOULD BE AVAILABLE.
F. HEALTH ISSUES: NO HEALTH ISSUES ENCOUNTERED. CREW WAS BRIEFED THOROUGHLY ON LOCAL DANGERS.
G. TRANSPORTATION: HA PROVIDED TRANSPORTATION TO SEVERAL EVENTS, INCLUDING THE NATIVE VILLAGE TOURS. ENTIRE TOWN IS WITHIN WALKING DISTANCE OF PIER, SO NO ROUTINE TRANSPORTATION IS REQUIRED.
H. BROW: NO BROW AVAILABLE. SHIP'S ACCOM LADDER UTILIZED.
I. COST OF SERVICES: PORT COSTS ARE STILL BEING DETERMINED AT THIS TIME. POST VISIT COST MESSAGE (CRAFT) WILL BE SENT WHEN FINAL INFORMATION IS AVAILABLE.
6. COMMUNICATIONS: DESPITE MOUNTAINOUS TOPOGRAPHY, BOTH INMARSAT AND IRIDIUM CONNECTIONS WERE STRONG AT THE PIER, CAUSING NO INTERRUPTION IN SHIP'S BUSINESS. THERE WERE NO PUBLIC TELEPHONES IN PROVIDENIYA. LOCAL OFFICIALS UTILIZED CELL PHONES, BUT WE DID NOT INQUIRE ON THEIR AVAILABILITY FOR SHIP'S USE.
7. COMMUNITY INTERACTION:
A. LOCAL POPULACE WAS FRIENDLY, BUT IT IS NOT RECOMMENDED TO VENTURE FROM PIER ALONE; BUDDY SYSTEM WITH A MINIMUM OF FIVE WAS ENFORCED AFTER DARK FOR ENTIRE STAY IN PROVIDENIYA WITH LIBERTY EXPIRING FOR ALL HANDS AT 2400. CIVILIAN CLOTHES ARE RECOMMENDED FOR LIBERTY. TOWN IS NOT WELL LIT, AND WALKING IN DARKNESS POSED A VARIETY OF TRIP HAZARDS. CREW WAS BRIEFED TO CARRY FLASHLIGHTS.
B. HOSTED A TOUR FOR LOCAL HIGH SCHOOL STUDENTS ONBOARD HEALY. INVITED ATTENDEES FOR A LIGHT SNACK UPON COMPLETION.
C. HA ARRANGED FOR CREW MEMBERS TO TOUR A NEARBY NATIVE WHALING VILLAGE AND GLIMPSE A MORE TRADITIONAL CHUKOTKA LIFESTYLE. CREW WAS TREATED TO A PERFORMANCE FROM NATIVE MUSICIANS AND SCHOOL CHILDREN AND EVEN PARTICIPATED IN THE DANCING; AN OUTSTANDING TOUR AND HIGHLY RECOMMENDED.
D. CULTURAL CENTER LOCATED IN DOWNTOWN PROVIDENIYA ALSO PROVIDED SEVERAL EVENTS FOR THE SHIP'S CREW INCLUDING RUSSIAN MOVIES (WITH ENGLISH SUBTITLES), A PERFORMANCE OF TRADITIONAL DANCES WITH INFLUENCES OF RUSSIAN CULTURE, AND SPORTING EVENTS WITH GAMES OF SOCCER, BASKETBALL AND VOLLEYBALL.
E. THE GOAL OF THIS PORT CALL WAS TO BE A LOWKEY "WORKING VISIT" SINCE PROVIDENIYA'S REMOTE LOCATION AND STRAINED ECONOMIC SITUATION MAKES OFFICIAL FUNCTIONS HARDER TO HOST FOR LOCAL OFFICIALS. THE COMMAND DID HOST EIGHT LOCAL OFFICIALS INCLUDING THE REGIONAL MAYOR WITH A MODEST RECEPTION HELD ON BOARD IN THE CABIN. LOCAL DIGNITARIES RECIPROCATED AND HOSTED 15 MEMBERS OF THE WARDROOM AND CHIEFS MESS AT THE CULTURAL CENTER FOR A MEAL, MUSIC, DANCING AND MANY TOASTS. THESE TWO INFORMAL RECEPTIONS PROVIDED POSTIVE CULTURAL AND PROFESSIONAL EXCHANGE AND GIFT GIVING, BUT WITHOUT TOO MUCH OF AN ORGANIZATIONAL OR FINANCIAL LIFT FOR THE RUSSIANS. RUSSIANS TAKE BEING A HOST VERY SERIOUSLY. THEY APOLOGIZED FOR NOT HAVING MORE EVENTS PLANNED, HOWEVER THEY GRACIOUSLY PROVIDED MORE THAN EXPECTED.
F. THERE WERE TWO INCIDENTS ON THE QUARTERDECK WHERE FRIENDLY BUT INEBRIATED LOCALS ATTEMPTED TO GAIN ACCESS TO THE SHIP. THE LOCKING GATE SYSTEM WAS INVALUABLE, AND IT IS POSSIBLE THAT WITHOUT IT, SOME LOW-LEVEL USE OF FORCE OR INVOLVEMENT BY BORDER GUARD WOULD HAVE BEEN NECESSARY TO REMOVE THESE INDIVIDUALS.

G. LOCAL BUSINESSES AND ESTABLISHMENTS ARE LIMITED AND HARD TO FIND DUE TO LACK OF SIGNAGE. CREWMEMBERS SHOPPED AT A VARIETY OF SMALL MARKETS AND A LOCAL BAKERY. THERE IS ONE BAR THAT IS OPEN ONLY ON WEEKEND NIGHTS. TWO RESTAURANTS SERVE GOOD LOCAL FARE FOR VERY INEXPENSIVE PRICES. THERE ARE NO PUBLIC HOTELS. THERE IS A PUBLIC BATH HOUSE, BUT IT WAS NOT UTILIZED BY THE CREW.
H. RUSSIAN LAW REQUIRES ALL TRANSACTIONS TO BE COMPLETED IN RUBLES, HOWEVER MOST PRIVATE BUSINESSES PREFERRED US DOLLARS. BANK WAS ONLY ABLE TO EXCHANGE $2000 DUE TO LACK OF CURRENCY ON HAND. EXCHANGE PROCESS WAS ALSO VERY LENGTHY TAKING THREE HOURS DUE TO SCREENING AND CLOSE INSPECTION OF EACH BILL.
I. EXCELLENT OPPORTUNITIES FOR HIKING AND MOUNTAIN BIKING IN THE LOCAL AREA. ONLY OFF-LIMITS AREAS WERE THE BORDER GUARD COMPOUND AND THE AIRPORT, BOTH LOCATED ON THE OTHER SIDE OF THE HARBOR.
8. NAVIGATION/PORT INFORMATION: PROVIDENIYA HARBOR PROVED TO BE AN EASY NAVIGATION DETAIL, WITH EXCELLENT RADAR LANDFALL FOR GOOD QUALITY FIXES WITH NOTICEABLE RANGES AND A LIGHT TO CUT VISUAL BEARINGS FOR FIXES. SEE THE CHART SECTION FOR GPS/DATUM CONCERNS. THE HARBOR CHART GIVES MINIMAL CHARTED DETAIL ABOUT THE PIER/WHARFS AND IS NOT SET TO THE BEST POSSIBLE SCALE FOR PRECISION NAVIGATION ONCE IN THE INNER HARBOR.
A. NAVIGATIONAL AIDS: ALL CHARTED RANGES WERE VISIBLE AND AS CHARTED. THE RANGES WERE OF A SOLID CONCRETE PILLAR CONSTRUCTION AND WERE WHITE IN COLOR WITH A BLACK CENTER STRIPE. THERE WAS NO CHARTED OR VISIBLE FLOATING ATON. DEPTHS WERE AS CHARTED ON NGA PAPER CHARTS.
B. TIDES AND CURRENTS: NO APPRECIABLE CURRENT OBSERVED. THE 2004 SAILING DIRECTION CALLED FOR A 2.5-METER TIDE RANGE, FOR THE THREE DAY PERIOD HEALY WAS MOORED IN PROVIDENIYA AN APPROXIMATE RANGE OF 4 FEET WAS OBSERVED.
C. CHARTS: PAPER CHARTS USED WERE: 96ACO96640 FIFTH EDITION JANUARY 1995 AND 96XHA96645 FIRST EDITION JANUARY 1988 EACH HAD THE WGS-1984 DATUM WHICH WAS CONFIRMED BY RADAR/VISUAL FIXES BEING COMPARED BY GPS. THE ELECTRONIC NGA CHART WAS DNC-COA-27E EDITION 30 APRIL 2004, IT ALSO WAS SUPPOSED TO HAVE THE WGS-1984 DATUM, BUT UPON STANDING INTO THE HARBOR A DIFFERENCE OF NEARLY 1000 YARDS WAS NOTICED BETWEEN RADAR AND THE GPS FIX DATA. UPON COMPARISON OF THE RADAR OVERLAY IN VMS AND THE GPS DATA, THE ERROR WAS DETERMINED TO BE 357T AT 955 YARDS. PRIOR TO DEPARTURE THE RUSSIAN DATUM OF 1911 WAS ENTERED INTO THE GPS AND THE GPS - RADAR FIX ERROR WAS REDUCED TO LESS THAN 50 YARDS. ANY CUTTER ENTERING PROVIDENIYA HARBOR SHOULD EXERCISE CAUTION IF USING ANY FORM OF ECS, ECPINS, OR VMS SYSTEM.
D. PILOTAGE: PER THE 2004 SAILING DIRECTION, PILOTAGE WAS COMPULSORY. HEALY DELAYED ONE HOUR FOR PILOTS ARRIVAL; ARRIVED VIA TUG WITH THE HA AS TRANSLATOR. THE LANGUAGE BARRIER AND HIS INSISTENCE THAT WE SET THE OUTBOARD ANCHOR 50M FROM THE PIER COMPLICATED THE MOORING EVOLUTION. HE STATED THAT HARBOR REGS REQUIRED SUCH USE OF ANCHOR. FOR DEPARTURE, THE PILOT EMBARKED VIA SHIP'S BROW ALLOWING FOR TIME TO DISCUSS THE EVOLUTION PRIOR TO GETTING UNDERWAY. SEVERAL OF THE PILOT'S ACTIONS WERE UNFAMILIAR AND POTENTIALLY UNSAFE. IT IS UNCLEAR IF THAT WAS DUE TO THE LANGUAGE BARRIER OR INEXPERIENCE, BUT EITHER WAY WE DEVIATED FROM HIS RECOMMENDATIONS ON SEVERAL OCCASIONS.

