

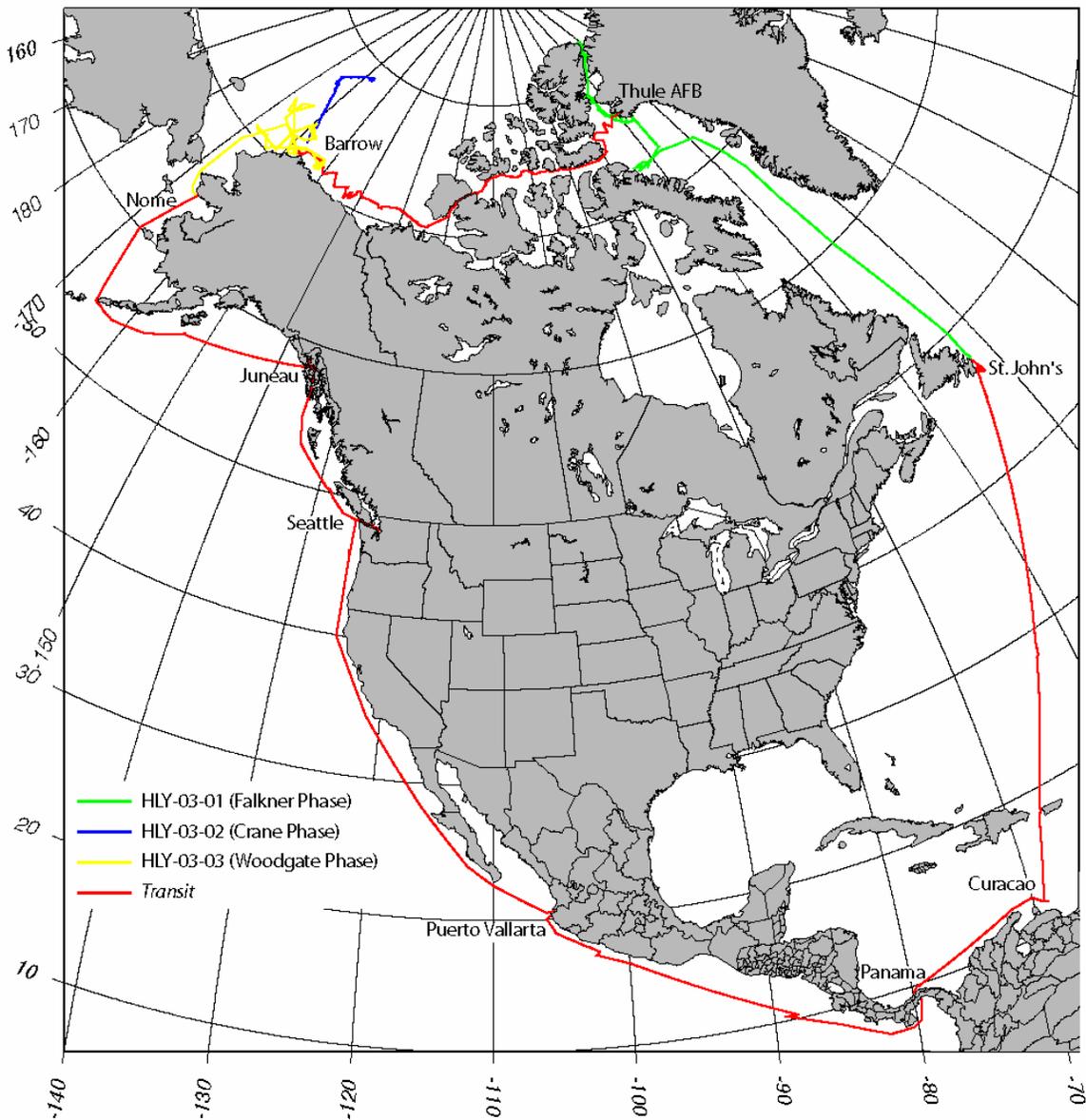
# ARCTIC EAST WEST SUMMER 2003



USCGC HEALY (WAGB 20)

**13 June - 1 November 2003**

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U.S. Department  
of Transportation

United States  
Coast Guard



16155

## MEMORANDUM

From: D. K. Oliver, CAPT  
CGC HEALY (WAGB-20)

To: Commander, Coast Guard Pacific Area (Po)

Subj: ARCTIC EAST WEST SUMMER 2003 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 13 June to 01 November 2003.
2. HEALY completed three challenging science missions during AEWS-03. The first was the Canadian Archipelago Through Flow Study comprised of 83 CTD hydrographic sections in Northern Baffin Bay and Nares Strait. The other objectives consisted of deploying the Nares Strait mooring array, coring into bottom sediments of Baffin Bay and Nares Strait, and velocity surveys of the Nares Strait, all of which were meant or exceeded. Following the first science mission, HEALY transited through the North West Passage with a variety of riders ranging from reporters to science of opportunity scientists. HEALY then picked up the NOAA science group. The main target of this science leg was to map the Chuckchi Plateau, clearly defining the critical bathymetric features needed to file the EEZ claim under the United Nations Conventions Law of the Sea. The last science mission was part of the multi-year Shelf Basin Interaction (SBI) project. Along with a record 321 CTD's, 13 recovered moorings (one belonging to China), and 15 deployed moorings, data was also collected through ADCP, video plankton recorders, XBT, and Knudson/Bathy Sub-Bottom profilers. HEALY also completed Limited Team Training during the transit between Curacao and St. John's working with training personnel from ATG PACNORWEST.
3. During Arctic East West Summer, all science mission objectives were met or exceeded as HEALY continued to demonstrate that it is the premier platform from which to conduct polar scientific operations.

#

Encl: (a) Arctic East West Summer 2003 Cruise Report

Dist:	<u>Qty</u>		<u>Qty</u>
Commandant (G-OPN, G-OCU, G-OCA, G-SEN)	1 ea	National Science Foundation	1
Commander, Pacific Area (Po, Pof, Poo)	2 ea	Center for Polar and Scientific Archives	
Commander, Atlantic Area (Ao)	1	National Archives of the United States	1
MLCP (v, t)	1 ea	U.S. Army Cold Regions Research and	
USCG Academy	1	Engineering Lab	2
Aviation Training Center (POPDIV)	1	Engineering Logistics Center (01, 02)	1 ea
USCGC POLAR STAR	2	NESU Seattle	1
USCGC POLAR SEA	2	ESU Seattle	1
Arctic Icebreaker Coordination Committee	10		

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# **CHAPTER I- SHIP OPERATIONS**

## **1. AEWS-03 Operations Summary**

### **A. Pre-Deployment Preparations**

Initial scheduling discussions were held w/NSF (Simon Stephenson) in October 2002. NSF initially was only planning on having HEALY do an SBI mission in the western Arctic, and NOAA was looking for a Seabeam mapping mission there. By November, discussion emerged about possibly doing an NSF mission for Dr Falkner in Baffin Bay. So HEALY sent various schedule proposals to HQ (G-OPN) for review before being passed to NSF. The schedules included 3 different routes: (1) NOAA or SBI in the western Arctic, transit through the Northwest Passage (NWP) to the east, Falkner mission in Baffin Bay, then return through NWP for SBI or NOAA in western Arctic, (2) western Arctic through NWP to Baffin Bay, then return via Panama Canal, and (3) Panama Canal to Baffin Bay, then NWP to western Arctic. By mid-December, NSF had decided on going with the 3rd option above, in the order of Falkner, NOAA(Mayer), and SBI(Woodgate). None of the science parties were 100 percent satisfied with the timing (all wanted to start sooner than the scheduled dates), but understood that there had to be compromises with a 3-mission deployment over such a large area. We expressed concern to NSF that the time allotted for Dr Falkner's mission was sure to be less than what she needed given that she had wanted more than 30 days of ship time, NSF allotted her 26 days, and it might take up to 6 days just to get from St Johns Newfoundland up to her first science station. We also informed NOAA that for their 10-day mapping mission, 3 days could be spent transiting up and 3 days more transiting back to the area that they wanted to map.

We had to plan on refueling in St Johns, as well as refueling by barge off shore of Barrow. Port calls had to be at the beginning of the trip since no decent ports would be available after departing St Johns. We set the departure date to allow for 2 port calls before St Johns; we later decided on 1 on the west coast (Puerto Vallarta MX) and 1 in the Caribbean (Curacao) to divide up the transit time equally. We also set the port call schedule so that transit speeds to St Johns would be in the 13-14 knot range, allowing for bad weather along the way. The exception was the Puerto Vallarta to Canal transit, where we used an 11-12 knot transit speed to allow time for helicopter flight deck training (which we had not been able to complete during the Deep Freeze mission, and had to complete by 30 June), shiphandling training, boat training, and CTD testing.

HEALY scheduled the mission planning meetings with the scientists for late January. However, the unexpected Deep Freeze Deployment from 9 January to 4 April modified that plan. While we deployed, our Science Liaison encouraged the scientists to get their Cruise Planning documents submitted to the online "Mission Controller" website by the end of January. We then reviewed the documents and sent initial comments back to the Chief Scientists. Then in mid-February, while still working the ice channel in McMurdo, we held planning meetings with each Chief Scientist using the Iridium phone system. It was not as useful as the face to

face meetings we had conducted over the preceding 2 years, but having the planning documents beforehand definitely made it easier to do the final planning meetings over the phone.

Given the short duration of her mission, Dr Falkner requested that the Coast Guard get a Canadian ice pilot and ice analyst. HQ (G-OPN), while making the NWP transit notification to Canada, requested an ice pilot and an ice analyst for the Falkner mission, and an ice pilot for the NWP transit. The Canadian Ice Service (CIS) agreed to provide an ice service specialist (ISS) for the Falkner mission, and an ice pilot (Capt Klebert) for the NWP transit.

To allow for contingencies, we requested and received a waiver from HQ (G-OCA) to land Canadian BO-105 helicopters on HEALY if necessary during the deployment.

Port call clearance messages were all sent in early April. The Panama Canal transit notification message was sent in early May. The Embassy in Panama later requested that we send a country clearance request, even though we wouldn't be stopping in port. As is typical for Mexican port calls, we didn't actually receive a clearance until the morning that we pulled into Puerto Vallarta.

We worked closely with the Naval Ice Center (NIC) to arrange ice imagery for the 3 missions and the NWP transit. The incoming Operations Officer also visited the NIC in Maryland for a brief prior to leaving his job on the east coast. Berthing was offered for 1 NIC ice observer to ride HEALY on the Falkner and NOAA missions, as well as the NWP transit. We made arrangements with the CIS to have their Ice Vu system installed in St Johns, during which the ice specialist would board the ship for the Falkner mission. The CIS agreed to leave the Ice Vu aboard after the ISS departed, provided it was returned to the CIS before 1 October. (Later, the CIS said that shipping the equipment after our return to Seattle was acceptable.)

The International Ice Patrol expressed some interest early on in having HEALY drop some current buoys near the Newfoundland coast and in Baffin Bay, but later decided that we would be arriving in the area too late for their iceberg tracking season.

We obtained more M-16s from the Seattle Armory after getting a weapons allowance increase request approved by HQ, and arranged weapons training through the Seattle Armory. With no Boarding Officer on board, we couldn't conduct JPC qualifications. A TAD BM1 from MSST San Diego rode from Seattle to Puerto Vallarta, and conducted Use of Force, Rules of Engagement, and JPC training along the way. This worked exceptionally well due to the high tempo inport (with people from all departments being pulled in every direction, and many TAD at schools). Recommend doing this again in the future.

We conducted our triennial Navy ASIR/TA flight deck certification in May.

We sent one RHIB to SafeBoat upon return from Deep Freeze in order to get the ruptured inflatable sponsons replaced with foam. We received the boat back in late May. After putting it in the cradle for 2 days, we found that the foam was crushed when the boat was pulled into the stowed position. We called SafeBoat and they said they didn't realize the boat would be used in a Roddamer davit, and that the foam was not capable of having prolonged pressure against it. We put the boat back in the water, and even without pressure, the foam had not expanded back to its original shape after 2 days. The boat still operated OK (except in high speed turns), so we decided to take the boat with us anyway as a backup.

With the CO, XO, Ops, Navigator and Comms Officer all transferring off the ship prior to the start of the first mission, extensive efforts were also made to ensure as thorough a turnover as possible between each of these personnel and their reliefs, in particular Ops and Nav.

## **B. Seattle to Puerto Vallarta**

Conducted TACAN certification, and VHF and UHF DF calibrations at the SESEF range off Port Angeles.

Embarked CG-6519 off of Port Angeles.

Transit uneventful other than cycloconverter problems that prevented extra time for training in order to make our transit speeds.

## **C. Puerto Vallarta to Curacao**

Conducted 23 helo DLQs and 2 VertReps. Remainder of desired DLQs, NLQs and HIFR delayed due to weather.

Tropical Storm Blanca formed into a Tropical Cyclone just 40 miles ahead of us along our track. We went right through the SW side of the storm, in the navigable semi-circle but very close to the eye. This provided a great hands-on meteorology lesson for the OODs and MSTs, with the winds and seas shifting and building or decreasing significantly as we passed by the center.

We arrived early in the morning at the Panama Canal anchorage, with the hope that they would let us go through during the day. Upon anchoring they advised us that we would not start through until after 1800. Fortunately we had arrived when we did though, as we had to conduct a medevac, via helo, of a crewmember that had symptoms of a mild heart attack. Capt Mike Blair, the USCG Liaison to the Panama Canal Authority, had fortunately arrived with the PCA inspection team after we anchored. He was able to use a cell phone to call the Embassy and cut through the red tape to get us a clearance to use the helo for the medevac.

We got underway from the anchorage at approximately 1930, entered the first lock at 2100, cleared the last lock at 0340, and exited the breakwater into the Caribbean at 0430.

The rest of the transit to Curacao was uneventful.

#### **D. Curacao to St. John's**

HEALY embarked a team from ATG Everett for Limited Team Training onboard from Curacao to St. John's. LTT members worked with on board training teams to further develop HEALY's training teams and make training environments more realistic.

Conducting LTT in transit several weeks after departing homeport allowed watchstanders to either qualify or get closer to qualification in both their normal watch and General Emergency billet. The engineering department also had the opportunity to resolve many shake down issues with the engineering plant before the week of intensive training commenced. We still experienced some casualties that delayed training, but not to the extent experienced in the first 4 weeks after departing homeport. An LTT directly out of port, especially without a shakedown cruise, would have significantly curtailed the available time for LTT training, and would not have been an efficient use of their expertise.

While conducting coxswain and boat crew training, the starboard boat davit brake assembly failed. The RHI was "stuck" at the hip and could not be cradled. The RHI was secured in place awaiting troubleshooting. The port RHI, HEALY 2, was made the ready boat. In port St. John's, when it became evident that parts were not available, deck force secured HEALY 1 to the deck on foam blocks using the 04 level crane.

We conducted flight ops off of Borinquen, Puerto Rico – embarked 6521 and the third of three pilots comprising the AVDET. Chief of POPDIV, CDR Don Marinello, also flew on in 6521 for a fam trip for the transit to St. John's. The AVDET flew one helicopter off as we entered St. John's harbor, which they based at the airport for the duration of the portcall to conduct training. Remaining pilot and Senior Aviator for the AVDET, LCDR Rob Young, joined HEALY in St. John's.

We moored at the fuel pier on the south side of St. John's harbor. After a 20-hour fueling evolution, we shifted berths to pier 19 on the north of the harbor and east of town toward the Narrows.

Canadian Coast Guard forces assisted with the transportation and onload of some additional science gear. CCG also delivered some "field planning sheets" for the Nares Strait region. The Canadian Ice pilot scheduled to ride HEALY through the NWP had requested these field sheets from the Canadian Hydrographic Service to assist in navigation in Nares Strait. We also received from Canadian Ice Service the IceVu system and an Ice Observer, Yves Sivret, to assist in ice navigation.

A recurring problem on HEALY, which came to a head in St. John's, is the mail service provided by the FPO. As an example of the perennial tardiness of delivery, most of the mail received by the ship in Curacao on July 4th had

postmarks from April. However, FPO service to St. John's proved even worse as no mail reached the ship in a five-day period.

## **E. Falkner Mission**

As stated earlier, Dr. Falkner had an ambitious amount of work planned for a cruise which was only allotted 26 days. For that reason, we made best speed on three MDE to get to the first science station as soon as possible. Based on ice imagery, a track line up the eastern side of Baffin Bay was chosen. The imagery was correct, and since we encountered no fog, we made great time. The Baffin Bay hydrography and coring went as planned. A logistics flight into Pond Inlet was required to pick up some important cabling for some science moorings that the manufacturer had forgotten to ship. Later, a flight into Thule was also required to pick up important parts for ships equipment.

The bow thruster blew one of its fuses, and was not operational for the majority of this science phase. OODs had to maneuver without the bow thruster, either drifting on station if conditions were benign, or stemming the wind and current with rudders and shafts.

Falkner had plans to place up to eight pressure sensors in shallow water moored to the seabed in various locations in Nares Strait. Sites were chosen based on the amount of shelter from ice, accessibility for recovery and lack of local water outflow. In the end, five sites were chosen. Ship's divers operated from the LCVP to find correct depths, drive a stake into the sea floor, and attach the mooring assembly. In conjunction, divers also collected a variety of clams to use as another indication of water changes.

The assistance of Yves Sivret of the Canadian Ice Service (CIS) was invaluable. He not only provided daily ice predictions, but also shared his wealth of knowledge and experience, assisting us greatly in training our OODs.

Although we had been warned to question them, we found the navigational charts throughout the Nares Strait area to be accurate. We did notice quite a discrepancy on one chart, however, in Alexandra Fjord. During our boat and diving operations in Alexandra Fjord, we supplemented the VMS information by manually plotting on one of the Canadian hydrographic field sheets from Capt. Klebert. Likewise, a field sheet was used to plot HEALY into anchorage in Scoresby Bay, as there was no other navigational data for that small bay. The field sheets were well worth having on board.

Overall, the mission was very successful. All of her planned goals were completed, as well as additional CTDs, cores and ADCP analysis.

HEALY anchored in North Star Bay just off of Thule Air Force Base. Depth of water at the pier charted as adequate for our draft, but reports of shoaling from local authorities required us to anchor. Base officials requested we sound depths along pier to assist their port management. Using the installed fathometer on the

LCVP, depths were recorded and forwarded to base port services. Although not an official record, it appears as if there is sufficient water to moor HEALY. As it turned out, there was vessel traffic at the pier anyway, so had we taken boat soundings and tied up, we would have had to move.

Using a tug provided by Thule, we offloaded the Falkner party on the morning of 19 August. Same tug also brought stores and provided trash offload. The Air Force tug was extremely accommodating for both logistics and liberty runs. Although the services provided by the AFB and local personnel were outstanding, Thule is not a convenient port call. Coordinating the military flight and personnel clearances into Thule requires a lot of planning, and if the limitation of depth of water at the pier remains, conducting all logistics by small boat is labor intensive.

While at anchor, HEALY experienced very high winds and dragged anchor. We veered two extra shots of chain and brought an engine online to ease the strain by driving into the wind. Wind gusts of up to 80 knots were experienced, and HEALY's anchor moved at least 500 yards before coming to rest. Upon weighing anchor, we discovered that one of the flukes had broken off.

Due to a massive power outage in the Northeast, Capt Stewart Klebert, our scheduled Ice Pilot from the CCG, missed his flight to Thule. Efforts to get him to Thule via alternative flights failed, and we sailed without him.

## **F. Northwest Passage**

Although the NorthWest Passage trip was simply a transit from the eastern to western Arctic, there was considerable interest in the journey. We conducted the on load of NWP riders at the same time as disembarking the Falkner party. PACAREA staff and HEALY's science liaison arranged most of the riders for this transit.

A writer and photographer from Outside magazine documented life on an icebreaker and the experience of transiting the NWP.

Science Of Opportunity (SOO) on this transit consisted mainly of XBT drops along the track line. A representative from NOAA's Arctic Research Lab was on board and coordinated the positions to drop the XBTs.

There was considerable interest in running the SeaBeam system during this leg. Dave Monihan from the Canadian Hydrographic Service and Dale Chayes from Lamont-Doherty provided input as to valuable areas to collect multi-beam data. They were interested in the NWP particularly, as there is almost no multi-beam data in this part of the world. Since we had a little extra time before we were due at Barrow, we ran several track lines across the Alaskan slope and the 2500 m contour as we transited toward Barrow. According to Dale Chayes, there is an effort to compile a database of all multi-beam tracks in the Arctic. This way, from year to year HEALY, could plan offset tracklines to augment this existing data, rather than run redundant tracks.

Our goal was to transit through the less traveled Prince of Wales Strait in the process of making the NWP. Although a light ice year in general, strong prevailing westerly winds pushed the main Arctic ice pack to the east throughout most of the summer. This forced thick multi-year ice onto Banks Island and into McClure Strait. However, HEALY was able to make it through the 40-mile stretch of 9/10 coverage large multi-year floes without any problem. Unfortunately, the majority of the transit was plagued by poor visibility, so much of the anticipated sightseeing was missed.

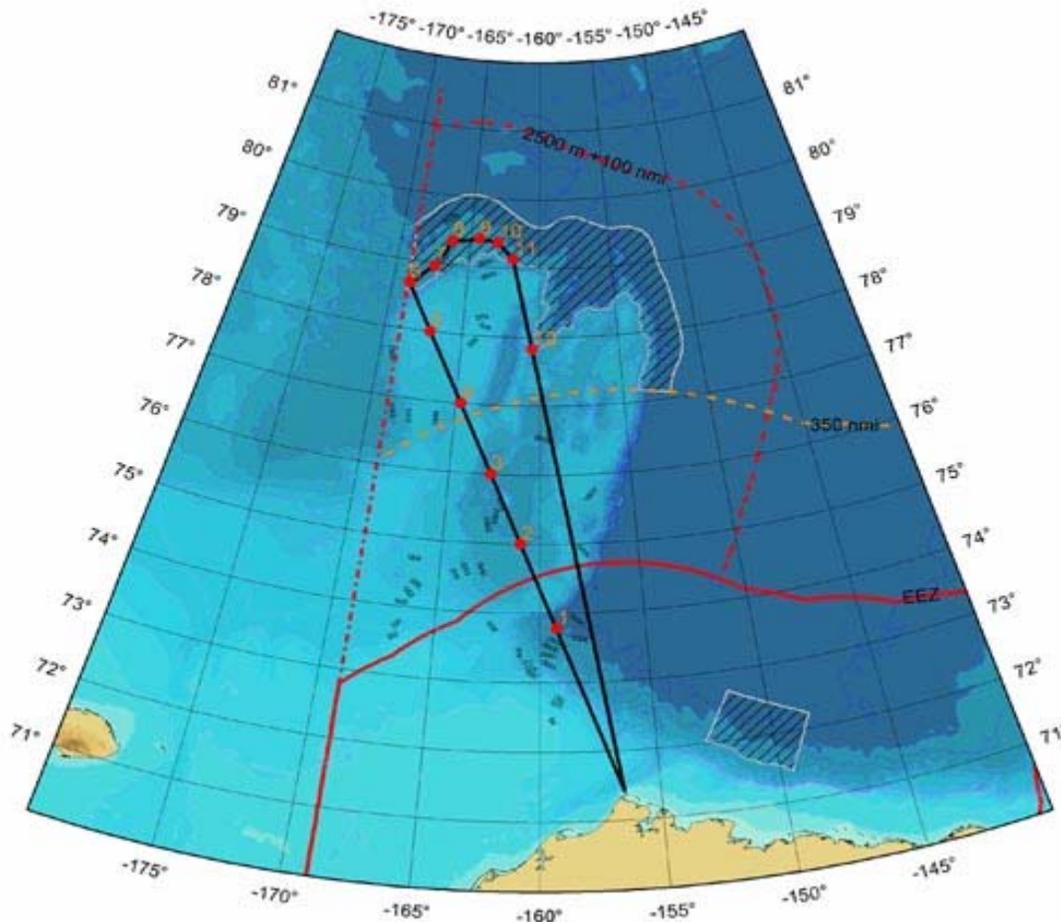
A fuel barge met HEALY off of Barrow on 31 August. HEALY anchored and the tug brought the barge alongside. 30-40 knot winds and a building sea state made this a touchy evolution. Conning officers attempted to drive into the wind and up on the anchor just enough to prevent the typical swinging while at anchor in heavy weather. This also created just enough of a lee on the starboard side that the tug and barge were able to safely complete the evolution. Given the unprotected nature of Barrow, and the unpredictability of arctic weather, this evolution is not recommended in the future.

## **G. NOAA Mission**

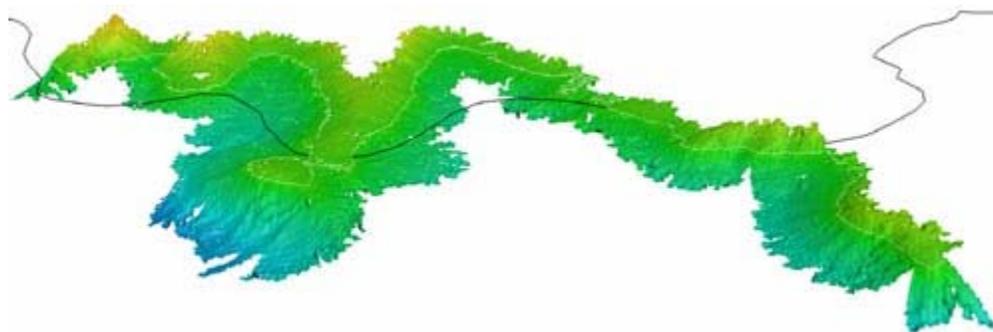
This mission focused on mapping the 2500 m contour to support Law of the Sea issues.

An exhaustive study of the US data holdings pertinent to formulating a claim under the United Nations Convention of the Law of the Sea (UNCLOS) identified several regions where new bathymetric surveys are needed. One of those regions is in the Bering Sea, and was the focus of this phase of science. The report emphasized that multi-beam echo sounder data is needed to rigorously define (1) the foot of the slope (FoS), a parameter of a UNCLOS formula line, and (2) the 2500-m isobath, a parameter of a UNCLOS cutoff line. Both of these features, the former a geomorphic feature and the latter a geodetic position, can be used to define an extended claim. NOAA was given the charge to contract for the new 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.

The initial plan was to proceed north at best speed and map as much of the 2500M contour as possible, beginning at the US/USSR convention line and working to the east. The following chart shows the planned mission track:



In reality, the contour was very convoluted and much more complicated than was previously known from the data on the IBCAO chart. The following graphic shows the 2500-meter contour in gray as it was known previously, and in white as it was determined on this cruise.

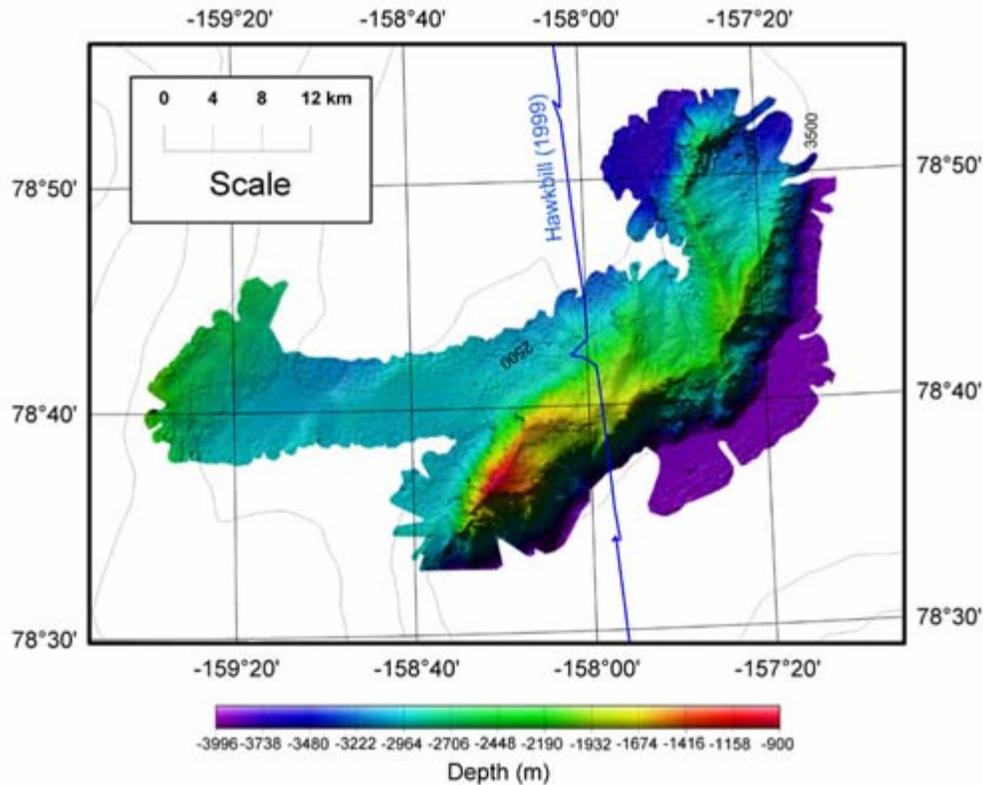


Good weather and light ice allowed us to reach the NW target point in less than three days. Given the ten day cruise, we projected that we would have at least four days of actually mapping the target depth – twice as much time as the worst case scenario.

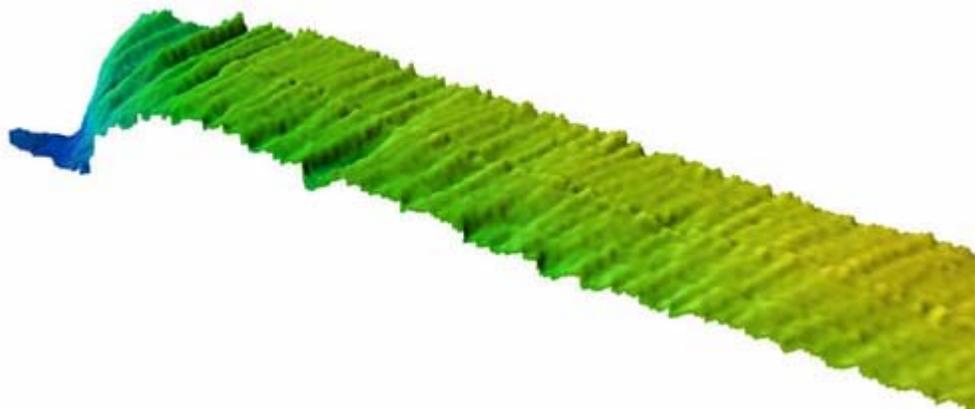
The SeaBeam repeater display positioned in the aloft conn allowed the OOD to drive the ship in the ice and follow the contour as much as possible. Science watchstanders in the

computer lab would watch the display carefully and move the cursor to where they anticipated the contour would continue. Operations were conducted 24 hours a day. Ice coverage was 8 or 9/10, which made conning in the dark a little more difficult, but still successful. Typical ice transit speeds of 4-6 knots seemed to allow the SeaBeam to “catch up” and get good data during the leads and smooth ice portions.

Toward the end of the time allowed for mapping the northern contour, a large chunk of time was spent mapping around a suspected seamount. The following is a 2-dimensional rendering of the seamount.



On the return transit, we also doubled up some tracks to get some better data on a few regions in which the science party saw some interesting features on the sea floor. Of particular was evidence of ice scouring as it is important for some theories about ice thickness and behavior during past ice ages. This section of SeaBeam data is enlarged to show an example of a suspected ice scours.



It is very possible that HEALY will be involved in continuing this effort in future years.

## **H. SBI Mission**

Led by Dr. Rebecca Woodgate, Healy-03-03's primary goal was the completion of thirteen moorings. Additionally, 80-100 CTD stations were planned in strategic areas of the Chukchi and Beaufort Seas. By all accounts, this SBI mission was a resounding success. All moorings were recovered and safely redeployed. The acoustic release on one mooring failed, but two hours of dragging resulted in its successful recovery. Furthermore, 321 CTD casts were conducted, over three times the number anticipated. Favorable weather and light ice conditions contributed to this large number of CTDs. The high resolution (some transects had stations spaced less than three miles apart) and synoptic nature of this hydrographic work will hopefully provide new insights into the currents and water structure of the region.

One problem faced by this mission was that of coordinating the science work with the annual fall migration and native hunting of whales. SBI, NSF, and many individual scientists conducted quite a bit of outreach to Barrow and other communities in Alaska. One of the goals was to educate residents as to the nature and relative importance of their science research. It is also important to inform residents of intended science work in order to avoid any conflicts between science or ship operations and local activities.

A few days prior to the start of this phase, Dr. Woodgate made a final visit to Barrow to meet with NSF representatives and local native community leaders to ensure all parties were informed and supportive of the summer's work. Prior discussions had led her to believe that local desire was for the science work planned in the whale hunting area should be conducted first to be completed prior to the start of the fall hunt (typically, the hunt begins in early to mid October.) To her surprise, a new issue was brought up which changed that schedule. It is apparently important for the first whales of the migration to have a clear path that leads close to Barrow, i.e. in the hunting zone, as all the rest of the whales will follow the path of the leaders. It was a concern to the locals that if the ship's presence forced the leaders to use a path farther from shore, then all the whales would choose that route and it could jeopardize the hunt. Due to this request, Dr. Woodgate started her other work, and saved the main set of moorings along the Beaufort Shelf until after the whale migration started.

The most complicated shipboard evolutions of this phase were the recovery and then re-deployment of science moorings. Prior to recovery, the science party chose to conduct a CTD cast at each station in order to have current data to compare with the data collected by the moored sensors. Likewise, the final activity at a given station would be a CTD cast right after deployment to provide a calibration for the new sensors which were just deployed. Precisely locating the moorings required a ranging evolution either with a lowered hydrophone or by hooking into the ship's installed transducer and communicating with the sensors. The science party also conducted a ranging after deployment of each mooring to

ensure they had a precise location of the newly deployed mooring. Dr. Bob Pickart, the PI in charge of the Beaufort Slope mooring line, also used several sweeps of SeaBeam data to ensure that he had the depth and topography that he wanted prior to deployment. Just as we found out on the NOAA cruise, the SeaBeam painted a much more detailed view of the slope than was previously known from prior bathymetry.

## **I. Nome to Seattle**

Flight operations were conducted into Nome on October 18th to disembark the Woodgate party and embark TAD personnel. Boat ops had been discussed as an alternative if the weather conditions were not right for flying. However, upon arrival, VHF discussions with Nome Harbormaster revealed that the harbor was already beginning to ice over. In approximately six hours, the remaining Woodgate party was disembarked by helicopter, while returning ships party and various TAD riders were embarked.

On the transit across the Gulf of Alaska, HEALY ran into a significant low pressure system. Winds had sustained speeds of 50 knots for over a 12-hour period, with occasional gusts of hurricane force. Seas built over 20 feet and the barometer dropped to a startling 28.71 inches (970 mb). Fortunately, the winds were predominantly abaft of the beam, and HEALY's progress was slowed only slightly.

The final port call on AEWS03 was Juneau, Alaska, on 24 October. For most of the crew, this meant 66 days since last touching dry land. Permission was granted from PACAREA to conduct a dependent's cruise from Juneau back to Seattle. Forty-five family, friends and guests joined HEALY for the transit back, which turned out to be memorable for a couple reasons. Beautiful weather graced HEALY during the entire trip home, and particularly on the morning of 28 October, when we transited the entire length of Glacier Bay. Furthermore, spectacular displays of aurora borealis were visible on both the 27th and 28th.

When researching the berthing options in Juneau, several things hinted that there might be inadequate water at the CG facility. Although the chart and Coast Pilot indicated sufficient water for HEALY, we sent email inquiries to local CG personnel. CGCANTHONY PETIT conducted an informal survey along the pier and reported several spots of less than 26 feet at a low tide. Given this, we sought other arrangements and tied up at the southern most cruise ship berth, using the floating ramp of the Alaska Steamship terminal as the landing for our bow. This worked out well as the ramp was low enough and the bow did not have to be adjusted throughout the 20 foot tide cycle.

On 27 October, RADM Underwood, District 17 Commander, conducted an official visit of HEALY.

On Halloween, the day before mooring in Seattle, AVDET 158 disembarked. This early departure was advantageous to both the ship and the aviators. For the

aviators, this “bought” them an extra day on their cross-country return to Mobile. For the ship, it eliminated the need for early morning flight ops on the final day of the trip. The first helo was launched 100 miles west of Tofino, Canada on Vancouver Island, and approximately 250 miles from Port Angeles. Their goal was to stretch the leg all the way to PA, but they had clearance into Tofino if weather or any other factor precluded them reaching PA. Both helos flew directly to PA.

At 1318L on 1 November, HEALY moored starboard side to at pier 5, Todd Shipyard. Due to the space limitations at Pier 36 during major renovations, and the fact that the drydock contract was set to begin on 5 November, the contract was modified to allow HEALY to go directly to Todd, and avoid moving the ship four days after returning from deployment.

Thus ended HEALY’s fifth deployment which was also HEALY’s first circumnavigation of North America. All three science missions were highly successful and met or exceeded Chief scientists’ goals. Despite an ambitious operational schedule, and a truncated pre-deployment inport period, HEALY continued to provide quality service to the science community.

## **2. Navigation Operations**

### **A. Seattle, Washington – June 2003**

Embarked Puget sound pilot for a late morning departure from Pier 37, ISC Seattle, WA, at low tide. Winds were westerly at 10-15 knots. The Tug HERCULES was made fast to the starboard bow and Tug CHIEF to the stern. Unmooring was conducted from Berth Charlie primarily by tugs with assistance from HEALY’s bow thruster. Transited Puget Sound and Strait of Juan de Fuca against a maximum flood current to Port Angeles, where HEALY conducted TACAN and DF calibration. Embarked CG6519 HH-65B Helo and AVDET and completed transit of Strait of Juan de Fuca. Stood into the Pacific Ocean early morning 14 June en route Puerto Vallarta, MX, commencing transit for AEWS 2003.

### **B. Puerto Vallarta, Mexico – June 2003**

Embarked pilot Captain Carlos Gonzales and assistant approximately 2 nautical miles southwest of harbor entrance at 0800 local June 20<sup>th</sup>. No tugs were available in this port. The pilot provided a chartlet showing updated soundings in the harbor due to recent dredging. Winds and seas were calm and tide outgoing approximately 1.5 hours prior to low tide when HEALY entered the harbor. An entrance range consisting of two red and white towers with a 053 degree true bearing was easily visible during the transit. The conning officer entered the harbor giving helm and lee helm commands. The harbor entrance narrows to 160 yards between entrance buoys, opening to a 380 yard basin in the harbor. Shoal water is marked at the north end of the harbor by red buoys. The conning officer then shifted to DP Joystick Auto Heading Mode and moored HEALY portside to

Pier N2 situated at the northeast side of the harbor. The pier itself is 380 feet long, concrete with tire fenders, and is oriented 174 degrees true. The bow line ran forward to a separate pier 110 feet southeast of Pier N2 by the pilot boat.

Embarked pilot, departed Puerto Vallarta midday June 24<sup>th</sup> at low tide. Winds were south-southwesterly at 15-20 knots and blowing on the pier. The conning officer unmoored HEALY giving helm, lee helm and bowthruster commands. Cycloconverter trips inhibited an easy unmooring, limiting the starboard shaft to 6 pulses. Upon backing into the turning basin, the conning officer brought the bow around to starboard and drove out on the over-the-shoulder range. There is little room for error in this harbor for a vessel of HEALY's length and draft.

### **C. Panama Canal Transit – July 2003**

010937R JUL 03 anchored in the Bahia de Panama awaiting a pilot for a Canal transit. At 0913 HEALY embarked two Panama Canal Commission inspectors. Inspectors were professional and polite. At 1213 launched CG6519 for a crew MEDEVAC and at 1249 Recovered CG6519. At 1830 HEALY weighed anchor by the instructions of the pilots. At 1914 HEALY embarked two pilots and one security person. Both pilots were competent, with Capt. David Bernard going on the first shift. Capt. Leslie Antinillo took the second shift. HEALY transited all the locks with no incident and the canal appeared to be operating smoothly. All ranges and ATON appeared to be on station and in good working order. At 0353 on July 2<sup>ND</sup> both pilots disembarked and HEALY stood into the Caribbean Sea en route Curacao.

### **D. Willemstad Curacao – July 2003**

On Friday July 4<sup>TH</sup>, HEALY arrived at Willemstad, Curacao. At 0728 embarked Capt J. P. Craan. HEALY experienced the westerly set at the mouth of the harbor that was advertised in the sailing direction. That current died out instantly as the bow passed the first gated pair of fixed aids. The pilot provided minimum input at the request of the Command and allowed the conning officer to moor the ship. There was a 15 – 20 knot wind coming from 080T directly on the ship's bow alongside the pier. The ship moored forward of a freighter at the Admiral Brion Pier Berth 6.

On Tuesday the 8<sup>TH</sup> of July, at 1143 Capt. Sint Jago embarked and per the Command's request provided minimum input. There was a 15-knot on the dock wind when HEALY got U/W. Regrettably line 1 parted due to a miscommunication between the bridge and focsle. A harbor tug was then used to pull HEALY away from the berth and past the freighter astern. After that the tug was used to help HEALY twist (in conjunction with the ship's bow thruster). The Westerly current was again experienced as HEALY exited the cut out of the harbor.