E. TUGS: TWO TUGS AVAILABLE AND USED. THE FIRST TUG WAS APPROXIMATELY 300 HP AND HAD NO BULL NOSE OR DECK GEAR FOR THE PASSING OF LINES AND WAS USED STRICTLY AS A PUSHER. THE SECOND TUG WAS APPROXIMATELY 1,600 HP AND HAD STANDARD DECK FITTINGS FOR THE PASSING AND HANDLING OF LINES.
F. PIER: HEALY MOORED PORTSIDE-TO ON THE SOUTHWESTERN OF TWO MAIN WHARFS AT THE ENTRANCE OF THE HARBOR. LAY OF THE WHARF WAS 066T AND HAD ADEQUATE BOLLARDS AND BITS AND WAS A SOLID WALL FACE. PIER WAS APPROX 1000 FT LONG AND HEIGHT ABOVE WATER AT HIGH TIDE WAS APPROXIMATELY 4 FEET. THERE WAS PLENTY OF WATER FOR HEALY'S 30 FT DRAFT.
9. GENERAL COMMENTS:
A. OVERALL, THIS WAS AN ENJOYABLE AND VERY SUCCESSFUL PORTCALL. BELIEVE THIS WOULD BE AN INTERESTING STOP FOR THE ALASKAN CUTTERS AND HOPEFULLY, DIPLOMATIC CLEARANCE WILL BE EASIER TO OBTAIN SINCE HEALY HAS BROKEN THE ICE.
B. CUTTERS VISITING SHOULD BE AWARE THAT THIS IS NOT A LOGISITICS STOP. GARBAGE REMOVAL IS THE ONLY HOTEL SERVICE CONFIRMED AVAILABLE. DUE TO THE LIMITED OPTIONS AND SMALL SIZE OF THE TOWN, A LIBERTY PARTY MUCH BIGGER THAN HEALY'S 70 COULD OVERWHELM PROVIDENIYA. WOULD ALSO RECOMMEND MAY THROUGH SEPTEMBER AS BEST MONTHS TO VISIT TO MAXIMIZE DAYLIGHT, AND A WEEKEND STAY TO ENSURE THE BAR IS OPEN. ADVANCE CONTACT WITH THE LOCAL HA WOULD BE VERY BENEFICIAL TO SET UP ACTIVITIES IN ADVANCE, SUCH AS THE NATIVE VILLAGE TOUR, THE COMMUNITY CENTER CULTURAL EVENTS, CURRENCY EXCHANGE, AND SPOTING EVENTS. THIS WOULD BE PARTICULARLY IMPORTANT IN SUMMER MONTHS AS PROVIDENIYA DOES RECEIVE PERIODIC CRUISE SHIP VISITS THAT COULD CONFLICT.
C. FOUR TRANSLATORS MET HEALY IN NOME AND THEIR SUPPORT WAS EXCELLENT AND IMPORTANT, PARTICULARLY AT THE TWO RECEPTIONS AND DURING COMMUNICATIONS WITH THE PILOT. HA AND AT LEAST TWO OTHER LOCALS FUNCTIONED AS TRANSLATORS AT ALL ORGANIZED ACTIVITIES, BOTH TO THE CREW'S BENEFIT AND FOR THE LOCAL OFFICIALS. BELIEVE THAT TAKING TWO TRANSLATORS WOULD HAVE BEEN SUFFICIENT, GIVEN THE LEVEL OF SUPPORT BY THE HA. HOWEVER, HAVING MORE DID ALLOW ONE TRANSLATOR TO STAY ON BOARD FOR USE OF DUTY SECTION. D17 RUSSIAN LIASON OFFICER WAS ONE OF THE FOUR TRANSLATORS, AND HIS PRESENCE WAS HELPFUL AND MUCH APPRECIATED. IT IS VERY IMPORTANT TO HAVE A TRANSLATOR ABOARD FOR THE APPROACH TO PROVIDENIYA AS ALL INITIAL RADIO COMMS WERE IN RUSSIAN.
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Appendix F

DEPLOYMENT SUMMARY MESSAGE REPORT

R 092148Z NOV 04
FM USCGC HEALY
TO COMPACAREA COGARD ALAMEDA CA//PO/PCC/POF/POC//
INFO COMDT COGARD WASHINGTON DC//G-OPN/G-OCU/G-A/G-SEN/G-CRC//
CCGDTHIRTEEN SEATTLE WA//CC/O//
CCGDSEVENTEEN JUNEAU AK//CC/O//
COMCOGARD MLC PAC ALAMEDA CA//K/V/VR/T/MDL//
COGARD INTSUPRTCOM SEATTLE WA
COGARD ENGLOGCEN BALTIMORE MD
COGARD NESU SEATTLE WA
COGARD ESU SEATTLE WA
COGARD ATC MOBILE AL//POPDIV//
USCGC POLAR SEA
USCGC POLAR STAR
USCGC MELLON
USCGC MIDGETT
USCGC ALEX HALEY
USCGC STORIS
USCGC ACUSHNET
COGARD AIRSTA KODIAK AK
COGARD CAMSPAC PT REYES CA
COGARD COMMSTA KODIAK AK
NAVICECEN SUITLAND MD
NSF POLAR WASHINGTON DC
BT
UNCLAS //N16240//
SUBJ: HEALY ARCTIC WEST SUMMER 2004 (AWS04) DEPLOYMENT SUMMARY
A. SAR SITREP ONE AND FINAL, OVERDUE VESSEL IVO SHISHMAREF, 200445Z JUL 04
B. SAR SITREP ONE, OVERDUE VSL IVO COLVILLE RIVER DELTA, 290325Z JUL 04
C. SAR SITREP TWO AND FINAL, 300335Z JUL 04
D. PROVIDENIYA POST VISIT REPORT, 080346Z OCT 04
E. PRINCE RUPERT POST VISIT REPORT, 082054Z NOV 04
1. DEPLOYMENT STATISTICS:
A. DEPARTED SEATTLE WA 1017T 30APR04
B. ARRIVED SEATTLE WA 1056T 09NOV04
C. PURPOSE: CONDUCT MULTIPLE MISSIONS IN SUPPORT OF ARCTIC RESEARCH:
MISSION HLY04-01: 08-DAY DART BUOY SERVICE PHASE
MISSION HLY04-02: 40-DAY SBI I PROCESS PHASE
MISSION HLY04-03: 40-DAY SBI II PROCESS PHASE
MISSION HLY04-04: 30-DAY SBI MOORING RECOVERY CRUISE
MISSION HLY04-05: 20-DAY NOAA ARCTIC MAPPING PHASE
D. DAYS AFHP THIS DEPLOYMENT: 193 (FY04: 154/FY05: 39)
E. DAYS AFHP FY04: 197
F. DAYS AFHP FY05: 39
G. DAYS IN TRANSIT: 34
H. DAYS IN SUPPORT OF SCIENCE: 138 UNDERWAY, 1 LOGISTICS I/P DUTCH HARBOR TO EMBARK SBI MOORING RECOVERY PHASE.

I. PORT CALL DAYS: 16 LIBERTY DAYS, 4 I/P WORK DAYS (FUELING/STORES/ON-OFFLOADS)
2. VESSELS BOARDED: N/A
3. SAR INCIDENTS:
A. UCN 04-01: AS OUTLINED IN REF A, THIS CASE INVOLVED THE LAUNCH OF 6532 TO SEARCH FOR OVERDUE BOATER IN KOTZEBUE SOUND ON 19 JULY. THE AIRCREW SUCCESSFULLY LOCATED THE OPERATOR AND HIS VESSEL AND SAFELY RETURNED HIM HOME TO SHISHMAREF, AK. THE CASE OCCUPIED ONLY 5 HOURS AND HAD MINIMAL IMPACT ON SCIENCE OPERATIONS.
B. UCN 04-02: THIS SAR CASE IS DOCUMENTED IN REFS B AND C. ON 28 JULY HEALY WAS DIVERTED FROM SCIENCE OPERATIONS TO JOIN IN A MULTI-UNIT SEARCH FOR OVERDUE WALRUS HUNTERS NEAR THE COLVILLE RIVER DELTA. ON 29 JULY, 6539 LOCATED THE VESSEL WITH ALL FOUR POB AND SAFELY RETURNED THEM TO THE VILLAGE OF NUIQSUT, AK AFTER THREE DAYS ADRIFT. TWO SORTIES WERE LAUNCHED AND 25 HOURS EXPENDED ON THIS CASE.
4. LAW ENFORCEMENT INCIDENTS: N/A
5. HELICOPTER OPERATIONS:
FLIGHT HOURS: 163.5
SORTIES: 123
MISSIONS: SAR, ICE RECON, SCIENCE SUPPORT, LOGISTICS, LE
COMMENTS: THE DIVERSE CONTRIBUTION OF AVDET 160 WAS INSTRUMENTAL TO HEALY'S SUCCESS ON AWS04. THE AIRCRAFT PROVIDED INVALUABLE LOGISTICS SUPPORT IN NOME AND BARROW, INCLUDING EMERGENT PASSENGER TRANSFERS AND CRITICAL PARTS DELIVERY, AS WELL AS SCHEDULED SCIENCE PARTY TRANSFERS. THE AVDET SUPPORTED SCIENTIFIC RIVER SAMPLING FLIGHTS TO THE YUKON, COLVILLE, AND IKPIKPUK RIVERS. AVDET 160 ALSO SUCCESSFULLY PROSECUTED 2 SAR CASES SAVING 5 LIVES AND FLEW 10.8 HOURS IN SUPPORT OF HSDN ENFORCEMENT WHILE HEALY TRANSITED TO YOKOSUKA JAPAN. THE AVDET FLEW OVER TWICE AS MANY HOURS AND SORTIES AS DURING AEWS03 AND ACHIEVED A 100% DISPATCH RATE FOR ALL MISSIONS.
6. MAJOR CASUALTIES:
A. CASREP 04016 AND 04022 ASW AND MSW PIPING LEAKS: DISCOVERED A STEADY STREAM OF WATER COMING FROM PINHOLE LEAKS ON BOTH SUPPLY AND RETURN AUXILIARY SEAWATER (ASW) PIPING FOR THE NR1 SHIP SERVICE AIR COMPRESSOR. TEMPORARY REPAIRS WERE NOT EFFECTIVE AND PIPE NEEDED TO BE CUT AND PLUGGED. LACK OF PROPER PIPING SUPPORT AND VIBRATION DUE TO HEAVY ICE BREAKING APPEARS TO HAVE CONTRIBUTED TO THE FAILURE. DISCOVERED 2 QUARTER INCH DIAMETER HOLES IN MSW PIPING SPOOL PIECE LEADING TO NUMBER 3 CENTRAL FRESH WATER COOLER. CRITICAL REPAIRS WERE SUCCESSFULLY COMPLETED DURING OUR MPB IN JAPAN, BUT MANY LEAKS AWAIT REPAIR IN DS05. PIPING SYSTEM FAILURES CONTINUE TO BE A CHRONIC PROBLEM.
B. CASREP 04027 EVAP NR2: DURING ATTEMPT TO LIGHT OFF EVAP IT APPEARED TO OVERHEAT WITH LITTLE STEAM INPUT. TROUBLESHOOTING REVEALED A ONE-INCH CROSSOVER CHECK VALVE FLAPPER SHAFT ERODED AWAY SO VALVE NOT SEATED PROPERLY. REPLACEMENT PARTS NOT ON BOARD. FABRICATED AND INSTALLED TEMPORARY CROSSOVER TUBE USING AVAILABLE CHECK VALVE. OP TEST CONDUCTED, MAXIMUM OUTPUT COULD NOT BE ACHIEVED. FURTHER INVESTIGATIONS REVEALED SEIZED SW CONTROL VALVE. VALVE CLEANED AND REASSEMBLED, FINAL OP TEST SAT.
C. CASREP 04028 RHI: HEALY 1 FAILED TO OPERATE RELIABLY WHEN WATERBORNE. INVX REVEALED THE EXHAUST PUSHROD OF NR 6 CYLINDER MISALIGNED WITH THE ROCKER ARM DUE TO STRIPPED THREADS ON BALL STUD. THIS CAUSED THE VALVE TO BREAK AND MAJOR DAMAGE TO HEAD,