#### **E. Saint John's Newfoundland, Canada – July 2003**

On July 16<sup>th</sup> HEALY entered Saint John's harbor. At 0820 embarked pilot W. Hancock who provided minimal guidance. There was no significant current worthy of mention. The buoy marking a charted rock on the north side of the cut was not there, as the rock it marked had been removed some years ago. An update has been sent to NIMA explaining this. The ship moored portside to the Irving Oil Fuel Pier with a 17-knot wind that was slightly off the starboard bow. On July 17<sup>th</sup> HEALY embarked the same pilot, and shifted berths to Berth 17 in Saint John's. Upon mooring, an 18-knot wind on the starboard beam set the ship down for a port side to mooring. On July 21<sup>st</sup> HEALY embarked the pilot M. Furlong after three hours of debate and confusion (on the Canadian part) and then got U/W with minimal forces acting upon the ship.

#### **F. Thule AFB, Greenland – August 2003**

On August 15<sup>th</sup> HEALY anchored off Thule AFB, Greenland in 101 feet of water, in position 76-32.452N 068-55.076W, with 5 shots of chain on deck to the port anchor. At approximately 0140P on the morning of August 17<sup>th</sup> the winds increased to in excess of 60 knots out of the NE. At approximately 0606P the winds increased to in excess of 80 knots, HEALY began to drag anchor; propulsion was brought on line, and veered out 2 additional shots of chain, having dragged 750 yards. By the morning of the 18<sup>th</sup> the winds had subsided and HEALY remained anchored with no further problems. On the morning of August 19<sup>th</sup> at 1031P HEALY weighed anchor, and discovered that the port anchor had lost a fluke. Also the ship had suffered an electrical casualty to the port capstan controller and the system had to be crossed connected to the starboard controller.

#### **G. Barrow, Alaska – August 2003**

On the morning of August 31<sup>st</sup> at 0659U HEALY anchored off Barrow, Alaska, in position 71-18.891N 156-50.258W, with 6 shots of chain on deck to the starboard anchor. At 0826U the tug FIDALGO moored alongside HEALY's starboard side to transfer fuel. The tug was riding exceptionally bad in 25 knots of wind and a combined sea of 7 feet due to their barge set-up. Upon completion of fueling the barge got U/W and HEALY weighed anchor. At 0100U HEALY suffered an electrical casualty to the starboard anchor capstan controller and another cross connect was needed to weigh anchor.

#### **H. Juneau, Alaska – October 2003**

On Friday the 25<sup>th</sup> of October at 1300U HEALY Moored portside to the Juneau Cruise Ship and Ferry Terminal in Juneau, Alaska. The ship moored without the use of a tug or pilot. The ship did suffer a temporary bow thruster casualty, but it was opted to wait until after the casualty had been repaired before mooring. On the afternoon of the 28<sup>th</sup> HEALY got U/W en route Glacier Bay with a tug standing by and the assistance of a pilot and a break-in pilot. The conning officer opted to use DPS for the evolution.

## **I. Todd Shipyard, Seattle, Washington**

On the afternoon of November 1<sup>ST</sup> HEALY moored starboard side to Pier 5, Todd Shipyard. A pilot embarked, but was not used nor needed. Although a tug was made up alongside the port quarter it also was not used.

### **3. Deck Operations**

#### **A. Pre-Deployment Preparations**

During the short 2 month time frame between deployments, Deck Force worked with other departments to on load supplies and ship's stores. In addition, Deck assisted the MST's in the on load of over 50,000 lbs of Science gear and 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. With advanced planning and setting deadlines, the science load-out was completed 2 weeks before departure which allowed Deck some time off and did not interfere with the Change of Command. Deck also scheduled the range and qualified 23 personnel on 9mm, M-16, Riot Shotgun and Bear Rifle.

#### **B. Seattle to Puerto Vallarta**

During the transit to Puerto Vallarta, Mexico, Deck continued to secure for sea and stow gear and supplies. Getting underway with only 4 qualified Bridge watch standers and 3 JOOD's, we concentrated on watch stander PQS/JQR training and qualifications. After recovering the AVDET Helo's, deck provided LSO, Tie-downs and break-ins during flight evolutions. In addition, Deck worked on several small painting projects and cleaned the threaded holes in the fantail deck in order to secure the Panama chock and bitts. BM1 Quidort conducted Use of Force and Judgmental (JPC) training for personnel who qualified on weapons during the inport.

#### **C. Puerto Vallarta to Curacao**

During the transit from Puerto Vallarta to the Panama Canal, Deck continued bridge watch stander qualifications and training. Deck continued painting projects and installed the Panama Chocks, Bitts and Pilot's Stanchions in preparations for the canal transit. Deck also conducted small boat training to re-certify an RHI coxswain and boat crew.

On the transit through the Panama Canal, Deck Force received boats w/line handlers for pilots and tugs alongside. During actual transit of the locks, Deck stood-by to assist as needed and operated the windlass for the Panama Canal line handlers.

During the transit from the Panama Canal to Curacao, Deck continued training and bridge watch qualifications. Weather precluded exterior painting or removing Panama Chocks and Bitts. While inport Curacao, we stowed and secured the Panama Chocks and Bitts on the 04 Deck. This was done due to science gear

obstructing access to Holds. Deck also completed several small painting projects.

#### **D. Curacao to St. John's**

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. In addition, coxswain, boatcrew and boat detail training was completed. The boat training included over 20 launch and recoveries on the starboard boat davit. While raising the boat on the last evolution, the davit brake assembly failed. As a result, the davit cradle with boat attached was stuck at the "hip" and could not be raised to the "cradled and secured position". Deck used lifting straps to secure the cradle in place at the hip. Since parts were not available on board, the boat had to be secured to the rail for the transit to St. John's.

While moored in St. John's, Deck prepped, primed and painted the aft mooring capstan and provided crane operators and riggers for the on load of science gear, parts and supplies. Due to a 4 month wait for parts to repair the starboard boat davit, Deck removed the Starboard RHI from the cradle and secured it on the 02 deck forward of the LCVP using foam blocks. The Starboard davit cradle was secured to the side of the hull at the 02 deck using nylon straps. Deck also launched and conducted LCVP training while in port St. John's.

#### **E. Falkner Mission**

Deck was extensively involved with all operations during the Falkner Mission, providing Coxswains, Boatcrews, Divers, Boat Lowering Details, Riggers, Crane Operators, Helo-tiedowns, LSO, and JOOD's.

While anchored in Thule, Deck provided Boat Coxswains, boatcrews, crane operators, riggers and deck supervisors for the on-load and off-load of stores, supplies, personnel and baggage. Using the tug provided by the Air Force, most of the logistics and pax transfers were completed on the first day. The tug would bow-up and hold its bow against the hull. HEALY's cranes would then remove the pallets of stores and supplies. The passenger transfers were conducted from the stern. The tug would again bow into the stern and hold tight against the hull by powering up on its engines and resting on the 2 large tire fenders on the tug's bow. Deck rigged the short brow on a block and tackle from the A-Frame. The brow was raised and lowered to the bow of the tug by the block and tackle rig. This made a quick, easy brow from HEALY to the tug and allowed for the safe and efficient transfer of personnel. The tug also brought out 2 trash dumpsters that were placed on the Flight Deck, filled with trash, and returned to the tug. The next day, the tug brought out another dumpster and left it on board for the collection of trash until just before we departed. After the logistics and pax transfers were completed, the tug ran liberty runs for the crew. HEALY provided mustangs suits for the crew to wear while on the tug. Deck also rigged the A-comm ladder and launched the LCVP to assist with logistics and pax transfers and ran several liberty runs with the LCVP as needed when the tug was not running.

On the second morning at anchor, Deck Force was woken up around 0600 to veer chain due to the anchor dragging in winds gusting over 80 knots. From sediment left on the anchor and chain, the bottom appeared to be mostly comprised of sand and gravel.

During the deep water mooring deployments, Deck provided a BM2 as full time crane operator to assist the science party and MSTs. These moorings were deployed in two ways. The short moorings were picked up by the crane and lowered over the side until most of the mooring was in the water, then a release line attached to the top float was cut, and the mooring was sent to the bottom. This method worked extremely well for the short moorings in which the crane could pick the entire mooring up and move it over the side. The second method also involved using the crane to deploy the instruments and the anchor while hand tending the rest. These longer moorings were all deployed by the anchor last method. The crane was used to pick-up the instrument packages and lower it into the water between the aft A-Frame where a release line was cut. The mooring was then hand tended paying out the line, floats and current meters. Finally, the anchor and release was picked up and lowered to the waters edge, then a release hook was used to trip the anchor and send it to the bottom. This worked extremely well in open water. A few of these moorings were deployed in fairly short leads of ice that were open only enough to allow for the full length of the mooring to be streamed behind the ship.

Deck was also extensively involved in the diving operations for clams and placing shallow water moorings on the bottom. Prior to this part of the mission, deck worked with the science party rigging the LCVP to deploy and power the camera and monitor used in locating the clam sites. The DC's constructed and rigged an outrigger that extended the camera wire approx. 2 ft outboard of the boat. Using adapters and an AC/DC converter, the camera and monitor was powered using the LCVP's electrical system. On the first boat/diving operation, the claming was attempted first, followed by the deploying of the shallow water mooring. After searching two sites, moving twice and several dives for clams, the shallow water mooring personnel were sent out to the LCVP via HEALY's RHI. The biggest problem encountered on this first boat/dive mission was that the mooring deployment was not even started until after the crew/divers spent over 12 hours in the boat and completed several dives for clams before hand. The complete mission took close to 16 hours from start to finish. After a debrief with all parties, it was decided that for future boat/diving operations, we would deploy the mooring first, then do the claming with the remaining time and call the operation before fatigue became a factor. For most of the remaining boat/dive Ops, we would send out the mooring personnel and 4 of the 6 divers. When the mooring was complete, we would send the claming personnel and remaining 2 divers out in the RHI and bring the mooring personnel back to HEALY. After the moorings and claming were completed, the LCVP made several beach landings to collect water samples from the rivers near the mooring locations. In addition to completing these missions, LCVP coxswain training was conducted and resulted in the qualification of one Coxswain and near qualification of another.

## **F. Northwest Passage**

On the transit of the NW Passage, Deck Force provided watch standers, LSO and Helo-tiedown crews during Helo flights for training and ice recon. Deck also conducted Division training and cross-training with the Bridge BMs. During the transfer of Science party personnel and logistics, Deck provided HCO, LSO and Tie-down crews for the flight operations.

During the fueling operations offshore of Barrow, Deck Division provided Anchor Detail personnel, then handled lines for the barge coming along side. Due to adverse weather, Deck maintained a watch on the lines and adjusted as needed. Fueling was completed, but in less than ideal conditions with waves breaking and washing over the barge. The personnel working on the barge were often working in ankle to knee-deep water, and dodging the larger waves.

## **G. NOAA Mission**

During the NOAA mission, Deck Division provided watchstanders, and Flight Deck personnel. Deck also conducted Division Training and Qualified several JOOD watchstanders. With heavy icing and snow conditions as the ship sailed further North, Deck worked to keep the decks clear of ice and snow. During an ice liberty, Deck rigged the A-comm ladder and surveyed the ice, marking a “safe area” with traffic cones and flags before allowing personnel onto the ice. The Avdet provided qualified personnel to stand the bear watch.

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. SBI Mission**

Deck Force was actively involved in all phases of the SBI mission, providing Coxswains, Boatcrew, Boat Lowering Details, Riggers, Crane Operators, Helo-tiedowns, LSO, JOODs and assisted the MSTs with deploying CTD's. 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 recoveries. After the moorings were completed, Deck provided 2 extra watchstanders to assist the MST's during the extensive CTD operations.

During the recovery and redeployment of the first 4 moorings, Deck provided coxswains and boat crews, Deck Supervisor and riggers, and Deck Safety. For the first mooring recovery, the RHI was launched to recover it and tow it toward the stern of HEALY as the ship maneuvered by backing into position to recover. Once the mooring was in position, the boat attached a lifting strap onto the mooring, and the starboard crane was used to lift the mooring onto deck. This worked OK, but also created some safety concerns. First, the boat had a difficult time towing the mooring close enough to hook onto the crane, and once it did get close enough to hook up, the boat would surge up in the swell and cause the crane's block to come dangerously close to personnel in the boat. In addition, the

boat almost fouled its props in the mooring and towline while attempting to hook-up the strap. After debriefing this first evolution, the next three moorings were recovered by backing the ship up to the mooring, then using the boat to take the retrieval line out to and attach it to the mooring. The mooring was then hauled aboard using a block provided by the science party attached to the Aft A-Frame. As the mooring's floats and instruments were pulled out of the water, the A-Frame was boomed in and a stopper chain was attached to the mooring's cable below the float or instrument. The float or instrument was then removed, after which the in-haul line was reattached, and the cable was pulled in until the next float or instruments, then repeated. The biggest problem encountered using this method was that the CONN had to stop the stern way of the ship and ensure that the ship was not set down onto the mooring. During one recovery attempt, the ship drifted over the mooring, and it took several attempts by the boat to clear it from resting under the stern. This problem was compounded by the mooring's float being 90 percent submerged. The only other problem encountered during the recovery phase was that the second mooring did not release and float to the surface. Using equipment provided by WHOI, 600 meters of drag wire 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 recovered. The moorings were deployed using the anchor last method with no problems encountered.

The Chinese mooring was recovered the same as the previous 3 except it was a surface mooring, with an 800 pound anchor. Only a small white surface float remained visible on the surface. After locating it, the boat hooked into the line just below the float and it was retrieved without any problems.

After debriefing the 5 previous mooring recoveries and with the recommendation of John Kemp from WHOI, the next 8 SBI moorings and 1 ARP mooring were recovered using an up wind approach, passing the mooring close aboard down the 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. 7 of the 8 Beaufort Slope (BS) moorings were from 70 to 1400 meters long, and took from 1 to as much as 4 hours to haul on board. The main reason for this was due to the maximum speed of the inhaul capstan being only approximately 12 meters a minute. The BS1 mooring was an ADCP Tripod, which was resting on the bottom. Once the floats were on the surface, the approach was the same as the other moorings, except, once it was hooked up to the inhaul, the Conning Officer had to back keeping the wire angle near vertical until the Tripod was lifted from the bottom. All moorings except BS2 were deployed anchor last, streaming the floats and instruments aft while driving the ship into position and releasing. BS2 was deployed anchor first, using the DPS to hold position. Both methods worked smoothly and flawlessly.

## **I. Nome to Seattle**

During the transit from Nome to Juneau and Juneau to Seattle, Deck Division prepared inport work lists and paint contract priority lists. Deck also conducted training and completed inport qualifications for several personnel.

## **J. Recommendations**

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 outfit, is not long enough to reach most piers or the ice. A 40ft brow could be set up in less than 15 minutes and would not require personnel to work over the side until it is "set in place." The cost of a 40 ft. lightweight aluminum brow is approximately \$17,000.

## **CHAPTER III – COMMUNICATIONS AND ELECTRONICS**

### **A. Pre-Deployment Preparations**

Communications: There was a short hectic in port period with a lot to accomplish. HEALY upgraded physical hardware on SWIII server, and upgraded each SWIII workstation to new Microsoft XP OS as well as replaced all workstations too obsolete to handle the new OS. A new Iridium MXU was installed to be used for high latitude data during a segment of Falkner mission when beyond range of Inmarsat B. The MXU had 4 separate Iridium channels, each of which can be used for voice or 2400-4800kbs data. The plan was to dedicate one channel each for crew and science e-mail, a third channel for file transfer only, and the fourth for voice. Prior to sailing, e-mail function was tested satisfactorily, while file transfer function had not. We received a new SMW (Secure Message Workstation) laptop from Camspac, which allowed us to receive classified traffic via landline.

### **B. Seattle to St Johns**

1. Communications: We continued to have a rough transition when submitting a Commshift to Camspac Pt Reyes. This was the third deployment in a row with similar problems. The CTES Inmarsat terminal is listed on Camspac's master spreadsheet as our primary Inmarsat-B terminal despite numerous requests to change it or remove it. The CTES terminal was unable to come up on a leased channel satellite due to an older software version. Sent Inmarsat leased channel request message requesting our primary SWIII Inmarsat terminal be added to lease, only to have CTES terminal once again added instead, and losing first day of connectivity, troubleshooting, and repairing. We lost the first 3 days of message traffic due to routing errors in the Camspac database. We did not receive any messages sent to collective addresses or address indicator groups (AIGs). All unclassified traffic was routed to HFDX terminal despite a Commshift message requesting it be routed via Inmarsat. We were unable to achieve good HFDX lock through first 4 days underway. After exhaustively troubleshooting the circuit, the problem was repaired without any changes on the ship's end. All problems continued through the weekend (HEALY got underway on a Friday morning), and were not resolved until after Monday morning. We have had the same problems each time when we have initially shifted our guard at the beginning of a deployment. On 01 July, shifted HFDX guard to Camslant Chesapeake.
2. Electronics: On 01 July, the MXU file transfer function tested satisfactory, and was up and running. We are used Direct-Internet software to link with Iridium server vice connecting to ESU Seattle for FTP. This was better because Iridium software has compression capability built in which allowed for faster downloads.

### **C. Falkner Mission**

1. Communications: Iridium e-mail was up and running for both the SDN (science data network) and Crew. Camspac agreed to dual route our unclassified traffic to our current address and the new iridium address. The iridium address had connectivity above 80 degrees where Inmarsat-B did not. The problem we had was that iridium was not encrypted, and therefore not an option to receive unclassified message traffic. We will continue to research the policy concerning this matter and pursue it as an option in the future. On 30 July around 74 degrees North we lost Inmarsat Mini-M signal, and were unable to receive incoming or make outgoing calls on that system. The MXU Iridium phone was working and had been routed to the bridge. Inmarsat-B was still connected, and we were able to send and receive unclassified message traffic and e-mail. HFDX was working, but the connection was intermittent. We tried unsuccessfully to establish communications via HF SCN with Camslant. On 01 Aug we requested permission from Camspac to transmit unclassified traffic via iridium e-mail. Camspac notified us that they contacted Pacarea on the policy; we are awaiting a decision from them. On 02 Aug we successfully passed a test message via HFDX to Commsta Kodiak. We had been unable to connect with Camslant for 48 hours, so we shifted our HFDX guard to Commsta Kodiak. When over 78 degrees north, we still had Inmarsat-B connectivity. Then on 05 Aug, at 80-23N, Inmarsat connectivity was intermittent, but we were able to send and receive e-mail a few times daily. HFDX was also intermittent. On 06 Aug, in position 80-49N 067-25W, we still had Inmarsat-B connectivity. On 07 Aug, in position 81-41N 064-31W., there was no Inmarsat-B connection. Camspac notified us that still no word on policy about unclassified traffic via Iridium from Pacarea. Camspac requested we shift unclassified traffic guard to Kodiak via HFDX. On 11 Aug, in position 81-37N 063-15W, we had Intermittent Inmarsat-B connectivity established.
2. Electronics: Iridium e-mail has been up and working even at our highest Northern latitude. On 07 Aug, laptops were set up in each of the lounges for the crew to use while out of Inmarsat-B range (7-16 August).

### **D. NW Passage and NOAA Mission**

1. Communications: On 16 Aug, Thule AFB, Inmarsat-B connectivity on the 98W satellite was good and we were able to send and receive e-mail and message traffic. Camspac added HEALY to the 142W satellite on 17 Aug. We were on both the 98W and 142W satellites until we got into the 142W satellite footprint. On 26 Aug, in position 71-07N 133-20W, we were able to pick up the 142W satellite signal, but were unable to connect to 142W satellite. Inmarsat Mini-M had connectivity, and a good signal. On 27 Aug, after a few calls to the Stratos NOC, and e-mails to CAMSPAC, we connected to the 142W satellite. We had two Inmarsat-B terminals that needed to be added to the satellites when we shifted from one satellite to another. One was for HEALY crew and the other is for HEALY Science. We requested both be added to the 142W satellite. We

received the daily Pacarea inmarsat messages that indicated both terminals were added to the satellite and had slot assignments. However, we were unable to connect the HEALY terminal to the 142W satellite because it had not actually been added to the satellite. Only the HEALY Science terminal was added. Fortunately, we were able to contact the Stratos NOC and CAMSPAC to get things straightened out within a few hours. The HEALY terminal was added and connectivity was established.

2. Electronics: A virus infected CG wide computer systems. HEALY was prepared and was not infected. All patches were successful and anti-virus updates were completed without incident. The internet connectivity on board HEALY was slowed during the infection and remedy stages of the viruses.

#### **E. SBI Mission**

1. Communications: On 11 Sep, Unclassified message traffic was not being received. Inmarsat-B connectivity was good, and we were able to send and receive e-mail, and connected to the internet. We contacted Camspac and soon after received approximately 80 messages from the Postmaster vice CGMSService as normal. On 12 Sep, we were still not receiving message traffic normally. We did not get comeback copies of our outgoing message traffic, even though we INFO'ed USCGC HEALY. Camspac was unable to provide an explanation. On 08 Oct, Combination lock (X-O7) experienced a bit drop and dropped the combination. We were unable to gain access to the safe or required keymat for HFDX. We planned to call in a locksmith at the earliest opportunity. Fortunately, HEALY's mission was not dependent on classified message traffic. We shifted classified traffic guard to Group Seattle.
2. Electronics: The CG WSIII Server Backup Drive was repaired.

#### **F. Nome to Seattle**

Communications: On 24 Oct, in Juneau, a locksmith called in and gained access to the safe. On 01 Nov, we arrived at Todd Shipyard, Seattle.

#### **G. Recommendations:**

Communications: Recommend using Iridium circuit for unclassified message traffic while outside Inmarsat-B range. Update existing X-O7 Locks to the newest model X-O9 on all safes in radio.

## H. Message Traffic Statistics

	Sent	Received
Inmarsat	350	10100
HFDX	16	2961
<b>Total</b>	<b>366</b>	<b>13061</b>

## CHAPTER IV-SCIENCE



### **A. Pre-Deployment Preparations**

1. Preparations for AEWS 03 began as early as during HEALY's deployment to Antarctica for Deep Freeze 03. Teleconference meetings coordinated by HEALY's Science Liaison were held in February between HEALY and representatives from the three science missions that would make up AEWS 03. Thanks to the initiative of HEALY's Science Liaison and shore side support, science parties were able to log on to a web site and fill out a planning guide that covered all thinkable aspects of an underway science mission, from gear on-load to required science gear to special dietary needs of science parties. The planning guide also outlined HEALY's gear complement thus allowing scientists to learn early on what their host ship could and could not support. The form additionally queried the chief scientists about the operational requirements of their missions. By the time teleconference meetings were held in February, many basic but critical questions had already been answered and both parties were thus able to discuss the finer necessary details. These meetings helped along by the comprehensive planning guide were essential for a successful pre-deployment since by the time HEALY tied up in her homeport, she had two months before embarking on her three-phase science mission.

A footnote regarding the planning guide is that at the end of the mission, SBI's Chief Scientist commented on the HAZMAT section. She recommended that HEALY spell out very clearly what their definition of HAZMAT is in the

planning guide. During the on-load, MSTs and science techs alike were forced to rummage thru science gear for powdery chemicals not deemed HAZMAT by the science party for shipping, but needed to be stored separately on board.

2. Extraordinary demands were placed on HEALY's MSTs to prepare HEALY for AEWS 03 upon return to homeport, including procurement of supplies expendable and otherwise, calibration of instruments like CTD sensor packages, procurement of a spare CTD, proper disposal of HAZMAT, loading science equipment and science systems training to name a few.



3. Except for some late, greater than expected arrivals in St. John's, Newfoundland, MSTs on loaded the bulk of science gear in Seattle over a pre-arranged two-week stretch in May. Over 100,000 lbs of science gear was loaded during this period including mooring equipment, anchors, floats, chain, and lab equipment. An online shipping web page enabled individual scientists to log their shipments and HEALY to track them thus making tracking of shipments a lot easier. Representatives from both the Falkner and SBI groups provided a helping hand along with HEALY deck force during the on-load. This also proved very beneficial from the standpoint that science parties could stake claims to certain lab areas, then MSTs would not have to duplicate efforts by having to reposition science equipment upon embarkation of scientists. The informal walk thrus and meetings completed during the on-load period were critical and should be repeated in the future.
4. The two-week on-load period that was formally agreed to and emphasized during the pre-planning meetings resulted in an overall smooth on-load. For purposes of future onloads going just as smoothly, both sides should continue to set aside an agreeable time frame for on-load, and strictly adhere to it. With respect to the shipments themselves, several did not arrive at the pier until late morning

resulting in longer than anticipated workdays. Science parties should be encouraged to inform shipping agents of the ship's work hours so that work hours are not wasted waiting for gear to arrive. Along these same lines, better coordination between HEALY and the ISC warehouse will prevent HEALY from having to struggle needlessly for forklifts, a rather simple component of an on-load that, when HEALY tried to procure one, proved very tiring. HEALY needs to ensure forklifts are signed out ahead of time and at the same time, ISC warehouse needs to be flexible and tolerant as shipments arrived late in the work day thus necessitating the use of a forklift after work hours. Insisting on the return of the forklift before the job was done unduly added to the ship's heavy workload.

## **B. Seattle to Saint John's**

1. Several experts rode HEALY to provide experienced support. This support included the hire of a full time dedicated SDN administrator, and three SeaBeam technicians spread out over the three-phase science mission.
2. The transit from Seattle to Saint John's was very busy. MSTs conducted 9/16" trawl core load tests, cable termination training on the .322 for CTDs and CTD test casts. They spot-checked and maintained full operation of science equipment during regular rounds and conducted nightly weather briefings and weather briefings for flight quarters.

HEALY's Science Liaison arranged for a Scripp's technical expert to ride HEALY from Puerto Vallarta to the Panama Canal to test, troubleshoot, and train MSTs on several pieces of hydrographic science gear ranging from Thermosalinograph (TSG) to CTD to AutoSals.

CTD: Underwater cables, bulkhead connectors, and sensors were inspected for corrosion and likewise cleaned and lubricated. A test of CTDs, transmissometers, fluorometers, altimeters, and oxygen sensors was also conducted. MSTs, under the tutelage of Carl Mattson of Scripp's, made sure that all pumps turned on after salt water was inserted into the conductivity cells and they also tested for the timely release of the carousel latch attached to each Niskin bottle. All bottles were filled to check for leaks. Testing involved opening the spigot while the vent remained closed. Two bottles total were found to have leaks.

Two 24 bottle CTD/Rosette systems were confirmed fully operational by the time HEALY entered the Panama Canal. The goal was to have three systems, one of which would be a 12 bottle system. However a lower frame part belonging to the 24 bottle system transferred from POLAR STAR was the wrong size. Subsequently, HEALY's 12 bottle system was converted to a 24 bottle system through a transfer of parts. In the end, HEALY had 2 complete 24 bottle systems.

During one of the test casts, the CTD wire jumped one of the sheaves located in the upper part of the starboard staging bay. The wire became jammed inside the

sheave and only after the crew placed a stopper to relieve the wire tension was it able to wrestle the cable free. All strands of the outer armor were destroyed and all hands crossed their fingers while the CTD was brought to the surface from 840 meters with just the inner armor of the wire in tact. Once on deck, 1000 meters of wire was cut and discarded. It was discovered that a sheave pin was still engaged thus preventing the sheave from moving freely. Procedures are now in place to effect taking out the sheave pins before CTD casting.

Autosal: At the behest of the science community, HEALY had two autosals onboard when it left Seattle, one of which was transferred from POLAR STAR. The unit borrowed from the POLAR SEA was sent to the manufacturer, prior to deployment, for calibration. It was discovered during the OEM calibration that the unit needed significant repair. Both autosals were set up in the Bio-Chem lab where the tanks were filled and temperatures stabilized. MSTs were trained in the following topics: 1) Preparing the autosal for use. 2) Conducting operational checks prior to usage. 3) Operating the autosals using the OSI ACI2000 logging software. 4) Operating the autosals using the SIO logging software. 5) Autosal standardization. 6) Running samples. 7) End standard check. 8) Procedures to be taken after using the autosal. 9) Packing and storing the autosal. Following training, the MSTs ran samples obtained from the CTD casts. Both autosals were determined to work. However, the 65-715, or HEALY's autosal, appeared to be more stable. Amplifying information can be found in the USCG HEALY Hydrographic Systems Testing 2003 report prepared by Carl Mattson of Scripps.

Thermosalinograph (TSG): Both TSGs were confirmed operational. Concerns regarding the aft TSG pump arose when water flow rates became sporadic. More than likely, the water collection hose leading aft and into the sea bobbed in and out of the water as a direct result of ship's movement. This improvisational method of collecting water is HEALY's only recourse for the time being as research continues on how to enable the forward, more reliable TSG in icy conditions.

Amplifying information on the TSGs as well as oxygen sensors and CTD bottle data can be found in the USCG HEALY Hydrographic Systems Testing 2003 report prepared by Carl Mattson of Scripps.

3. There was science of opportunity completed (SOO) during the transit from Seattle to St. John's. Kevin Maillet of the University of Miami launched weather balloons from several positions to record atmospheric conditions. Balloons were released from the fantail where the helium bottles were stored. The sensor package consisted of a thermometer, humidity sensor, pressure sensor, battery, and transmitter. Balloons are projected to burst at approximately 10 miles altitude. An antenna mounted on the ship received the data readings from the sensors' transmitter for later analysis.



### C. Falkner Mission

1. The remainder of science gear for both the Falkner and SBI groups was unloaded in St. John's. Thanks to the Canadian Coast Guard who facilitated a one-trip delivery to HEALY with their flatbed truck, MSTs and scientists were able to unload straggling science gear quickly in one afternoon.

The first science leg of AEWS 03 informally known as the Falkner phase was, in the words of Chief Scientist Dr. Kelly Falkner, “a resounding success.”



2. CTD: During one of the CTD casts, we experienced a short in the .322 cable termination. This caused us to lose the pigtail that joins the .322 cable to the Seabird 9+ underwater unit. The .322 cable was re-terminated, and the bad power pigtail was replaced. The follow-on cast was uneventful. However, a subsequent cast had to be aborted due to leakage in the underwater connector for one of the Temperature sensors. This leakage caused a short that cost us another power pigtail. Deck testing of the underwater unit indicated additional problems that we could not fix. This unit was sent to Seabird for repair and recalibration and was returned when we arrived off of Barrow. We switched to one of the two remaining spare 9+ underwater units that we had onboard and replaced ALL cables on the underwater unit with new spares. At the phase's end, we had one remaining power pigtail, but we ordered an additional three from Seabird. Additionally, the affected underwater unit was sent to Seabird for repair and recalibration, and was returned when we arrived off of Barrow along with the three new pigtails.

There were indications in the salinity checks that a couple of bottles closed at other than the intended depth. One of the senior scientists spoke with Seabird about this and it was recommended we remove and clean the bottle-firing pylon. This was done and there didn't appear to be any further misfire-type problems. During a large portion of the casts, however, only about half of the bottles were being fired. Due to the short time interval between the casts, the unfired bottles were left cocked. This, in the opinion of the MSTs, along with the heating and cooling going on between being out on the deck and being inside caused some of the lanyards on the unfired bottles to stretch, thus allowing the bottom caps to close. Adjustments on all of the lanyards were made.

83 CTD casts were conducted off of HEALY's Starboard A-Frame producing detailed hydrographic sections along east-west and north-south trending tracks in Northern Baffin Bay, across Smith Sound, southern Kennedy Channel and Robeson Channel. Additional casts were conducted in the previously un-sampled Peterman Glacier Fiord along its sill, and in Hall Basin.

Detailed CTD information can be found in the Research Cruise Report: Mission HLY031 submitted by Dr. Kelly Falkner.



3. Moorings: Testing was conducted on all acoustic release transponders and work horse 75 kHz ADCPs prior to arriving on each mooring station. HEALY's MSTs assisted mooring technicians in securing components to a spare CTD rosette and lowering them to a prescribed depth of 1000 meters. Functionality was then tested with the hydrophones lowered off of HEALY's stern. Difficulties arose with the 866A releases on the vertical propagation path when the hydrophone was placed at a shallow depth. It was concluded that HEALY is too loud. When horizontal propagation was employed by removing the hydrophone from the HEALY, placed onboard the RHIB, and distanced approximately 100 m, testing was successful.

Weather permitted deployment of the RHIB and this horizontal method. In the event weather prohibits this approach and vertical propagation is the only permissible method, a lengthened hydrophone cable is recommended. Also, HEALY equipment operating at 3.5kHz and 12kHz was and should be secured during the testing.

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18 moorings: -ADCP, temperature-salinity recording, and ice profiling- deployed off of HEALY's stern into Kennedy Channel and Nares Strait, anchor last. Meticulous planning and teamwork between HEALY's MSTs, deck force, and science techs resulted in well-run and well-supervised mooring evolutions. For further information regarding mooring illustrations, placement positions, and deployment method, refer to the Research Cruise Report: Mission HLY031 submitted by Dr. Kelly Falkner.

4. ADCP: An ADCP "box survey" was completed off of Greenland in the vicinity of Thule on 1 August to investigate coastally trapped flows along the Greenland coast. A similar survey was completed in Robson Channel at the northernmost end of Nares Strait. This consisted of six parallel legs across the entire width of

the strait. ADCP surveys were also completed along the mooring line in Kennedy Channel.

Both of HEALY's ADCP systems were used but the 75kHz system proved the only reliable one. The water profiling range varied from more than 600m to less than 200m. The 75 tracked the bottom without any problems down to 900-1100m. Optimum ship's speed was 12-14kts. When a third engine was placed on the bus, however, the additional vibrations degraded the 75 substantially. The same applied when active ice breaking took place.

At the end of the trip, the 150kHz system still did not function properly. There are several educated guesses on why but dry dock should yield a definitive cause. ADCP data collected during the Falkner phase will be used to complement the hydrographic sections.

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5. Coring: HEALY's sub-bottom profilers were used extensively to survey potential piston coring sites. HEALY's MSTs and coring technicians carefully watched 3.5kHz records from both Bathy 2000 and Knudsen both of which worked well. 3.5kHz Bathy 2000 data with Bathy 2000W software turned out to be the data most relied upon. It was concluded after review of Bathy 2000 data that positions coring techs initially proposed for coring sites would be sufficient. SeaBeam played a supporting role cutting swaths that ended up being parallel to the four coring sites. These swaths covered a one hundred nautical mile track line trending thirty nautical miles NW to SE. Efforts were made to the delight of the coring techs to overlap these swaths that resulted in a complete bathymetric map

of the entire coring area. 4 piston cores were taken in the Western margin of Baffin Bay between 900 and 1400m.

Two gravity cores were taken in the 800m deep channel in the Hall Basin. In both instances, a cloth sock was placed in the core catcher to help retain any sandy sediment. Regarding the first site, a 12kHz pinger was rigged 50 meters above the 12ft core. The core was lowered at 60m/min and was stopped 100m above the bottom for several minutes to settle out. The core was then lowered into the bottom at 60m/min. This core was conducted in position 81-37.286N, 063-15.467W, notable because it is the highest latitude core ever taken by the Oregon State University NORCOR group.

The starboard 04 crane sprung a hydraulic leak due to a blown O-ring seal, delaying the next gravity coring for approximately 2 hours. Similar methods were employed for this coring including the cloth sock and 12kHz pinger. This gravity core was 8ft longer than the first registering in at 20ft. The core was lowered to the bottom this time at 70m/min and the result was similar to the first gravity coring, good.

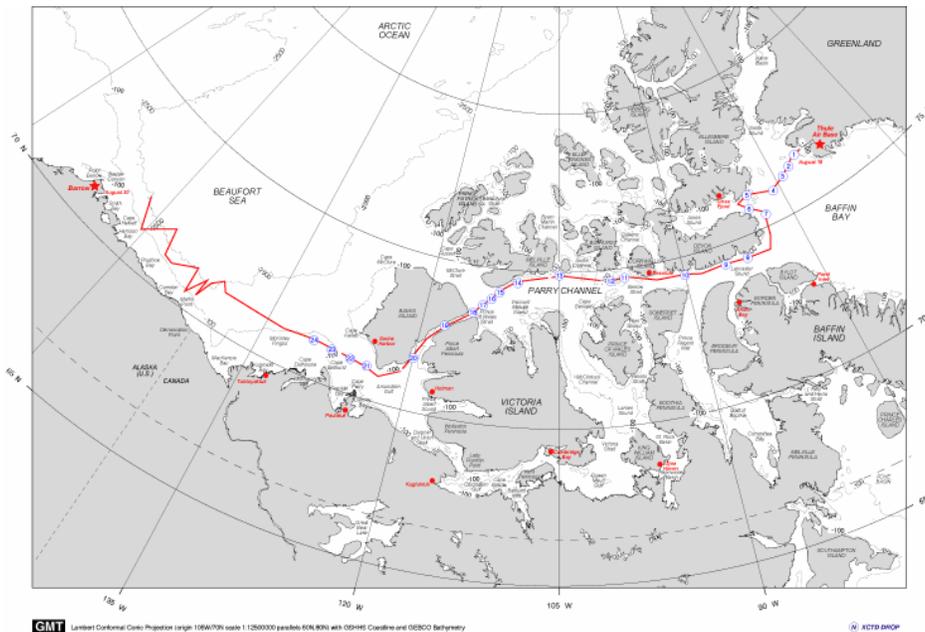
A problem did arise during recovery of the second gravity coring. The MST winch operator discovered a bad wire wrap. If it weren't for vigilance and a quick response time, the entire gravity core could have been compromised. A modest paying out of wire was all it took to correct the bad wrap on the drum and subsequently recover the gravity core.

6. SeaBeam: The first major SeaBeam outage involved a hard drive failure. A replacement drive was installed but not before several hurdles arising from the lack of documentation on software reconfiguration. By the time SeaBeam was fully functional again, documentation on software reconfiguration had been drafted and inserted into maintenance manuals.

There were two instances when the system stopped logging data despite giving the appearance of operating normally. The first time called on HEALY's ETs to reseal ribbon cable connectors inside the 2112 chassis which appeared to be loose. The second time required the replacement of the magneto-optical disk.

In conclusion, SeaBeam is one enormous learning curve. The three isolated incidents mentioned above are mere highlights of the problems experienced with SeaBeam. Other, more minor outages, occurred regularly which had to be addressed and corrected throughout the mission. A SeaBeam subject expert was ultimately responsible for SeaBeam's success, but HEALY's MSTs were often called upon to perform less technical tasks including rebooting the system. The more training MSTs receive on SeaBeam, the better. Science parties have an expectation that HEALY's science techs will have a good working knowledge of all science systems onboard. While some systems can be learned on the job, SeaBeam commands more formalized training.

7. Moorings on a Stake-The science party planned to deploy 8 pressure recorders on both sides of the channel between Hall Basin and Smith Sound. Five were actually deployed. See the diving section of this cruise report for more information.
8. Clams- Bivalve retrieval is also covered in the diving section of this cruise report.



#### D. Northwest Passage & NOAA Mission

1. Sightings of marine mammals and seabirds were recorded from HEALY during its transit from Thule, Greenland to Barrow, Alaska. During this period, 147 hours of single observer watches were stood. Sightings of marine mammals were recorded on NOAA, NMFS Platforms of Opportunity forms, and seabird sightings were recorded by species and grouped by two-hour blocks. One cetacean and four pinniped species, the polar bear, and 14 seabird and waterfowl species, were recorded. The most frequently sighted marine mammal species was the bearded seal (31 sightings), followed by the polar bear (19 sightings), and the ringed seal (18 sightings). The most frequently sighted bird species was the thick-billed murre (989 birds), followed by the northern fulmar (769 birds), and the black-legged kittiwake (486). The largest number of marine mammal sightings occurred within the Parry Channel, whereas the largest number of birds was seen in Baffin Bay. Sightings of bowhead whale, harp seal and hooded seal all made well into the Parry Channel may represent additions to the knowledge of the range of these species in this area.

The marine mammal sighting forms will be added to the NOAA National Marine Mammal Laboratory's database in Seattle, WA, which has data dating back to

1958. This data helps biologists to determine the distribution and range of marine mammals all over the world. Polar bear sightings, photographs, and video will also be archived with the U. S. Fish and Wildlife Service, Office of Marine Mammals Management in Anchorage, AK. Data of seabirds will be sent to the U. S. Fish and Wildlife Service, Office of Migratory Bird Management in Anchorage, AK.