PISTON, AND CYLINDER, ALSO COLLATERAL DAMAGE IN NEARBY CYLINDERS. NESU SEATTLE PROCURED AND SHIPPED REPLACEMENT ENGINE TO NPOC. INSTALLED ENGINE, AND ONE HOUR AND 15 MINS INTO UNDERWAY BREAK-IN BOAT CREW HEARD LOUD KNOCKING FROM ENGINE. ENGINE SECURED AND BOAT TOWED BACK TO HEALY. DISASSEMBLY OF THE CYLINDER HEAD FOUND PIECES OF THE GLOW PLUG HEATING ELEMENT (WHICH HAD TO BE REUSED FROM OLD ENGINE) STUCK IN THE NR6 CYLINDER INTAKE VALVE WITH DAMAGE TO THE PISTON CROWN AND INTAKE VALVE. VOLVO SERVICE DEALERSHIP REPORTED SHORT LIFESPAN OF STOCK GLOWPLUGS AND RECOMMENDED REPLACEMENT ANNUALLY. WILL COMPLETE REPAIRS UPON RTHP.

D. CASREP 04031 RHI BOAT DAVIT: DISCOVERED AN INTERMITTENT PROBLEM WITH CENTER WIRE SPOOL TAKING MOST OF THE TENSION WHEN HOISTING THE BOAT OUT OF THE WATER. TENSIONING ASSY FOR SHEAVE HAS STACK OF FLAT WASHERS IN PLACE OF SPRING WASHERS. PARTS SHIPPED TO NESU SEATTLE FOR INSTALLATION DURING HEALY'S DS05.

E. CASREPS 04036 AND 04041 NR2 LOP AND NR1 FOP FAILURE: CONTINUE TO RECEIVE FAILED CLEAR AND BRIGHT TESTING ON NR1 FOP. FOLLOWED ALL OF TECH REPS SUGGESTIONS FOR TROUBLESHOOTING. LAST STEP IN TROUBLESHOOTING IS TO REPLACE THE PARING DISCS. PARTS ON ORDER. LOP FAILED TO SELF-CLEAN AND CAUSED UNCONTROLLED DUMPING OF ENGINE LUBE OIL. PUMPED 400GALS FROM ONLINE ENGINE SUMP BEFORE ALARM SOUNDED AND PURIFIER COULD BE SECURED. TROUBLESHOOTING REVEALED SLUDGE BUILDUP CAUSED BY A BAD CONDITIONING WATER FLOW VALVE. REPLACED FLOW VALVE, OP TEST SAT.

F. CASREP 04047 STEAM HEATER COILS: FOLLOWING RETURN TO WARMER TEMP WEATHER, DISCOVERED WATER LEAKING IN VARIOUS DUCT WORK FROM THE RUPTURE OF STEAM COILS. FIRST WAS SS-87, SUPPLY FOR PROPULSION TRANSFORMER ROOMS. VENT TEMP TREND SHOWED NO FREEZING TEMPS IN SYSTEM, BUT DID DIP INTO 30'S. SECOND AND THIRD ARE IN TWO SYSTEMS, SS-31 AND SS-79, WHICH HAVE PREVIOUSLY RUPTURED PREHEATERS THAT ARE ALREADY SCHED FOR RENEWAL IN UPCOMING DS. THE LAST TWO ARE TWO OF FOUR REHEATERS IN SS-95, SUSPECT REHEATERS FAILED DUE TO LACK OF STEAM TO PREHEATERS. HAVE INITIALIZED ALARM SET POINTS IN MPCMS TO PROVIDE WARNING OF DANGEROUS INLET TEMPS. PREHEATER FOR SUPPLY SYSTEM 34 SERVING THE HANGAR ALSO FAILED. REPAIRS TO BE COMPLETED DURING DS05.

G. CASREPS 04034 AND 04037 CYCLOCONVERTERS: EXPERIENCED SEVERAL HARDWARE FAILURES THAT CAUSED VARIOUS TRIPS OR COMMUNICATIONS FAULTS. COMPONENTS WERE SHIPPED TO MANUFACTURER FOR FAULT ANALYSIS. RECEIVED GREAT TROUBLESHOOTING SUPPORT FROM NESU SEATTLE AND ALSTOM PITTSBURGH.

H. CASREPS 04018 AND 04048 NR2 MSW PUMP AND MOTOR: WATCHSTANDER SECURED PUMP AFTER NOTICING BLACK RUBBER BRAKE DUST ON TOP OF AND INSIDE THE PUMP'S COUPLING GUARD. PUMP'S UPPER AND LOWER COUPLINGS HAD SHEARED. RECEIVED PARTS, INSTALLED, OP TEST SAT. SECOND OCCURRENCE: MSW PUMP NR2 SECURED AUTOMATICALLY CONCURRENT WITH A FIRE ALARM ACTIVATION IN AMR 3. MSW PUMP NR3, THE STBY PUMP, CAME ON LINE. MSW PUMP NR2 WAS INOPERABLE FROM BOTH REMOTE AND LOCAL CONTROLS. THERE WAS BLACK CHARRING COMING OUT OF PUMP'S VENTS AND ELECTRICIAN FOUND THE MOTOR TO HAVE 10,000 OHMS OF RESISTANCE TO GROUND. REPAIR TO BE COMPLETED UPON RTHP.

I. CASREPS 04032, 04038, 04039, 04044, 04046 AND 04050 MDE/MDG CASUALTIES: FIRST CASUALTY - A FUEL LEAK WAS REPORTED ON THE NR2 MDE FUEL LEAK OFF LINE ON THE A5 CYLINDER. SF RE-BRAZED FITTING AND REPLACED LINE FOR TEST. TEST SAT. NEW LEAK OFF PIPES ON ORDER. SECOND CASUALTY - MECHANICAL SEAL ON NR2 MDE JW KEEP WARM PUMP

FAILED. RECEIVED, INSTALLED PART, OP TEST SAT. THIRD CASUALTY - NR2 MDE AMOT VALVE FAILED TO ACTUATE FOR FULL RANGE OF MOTION CAUSING NR2 MDE TO OVERHEAT. VALVE OPERATED MANUALLY UNTIL NEW VALVE RECEIVED. FOURTH AND WORST CASUALTY - DURING START OF NR2 MDG, START AIR VALVE FOR B3 CYL EJECTED FROM HEAD DUE TO FAILED BOLTS ON THE RETAINING FLANGE. FLANGE COLLAPSED THE BACK SIDE OF THE ROCKER GEAR ASSEMBLY AND WEDGED AGAINST THE AUXILIARY ROCKER ARMS. REMOVED CASTING FRAGMENTS AND INSPECTED AFFECTED PARTS. ENTIRE HEAD REQUIRES RENEWAL DUE TO ADDITIONAL CRACKS FOUND IN CYLINDER COVER AT BASE. FIFTH CASUALTY - RECEIVED A NR1 MDG COOLING FAN FAILURE ALARM ON MPCMS DUE TO SEIZED MOTOR. REMOVED FAN MOTOR FROM NR2 MDG AND INSTALLED ON NR1 MDG. SIXTH CASUALTY - NOTICED NR4 MDE LOSING 15-20 GAL OF J/W PER DAY. SUSPECT FAULTY O-RING ON CYLINDER LINER. CONTINUING TO OPERATE AND MONITOR ENGINE DUE TO NR2 MDE OOC. HEAD AND CYLINDER REPAIRS TO BE COMPLETED IN UPCOMING WARTSILA GROOM.
J. CASREPS 04035 AND 04042 NR1 BOILER: ON SEVERAL OCCASIONS, BOILER RESERVE FEED WATER CONSUMPTION INCREASED DRAMATICALLY. TROUBLESHOOTING OF THE ONLINE NR1 BOILER REVEALED STEAM EXPELLING FROM BOILER EXHAUST STACK. OVER THE COURSE OF THIS ONE PATROL PLUGGED 12 TUBES, ALL ON THE FIRST PASS THROUGH THE WATER DRUM. FINAL OP TEST SAT, BUT LEAVING BOILER IN HOT LAYUP STATUS FOR EMERGENCY USE ONLY. EXPENDED OVER 420 HOURS IDENTIFYING, PLUGGING, AND RECOVERING FROM THESE CASUALTIES. MLCPAC INCLUDED RETUBING OF NR1 BOILER FIRST PASS TUBES IN DS05 PACKAGE.
7. COMMUNICATIONS:
A. OVERALL, COMMS WERE EXCELLENT THROUGHOUT THE DEPLOYMENT. INMARSAT CONNECTIVITY INTERMITTENT FOR A SHORT TIME PERIOD WHILE WORKING ABOVE 77N. BETWEEN 77N AND 80N, INTERNET AND ANY WEB-BASED APPLICATIONS ARE NOT AVAILABLE, BUT EMAIL AND MSG TFC VIA EMAIL STILL TRANSFER SLOWLY.
B. HFDX COMMS WERE GOOD THROUGHOUT THE DEPLOYMENT. HEALY RECEIVED GREAT SUPPORT FROM COMMSTA KODIAK AND CAMSPAC.
C. IRIDIUM COMMS THROUGH MXU2000 WERE CONSISTENTLY GOOD THROUGHOUT THE DEPLOYMENT. PROVIDED THE SCIENCE PARTIES AN ALTERNATE MEANS FOR DATA AND EMAIL TRANSFER AND IRIDIUM PHONE WAS PRIMARY VOICE COMMUNICATIONS CIRCUIT WITH MINI-M USED SECONDARILY. IRIDIUM FUNCTIONED WELL FOR BOTH VOX AND E-MAIL AT OUR HIGHEST LATITUDES.
D. HEALY IS CURRENTLY IN DISCUSSIONS AGAIN REGARDING HIGH LATITUDE CONNECTION TO CGDN. BELIEVE THAT IRIDIUM IS CAPABLE OF BEING USED FOR THIS SERVICE AND IT IS RECOMMENDED AS A SOLUTION FOR CONNECTIVITY DURING AEWS-05 WHEN HEALY WILL BE OUT OF INMARSAT-B SATELLITE FOOTPRINTS. REQUEST ASSISTANCE OVERCOMING ALL COAST GUARD DATA NETWORK CONNECTIVITY BARRIERS VIA IRIDIUM.