2. XBTs -A total of 24 XBTs were launched while HEALY transited the Northwest Passage.



3. NOAA: The area covered by HEALY 03-02 encompassed the shelf area of the Chukchi Sea, the Northwind Ridge and Chukchi Cap, and the shelf break down to the Mendeleev – Canadian abyssal plain. The mission was using SeaBeam to “image and map the seafloor of the Chukchi Plateau and its areas of high bathymetric uncertainty to clearly identify critical bathymetric features needed to file a claim for an extended EEZ under the United Nations Convention on the Law of the Sea (UNCLOS).” (Oceanographic Measurements HLY03-02 Report)

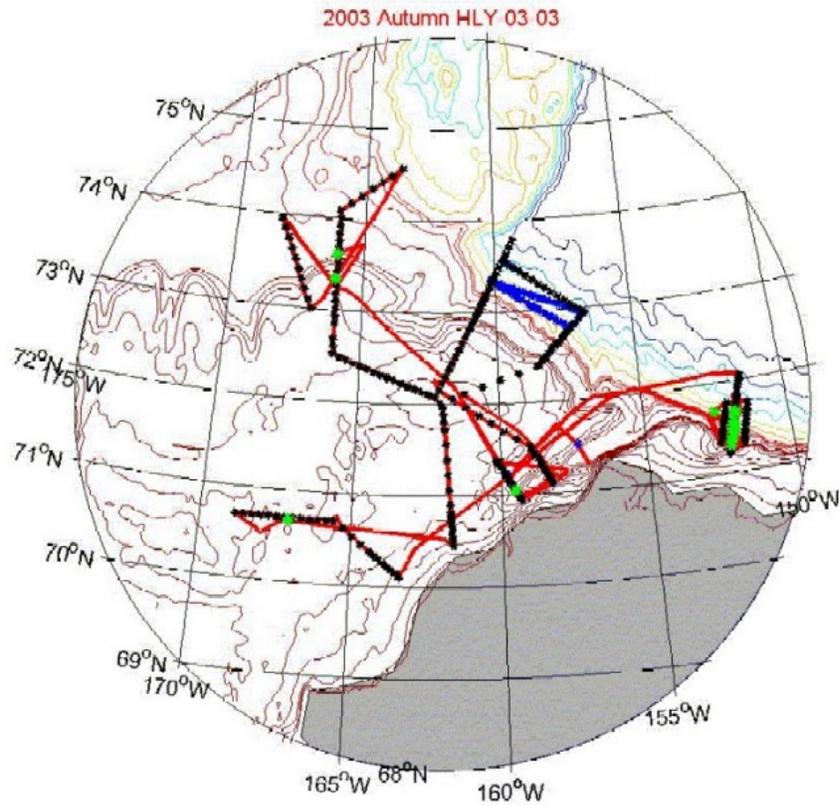
In addition to SeaBeam data collection that was generally managed and maintained by the embarked NOAA science party, science of opportunity (SOO) did present itself throughout the 11-day mission. Twelve XCTDs, 14 XBTs, and 2 CTD casts were conducted during this leg.



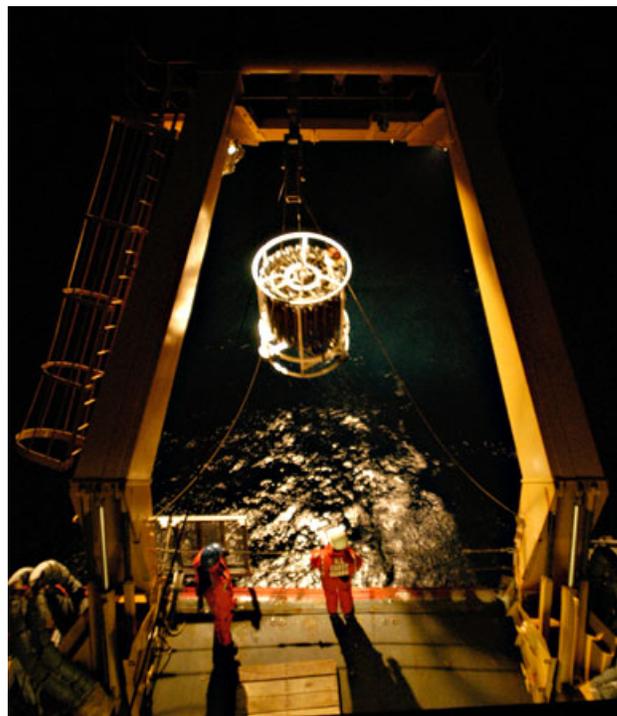
Gravity Core: One gravity core, HEALY 03-02 GCO1, was successfully recovered at the slope of the Chukchi Cap facing the Canada Abyssal Plain. It was the first core MSTs and deck force completed without the assistance of external coring techs. The core appeared undisturbed.

#### E. Shelf Basin Interaction (SBI)

1. SBI: SBI's chief scientist remarked, "The more (science) dots there are, the better and clearer the picture is, just like a TV." There were a lot of science dots on this final leg of HEALY AEWS 03, more than anybody expected including the scientists.
2. CTD: There were 321 CTD hydro-casts conducted over HEALY's starboard side. Because of the very high op-tempo and hardly any rest between casts, two deck force members were assigned science detail. They contributed enormously to the overall success and safety of CTD evolutions.



Considering the volume of casts, the number of set backs encountered was insignificant. One re-termination had to be done due to HEALY drifting in poor weather. It became standard operating procedure from this instance on for conning officers to position HEALY bow into the wind or wind slightly off the Starboard bow, at least when winds exceeded 20 knots.



A rushed pass-down of information from an off-going science watch to an oncoming one is probably what is responsible for the CTD hitting ocean bottom on another occasion. Thanks to the vigilance and quick response time by the MST winch operator though, the rosette that hit bottom was not damaged.

The chief scientist said it would be advantageous to have the CTD deck unit closer to the winch operator to prevent having to shout across the aft conning station. She also recommended having a CCTV at the deck unit for the science driver.

3. Moorings: HEALY's MSTs and deck force worked closely with the very experienced mooring hands of the science party. A total of 13 moorings were recovered including one mooring belonging to China. The conning officer laying to aft conning once the mooring was attached to the towline established a substantial comfort level among science party members.

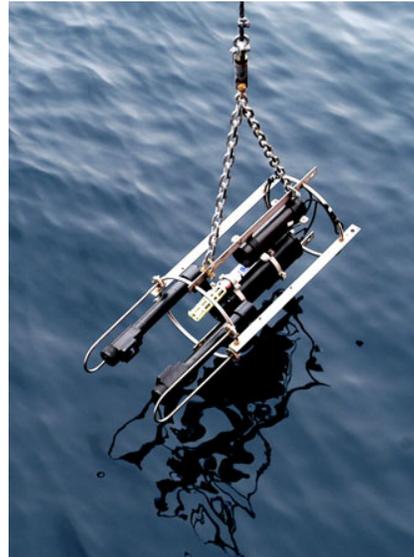


Fifteen moorings were deployed including 3 acoustic recording platforms (ARP). It was discovered during one of these moorings that instead of lowering a hydrophone over the fantail to receive the mooring's signal, we would use the ship's hydrophone. Mooring techs received reliable signals from HEALY's hydrophone and were able to triangulate the mooring's position from IC-Gyro. This method was not necessary for the deployment of the 3 ARPs.

As far as safety is concerned, it was judged that too many safety observers and deck hands have a negative impact. While moorings are heavy in nature and require manpower, there were instances when too many helping hands were tripping over each other. Two experienced mooring technicians and one Coast Guard experienced hand seemed to be the optimal number in the immediate vicinity of the mooring gear once it was faked out and ready to be deployed. All other hands stayed well clear unless tasked specifically with driving the capstan or taking the towline to power. The capstan itself proved very slow. This did not

hamper mooring evolutions, but a faster capstan would definitely have allowed mooring techs, MSTs, and deck force to come in from the cold a lot sooner.

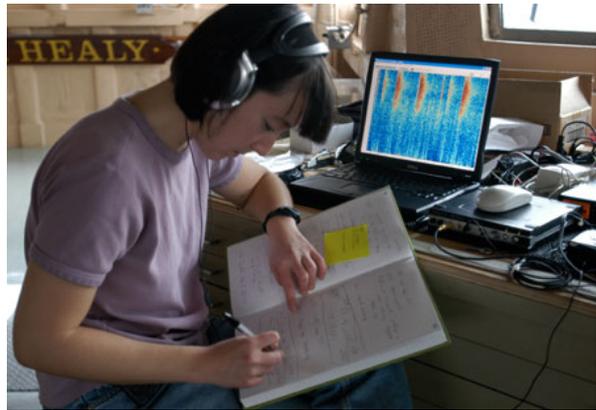
4. ADCP: Additional information is in notes from Falkner phase of AEWS'03. The data collected during SBI is different geographically, but in terms of ADCP operation, nothing really changed.



5. VPR Casts/Net Tows: Any problems associated with the video plankton recorder (VPR) were generally equipment related. As far as net tows go, some guessing is still going on as to whether or not the ship driver could have positioned the ship better in rougher seas or if the seas themselves are to blame for the net tows not lowering to prescribed depths. Thirty-four VPR casts and 11 net tows were deployed from HEALY's fantail during this phase.
6. XBT: The chief scientist brought 24 of her own XBTs for her mission and was pleasantly surprised when HEALY's MSTs furnished 39 more.



7. Nutrients: 948 nutrient samples were taken during this phase. Careful coordination between MSTs and Engineering is essential to ensure distilled water is not secured when it is in demand, particularly for the nutrient analyzer and water purifier.
8. Knudsen /Bathy Sub-Bottom Profilers: Whether Knudsen or Bathy was selected depended on the scientist's personal preference. What must be made absolutely clear to scientists in the future is that both systems share the same transducer and they cannot be used simultaneously.



9. Sonobuoys-In conjunction with the ARPs, 70 sonobuoys were launched over the fantail to detect whales acoustically. These buoys had a short range and did not yield the sounds everybody was hoping for.

## **F. SDN & Internet Connectivity**

1. Bathy2000: This sensor had the most communications problems. The problems were in two different areas, the raw data feed between the Bathy2000 deck unit and the Bathy2000 and Bathy2000w sensor computers in the computer lab, and the ASCII data feed between the deck unit and the SCS server in the computer lab. Of these two, the SCS feed was most problematic. For the SCS feed, Bathy2000 uses RS-232 serial communications, and due to the distance between the deck unit (in IC No Gyro) and the SCS server (in the computer lab), a serial over IP device is used. This device, a Devicemaster Primo (DMP), had failures throughout the cruise, which turned out to be in the DMP software on the SCS server. The impact on data collection was fairly well contained since we had a well documented recovery procedure whenever the issue occurred.

SDN support technicians will try to upgrade the DM Primo and Windows 2000 Server software to the latest release and retesting Bathy2000 / SCS operations over a period of at least a few days. If this doesn't resolve the problem, an alternative to the DeviceMaster Primo hardware/software should be tested. Third, the technicians should coordinate with the ET division on using RS-232 to RS-443 converters at both ends of the physical serial connection in order to replace

the serial-over-IP solution. If this still fails to resolve the problem, the technicians should coordinate with the ET division on contacting the Bathy2000 vendor for assistance.

2. The SDN doesn't yet accommodate non-Windows computers very well, which caused some integration issues when scientists brought aboard non-Windows machines. The larger problem created by having mostly Windows computers on the SDN was the lost productivity due to numerous virus threats. In fact, Symantec, the vendor of our anti-virus software, released a statement to the public that in the last year they have countered over 4000 Windows-based viruses and worms, while only countering 12 or so Linux viruses/worms, and no Mac-based viruses/worms since 2001.

RedHat Linux and Mac OS X computers should be added to the common areas (computer lab, science conference lounge, and main lab), and SDN technicians should be equipped with the necessary training and tools to support these operating systems. A plan should be developed to eventually migrate the primary operating system on both the workstations and servers to be either Mac OS X+ or RedHat Linux 9.0+, phased in over the next few years as sensor and post processing applications become available on those platforms. This will be discussed at this year's RVTEC conference.

3. A file synchronization tool was successfully tested and was instrumental in two major areas on the SDN: (1) it was used to synchronize collected data between the two main servers, and between sensor computers and the data server, which improved data collection and made the SDN more fault tolerant. (2) It was used to stage data towards the end of missions so that the data archival process could run in much less time.

By deploying the aforementioned file sync tool, DVD burners, and a firewire interface in the main data collection server, we reduced the data archival time for the SBI mission to 1/10th what it took for the Falkner mission.

4. Shore support and the SDN administrator successfully tested and implemented an automated SDN system-monitoring tool. By the end of AEWS03, we had phase 1 complete: the Windows servers and SDN printers were being monitored 24/7, and could send alerts via pager and e-mail to SDN administrators and/or watch standers for critical system failures. Phase 2 will be adding directory monitoring to detect SDN sensor data collection problems, as well as providing technician operator documentation for the monitoring system.
5. Iridium Email Communications: The HEALY used two e-mail systems during AEWS03: Inmarsat/Exchange Email, the primary email system, was available for message transfer to/from shore two hours per day (the Inmarsat Internet connection windows established by the chief scientists); the Iridium Email system, intended to be the secondary email system for use only when Inmarsat was down, or when communications were operationally time critical, was

available 24/7. The main problem with Iridium is that it is still a beta email system as configured for the SDN. The shore server was at the CG's Research and Development Center in Connecticut, and as such did not have a technician assigned to provide 24/7 operational support. Since the system was advertised in cruise planning documents as a 24/7 email system for small text messages, the scientists and system administrators depended heavily upon Iridium email. Unfortunately, the load on the system resulted in frequent hung message queues, and server or communications equipment crashes. By the midpoint of the SBI mission, all stakeholders agreed to treat it as an emergency use only email system, especially since Inmarsat/Exchange email was working very well. Overall, the SDN system administrators, including shore-side support technicians, spent a disproportionate amount of time supporting this email system.

ESU Seattle Science Branch technicians and the SDN administrator have taken steps towards eliminating the Iridium router and e-mail proxy software, which was the weakest link for e-mail communications on the SDN. The HEALY will be upgraded to Exchange 2000 to match the ESU shore server, and this will allow for an integrated Exchange-only mail system that separates the e-mail software from the type of network connection. The recommendation is to configure the Exchange 2000 server aboard the HEALY to automatically select the best available network connection for routing e-mail ship to shore and vice versa. This has the added benefit of eliminating the second e-mail address for each SDN user, which was confusing and inconvenient for SDN users and those they corresponded with via e-mail.

6. On the transit to Saint John's, ESU's efforts preparing for AEWS 03 were focused on working out operational issues with electronic mail systems, file transfer systems, and some of the sensor computer systems and interfaces. With very little testing time prior to sailing, most of this work had to be accomplished underway.

We also updated a variety of SDN systems documentation to reflect current reality. We also started investigating monitoring tools to help automate the continuous health checks of SDN computer systems.

7. The Iridium connection provided the Canadian ice service technician with 24/7 FTP connection which proved useful in a number of situations. It provided timely download of images outside the Inmarsat 2 hour window and provided for high latitude connectivity for internet access, FTP and email.



## G. Recommendations

1. SBI's Chief Scientist recommended that HEALY spell out very clearly what its definition of HAZMAT is in the planning guide. During the on-load, MSTs and science techs alike were forced to rummage thru science gear for powdery chemicals not deemed HAZMAT by the science party during shipping, but had to stored on board as HAZMAT.
2. The informal walk thrus and meetings completed during the on-load period were critical and should be repeated in the future.
3. Science parties should be encouraged to inform shipping agents of the ship's work hours so that work hours are not wasted waiting for gear to arrive. Along these same lines, better coordination between HEALY and the ISC warehouse will prevent HEALY from having to struggle needlessly for forklifts, a rather simple component of an on-load that, when HEALY tried to procure one, proved very tiring. HEALY needs to ensure forklifts are signed out ahead of time and at the same time, ISC warehouse needs to be flexible and tolerant as shipments arrived late in the work day thus necessitating the use of a forklift after work hours.
4. Every MST does have and should continue to have ownership of some piece of science gear from operation to troubleshooting skills. SDN administration has historically been an MST job and likewise with SeaBeam operation, albeit with trusty network support from ESU. When scientists and techs arrive onboard they will hopefully continue to be greeted by a team of MSTs who have a strong working knowledge of all of HEALY's systems.
5. When horizontal propagation was employed by removing the hydrophone from the HEALY, placed onboard the RHIB, and distanced approximately 100m, testing was successful. Weather permitted deployment of the RHIB and this

horizontal method. In the event weather prohibits this approach and vertical propagation is the only permissible method, a lengthened hydrophone cable is recommended. Also, HEALY equipment operating at 3.5kHz and 12kHz was and should be secured during the testing.

6. For further information regarding mooring illustrations, placement positions, and deployment method, refer to the Research Cruise Report: Mission HLY031 submitted by Dr. Kelly Falkner.
7. The more training MSTs receive on SeaBeam, the better
8. The chief scientist said it would be advantageous to have the CTD deck unit closer to the winch operator to prevent having to shout across the aft conning station. She also recommended having a CCTV at the deck unit for the science driver.
9. A faster fantail capstan.
10. Administrators, the NSF liaison, and other key players agree upon, at a minimum, guiding principles to drive support expectations during science missions. Ideally, these should address expected service levels for different types of system outages (with defined severity levels, response times, and resolution times), and data storage and archival requirements. The requirements should be detailed enough such that the ESU and SDN administrators can then create an appropriate design document for the SDN. This design document would then be used to determine work efforts required on the HEALY while she is in dry dock to get the SDN to full operational capability.
11. SDN users should be required to attend SDN introductory training within the first full day aboard the ship, and should sign a document indicating they understand safe computing practices in the SDN environment. No user should be allowed to log in to SDN workstations or connect personal computers to the SDN until this training requirement is met.

**G. Table of Over-the –Side Science Evolutions during AEWs 03**

	CTD	MOORING	CORING	VPR	NET TOWS	XBT	XCTD	TOTAL
FALKNER	83	23*	6	0	0	0	0	112
NW PASSAGE	0	0	0	0	0	0	24	24
NOAA	2	0	1	0	0	14	12	29
SBI	321	28	0	34	11	63	0	457
TOTAL	406	51	7	34	11	77	36	622

\* Includes 5 pressure sensor moorings deployed by divers.

## **CHAPTER V – ENGINEERING**

### **1. Summary**

#### **A. Pre-Deployment Preparations**

1. Pre-Deployment efforts were very rushed. The Engineering Department only had 10 weeks between return to home port from DF 2003 and departure for AEWS 2003. To get a running start on inport work efforts NESU Seattle sent the majority of the HEALY MAT MKs to meet the ship in Hobart, Tasmania. This 3 week period allowed HEALY to commence a lengthy Main Diesel Engine Worklist under the supervision of a Wartsila Tech rep.
2. Alstom and Cadick Corp completed a compressed groom of the Integrated Propulsion Plant. This included open, inspect, and clean PMS items on the High Voltage and Low Voltage Buses, and inspection of the Main Generators, Main Motors and associated bearings, and inspections of the Cyclo Drive Cabinets, and MPCMS Remote Terminal Units (RTUs). Shortly before getting underway a complete plant set of lite-offs was completed. During these lite-offs David Allie of Anna Corp completed AVR programming, adjustments, and testing. Also, we discovered that the cyclo drives were not functioning properly, and as a result requested tech rep assist (via a CASREP) from Alstom to complete post groom repairs.
3. HEALY completed a \$130K mini-dockside contract. This contract was a scaled down version of the dockside that was planned for Jan-Feb '03 but cancelled due to Deep Freeze tasking. This contract encompassed modifying a test patch of deck sockets on the aft working deck, ventilation cleaning, replacing steam and boiler feed valves, and minor voyage repairs including the replacement of 7 ruptured steam coils in the HVAC system.
4. Belzona completed temp ADG cooling water piping repairs under a CASREP.
5. A complete level 1 overhaul of all weight handling gear was completed.
6. Outstanding CASREPs prior to departure:
  - a) 01038: Steam Heater Coils – HEALY departed with seven failed steam coils. These steam coils are scheduled to be repaired during dry dock (item D-23) at the completion of AEWS '03. During the course of the deployment, three additional steam coils failed, and were added to the dry dock specification.
  - b) 02014: Bridge UPS – During the in-port period, eight new bridge UPSs were installed. The UPS system was waiting for an operational test that could not be held until HEALY was underway. Once underway, an operational test was held. Testing revealed that several ground faults still existed in the system. Ship's force with the help of ESU found a loading

- balance problem that is causing the ground faults. New power supply cables were ordered and new cable will be routed during the inport.
- c) 02026: Aft Science Conn VMS Computer – Aft Science Conn VMS Computer locks up when it tries to load VMS application. Troubleshooting with Sperry representatives by phone revealed the problem to be hardware related. Sperry shipped a new computer that was received in Curacao. Sperry techs onboard for a wiring validation effort of the IBS system installed new computer. All operational tests were satisfactory.
  - d) 02028: Bow Thruster - The bow thruster system is scheduled for overhaul during HEALY dry dock 2004 under item D-40.
  - e) 02031: Port Propeller Hub Cone - repairs are scheduled for the Nov-Feb dry dock availability.
  - f) 02038: Starboard Anchor Windlass. - Repairs were completed during inport period. HEALY departed homeport without a full operational test. Operational test was conducted off the coast of Panama while waiting to transit the Panama Canal. CASREP was cleared shortly there after.
  - g) 02040: Science Seawater. System modification is scheduled for dry dock 2004. CASCOR pends underway trials in ice covered waters during 2004 summer deployment.
  - h) 02042: Bow Thruster Port Moment Arm. - The bow thruster system will be completely overhauled during Nov-Feb dry dock availability. Operational test will then be conducted during HEALY's shakedown cruise in March of 2004.
  - i) 02052: Minerva Fire Protection System. - Ship's force found two exterior junction boxes (that connect fire alarm system to science vans) with major corrosion. Ship's force submitted a CMA to have repairs completed. NESU is obtaining parts for junction boxes, PC circuit boards, and brackets. NESU will install new parts during next in-port period at the conclusion of AEWS '03. Installation of new junction boxes requires welding, cutting, and wire relocation.
  - j) 03002: AFFF Limitorque Valve. - HEALY departed homeport waiting on arrival of part. At the conclusion of the deployment, the valve had still not been received. CASREP has been open for 10 months.
  - k) 03005: MPCMS. - During the IPP groom, Alstom technical representatives noticed network communications were extremely slow between ECC1 and ECC2 to CTES. The representatives cleaned up old files to free up resources. However, communications remained extremely slow. Ship's force continued working with Alstom to determine cause throughout the deployment. After departing homeport, Alstom continued working on problem via CTES. After Alstom instructed HEALY to reboot system, ECC1 and ECC2 began transferring MPCMS alarms to CTES server correctly.
  - l) 03008: Port Main Motor. - Temporary repairs were made to the main motor terminal lug which required replacement. The terminal lug will not

be replaced until Engineering Change Proposal is drafted and approved by Alstom.