8. PORT CALLS:	DATES:	PURPOSE:
A. DUTCH HARBOR, AK	10-11 MAY	OFFLOAD/R&R
B. YOKOSUKA, JN	3-9 JUL	FUEL/R&R
C. DUTCH HARBOR, AK	28 AUG-1 SEP	FUEL/ONLOAD/R&R
D. PROVIDENIYA, RU	3-5 OCT	R&R
E. PRINCE RUPERT, CA	2-5 NOV	R&R

NOTE 1: REF D DETAILS PROVIDENIYA PORT CALL
NOTE 2: REF E DETAILS PRINCE RUPERT PORT CALL
9. NOTEWORTHY EVENTS:
A. SCIENTIFICALLY, AWS04 WAS VERY SUCCESSFUL. HEALY PROVIDED A CG RECORD 138 SUPPORTED SCIENCE DAYS, 116 OF WHICH WERE ABOVE THE ARCTIC CIRCLE, AND ALL MISSIONS MET OR EXCEEDED RESEARCH GOALS. AWS04 ALSO MARKS THE COMPLETION OF THREE YEARS SUPPORTING THE FIELD

RESEARCH FOR THE SHELF BASIN INTERACTION (SBI) PROJECT. CRUISE REPORT WITH COMPLETE DETAILS WILL BE PUBLISHED AND DISTRIBUTED IN NEAR FUTURE.
B. HEALY'S PORT VISIT TO PROVIDENIYA, RUSSIA, DETAILED IN REF D, WAS A SUCCESSFUL EVENT ON SEVERAL LEVELS. GREATLY APPRECIATE ALL THE WORK AND ASSISTANCE BY PACAREA AND D17 STAFF MEMBERS IN PLANNING, DIPLOMATIC EFFORTS AND ACTUAL EXECUTION. SINCERELY HOPE THAT OTHER CUTTERS AND COASTIES GET TO EXPERIENCE RUSSIAN CULTURE AND GENEROSITY AT PROVIDENIYA IN THE FUTURE.
C. MUCH OF THE SUCCESS FOR AWS04 CAN BE ATTRIBUTED TO GOOD PREPARATION. IN LATE MARCH, HEALY SAILED ON A 12 DAY SHAKEDOWN, THE IMPORTANCE OF WHICH CANNOT BE STRESSED ENOUGH. ENSURING THE ENGINEERING PLANT IS OPERATIONAL, AND TESTING THE MYRIAD OF SCIENCE SYSTEMS IS ESSENTIAL. SHAKEDOWN ALSO PROVIDED VALUABLE REFRESHER TRAINING AND FAMILIARIZATION FOR OLD AND NEW CREW, INCLUDING HELO TRAINING DURING THE STAN VISIT.
D. ALSO SIGNIFICANT WAS HEALY'S ENCOUNTERING VERY DIFFICULT ICE CONDITIONS IN LATE MAY AND EARLY JUNE. HEALY WAS BESET FOR OVER 48 HOURS IN THE BEAUFORT THE FIRST WEEK OF JUNE, PROVIDING A STARK REMINDER OF THE DANGERS OF ICEBREAKING AS WELL AS PROVIDING A CAUTIONARY TALE FOR EARLY SEASON SCIENCE CRUISE PLANNING.
10. FUEL EXPENDED: 2,055,780 GALLONS
PROPULSION: 2,047,225 GALLONS
AVIATION (JP5): 8,555 GALLONS
11. MILES CRUISED: 28,485.5 NM
12. COMMANDING OFFICERS COMMENTS:
A. ANOTHER HIGHLY SUCCESSFUL SCIENCE CRUISE AND I AM VERY PROUD OF WHAT THIS CREW HAS ACCOMPLISHED DESPITE THE LENGTH OF TIME AWAY FROM HOME. AS THE POINTY END OF THE STICK, WE GET MOST OF THE ACCOLADES, BUT OUR SUCCESS IS POSSIBLE BECAUSE OF THE EXCELLENT SUPPORT WE RECEIVE. MY THANKS TO ALL WITH PARTICULAR NOTE TO NESU AND ESU SEATTLE.
B. ONBOARD SCIENCE SYSTEM SUPPORT WAS PROVIDED BY LDEO AS A SUPPORT CONTRACTOR VIA ESU. THIS WAS ONBOARD SUPPORT SPECIFICALLY GEARED TOWARDS HEALY'S UNIQUE SCIENCE SYSTEMS OVER AND ABOVE THE SUPPORT PROVIDED FOR OUR SCIENCE DATA NETWORK. THE SCIENCE SUPPORT WAS A KEY COMPONENT TO OUR SUCCESS, ENSURING OUR SCIENCE UNIQUE SYSTEMS WERE ALWAYS FUNCTIONING AS ADVERTISED. CONTINUATION OF THIS SUPPORT IS AN ABSOLUTE MUST FOR ALL FUTURE SCIENCE MISSIONS.
C. APPRECIATE AND VERY THANKFUL TO PACAREA FOR SUPPORTING OUR JAPAN PORT CALL. AN ALL-ARCTIC WEST DEPLOYMENT LACKS OPPORTUNITIES FOR CREW REST PORT CALLS. PROVIDING US THE FLEXIBILITY TO TRANSIT TO/FROM JAPAN WAS A BIG PLUS TO HELP BREAK UP A LONG DEPLOYMENT.
D. HAPPY TO REPORT WE WERE ABLE TO KEEP THE ARCTIC WATERS NORTH OF ALASKA ICE PIRATE FREE, DOING OUR BEST FOR DHS.
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Appendix G

POST-VISIT REPORT FOR PRINCE RUPERT, B. C. CANADA

R 082054Z NOV 04
FM USCGC HEALY
TO COMPACAREA COGARD ALAMEDA CA//PO/PCC/POF//
INFO CCGDSEVENTEEN JUNEAU AK//O/CC//
CCGDTHIRTEEN SEATTLE WA//O/CC//
COMCOGARD MLC PAC ALAMEDA CA//MDL//
BT
UNCLAS FOUO //N03120//
SUBJ: POST-VISIT REPORT FOR PRINCE RUPERT, B. C. CANADA
1. MISSION: PORT VISIT FOR END-PATROL BREAK
2. TASK ORGANIZATION: NONE
3. INTELLIGENCE SUPPORT: NONE
4. LOGISTICS:
A. HUSBANDING AGENT
RMS CRUISE SERVICES
POST OFFICE BOX 848
PRINCE RUPERT, B. C., CANADA V8J 3Y1
PHONE: (250) 624-5133
FAX: (250) 624-4329
B. LOCAL HA WAS VERY HELPFUL:
DOUGLAS MOORE
RUPERT MARINE SHIPPING
239 EAST 4TH AVENUE
PRINCE RUPERT, B. C. CANADA V8J 3Y1
CELL PHONE: (250) 624-1030
E-MAIL: DEMOORE(AT)KAIEN.NET
5. SERVICES:
A. LINE HANDLERS: INITIAL COMMS WITH PORT AUTHORITY INDICATED LINEHANDLERS WERE NOT AVAILABLE, SO SHIP LAUNCHED RHI INSIDE HARBOR AND PROVIDED OWN LINEHANDLERS. AFTER ARRIVAL, HA STATED THAT LINEHANDLERS ARE AVAILABLE IN PR.
B. SECURITY: AT THE TOP OF THE PIER IS A CUSTOMS BUILDING THAT RESTRICTS ACCESS TO PIER. PORT REQUESTED EITHER SHIP STAFF THIS BUILDING OR HIRE PRIVATE SECURITY FIRM. WE ADJUSTED THE DUTY SECTION TO HAVE A SECURITY WATCHSTANDER AT THE CUSTOMS BUILDING. NO OTHER ADDITIONAL SECURITY MEASURES TAKEN.
C. GARBAGE REMOVAL: AS DUMPSTERS COULD NOT BE LEFT ON FLOATING PIER, CHOSE TO HOLD TRASH UNTIL RTHP. IT WAS LATER DISCOVERED THAT A TRASH BARGE IS AVAILABLE IN PR.
D. POTABLE WATER: RECEIVED POTABLE WATER VIA SHORE TIE FROM FIRE MAIN AT TOP OF PIER STRUCTURE. CITY REQUESTED CONSUMPTION BE REPORTED, BUT DID NOT HAVE A METER; STAYED ON SHIP'S WATER AND LOGGED EACH TANK FILLING.
E. SEWAGE: THERE IS NO SEWAGE SHORE TIE ALTHOUGH A BARGE IS AVAILABLE FOR SEWAGE OFFLOAD.
F. TRANSPORTATION: MOST OF TOWN IS WITHIN WALKING DISTANCE OF PIER, HOWEVER, A VAN WAS RENTED AND PROVED USEFUL DUE TO TWO DAYS OF HEAVY RAINS AND HIGH WINDS.
G. BROW: NO BROW AVAILABLE. SHIP'S ACCOM LADDER UTILIZED.
H. COST OF SERVICES: PORT COSTS ARE STILL BEING DETERMINED AT THIS TIME. POST VISIT COST MESSAGE (CRAFT) WILL BE SENT WHEN FINAL INFORMATION IS AVAILABLE.
6. COMMUNICATIONS: BOTH INMARSAT AND IRIDIUM CONNECTIONS WERE STRONG AT THE PIER, CAUSING NO INTERRUPTION IN SHIP'S BUSINESS. THERE WERE MANY PUBLIC TELEPHONES WITHIN WALKING DISTANCE. HA PROVIDED FOUR CELL PHONES FOR OFFICIAL SHIP'S BUSINESS.
7. NAVIGATION/PORT INFORMATION:

A. PILOTAGE: WE UTILIZED A PILOT FOR THE INBOUND TRANSIT TO PROVIDE AREA FAM AND TO USE TUGS FOR MOORING. WE DID NOT EMBARK A PILOT OR USE TUGS FOR GETTING UNDERWAY, HAVING OBTAINED A WAIVER FROM CANADIAN PILOTAGE THROUGH PREVIOUS COMMUNICATIONS WITH D17.
B. NAVIGATIONAL INFORMATION: WE APPROACHED FROM DIXON ENTRANCE TO THE WEST AND EMBARKED CANADIAN PILOT AT THE CHARTED TRIPLE ISLAND PILOT STATION. PILOT WAS VERY KNOWLEDGEABLE AND WORKED WELL WITH NAV TEAM. UPON REVIEW OF THE SHIP'S TRACK LINES, THE PILOT OFFERED AN ALTERNATE SHORTER ROUTE OF THE FOLLOWING: FROM THE PILOT STATION, PROCEED EAST THROUGH THE FIRST GATED PAIR OF BUOYS, CONTINUE EAST, NORTH OF KINEHAN ISLAND AND SOUTH OF PETROL ROCK AND THEN COMPLETE A 90-DEGREE TURN NORTH INTO PRINCE RUPERT HARBOR. THIS ROUTE IS MARKED BY IALA-B BUOYAGE SYSTEM, BUT ONLY HAS BUOYS ON THE PORT HAND SIDE AS YOU ENTER THE HARBOR. PILOT CONTROLLED THE TWO TUGS, WHICH OPERATED ON CHANNEL 17. THE VTS (PRINCE RUPERT TRAFFIC) WORKED ON CHANNEL 11, AND ALL CHECK-INS WERE CONDUCTED AT THE CHARTED POSITIONS. ALTHOUGH NOT MENTIONED IN THE NGA SAILING DIRECTIONS, WHEN CHECKING IN WITH VTS ANNOUNCE THE CURRENT STATION AND THE ETA TO THE NEXT VTS CHECK-IN. A MANDATORY, 5KT TRAFFIC ZONE BEGINS ALONGSIDE THE WHARF/TERMINAL JUST SOUTH OF PILLSBURY POINT AND CONTINUES THROUGH THE ENTIRE HARBOR. THE HARBOR HAS A PLETHORA OF VISUAL AIDS AND DISTINCT RADAR POINTS FOR A MANUAL NAVIGATION PLOT. THE CANADIAN DGPS SIGNAL WAS STRONG AND THE DNC CHARTS USED A WGS-1984 DATUM. DGPS AND MANUAL RADAR OVERLAY SHOWED NO FIX ERROR WHILE ENTERING OR EXITING THE HARBOR. THE TIDAL RANGE DURING THE 4 DAY PORT CALL AVERAGED ABOUT 12 -15 FEET.
C. PIER: THE NEWLY CONSTRUCTED NORTHLAND CRUISE TERMINAL IS LOCATED JUST WEST OF THE COW BAY AREA OF PRINCE RUPERT IN POSITION 54-19.08N, 130-19.42W. THE LAY OF THE PIER IS 260T AND THE LENGTH OVER ALL IS 330 METERS. PIER IS CONCRETE PILE CONNECTED BY STEEL CATWALKS WITH SAFETY RAILS AND A FLOATING CENTER SECTION DOCK, SEVEN FT ABOVE THE WATER, DESIGNED FOR CRUISE SHIPS THAT HAVE A BROW AREA AMIDSHIPS. EACH CONCRETE PILE ALSO HAD A LARGE SHOCK ABSORBER FIXED CAMEL SYSTEM. DUE TO THE FLOATING PIER SYSTEM, NO BROW WAS AVAILABLE, AND THE SHIP'S ACCOMMODATION LADDER WAS UTILIZED. A CUSTOMS BUILDING RESTRICTS ACCESS TO THE PIER.
8. GENERAL COMMENTS:
A. OVERALL, PR WAS A VERY ENJOYABLE PORTCALL. BELIEVE THIS WOULD BE A GOOD ALTERNATIVE STOP FOR CUTTERS FROM D13 AND D17, AS WELL AS ALPAT CUTTERS. PR IS A BEAUTIFUL, DEEP, NATURAL HARBOR AND THE NORTHLAND TERMINAL IS EXCELLENT AND CONVENIENTLY LOCATED. CRUISE SHIP TRAFFIC IS EXPECTED TO INCREASE NEXT SUMMER; RECOMMEND ANY INTERESTED SHIPS WWW.RUPERTPORT.COM/HOME.HTM FOR CRUISE SHIP SCHEDULES AND AVAILABILITY.
B. PR POPULACE GREETED HEALY WITH THE NOTEWORTHY COURTESY AND FRIENDLINESS WE HAVE EXPERIENCED IN ALL OF OUR CANADIAN PORTCALLS.
C. SIMILAR TO PORTS IN SE ALASKA, PR OFFERS A GREAT VARIETY OF OUTDOOR ACTIVITIES, INCLUDING FISHING, HIKING, MOUNTAIN BIKING, ETC.
BT
NNNN

USCGC HEALY
WINTER 2004
INTEROCEAN SYSTEMS GROOM

March 1, 2004

Commander
CG MLCPAC (vp1) and (v)
Coast Guard Island Bldg 50-7
Alameda CA 94501-5100

Reference: a) DTCG85-00-D-66P381 Polar Class Icebreaker Grooming Contract
b) IOS Job 7-2963-027, Delivery Order D029

Subject: USCGC Healy (WAGB 20) Winter 2004 Groom

Under direction of MLC, by delivery order D029 of reference a) above, InterOcean Systems performed work onboard Healy to complete items 1 thru 4 of the delivery order Statement of Work (SOW), copy attached. This work was done during the period of February 16th to February 27th, 2004 in Seattle, WA. Following is a report of that work.

1. Conduct a standard annual groom in accordance with Polar Class Icebreaker Grooming Contract section C-5.1. Also ensure motor re-alignments meet Vulcan Coupling specifications.

February 16th was a travel day. We began the groom right away on the 17th. We removed all the chain and motor guards from the winches. We cleaned and tightened the level wind drive chains. We then removed and inspected the level wind shuttles. Each shuttle showed light wear but is still within specifications. The level wind assemblies of all three winches were cleaned, inspected and re-greased.

All three winch motors were laser aligned. OW#1 and the TC winch motors were within specifications (printouts and specification sheets attached.) On OW#2, the 3/8" winch, the motor to gearbox coupling was loose. It appears that the previously installed double set screws had worked loose and allowed the coupling to work on the key. The coupling was removed and inspected. The coupling spider was worn and the key was very worn. CFR D029-001 was submitted.

Upon approval of the CFR we replaced the spider (we left an additional spare spider on the Healy with the MST's) and did a NDT dye penetration test on the motor shaft, gearbox shaft and both sides of the coupling. (See Figures 1, 2 and 3) There were no indications of any problems on the tested parts. The keyway on the coupling was carefully measured and was found to be in specification. However, the keys themselves

were very worn and were replaced with new keys. The coupling was reassembled and the motor was laser aligned.

When beginning to work on OW#2 the Stern EM brake would not properly release in the manual release mode. When the cover on the brake was removed we found that the weld on the engagement tab on one of the manual release rods had broken, thus the rod would not manually disengage. We removed the rod and tab and had them welded back together. The other brake was checked and it properly released.

2. Align the 0.680" sheave in accordance with USCG Icebreaker Support Contract DTCG85-00-D-66P381 reference CFR no: DO026-001.

Per CFR DO026-001, the 0.680" instrumented sheave was realigned. Pad eyes were added to the overhead of the winch room to allow the sheave to be lowered. Upon lowering we found that the foundation was not parallel with the horizontal turning sheave. The sheave was also not in alignment with the above deck turning sheave.

The existing 1" diameter, grade 5 bolts were removed. A spacer shim added along the foundation of the sheave that was 3/4" thick on the inboard side and 7/16" thick on the outboard side. This lowered the sheave to be in line with the horizontal flag block sheave in the winch room. We slotted the sheave base mounting plate 1/4" of an inch to allow the sheave to move aft slightly to align with the above deck turning sheave. The actual placement of the sheave was set using laser alignment equipment from the above deck sheave and the flag block sheave. The grade 5 bolts were replaced with 7/8" grade 8 bolts and new Nylock nuts and heavy duty washers were installed. The 7/8" bolts was necessary to allow proper fore/aft alignment of the sheave.

All welding and cutting areas were painted with primer and top coat.

3. Clean, inspect and calibrate all four instrumented sheaves (including line tension load cells) and associated display units (MD TOTCOs).

All four instrumented sheaves were lowered from their respective frames and inspected. Bearing play was checked and found satisfactory. Safety wires were inspected.

Each sheave was then returned to their respective frames. A tension was applied through a calibrated digital load cell and the MD TOTCOs were set using a two point calibration. New calibration stickers with the proper slope and offset numbers filled in were applied to the TOTCO cabinets (copies attached.)

The sheaves were returned to service.

4. Modify the under the flight deck sheaves to permit un-reeving of the winch wires with termination fittings attached in accordance with InterOcean Spring 2003 Groom for Healy (WAGB 20) report recommendation.

Three 48" under deck sheaves were modified to allow passage of a 9/16" Fiege fitting attached to the 9/16" wire rope. This involved installing larger Nylatron inserts into each of the sheaves and moving the wire keeper pins to accommodate the newer inserts as

proposed in the Spring Groom report.

On the two movable flag block sheaves once the larger inserts were installed additional counter balance weight was added to the sheave to keep the wheel in balance. On the horizontal non-movable sheave an access hole (see Figure 5) was cut into the housing plate to allow the attachment bolts to be reached. With the original sheave inserts a person removing or installing inserts could reach between the flange plates and the inserts to tighten the insert mounting bolts. With the new wider inserts the installer needs to reach through the access hole to tighten the bolts.

While working on the horizontal sheave we found that due to the way the sheave pin is made and the manner in which the sheave is mounted the upper (mounting) side of the sheave frame has warped (see Figure 6.) This required a new thrust washer to be placed on the bottom of the pin to return the sheave wheel into the center of the frame. This sheave will need to be reinforced during the next availability. See CFR D029-002 attached.

In addition to the CFR on the warped sheave, several other CFR's are attached that came about during our grooming visit. These include additional work needing to be done during the next availability and some spare parts that could be approved and shipped to the Healy while on their next deployment. These CFR's are submitted with this report but should be considered on their own merit.

Regards,

Ron White

Ron White
Director of Operations
InterOcean Systems, Inc.