- m) 03012: Doppler Speed Log. - Parts were received during the in-port period. All pier side tests are satisfactory. Ship's force conducted underway test and performed transducer electrical alignment after HEALY departed homeport. All underway tests were satisfactory.
- n) 03013: Number 2 Main Sea Water Pump. - Pump repairs were completed under initial CASREP shortly before departing homeport. However, the pump experienced a lower seal failure two weeks into the deployment. The pump was rebuilt underway by TAD HEALY MAT MKs.
- o) 03014: Number 7 Central Fresh Water Pump. - Ship departed Seattle waiting for parts to overhaul the pump. The parts were not received until HEALY's port call in Curacao. After departing Curacao, the pump was overhauled.
- p) 03018: Number 1 Central Fresh Water Pump. - Ship departed Seattle waiting for parts to overhaul the pump. The parts were not received until HEALY's port call in Curacao. Vibration reports indicated the pump was failing, but it was decided to not overhaul the pump until it failed. Upon the conclusion of AEWS '03, the pump had not failed even though it was used continuously for the duration of the deployment.
- q) 03019: Number 3 Central Fresh Water Pump. - Ship departed Seattle waiting for parts to overhaul the pump. The parts were not received until HEALY's port call in Curacao. Vibration reports indicated the pump was failing, but it was decided to not overhaul the pump until it failed. Upon the conclusion of AEWS '03, the pump had not failed even though it was used continuously for the duration of the deployment.
- r) 03020: Number 5 Central Fresh Water Pump. - Ship departed Seattle waiting for parts to overhaul the pump. The parts were not received until HEALY's port call in Curacao. Vibration reports indicated the pump was failing, but it was decided to not overhaul the pump until it failed. Upon the conclusion of AEWS '03, the pump had not failed even though it was used continuously for the duration of the deployment.
- s) 03021: Number 1 Boiler. - Ruptured boiler tube was repair during the in-port period. Hydrostatic test was satisfactory. However, an operational test was held up until feed water valve repairs were completed under the mini dockside. A full operational test was completed after departure. The operational test was satisfactory and the CASREP was cleared.
- t) 03024: Gray Water Pump. - The gray water pump would trip offline after only running for approximately ten minutes. The motor would go into an overload condition due to the pump being clogged with sediment and lack of head pressure. Ship departed on AEWS '03 and returned from AEWS '03 awaiting delivery of a replacement pump.
- u) 03027: Science Reefer. - During a test run of number 1 science reefer prior to deployment, ship's force noticed an unusually high vibration. Investigation revealed four pieces of metal in the piston assembly that caused damage to the discharge valve cage assembly, piston, and cylinder

- sleeve. In addition, the compressor flywheel had stress cracks throughout. During removal, the flywheel cracked into numerous pieces. Received all parts; however, the flywheel was the incorrect part of the reefer. Ship's force continues to work with manufacturer to obtain correct flywheel.
- v) 03029: Ballast Tank Valve. - The three way motor operated valve for 3-E-0-W ballast tank leaks by excessively. NESU Seattle removed the valve and shipped it to a local contractor for overhaul. Contractor reported that the ball was pitted beyond repair. Lead-time to procure new valve was six to eight weeks. The original valve was installed. During the Puerto Vallarta, Mexico port call, it was discovered that the valve was installed backwards. To prevent water from leaking into the tank, a flange was installed on the fill side to prevent water from entering the 3-E-0-W tank. Repairs to the valve will be completed during HEALY dry-dock 2004.
  - w) 03030: Stern Tube Strainer. - During preparations for the deployment, ship's force found the starboard stern tube main seawater strainer internal surface severely eroded causing the housing to leak. Strainer was received and installed prior to departure. Underway system test was conducted after departure and was satisfactory.
  - x) 03031: Auxiliary Diesel Generator Salt Water (ADGSW) piping: - A single leak was found in the six inch return piping running through the port MDE intake space. Later on, an additional five more leaks were discovered in the same space. Two of the leaks were discovered in the same piping run and two were discovered in the supply piping. One additional leak was discovered in the auxiliary sea water line for the number 3 start air compressor. During repairs of the system, severe pitting was found throughout the piping. Inspection revealed that the piping was made of 304-L stainless steel. Contractor was unable to complete weld repairs due to dissimilar metals and lack of time. Repairs were completed using several belzona patches before departing on AEWS 2003. Operational test was completed during Puerto Vallarta, Mexico port call with no signs of any leakage. A CSMP was developed at that time to have entire ADG salt water piping system replaced during the next in-port period.
  - y) 03032: VAS Alarms: - While performing PMS on the main diesel engine sensors for the vital alarms panel, ship's force found three inoperable jacket water high temperature switches and one inoperable jacket water high temperature switch. Received switches during Nome, Alaska logistics stop in October. Ship's force installed and calibrated all four switches and cleared CASREP.
  - z) 03033: ADG Circuit Breaker. - The ADG circuit breaker (CB 101) charging motor failed due to overheating. The overheat resulted when a cam mechanism moved out of position permitting the motor to remain energized after the circuit breaker was charged. Parts were received and installed after departure from Seattle. During hove-to to underway sequence when getting underway from Puerto Vallarta, Mexico, ADG circuit breaker tripped and ship lost electrical power. EOW tried to close

circuit breaker from MPCMS, and an EM attempted to close locally on SA Board. All attempts to close breaker failed. While troubleshooting, the EM's found that the linkage internal to the breaker was binding and was not letting the breaker open or close, preventing the breaker from being recharged electrically and manually. Received new circuit breaker in Curacao. Ship's force installed new breaker after departing Curacao, and the CASREP was cleared

- aa) 03034: Seabeam 2100. - L3 Communications identified seventeen failed hydrophones and one projector. Even though this degrades the accuracy of Seabeam, Seabeam was still able to provide a 50° swath angle which meets Seabeam specifications. The hydrophones and projectors will be renewed during dry-dock under item D-19.
- bb) 03035: Number 1 Ship's Service Air Compressor. - The back pressure regulating valve failed and was letting air by. At time of departure, ship was waiting on arrival of part. Valve was received during Puerto Vallarta, Mexico port call. Part installed by ship's force and operational test was satisfactory.
- cc) 03036: Cyclo Drives. - Cycloconverters continually tripped off-line while attempting to rock the shafts for dockside tests. Indications were similar to reoccurring slow speed trips. With the assistance of Alstom, troubleshooting revealed loose wires, gating cards not seated, and bad crimps. After repairs were made, the ship was able to rock the shafts. This major casualty was cleared upon arrival in Curacao.

## **B. Seattle to St. John's**

- 1. 03037: Starboard Cyclo Drive. - Numerous alarms and trips occurred on 1CC1 and 1CC2 cyclo drives. Some of the problems experienced were: phase-back trips, over-current trips, and Opto-Link alarms. 1CC1 would not operate on six pulse with 1CC2 secured. This limited troubleshooting of 1CC2 since it could not be secured without securing the entire shaft. On 1CC1, the gate distribution card was replaced. While replacing card, two optic cables were found to be crossed. Several connections were not fully seated and had to be reseated. Also, the cable between the Sigma controller and pulse distribution board in the drive was in contact with high potential wiring (high potential wiring was installed as part of a power quality study) at gate card. The cable was secured away from the gate card. Once the repairs were made, both drives began to work properly.
- 2. 03038: Main Diesel Engine Governors. - The main diesel generators (MDG) were having problems paralleling, especially when the number 3 MDG was on-load to the high voltage bus. Minor alarms occurred on all MDE governors every time an MDE was started. Number 2 MDE had a constant minor alarm although speed pick up was received at MPCMS. Two MDEs had minor alarms with the engines secured. MLCPac arranged for a technical representative to ride with the ship from Curacao to St. John's. While aboard,

the technical representative found all four governor oil filters contaminated. All filters were cleaned. Also, it was determined that the fuel rack positions were out of calibration. Each fuel rack was aligned to position 2 (rated speed with no load). Number 2 MDE and number 4 MDE speed sensor were not transmitting a signal to the governor. In addition to these problems, number 1 MDE had problems paralleling to number 3 MDE when number 3 MDE was on the high voltage bus and vice-versa. The online MDE would drop its load to zero while the other on-line MDE would go into a KW overload condition until the on-coming MDE closed to the high voltage bus. Inspection revealed that two wires were reversed. Once the wiring was connected properly, no more problems were experienced. Once tune-ups were completed, load share between all engines improved and minor governor alarms were no longer received at start.

3. 03039: Number 1 MDE Amot Valve. - The number 1 MDE Amot valve failed to actuate through a full range of motion causing number 1 MDE to overheat. Valve was operated manually to maintain correct engine temperature until a new valve could be procured and installed. The new Amot valve was received during HEALY's St. John's port call and installed. Op test was SAT.
4. 03040: 2CC2 Cyclo Drive. - The 2CC2 cyclo drive would trip within five minutes of coming ahead on the port shaft. Trip indications were an under current alarm, then an over current trip alarm was noted on MPCMS, and on the high voltage gating power supply unit (GPSU). The GPSU unit was changed, but the drive still continued to trip off-line. Additional investigation with the assistance of an onboard Alstom technical representative showed a noise induced glitch that caused the GPSU to trip. It was determined that a high voltage cable that was installed by Northrop Grumman power study group was found to be strapped to a wire way that contained low voltage wires from the GPSU outward to other parts of the cyclo. This caused noise in the GPSU cables. Once the high voltage cable was relocated away from the low voltage wire, the drive ceased to trip off-line.
5. 03041: Auxiliary Diesel Generator. At approximately 0230 on the last day of HEALY's port call in Curacao, the ship lost power. Personnel inspecting the auxiliary diesel generator (ADG) discovered shrapnel around the exciter section of the ADG and a hole in the exciter cover between the 4 and 8 o'clock positions. Further investigation revealed that the exciter permanent magnets came loose in the housing at rated speed and were ejected from the housing causing damage to the exciter, exciter armature, exciter windings, and PMG. The exciter windings were damage beyond repair. All parts with the exception of the fan unit and cover arrived at next port call along with a technical representative from National Oil Well, the ADG OEM. With the technical representative's assistance, repairs were completed in 3 days and the ship was able to use ADG for electrical power for the remainder of the St.

Johns port call. The fan unit and cover arrived in Pt. Barrow and were installed, completing ADG repairs and clearing the CASREP.

6. 03042: Number 1 MSW Pump. The lower mechanical seal cracked and failed on number 1 main seawater (MSW) pump. Upon disassembly, it was discovered that previous brazing and welding work had been completed on the impeller; however, cavitations had eroded the previous repairs causing the pump to be unbalanced. Temporary repairs were made using a belzona patch to prevent water from leaking out the lower mechanical seal. Most parts required to overhaul pump have been received. Still waiting on impeller and shaft to overhaul pump.
7. 03043: Aft Gray Water Tank Level Indicator. The aft gray water tank level indicator (TLI) was not being read by MPCMS, or the display monitoring unit (DMU). The DMU was changed, but began to overheat after installation. It was determined that an extra 24 volts went to the DMU from remote terminal unit (RTU) 9A. After removing the power supply unit and testing it, it was determined that the unit does not operate to proper specifications. Ship received and installed a new power supply unit which allows the tank level to be displayed locally. Cause of the extra 24 volts is unknown. Until the cause is determined, the RTU cannot be hooked up to the TLI which prevents the level from being displayed on MPCMS. Casualty will be addressed during the IPP Groom.
8. 03044: Starboard RHIB Davit. The starboard RHIB davit lowering brake mechanism failed. Upon disassembly, the thrust bearings were found destroyed beyond repair, and the bearing support housing unit and shaft were deeply scoured. Also, the gear case oil seal had overheated and the acme thread on the threaded sleeve was damage beyond repair. Parts were received during Pt. Barrow logistics stop and installed clearing the CASREP.

### **C. Falkner Mission (St. Johns to Thule)**

1. While attempting to increase the Sea Bay temperature a watch stander closed off all overboard discharge valves, and limited the amount of MSW going overboard so greatly that all secondary cooling loops quickly overheated. Both PORT side MDE's secured on high Lube Oil temps. Soon there after number 1 and then number 3 MDE were secured. During the casualty response action, the ADG was started and electrical power was not lost. Number 1 Fire Pump supplied cooling water to the ADG and was discharged over the side. This allowed to ship's force time to properly diagnose the casualty. Sea Bay temp is normally regulated using MSW valves V102, and V104 on the PORT side and V107 and V109 on the STBD side. Normally the valves are adjusted in 5% to 10% increments on MPCMS. The watch stander used a 100% open command. The MPCMS values for the valves were not properly calibrated to the actual valve position, and are off by as much as

20%. This may have contributed to the cascading failure. This delayed HEALY's transit to the first science mission area by 2 hours, but no equipment sustained any damage due to the overheat conditions.

2. 03045: Number 2 Boiler Cutoff Switch. - The number 2 boiler cutoff switch had been operating erratically. Any vibration on the steam pipe caused the cutoff switch to open. The required part was received during Thule, Greenland, port call and installed.
3. 03046: Number 2 SSMG. - Number 2 SSMG intermittently failed to start. Sometimes, the motor management relay indicated an unbalanced trip, or the contactor opened with no indication of a fault. When the motor management relay tripped, it indicated a 20% - 30% unbalance. While troubleshooting, ship's force observed electrical arcing between the high voltage rotor and the stator causing the contactor to open. MLCPac made arrangements to have a Kato technical representative to inspect and overhaul number 2 SSMG upon return to homeport. Also the number 1 SSMG set will be inspected for a potentially similar condition and possible failure.
4. 03047: Ashtech GLONASS GPS Unit. Initially the Ashtech GLONASS GPS unit appeared to fail. Unit did not communicate with any external devices, such as IBS. It did appear to be receiving satellite information, but it did not output NEMA information. Ship's force was unable to communicate with receiver utilizing test equipment. Further investigation revealed that the unit had defaulted back to a factory preset program. In the default state, the receiver did not output any serial data since the ports had to be configured correctly. Ship's force suspects the battery in the unit may be getting weak resulting in the unit defaulting to factory preset program. HEALY received a spare GLONASS GPS unit in case current unit fails again.
5. 03048: Bow Thruster. Shortly after the bow thruster was energized for science operations, it emitted a loud bang and immediately secured. Investigation revealed that a 6,600 V fuse on the 1P high voltage switchboard had blown. Cause of blown fuse unknown. Replacement fuses were received at next port call and installed.

#### **D. Northwest Passage Transit (Thule to Barrow)**

1. 03049: Aft Cathodic Protection Unit. The aft impressed current cathodic protection system (ICCP) was found not reading and switched to manual. Ship's force tried to reset unit; however, unit gave an E-3 error code and went to manual after it completed its calibration and test cycle. Troubleshooting narrowed the problem down to 2 circuit cards. Repair of unit is being delayed because one of the circuit cards is no longer available from the manufacturer. Ship is waiting on finding a suitable replacement. An OEM tech rep is

scheduled to inspect the unit just prior to and after HEALY is placed in dry dock. Tech will return after HEALY is refloated to calibrate the system.

2. 03050: Seabird SBE-9+. An apparent short in the underwater sea cable termination caused both the 1 amp power fuse and the 0.5 amp sea cable fuse located in the deck unit to blow. Also, the power cable used to connect the sea cable to the CTD was shorted. The sea cable was re-terminated, and a new power cable was installed. A successful cast was conducted, then both fuses blew again on the next cast. Investigation determined that a bulkhead connector for one of the temperature sensors had leaked and shorted across the pins. This short caused the power cable to burn up. After numerous troubleshooting attempts, the unit was shipped to the OEM for repair. OEM repaired and calibrated unit. OEM report states that there was corrosion damage. The sea cable connector was shorted between two pins, and the main DC/DC power supply failed.
3. 03051: Number 1 Evaporator Pressure Reducing Valve. The number 1 evaporator pressure reducing valve operated erratically. The valve failed to maintain a reduced pressure of 15 PSI. Ship is awaiting a replacement valve.
4. 03052: Port Anchor. On August 17<sup>th</sup>, during HEALY's port call in Thule, Greenland, the weather unexpectedly turned and the ship experienced off-shore wind gusts of up to 86 knots, and sustained wind speeds above 50 knots. As a result, the anchor dragged approximately 500 yards before the EOW could get propulsion on-line from hove-to mode. Upon weighing anchor on August 19<sup>th</sup>, it was discovered that one of the two flukes had broken off. MLC PAC has acquired a new anchor and will have it delivered to HEALY during the upcoming dry dock.



5. 03053: Ship's Whistle. Ship's whistle failed to operate via electrical control box. Investigation determined that the navigation whistle timer for the ship's whistle was inoperative. As a result, the watch stander had to manually sound the ship's whistle. A new timer was delivered at HEALY's next port call and installed.
6. 03054: Number 2 Air Dehydrator. The number 2 air dehydrator salt water condenser was corroded. The condenser was on the refrigerant side of the unit and failed to cool the refrigerant adequately. The air dehydrator was non-operational until the condenser could be replaced. It is cheaper to replace the entire dehydrator and return the old unit instead of replacing the condenser individually. Unit was delivered to Seattle prior to HEALY's RTHP, but it was impractical to ship the new dehydrator to Alaska and install while underway. Repairs are scheduled for the inport.
7. 03055: Condensate Cooler. Boiler reserve feed water system was consuming water at an abnormally high rate. Ship's force traced the source of water loss to the condensate cooler. The system is being manually regulated, and the ship is still able to maintain demand for distilled water with only one evaporator online.

## **E. SBI Mission**

1. 03056: Starboard Science Staging Area Door. - At approximately 0030 on September 11<sup>th</sup>, the starboard staging area rollaway door was imploded by a large wave. The bottom three feet of the door was knocked off the forward track, and the seams between two slats split almost the entire width of the door. Damage slats were cut away and replaced by plywood. Door was still operational. Door will be fixed during HEALY's next in-port period.
2. 03057: Aft Warping Capstan. The aft warping capstan only worked in slow speed mode. Capstan remained at low speed when high speed mode was selected. The cause of the problem was unknown. The capstan is scheduled for overhaul during the upcoming dry dock availability (work item D-44).
3. 03058: Voyage Management System. HEALY's Voyage Management System (VMS) intermittently locked up. System locked up due to time errors and memory faults. System lock was preceded by a time and date jump. Time and date jumps adversely effected SEABEAM 2112 multi-beam operations. VMS is also used by HEALY as the ship's primary navigation and charting system, and a position and heading reference for the multi-beam sonar.
4. 03059: Starboard Hangar Camera. Starboard flight deck closed circuit TV camera failed due to cable connector separating from the camera housing. HEALY's shore side SK's procured parts and arranged to have them delivered at HEALY's next Alaskan logistics stop.

## **F. Nome to Seattle**

1. 03060: Port Fuel Service Tank. During transit to Juneau, Alaska coalescer filter elements for the port side engines had to be replaced with increased frequency. At one point the filters were being changed every other day. Fuel samples from the port service tank showed water contamination. The fuel was continuously purified during the Juneau portcall, but sample appearance did not improve. Continued to purify and monitor the port service tank until arrival in Seattle. Ship's force did not find any evidence of water in any of the fuel oil storage tanks, and the starboard service tank was never contaminated even though both service tanks were filled from common storage tanks. Tank will be opened for inspection during the dry dock.
2. 03061: Starboard Anchor Windlass. Shortly after setting special sea detail for mooring in Juneau, AK, ECC received a report of a hydraulic oil leak on the starboard anchor windlass. Engineering personnel discovered that a gasket had failed at the port block housing (where the supply and return lines from the HPU are attached to the windlass hydraulic motor) and had sprayed approximately 40 gallons of oil into the compartment. Approximately 5

gallons of the oil flowed into a deck drain and went overboard creating a sheen. A POLREP was issued, and the incident was reported to the NRC.

## **2. Main Propulsion**

### **A. Pre-Deployment Preparations & Seattle to St. Johns**

1. Due to the short inport period Pre-deployment preps were kept to the bare minimum. Also affecting preparations during this time was the transfer out of leading Main Prop personnel. Both the MKC and MPA transferred out during this time frame and the division was already short an MK1. The MPA and MK1 reported just prior to sailing and the MKC arrived in Curacao. Minor preps consisted of completion of PMS, bilge cleaning, and major spend down of funds on spare parts. Major work items include the below items:
  - a. New feed water valves were installed in both boiler rooms allowing system to be isolated. Also completed boiler tube repairs on the #1 boiler. This is a repeat casualty and growing concern. Two tubes were repaired prior to DF-03 mission and an additional tube required repair on return from DF-03. It was discovered that the computer for the feed water treatment system was not working properly, and believed this to be causing the early tube failures. A new computer was installed and the system groomed by a Techrep prior to departure. The new chemical feed monitoring system worked well for the duration of the mission. The #2 boiler indicated signs of a leak (increase in water usage in RFWT), but the cause was traced to a failed condensate cooler.
  - b. MDE fuel pump replacement was completed as a follow up from work begun during DF-03. Nearly all fuel pump barrels were found to be cracked, causing uneven firing pressures, and varying cylinder temps. The fuel pumps on MDEs number 1, 3, and 4, were removed, rebuilt, and installed by local Wartsila personnel. Other engine work included a change out of a cylinder head on number 2 MDE, and turbo cartridge change out on the number 3 MDE. Engines were test run at the dock and found to be in parameters. Five spare fuel pumps were sent for overhaul and were returned in St. Johns. Engines have been operating satisfactorily, however during first 3 weeks of deployment all the engines experienced numerous fuel leaks and oil leaks. Leaks were caused by loose bolts & fittings, and improperly installed washers and seals. This was attribute to Wartsila mechanics rushing to meet sail away date.
2. Oil Line Repairs: A week prior to entering St. Johns, a gauge line stand-off pipe welded on the oil pump suction piping cracked on engines 1 and 3. This required draining of over 2,000 gallons from each sump so piping could be removed and transported to the weld shop for repairs. The sumps were filled and test of repairs was satisfactory. An additional 1800 gallons was lost due to improper valve alignment. These large unplanned expenditures of lube oil

have caused some concern regarding remaining lube oils stores. Currently there is only enough for 1 complete oil change, and filling of ½ another sump. Supply Dept. arranged delivery of L/O in Barrow, AK, which was not easy, as the cost reflected.

3. Cleaning of Heat Exchangers: The following plate type coolers, MSW to CFW, CFW to J/W, and CFW to L/O were disassembled and cleaned. No major debris was found but the cleaning proved to be extremely valuable. No cooling problems were experienced when transiting through the tropical climates with sea bay temps often in the upper 80 to 90 degree temperature range.
4. Pump Overhauls: #2 MSW pump was rebuilt during the inport period, but failed just prior to departure. Parts were received, and the pump rebuilt by NESU personnel while enroute to Mexico. Pump has been operating satisfactorily since. During the inport period an overhaul of #7 CFW was started but could not be completed due to lack of parts. Based on vibration analysis from VSC, all CFW pumps were scheduled for overhaul, however parts were not received prior to departure. Healy sailed with only 3 operating CFW pumps.
5. Prior to departure from Seattle it was discovered that the ADGSW piping located in the MDE intake space had deteriorated and was leaking. Local contractor attempted to crop out and weld in new piping but found the piping was stainless steel and extremely difficult to weld. Repairs were less than successful and some of the repairs included a patch with Belzona materials. The ADGSW piping is scheduled for replacement on return to homeport (RTHP).
6. Bow Thruster port vane shaft seal began leaking (steady stream) while enroute to Mexico. Attempts were made to reduce the flow using oakum and wax but were unsuccessful. Seal cannot be repaired while waterborne and will be replaced during dry dock availability on RTHP. Flooding kept in check by pumping bilge once a day.
7. Amot Valve #1 MDE: Experienced high J/W temp on #1 MDE. Investigation found the Amot temperature control valve was binding up and sticking. Found control box to be operating correctly. Valve was CASREP'D and awaiting delivery of Parts. Valve is being manually adjusted when needed.
8. Lube Oil line cracks on number 1 & 3 Mains Diesel Engines: A week prior to entering St. Johns, a gauge line stand-off pipe welded on the oil pump suction piping cracked on engines 1 and 3. The DC's completed repairs to the lube oil lines.

## **B. Falkner Mission (St. Johns to Thule)**

1. During first extended science station operation began experiencing overheating of the Bow Thruster HPU. Believe sump tank was undersized and not adequately cooling the oil. Oil routinely exceeds 160 deg F. HEALY will submit CSMP to install SW cooler and possibly enlarge the sump capacity.
2. July 29, 2003 Lost Bow Thruster during morning coring station. Unit was energized and as watch stander was leaving the space heard a loud bang. Investigation found no abnormalities in the motor or gearbox. However a 6600 VAC fuse was found blown in the BT main breaker. Bow Thruster was CASREP'D as no replacement fuse was found on board. Cause of blown fuse still to be determined.
3. #7 CFW pump parts were received in St. Johns and the pump overhaul was completed shortly after departing. Parts for the other CFW pumps had yet to be received.
4. #1 MDE discovered abnormal aeration in governor oil sight glass. Drained oil, cleaned filter, and refilled governor. Air bubbles were no longer present in sight glass, however #1 MDE started to hunt when it was lit-off for test. Contacted Techrep via telephone who stated governor may need up to 6 hours to eliminate air in the system. Ran MDE for 5 hours off line/no load and then placed on the HV Bus. MDE had slight hunt at no load but hunt went away when placed under load.
5. #1 MDE Amot Valve: On 12 Aug 03 a new valve was received in St John's (special supply flight). S/F installed new valve and test ran #1 MDE. Test results satisfactory. Valve was operating correctly.

## **C. Northwest Passage Transit and NOAA Mapping Mission**

Main Propulsion machinery continued to operate well, no incidents of note.

## **E. Barrow to Seattle**

1. Ship's Force replaced o-rings on the discharge piston for the Boll and Kirsch oil candles for number 3 MDE. Test ran MDE with satisfactory results. System operated properly for the remainder of the mission.
2. Ship's Force was running the ADG for weekly PMS and noticed that it would not shut down on the emergency fuel rack trip. Removed inspection cover and found that the roll pin for the trip mechanism was sheered. Removed cover, replaced roll pin, and installed new gaskets. Test ran with satisfactory results.

3. Port moment arm on Bow Thruster system failed again at key way. A spare moment arm was onboard and was installed. Op test was SAT. This is the third such failure to the Bow Thruster system. Intentions are to fabricate and install a moment arm with more metal around the key way. This type of moment arm was fabricated and installed while underway for the AES '01 mission. New arm with the reinforced keyway was fabricated onboard the German Icebreaker *POLAR STERN*.

### **3. Auxiliary**

#### **A. Pre-Deployment Preparations & Seattle to St. Johns**

1. Aux Division had no major change out of personnel during this short inport period. This allowed for the completion of numerous work items needed for AEWS 03. Minor work items included PMS, installation of storage cabinets, cleaning of heat exchangers for various systems, on load of parts and consumables, replacement of leaking gaskets, and improvements in shop material conditions; on-load of fuel, lube oil, and hydraulic oil. Personnel also attended MDE training (part of a cross training initiative), and completed certification of Spectro Analysis machine for shipboard testing of lube oil. Major items are listed below:
  - a) Cranes: All cranes underwent a Level 1 inspection, which was completed by local contractor and are operating correctly. Ships Force (SF) completed repairs of minor hydraulic leaks and saltwater cooling system leaks.
  - b) Starboard Anchor Windlass: Local contractor completed installation of new hydraulic unit and gearbox as part of CASREP repairs to the windlass. Windlass was tested when anchoring off Panama Canal. Test results satisfactory. All other deck gear operating satisfactorily.
  - c) HVAC: A commercial contractor replaced steam heater coils in Hangar and various other fan rooms as part of CASREP repairs. Due to time constraints not all CASREP'D coils were replaced. The 8 remaining coils are scheduled for repair on RTHP. Steam demand early in the mission was light, allowing Aux Division to put steam to the heating system slowly when transiting to colder climates. This was in an effort to reduce/prevent coil ruptures. Replaced the number 2 Science reefer compressor as part of CASREP repair. Had S/W coolers cleaned in place (water lanced tubes), and hired contractor to complete groom of the Climate Control Chambers. Experienced several minor steam leaks and AC cooling water leaks enroute to St. Johns. Leaks involved failed gaskets and seals, lose bolts or packing, and were repaired by S/F. Weather conditions were tropical for the

first month of the mission placing heavy demand on A/C systems. The A/C plant operated satisfactorily.

- d) **Steering System:** All sumps were drained, cleaned, and had new filters installed during the inport. On arrival in Curacao the “B” tanks were opened due to unusual noise from the pumps. Filters were found imploded and disintegrated. Sumps were drained and cleaned and new filters were installed. After consulting the system manufacturer, it was determined that the filters in use may not be the type best suited for our application. A new type of filter was ordered and was received during the Thule, Greenland port call.
- e) **Evaporators and Potable Water System:** S/F conducted acid cleaning of both evaporators, replaced faulty seal on the number 1 condensate pump, and repaired various water, steam, and brominator leaks. The pressure switch on the number 1 P/W pump also required adjusting to correct short cycling of the pump.
- f) **S/S Air Compressors:** Contractor water lanced the heat exchangers on all 3 compressors and a new “priority valve” was installed in AMR6. All systems operating correctly.
- g) **Small Boats:** Tune-ups were completed on both RHIB’s and HEALY 2 received a new foam filled type sponson. A new LCVP was received from NESU. S/F painted underwater body of hull and changed oil in the lower unit. All boats operated satisfactorily for the duration of the mission.

## **B. Falkner Mission (St. Johns to Thule)**

1. On 01 Aug 03 began experiencing flame failure problems with the incinerator. Problems started when incinerator was overloaded with plastic materials causing heavy smoke build up. Smoke leaked throughout ship in the immediate area to the point of needing to be de-smoked. Unit was shut down for cleaning and later returned to service. During the following week incinerator had to be secured several times to correct minor leaks and remove debris. Most burning problems attributed to overloading of burn materials, and the loading of improper materials, such as heavy plastics, metal, aerosol cans.
2. During dive ops in Discovery Bay the bow ramp winch on the LCVP was left engaged causing a “two-blocked” condition. Winch continued to pull on closed ramp until the winch motor and spool failed. Aux Division and the DC Shop fabricated a temporary manual winch until a spare was received during Thule logistics stop.
3. Renewed LCVP Port Engine Props due to props touching bottom.

4. On 11 Aug 03: Experienced a 4 hour delay of coring operations due to a blown o-ring seal on the Starboard 04 deck crane. Seal blew out during operations. Aux Division personnel replaced the o-ring with one from stock. The bulk of time was spent cleaning up approximately 40gallons of spilled hydraulic oil, and refilling HPU sump. System operating correctly.

### **C. Northwest Passage Transit (Thule to Barrow)**

1. On 26 Aug 03: SF installed new electric winch on LCVP bow ramp. Winch was tested and operated correctly. New winch was received in Thule, Greenland.
2. Spent numerous man-hours troubleshooting incinerator. Incinerator would not burn trash and was constantly smoking out the space. However it satisfactorily continued to burn sludge alone.
3. Onloaded 450,000 gallons of F/O and 5,000 gals of L/O at the Barrow I logistics stop.

### **D. NOAA Mapping Mission**

1. Upon setting anchor detail to get U/W from Barrow, AK refueling stop, STBD anchor windlass would not energize. After approx 30 in of electrical troubleshooting Auxiliary Division personnel decided to cross-connect the PORT HPU piping to STBD system utilizing the system placard. Efforts were successful after PORT windlass was fully isolated. Hydraulic COV on PORT windlass needed to be closed for STBD windlass to be fully operational. STBD anchor was housed at approx 0230. Recommend routine training on HPU cross connection procedures for just such a casualty. The following day EM personnel traced the electrical problem to an error in the PLC ladder logic. Using the PORT system as a guide they reprogrammed the system. Resulting operational test was sat.
2. At approximately 0030 the night before competing this mission the Starboard staging area roll-away door was imploded by a large wave. The bottom three feet of the door were knocked off the fwd track, and the seam between two slats split almost the entire width of the door. Damaged slats, the lowest 8 slats, were cut away and replaced by plywood. Door was operational for the entire Faulkner mission and will be repaired under CASREP.
3. Rebuilt the STBD Boat Davit Brake assembly and replaced. A no-load test was SAT. Placed HEALY 1 in the water and tested davit with HEALY 1, added 1100 pounds and weight tested for 10 mins. All tests SAT.

4. Attempted to run OWS and had no vacuum and high oil content. Opened up OWS and found 10 gallons of sludge in the bottom, and found coalescing plates covered in oil due to OWHT back flowing into OWS. Removed plate packs and cleaned. Replaced gaskets and plate packs. Upon starting after cleaning, OWS was operating normal except it was taking 20 mins in Auto mode to reprime itself. Found Seawater inlet Solenoid valve to be badly corroded and replaced. Test SAT.
5. Incinerator problems and troubleshooting continued.
6. Replaced Mechanical seal on the Harbor Pump. Upon installation of seal tubing to cyclone, assembly was damaged and needs to be replaced. Parts pending.
7. Replaced mechanical seal on number 2 Evap condensate pump.
8. Replaced mechanical seal on number 1 Evap Brine pump.
9. Readjusted HEALY 2 throttle cable.

#### **E. Barrow to Seattle**

1. Discovered low L/O pressure on number 1 A/C unit, number 1 compressor. Evacuated compressor, drained L/O and removed oil pump. Parts pending.
2. Replaced filter driers on number 3, 2 and 1 A/C compressors.
3. Suspected faulty TXV due to low discharge pressure on number 2 A/C, number 2 compressor, evacuated unit. Performed hot work to remove associated piping, TXV and dryer housing, and 1" 1/8 angel stop valve. Parts pending.
4. Performed L/O acid tests on all A/C compressors.
5. Aft Mooring Capstan would not operate in High-speed mode. Troubleshooting and tracing out the entire system to find source of casualty was unsuccessful. System operated in Low Speed mode only. System CASREP 03057.
6. Incinerator would not operate in sludge mode. Exhaust temps exceeded 700 deg C and actual temp over 1100 deg C. Aux Division tried to drain and dilute sludge tank with no results. Cleaning of primary burner and inspection of aux burner yielded no results. Scraped sludge deposits from exhaust stack. Cleaned soot trap in boiler room with no results. (These steps involved countless man-hours between the actual work performed and the starting and securing of the incinerator on each test run). Drained sludge tank, cleaned and

wiped it out and resealed tank. Removed sludge discharge piping, cleaned and snaked piping. Also removed sludge deposits from restricted orifice. A failed thermocouple was also found upon further inspection of main burn chamber, which we changed. Lit off incinerator with disappointing results. After several more hours of troubleshooting, a failed fuel discharge solenoid was found. The ash grate was replaced three times during this deployment. Exhausting man hours, lack of parts and tech support have been a constant problem. The Incinerator is unpredictable and cannot be counted on to operate on a daily basis. A crewmember was usually needed to constantly adjust fuel and air supply to maintain the operation of the Incinerator.

7. Transferred 40,000 gallons of JP-5 from 3-117-1-F, 3-117-2-F and 3-123-1-F, to F/O Storage tank 5-84-3-F in preparation for dry-docking and liquid load management.
8. Trouble shot Medical Storage Reefer unit.
9. Set up AOP for dewatering of Bow Thruster bilges.
10. Replaced bridge windshield wiper solenoid valve.
11. Removed ice light bracket from F/O fan space and assisted in remounting on Port side bulkhead.
12. Had DC's weld handles on drainage pocket covers.
13. Installed tabs on step in CO2 room.
14. Installed and set new relief valve on Aft Gen Service HPU.
15. Repaired binding fan on Modine heater in JP-5 pump Room.
16. Changed zincs on A/C units, SS reefers, and Science reefers.
17. Repaired leak on S/W return line of number 3 SS air compressor.
18. During Special Sea Detail into Juneau, AK watch stander found a major hydraulic oil leak on the STBD Anchor Windlass. Watch stander secured and closed all valves. Discovered Port Block housing gasket blown. System CASREP 03061, the last CASREP of the AEWS '03 mission.

#### **4. Electrical**

##### **A. Pre-Deployment Preparations & Seattle to St. Johns**

1. IPP Groom: In an extremely compressed 5 week schedule completed all standard annual and conditional preventive maintenance listed in the

Integrated Propulsion Plant (IPP) contract. All work was completed by IPP OEM, Alstom Power Systems and their electrical subcontractor Cadick Corp.

2. While performing PMS for the Vital Alarm system panel, EM division personnel discover 4 inoperable jacket water temperature switches. (CASREP 03032). Spares were unavailable for immediate replacement. NESU EM's ensured that all the working sensors were placed in the high-high circuit, thus, ensuring the emergency shutdown system was intact. Replacement sensors were ordered but not received before the ship sailed.
3. On 7 June, cycloconverters kept continually tripping offline while attempting to rock the shafts after completion of IPP Groom. 1CC1 Tripped on APSH fault and 2CC1 tripped on stator HZ fault. 2CC1 and 2CC2 tripped twice on an external over speed and twice on an unknown trip. Alstom reps were called in under CASREP 03036. Ship's force found junction box 99-5 had 2 loose encoder speed feedback wires on the port main motor and crimped the wires. Replaced the fiber optic cable between the pulse distribution board and gating card because the end had pulled out of the crimp. Found that the PLI on the pulse card was not seating correctly. Ship's force reseated the PLI back to the pulse distribution board. On 1CC2, loose strands of the multi-stranded wire were loose from the TB-7 on the gating card were resting across the 7B on the bridge 1 5B gating card. These loose strands were removed from bridge 1, gating card 5B. On the 1CC1, bridge 1 2A thyristor gating card fiber was not seated properly. Ship's force reseated the fiber. After completing repairs to all loose connections, HEALY was able to rock the shaft on 11 June without tripping any of the cycloconverters.
4. While transiting from Puerto Vallarta, Mexico to Curacao, Dutch Antilles, all four MDG's were having difficulty paralleling to the HV bus. MDG governor's alarm would occur every time the MDG started. The number 2 MDG has a constant minor alarm although the speed pick up is received at MPCMS. A governor control system (GCS) technical representative arrived in Curacao to help solve Healy's governor problem. The GCS tech representative cleaned all 4 MDG governor filters and actuators, and found contaminations in all 4 filters. GCS tech rep found all 4 MDG fuel racks were out of calibration. GCS tech rep recalibrated all 4 MDG's fuel racks. Ship force and tech rep found MDG speed sensor was not transmitting a signal to the governor. Replaced 721-governor control on #1 MDG (CASREP 03038).
5. On the last night in Curacao, HEALY lost ship's power. The initial inspection found that the ADG exciter permanent magnets came loose in the housing at rated speed and were ejected from the housing causing damage to the exciter, exciter armature, exciter windings, and PMG. The EM division

removed the armature and stator winding from the shaft to investigate for further damage. No damage on the shaft, keyway, or key was found.