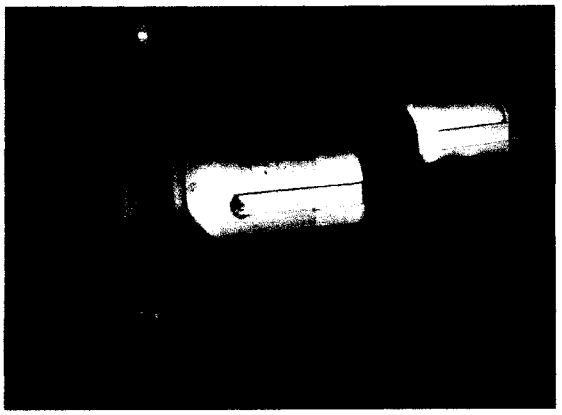


Figure 1 Motor and Gearbox Shafts

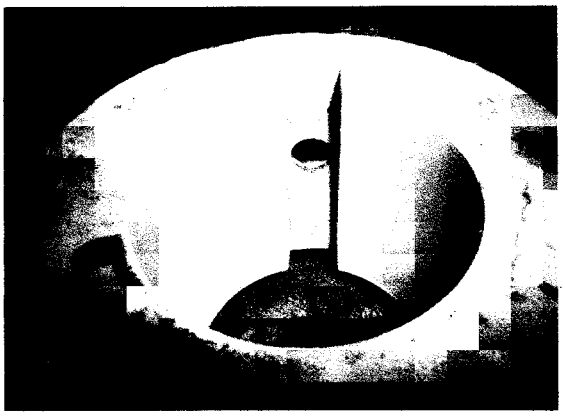


Figure 2 Gearbox Coupling

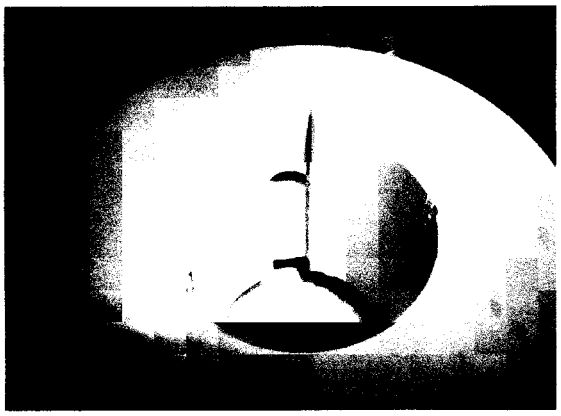


Figure 3 Motor Coupling w/Dye Pen

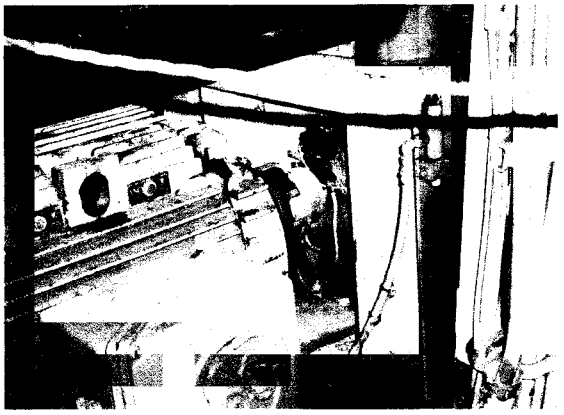


Figure 4 OW #2 3/8" Wire

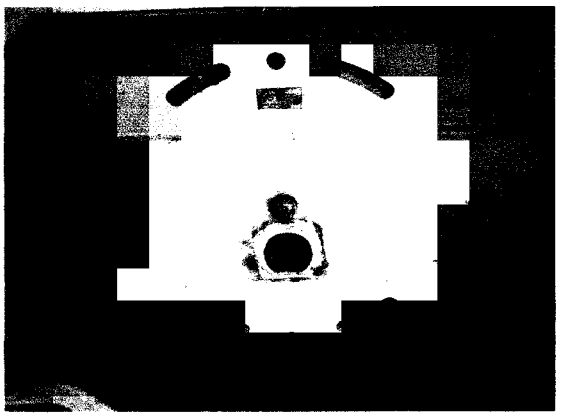


Figure 5 Access hole in turning sheave

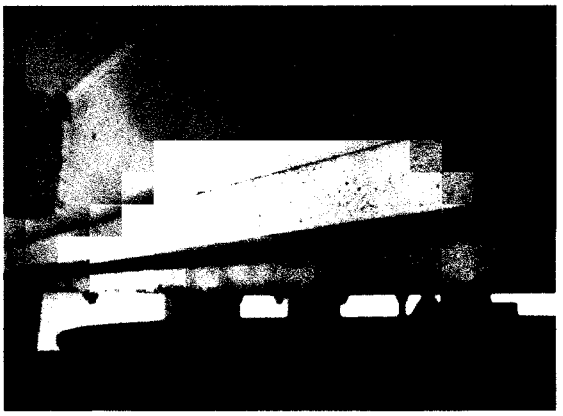
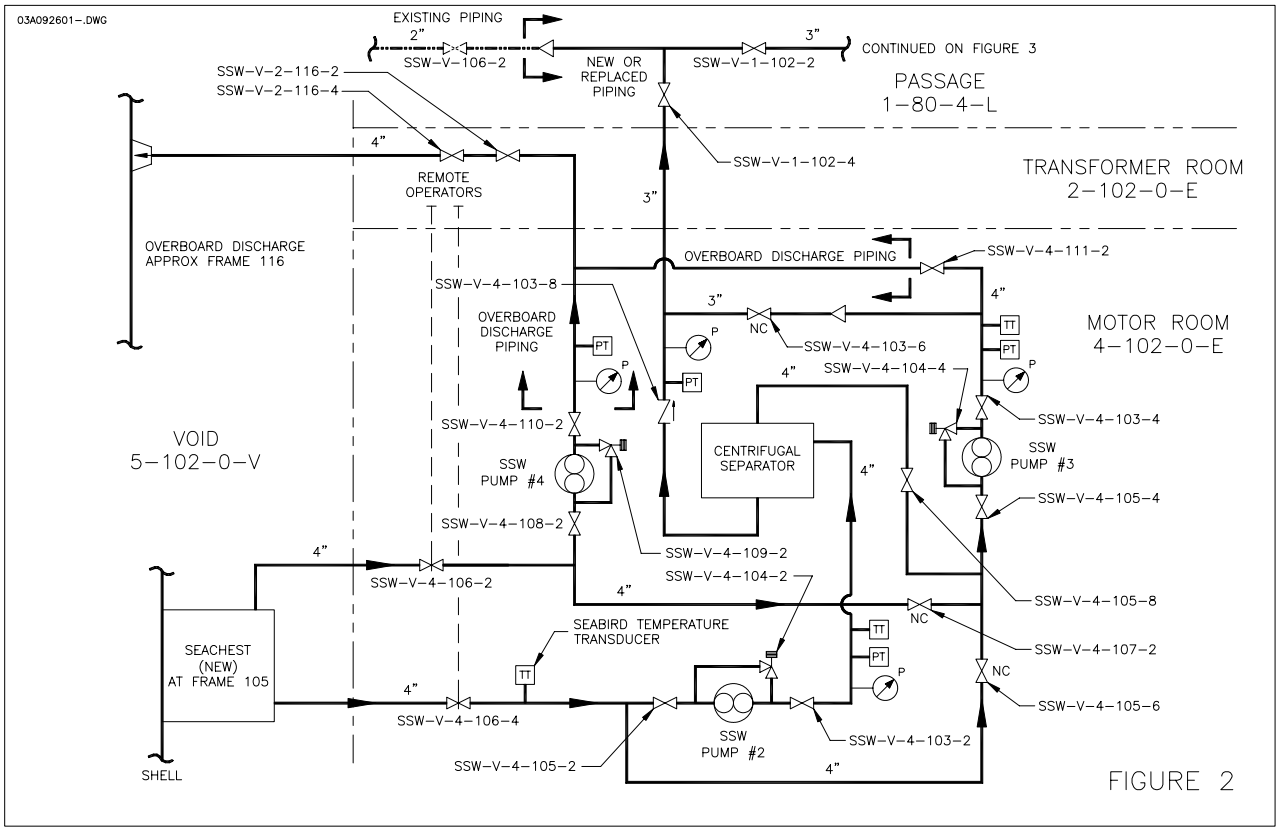


Figure 6 Warped sheave frame

Appendix I

SCIENCE SEAWATER OPERATING INSTRUCTIONS

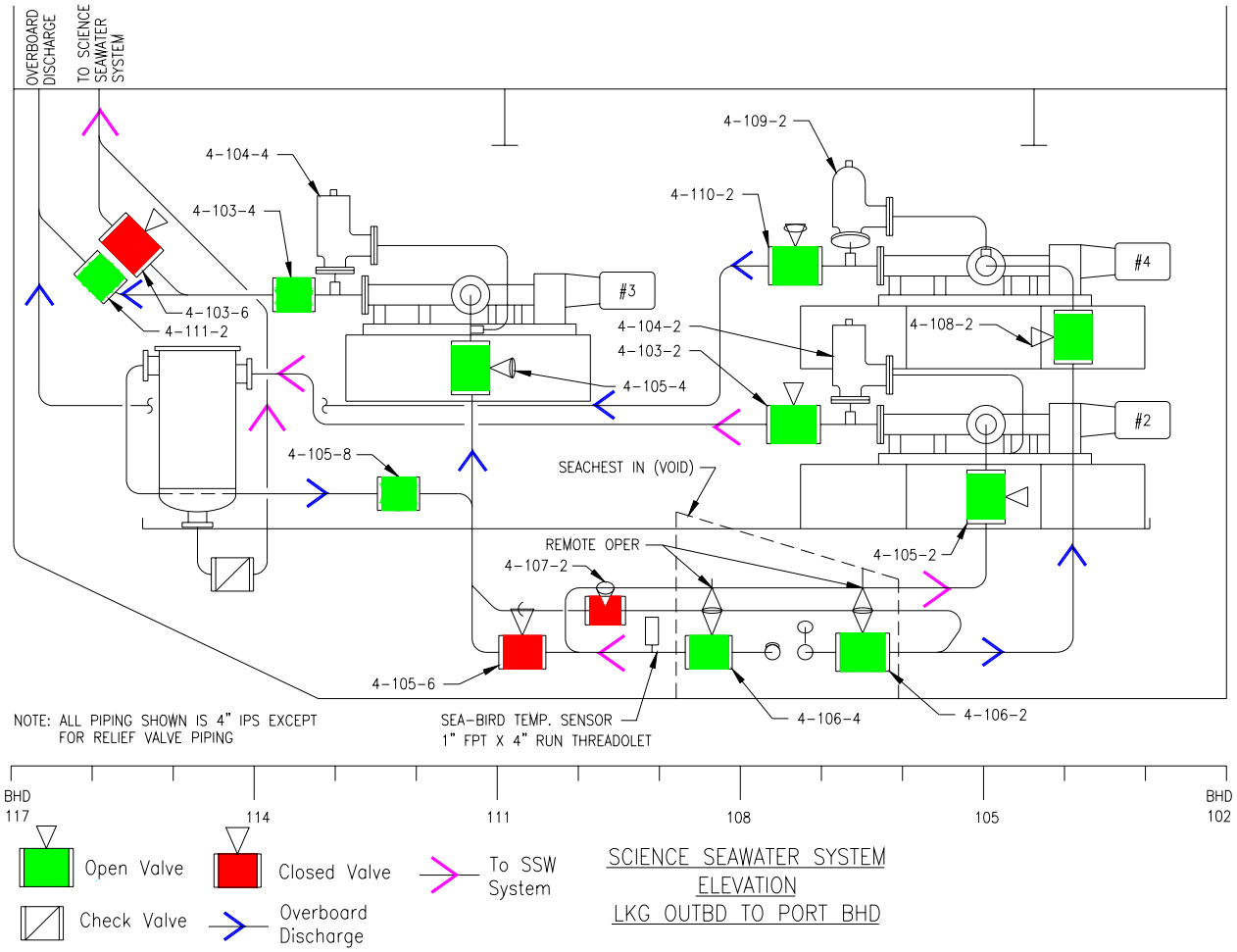


PUMP SPEED	GPM
10%	22
20%	44
30%	66
40%	88
50%	110
60%	132
70%	154
80%	176
90%	198
100%	220

Normal Operation

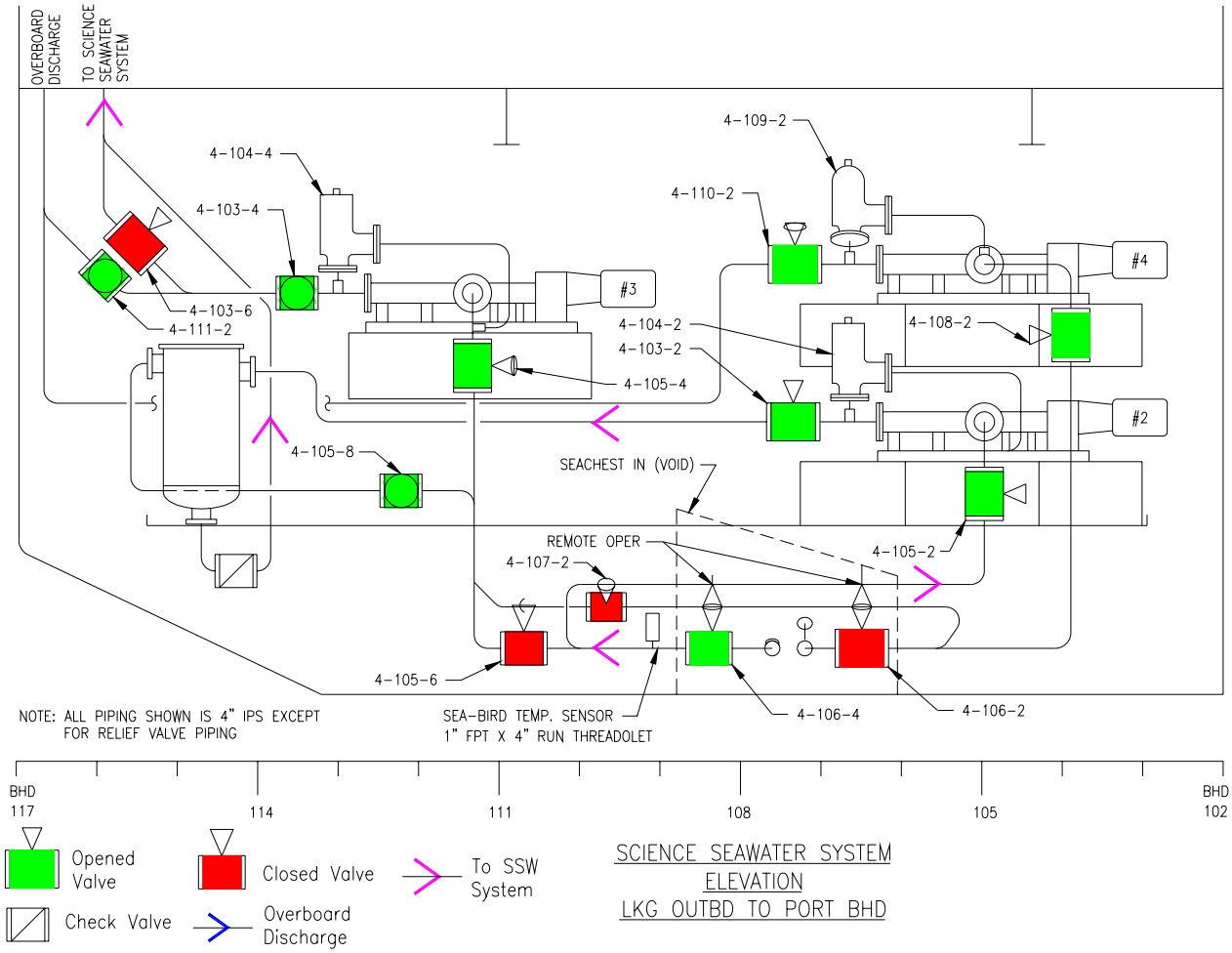
1. Open pump isolation valves SSW-V-4-105-2, SSW-V-4-103-2, SSW-V-4-105-4 SSW-V-4-103-4 SSW-V-4-108-2 and SSW-V-4-110-2.

2. Open seachest isolation valves SSW-V-4-106-4 and SSW-V-4-106-2.
3. Ensure that valves SSW-V-4-107-2, SSW-V-4-105-6, and SSW-V-4-103-6 are closed.
4. Open valves SSW-V-4-105-8, SSW-V-4-111-2, SSW-V-1-102-4, SSW-V-2-116-4, SSW-V-2-107-2, and SSW-V-2-116-2.
5. Open valve SSW-V-1-106-2 and the other valves required to serve the science labs, and/or SSW-V-1-102-2 and the other valves required to serve the forecastle.
6. Start SSW pump #4 (the seachest ice removal pump) and operate it at low speed. 10-15 percent of full speed is recommended as a starting point.
7. Start SSW pump #2 (the seawater supply pump) and operate it at an intermediate speed (no more than 40 % of full speed for science lab supply). Operate the pump at a higher speed only if needed for supplying incubators forward.
8. Start SSW pump #3 (the centrifugal separator ice removal pump, and operate it at low speed. 10 to 15 percent of full speed is suggested as a starting point. **WARNING: DO NOT OPERATE THE CENTRIFUGAL SEPARATOR ICE REMOVAL PUMP AT A HIGHER SPEED THAN THE SEAWATER SUPPLY PUMP. MISOPERATION MAY CAUSE PUMP OR PIPING SYSTEM DAMAGE.**
9. Observe the system pressures. Pressures at the pump #2 and the centrifugal separator outlet should be approximately 20-50 psig.



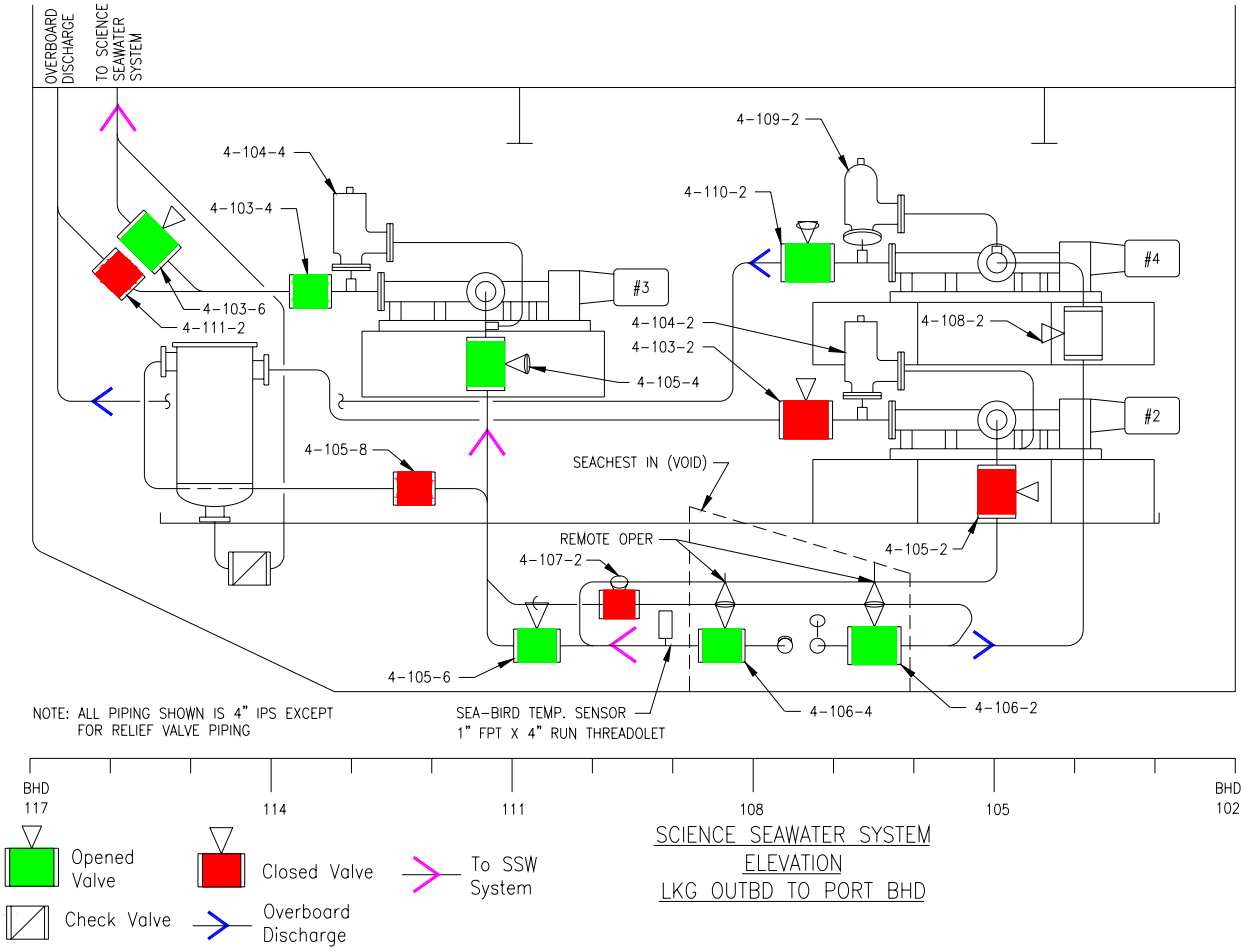
Normal Operation Out of Ice (Ice Removal Pumps Secured)

1. Open pump isolation valves SSW-V-4-105-2 and SSW-V-4-103-2.
2. Open seachest isolation valve SSW-V-4-106-4.
3. Ensure that valves SSW-V-4-106-2, SSW-V-4-105-8, SSW-V-4-105-6 and SSW-V-4-103-6 are closed.
4. Open valve SSW-V-1-106-2, SSW-V-2-107-2, and the other valves required to serve the science labs, and/or SSW-V-1-102-2 and the other valves required to serve the forecastle.
5. Start SSW pump #2 (the seawater supply pump) and operate it at an intermediate speed (no more than 30 % of full speed for science lab supply). Operate the pump at a higher speed only if needed for supplying incubators forward.
6. Observe the system pressures. Pressures at the pump #2 and the centrifugal separator outlet should be approximately 20-50 psig.



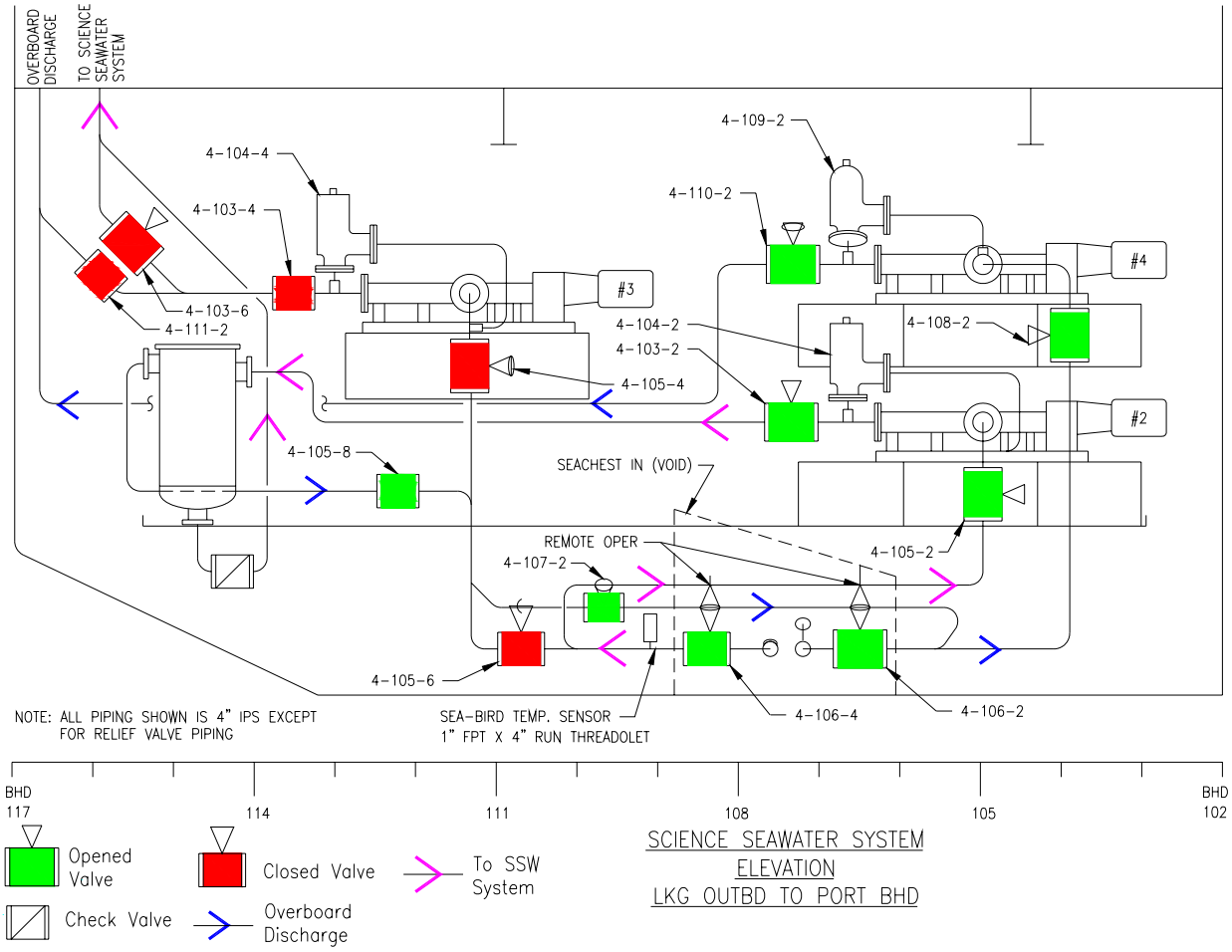
Operation with SSW Pump #2 Down

1. Open pump isolation valves SSW-V-4-105-4, SSW-V-4-103-4, SSW-V-4-108-2 and SSW-V-4-110-2.
2. Ensure that pump isolation valves SSW-V-4-105-2 and SSW-V-4-103-2 are shut.
3. Open seachest isolation valves SSW-V-4-106-4 and SSW-V-4-106-2.
4. Ensure that valves SSW-V-4-105-8 and SSW-V-4-107-2 and SSW-V-4-111-2 are closed.
5. Open valves SSW-V-4-103-6, SSW-V-1-102-4, SSW-V-2-107-2, SSW-V-4-105-6, SSW-V-2-116-4 and SSW-2-V-116-2.
6. Open valve SSW-V-1-106-2 and the other valves required to serve the science labs, and/or SSW-V-1-102-2 and the other valves required to serve the forecastle.
7. Start SSW pump #4 (the seachest/centrifugal separator ice removal pump) and operate it at low speed. 15-20 percent of full speed is recommended as a starting point.
8. Start SSW pump #3 (the seawater supply pump) and operate it at an intermediate speed (no more than 35 % of full speed for science lab supply). Operate the pump at a higher speed only if needed for supplying incubators forward.
9. Observe the system pressures. Pressures at the pump #3 and the centrifugal separator outlet should be approximately 20-50 psig.



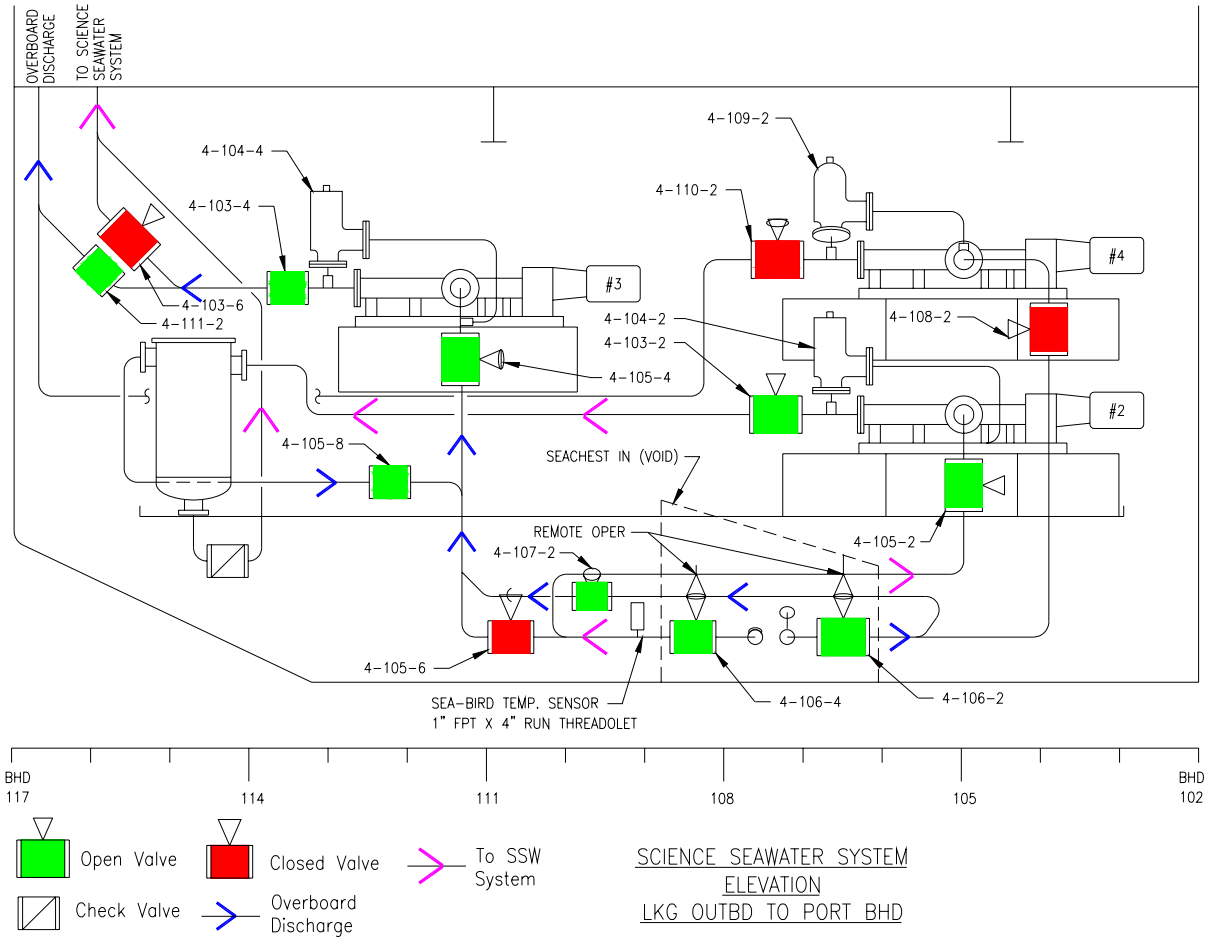
Operation with SSW Pump #3 Down

1. Open pump isolation valves SSW-V-4-105-2, SSW-V-4-103-2, SSW-V-4-108-2 and SSW-V-4-110-2.
2. Close pump isolation valves SSW-V-4-105-4 and SSW-V-4-103-4.
3. Open seachest isolation valves SSW-V-4-106-4 and SSW-V-4-106-2.
4. Ensure that valves SSW-V-4-111-2, SSW-V-4-105-6, and SSW-V-4-103-6 are closed.
5. Open valves SSW-V-4-105-8, SSW-V-2-107-2, and SSW-V-4-107-2.
6. Open valves SSW-V-1-102-4, SSW-V-2-116-2 and SSW-2-V-116-4.
7. Open valve SSW-V-1-106-2 and the other valves required to serve the science labs, and/or SSW-V-1-102-2 and the other valves required to serve the forecastle.
8. Start SSW pump #4 (the seachest/centrifugal separator ice removal pump) and operate it at low speed. 15-20 percent of full speed is recommended as a starting point.
9. Start SSW pump #2 (the seawater supply pump) and operate it at an intermediate speed (no more than 35 % of full speed for science lab supply). Operate the pump at a higher speed only if needed for supplying incubators forward.
10. Observe the system pressures. Pressures at the pump #2 and the centrifugal separator outlet should be approximately 20-50 psig.
11. Throttle valve 4-105-8 as necessary to maintain supply system pressure and flow.



Operation with SSW Pump #4 Down

1. Open pump isolation valves SSW-V-4-105-2, SSW-V-4-103-2, SSW-V-4-105-4, and SSW-V-4-103-4.
2. Close pump isolation valves SSW-V-4-108-2 and SSW-V-4-110-2.
3. Open seachest isolation valves SSW-V-4-106-4 and SSW-V-4-106-2.
4. Ensure that valves SSW-V-4-105-6 and SSW-V-4-103-6 are closed.
5. Open valves SSW-V-4-111-2, SSW-V-1-102-4, SSW-V-2-116-4 and SSW-2-V-116-2.
6. Open valves SSW-V-4-105-8, SSW-V-2-107-2, and SSW-V-4-107-2.
7. Open valve SSW-V-1-106-2 and the other valves required to serve the science labs, and/or SSW-V-1-102-2 and the other valves required to serve the forecastle.
8. Start SSW pump #3 (the seachest/centrifugal separator ice removal pump) and operate it at low speed. 15-20 percent of full speed is recommended as a starting point.
9. Start SSW pump #2 (the seawater supply pump) and operate it at an intermediate speed (no more than 35 % of full speed for science lab supply). Operate the pump at a higher speed only if needed for supplying incubators forward.
10. Observe the system pressures. Pressures at the pump #2 and centrifugal separator outlet should be approximately 40-60 psig.
11. Throttle valve 4-105-8 as necessary to maintain supply system pressure and flow.

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