6. In St. Johns, EM division removed the damaged PMG and exciter in preparation for the National Oilwell Tech rep to arrive with the new parts. Repairs to the ADG were completed in 3 days and test was satisfactory without the fan assembly. The fan and new cover assembly did not arrive in St. Johns. (CASREP 03041) Fan assembly arrived and was installed after the Barrow I Logistics stop.
7. The aft gray water TLI was not displaying locally, or on MPCMS. After further investigation, ship found a bad Display Monitoring Unit (DMU). Changed the DMU, and it started to overheat. Further investigation revealed that an extra 24 volts went to the DMU from RTU 9A, and the power supply was not working. (CASREP 03043)

#### **B. Falkner Mission (St. Johns to Thule)**

1. The Number 2 Ship's service motor generator (SSMG) failed to start locally or remotely. The problem was intermittent, and sometimes the motor management relay (MMR) indicated an unbalance trip, or the contact to the HV Bus just opened with no faults. A close inspection soon after returning to home port revealed that the starter bars experienced overheating from frequent start attempts in a short a short duration. Eng Dept procedures will be revised to ensure that an attempted start of the SSMGs is not initiated more than twice in a six hour period. (CASREP 03046)
2. EM personnel assisted Main Prop with troubleshooting flame failures on the number 2 boiler. It was determined that vibration on the steam pipe would cause the cutout switch to open. (CASREP 03045).
3. The DMU for the AFT Gray water TLI arrived in St. Johns, however the power supply unit was missing in the shipment. Replaced the DMU and used a power supply from a TLI in AMR 1 to test the unit. The aft gray water TLI was reading correctly locally in the space. Still trying to determine source of the extra 24 volts from the RTU before connecting DMU to the RTU so that it can be remotely displayed on MPCMS.
4. Replaced bad proximity switches on the MDG's.
5. The Aft Impressed Current Cathodic protection System (ICCP) was not reading properly and was switching to manual. Reset the unit with the reset switch and the ICCP unit went through its calibration and test cycle. After the test cycle, the ICCP gave an E-3 error code and went back to manual. Continued troubleshooting indicated 2 faulty circuit cards.

6. At Anchor Detail found that STBD Windlass was not working. EM personnel found that a breaker on MCC 1 in A/C Flats was tripped. Reset breaker and tested; breaker tripped again. Upon further troubleshooting discovered two fuses blown in STBD Anchor windless.

### **C. Northwest Passage Transit and NOAA Mapping Mission (Thule to Barrow)**

1. The ship's whistle would not operate via the electronic control box. Ship's force must manually operate the pull handle to sound the whistle. After further investigation determined that the navigational timer card was bad. (CASREP 03053).

### **D. Barrow to Seattle**

1. Ship's force received the new Navigational Timer card. Replaced the card and able to use the electronic control box to operate the whistle. Ship's whistle again failed several days later. Ship's Force found the whistles air valve had frozen closed. Further inspection found the whistle heater failed. Replaced heater and placed whistle back in operation.
2. The Oceanographic (OC) Winch number 1 had an Emergency stop indication on the Sigma controller. EMs checked the emergency stop circuit in the controller and found that it was not getting power. This showed that the problem had to be somewhere in the emergency stops. Found that the emergency stops were all good. Utilizing wiring diagrams found that all the emergency stops went through inhibit panel. Checked all emergency stops there and found that the one on the remote VDT console in Aft Con was not getting power through it. Had to hand over hand the cable from the inhibit panel to the VDT console. Once that was done and tested the correct wire to ground, found the circuit to be open. There were extra wires on the cable so EMs replaced the bad one with one of those and wired it back up. Started OC Winch #1 and did not get an emergency stop faults, test SAT.
3. On 14 October 03, the Bow Thruster blew another fuse on the C phase. It was replaced by one of the previous removed fuses, ref: CASREP 03048. Cause of blowing fuses has not been determined.
4. On 16 October 03, Bow Thruster was energized and blew a fuse on the A phase immediately after startup. Fuse was a used but good spare that was removed after 3 new fuses were installed under CASREP 03048. This fuse only lasted in operation for 2 days.
5. While transiting for 6 hours on 3 MDE's after completing last science station, 2CC2 Cycloconverter tripped offline. After further investigation, EM division discovered that thyristors 1B and 4A on bridge 3 failed. EM shop replace the 2 thyristors and reset 2CC2.

## **E. Recommendations**

Ensure that all inports are long enough to provide time for a shakedown cruise after all IPP Grooms are complete. Many of the propulsion problems experienced early in the voyage could have been identified and corrected more economically during a shakedown period.

## **5. Electronics**

### **A. Pre-Deployment Preparations & Seattle to St. Johns**

1. INMARSAT Mini M was installed by ATG. This allows 24/7 telephone and fax communications with the ship.
2. Iridium system. Antenna mounts, Heliac cable, MXU mount and deck penetrations were installed by ATG. ESU Seattle configured and installed the Computer and software to interface between SDN and the Iridium. Ship's force installed the Antennas, Heliac pigtail connections, and MXU. System was used when ship passed north of Inmarsat range.
3. TACAN experienced several hard failures. Replaced antenna Heliac connector while anchored at Panama City, Panama. Re-aligned system, test SAT and system was used for the duration of the mission.
4. Installed Color Cameras on Port/Stbd flight deck.
5. Sperry IBS Wiring Validation: Sperry and ESU/NESU Seattle validated all the cables inside the equipment cabinets on the bridge, Aft Science Conn, and the Aloft Conn. Sperry running sheets were updated and an electronic version will be delivered to the ship after RTHP.
6. Steering failure on Starboard "A" side in all steering modes except NFU in after steering. Replaced failed Rudder Servo Amplifier (RSA) and re-aligned "1A" and "2A" side of steering system.
7. S-Band radar was experiencing several intermittent faults. Reseated A7 interface PCB in the Aloft Conn radar Electronics Control Unit (ECU) and problem cleared.
8. Installed VHF/FM radios in ship's small boats.
9. Re-located gate system computer to ECC.
10. Installed new computer on bridge for the BM's CAPN program.

## **B. Falkner Mission(St. Johns to Thule)**

1. Ship experienced steering loss whenever switching from DP mode to Computer Manual. A jumper had to be removed off of the watchdog alarm module to keep the 24VDC fuse from blowing. Contacted Sperry to ascertain the purpose of the jumper. Issue will be raised at the inport IBS groom.
2. Steering failed three times. This is a separate problem from when the 24VDC fuse was blowing when shifting to DPS control as noted in paragraph 1 above. Each time steering failed the ship was in either Nav mode or Autopilot, and each time the OOD had to shift to back-up manual and man the center helm until the problem cleared, approximately five minutes later. Essentially all computer modes of steering were inop during the failure. Further testing will need to be made if the failure occurs again. Suspect a problem with MPCMS RTU #10.
3. Opened the ADCP 150 Transducer well due to noise/interference problems during data collection. Installed sound deadening material in SV2000 well in an attempt to reduce the noise. Also discovered that the transducer isn't mounted correctly, it needs to be mechanically isolated from the ship's hull through shock mounts which will need to be installed during drydock 2003.
4. Continued to monitor and log filling the Transducer Well Head Tanks. All tank levels are holding steady except number 9, the Seabeam transducer well. Unsure if water is leaking through the window or into one of the fuel tanks. Will continue to monitor fuel tanks for water. Will be addressed during drydock 2003.
5. Glonass GPS Receiver output to VMS failed. Submitted CASREP 03047 and ordered a new GPS receiver.
6. Experienced numerous intermittent errors on TOTCO units. Found bad 24VDC power supply, and one failed TOTCO unit. Replaced TOTCO with another unit out of inventory. Replaced power supply with a bench power supply. Placed failed power supply on order and ordered a spare for support.
7. Aft DPS station would not take control from the main DPS console. Reset the aft station, reset the PCB's in the Stbd DPS station, rebooted the GEM 80 PLC and re-started DPS at the main console. DPS functioned correctly and control was shifted to the aft station.
8. A Hard Drive on the Seabeam Bottom Profiler failed. Swapped and reformatted new Hard Drive.
9. CTD was blowing .5 amp 250V fuses at the deck box. Control unit on the CTD carousel had water intrusion. Replaced unit with spare.

10. CTD again experienced a blown fuse problem. MST's replaced bad carousel cable and re-launched CTD.
11. Re-located all Electronics Division technical manuals and related ship's drawings to 03 level storage.
12. Re-located bridge CAPN computer monitor to the overhead.

### **C. Northwest Passage Transit (Thule to Barrow)**

1. Received Glonass GPS receiver but not the configuration software. Awaiting download of software.
2. Received replacement power supply for TOTCO units in the Science Winch room. Replaced unit.

### **D. NOAA Mapping Mission**

1. Both the Ocean Data Systems Bathy 2000 and the Knudsen Sub-Bottom profilers were not transmitting in 3.5kHz mode after departing Barrow. Both transmitters share the same transducer for 3.5Khz. Each system was partially restored and was able to transmit in 12 kHz, but this interfered with the SEABEAM transmissions. Mr. Dale Chayes of the Lahmont-Doherty Earth Observatory and SF continued attempts to restore both systems to be able to transmit in 3.5 kHz. Troubleshooting finally revealed that the transducer well was dry. The head tank cut out valve at the transducer well was closed. It is uncertain how long this valve had been closed, but what little film of water was in the well allowed the system to operate properly until after the Barrow port call. The valve was open and the head tank was filled to the correct level and full operation of the Bathy 2000 and the Knudsen was restored. A dummy load was constructed while troubleshooting the system. A new switch w/dummy load will be installed during the next inport.
2. Received and installed programming for the GLONASS GPS receiver. The GPS unit had to be correctly configured via a laptop computer to output the correct information to VMS.
3. Voyage Management System (VMS) suffered several system errors and lockups during this mission. Although the problem didn't re-occur during the last two weeks of the mapping mission we're still not sure where the problem lies. While troubleshooting this problem Sperry Marine created a new VMS Config.ini file which ship's force installed on all VMS computers. Unsure if this corrected the time error problem. Sperry Marine will need to look into this problem further during next year's IBS groom.

4. Steering at Science Conn computer is inop, helm order is 45 degrees off. Will need to be addressed during IBS groom.
5. VMS does not have redundant steering capability. Steering will not shift from the CID to the NIU computer if the CID computer fails. Needs to be addressed during IBS groom.
6. The Port Flight Deck CCTV camera became inop due to failed connector assembly. Received and installed new connector assembly during Barrow II Logistics stop. Test SAT.
7. Sparc computer for the DPS system crashed twice. Re-booted the computer each time to restore DPS.
8. RM Young Air temperature sensor kept transmitting erroneous information to the Science Data Network. Discovered that sensor assembly junction box had filled with water and ice. Drained water and sealed up unit, function restored.
9. Re-routed 115VAC UPS power to various network devices in IC Gyro room. During a DC drill discovered that when power is secured to that space some of the Science Equipment network devices needed to be manually reset. SDN network devices are now hooked to a UPS to retain configuration settings during short power outages.

#### **E. Barrow to Seattle**

1. Experienced several alarms on SRD-500. Checked the configuration with Hyper-terminal and discovered the configuration file had become corrupted. Re-Configured unit to eliminate alarm condition. Received Dummy Load in Nome.
2. P-Code GPS unit experienced position discrepancy at 2100 several nights in a row. Problem cleared by itself after 45 minutes. Switched to other sensors during outage.
3. Deleted all DNC charts from the VMS computers. Experienced one time error and system lock-up during transit. Reset VMS with no further errors.
4. Knudsen lost the bottom in over 1000 meters of water. Reset unit and began receiving bottom data. After 5 days the Knudsen failed again. Ship's force discovered one failed 3.5Khz power amp, and re-strapped the motherboard to transmit with 4 power slices instead of 5. Unit was working normally in 12Khz mode of operation. Will continue testing and troubleshooting 3.5Khz mode of operation inport.

5. Replaced Stbd flight deck CCTV camera connector second day in Juneau. Camera fully operational.

## **6. Damage Control**

### **A. Pre-Deployment Preparations**

1. Prior to the deployment, ENS Hasselman relieved LTJG Kowalczyk as the Damage Control Assistant. Also, DCC Schaffner departed for the Chief Petty Officer's Academy, and would not return until the ship arrived in Curacao on the 4<sup>th</sup> of July.
2. Received five new Damage Control Books, and five sets of new Damage Control Plates from Engineering Logistics Center (ELC). Also, the ship received a new copy of its master CCOL.
3. All the SCBA packs were sent out for PMS. Other items that underwent PMS were the ship's fire fighting ensembles, and all the SCBA tanks were hydrostatically tested. All of the above PMS was completed through commercial contracts.
4. Many leaks were fixed throughout the ship. This included numerous steam leaks, a leak in the ballast line in the motor room, and a crack in the six inch main sea water (MSW) re-circulation line.
5. A salt water leak was discovered in the auxiliary diesel generator (ADG) sea water line in the air intake space. A contractor was hired to complete repairs on the system. During the contract, it was discovered that the piping was severely pitted. Because the piping was made of stainless steel, it was extremely difficult to make repairs to the line. In the end, the contractor made repairs using belzona material. A CSMP was submitted to replace the entire ADGSW pipe run to remove all stainless steel from the system.
6. Fourteen of the ship's QAWTDs were removed by a contractor to be re-wedged or re-skinned depending on the condition of the individual door. Doors that were worked on: 01-21-1, 01-21-2, 02-33-1, 02-33-2, 01-63-1, 01-63-2, 01-106-3, 01-106-4, 02-63-5, 02-63-2, 02-66-1, 03-63-2, 01-106-1, and 01-106-2.
7. Ship's force changed out the number 1 black water injector pump. While changing out the pump, they also changed the flapper and the flex joints that were associated with the pump.
8. Two of the three fire main segregation valves were replaced. The third segregation valve located in the bow thruster/sewage treatment room was not replaced. Numerous attempts were tried to drain the fire main system so the

valve could be replaced. However, all attempts had failed and it was decided to postpone the replacement of the valve until dry dock when the fire main system would be drained completely for repair work.

9. Four new P-100 pumps were on-loaded to replace the ship's current P-250 pumps. Two of the four P-250 boxes were modified prior to departure to accommodate the new P-100 pumps. Modification of the two new boxes were scheduled to be completed after the ship departed homeport on AEWS '03.
10. The 3-E-0-W ballast tank three-way valve was pulled and sent out for overhaul. However, it was determined that the valve could not be repaired and that a new one was needed. The procurement time for the new valve exceeded the amount of time HEALY had remaining before it departed on its next deployment. NESU reinstalled the valve.

## **B. Seattle to St. John's**

1. As has been done on previous deployments, daily damage control training began immediately. Training was given Monday through Friday at 1815. The first four nights consisted of completing JQR training for the SCBA, CO<sub>2</sub>, AFFF, and Range Guard. With the high personnel turnover this in port period, the large class sizes required two instructors to give the training.
2. Flight deck familiarization training was held and two crash on deck drills were held to qualify several new personnel as Aviation Fire Party On-Scene Leaders and Proxy man qualified.
3. After JQR training was completed, nightly Basic DC PQS classes were held on the mess deck. Due to other operational requirements responding to engineering casualties, numerous classes were cancelled between Seattle and Curacao. Classes were cancelled for the duration of Limited Team Training between Curacao and St Johns.
4. Several drills were held prior to the arrival of ATG PACNORWEST. Most of the drills consisted of a walk through and training drills since the ship had a large number of new personnel who reported to the ship during the in port period. The first drill consisted of manning up the repair lockers and completing on site training as to what their job entailed.
5. ATG PACNORWEST arrived in Curacao for Limited Team Training (LTT) during our transit from Curacao to St. Johns, Newfoundland. We held seven damage control drills two of which were integrated with ECTT. Medical training was integrated with all seven drills. The drills consisted of a Main Space Fire in #1 Engine Room, a Main Space Fire in #2 Boiler Room, Class Alpha fire in the ship's library, flooding in the potable water pump room, and a High Voltage class Charlie fire in the bow thruster soft start.

6. The first major casualty to occur happened when the fire plug in the gym was left opened. When the fire main was energized on the day after departure, the gym was flooded which required extensive clean up by the crew.
7. During the Seattle to Puerto Vallarta leg, the DCs made modifications to the two remaining P-250 containers so that they could accommodate the new P-100 pumps.
8. During the last in port day in Puerto Vallarta, approximately 50 gallons of water was found in forward deck machinery. At the time the source of the water could not be quickly ascertained. Later that morning, the EMs replaced the TLI on the 3-E-0-W ballast tank which revealed that the tank was 90% full. It was also noted that the ship was trimmed heavily by the bow. After the ship was out to sea the next day, the Damage Control Assistant (DCA) proceeded to de-ballast the tank. While attempting the de-ballast the tank, the TLI showed an increase in the water level of the tank instead of a decrease. De-ballasting was secured. The Engineer of the Watch (EOW) received a call about water coming out of a TLI in forward deck machinery. Investigation revealed that the 3-E-0-W tank had been pressed up forcing water out of the TLI. Further investigation revealed that the 3-E-0-W ballast tank three-way valve had been installed backwards, and to de-ballast the tank, it had to be in the fill position. The tank was emptied. Since the three way valve was known to leak, a flange was installed on the fill side of the three way valve.
9. Lube Oil line cracks on number 1 & 3 Mains Diesel Engines: A week prior to entering St. Johns, a gauge line stand-off pipe welded on the oil pump suction piping cracked on engines 1 and 3. The DC's completed repairs to the lube oil lines.



10. During the St. John's port call, the temporary patch failed on the Auxiliary Salt Water Supply line for the #3 ship's service air compressor inside the #2 Boiler Room air intake. As a result, the compartment filled up with water to approximately two to three feet. At this level, the water began running out vents into the O-2 level athwart ship passageway and eventually flowed overboard. P-1 pumps were rigged to dewater the passageway. Upon departure from St. John's, the patch was replaced and support was added to the line.



### C. Falkner Mission

1. The day after our departure from St. Johns, Newfoundland, all hands training was held for the P-100 pump. The P-100 pump was the replacement for the P-250 and only a few hands knew how to use it.
2. During the first week, we held training for the Damage Control JQRs daily at 1600 since many people still needed the training. At the beginning of the trip, approximately 50% of the crew had completed all their Damage Control JQRs. At the end of the Falkner Mission, 85% of the crew had completed their Damage Control JQR.
3. After departing St. John's, DCPQS classes began again. Since we had several new crew members report aboard in Curacao and in St. John's, it was decided to start over at the beginning of the Basic DC PQS classes. Also, we held BASIC DC PQS classes four nights a week instead of the usual three since this trip was shorter. We also held Advanced DC PQS classes on Thursday evening. We started with section 307 – Advanced Damage Control.

4. Three damage control drills were held. The drills consisted of a collision resulting in flooding of the refrigeration machinery flats, class Alpha fire in a stateroom, and flooding in the Bow Thruster void.
5. No major damage control problems were encountered during the Falkner Mission. Much of this transit was spent performing numerous welding jobs throughout the entire ship for various divisions. Some of the welding work included installing a new stand for the coffee machine in the ship's store, a new stand for the 02 deck copy machine, and installing numerous vidmars.
6. DC2 Gillick, a member of the dive team, fabricated some clam harvesting tools to be used on dive ops in support of science. One aspect of the Falkner mission was to gather clams to study the chemical composition of their shells.

#### **D. Northwest Passage and NOAA Mission**

1. Upon our departure from Thule, Greenland, DC JQR training was held again. Also, the DC's pressed forward with Basic DC PQS training on the mess deck five nights a week. Also, Advanced DC PQS training was held on Thursday's as personnel were available to teach the class. With the low percentage of personnel Basic DC PQS qualified, the division concentrated on getting personnel qualified.
2. Several DC drills were conducting during this transit to include a Class Alpha fire in deck machinery, flooding in AMR #1, and a Toxic Gas drill in bow thruster/sewage compartment.
3. With no major casualties and few minor casualties, many welding jobs were completed around the ship. Welding jobs included installation of vidmars in Aft Steering, mounting the new gym speakers, and building a storage shelving for the SK's in MICA.

#### **E. SBI Mission**

1. During the scientist offload at the end of the NOAA mapping mission DC1 Witkowski departed for leadership school and DC2 Gillick departed for steel welding school. As a result of their departure, DC2 Pentecost reported TAD from NESU Seattle to assist the DC division during the SBI mission until DC1 Witkowski returned in Nome, Alaska.
2. With the arrival of a new crew member, Damage Control JQR training was held in the afternoons over the course of a few days. This provided another opportunity for personnel who had missed previous training to get their JQRs signed off. Also, the Damage Control division held Installed Firefighting Systems training as part of the weekly Tuesday all hands training.

3. The DC PQS program completed the first training cycle two weeks into the SBI mission which qualified 13 personnel as Basic DC PQS bringing the ship's average of personnel qualified to 80%. Because new crewmembers arrived after we started the program, the DC's began the training cycle over again. In an attempt to get through as much of the Basic DC PQS training cycle before the ship's return to Seattle, Basic DC PQS was additionally held on Saturday afternoons at 1500.
4. As time permitted, Advanced DC PQS training was held on Thursday nights. Section 307 – Advanced Damage Control was finally completed, and began training on Section 308 – Advance Fire Fighting.
5. The first drill held was a High Voltage drill in the #2 SSTF. At the DCTT debrief after the conclusion of the drill, several DCTT members identified a problem with personnel being very complacent for drills, taking their time getting to their GE billets, and other complacency issues were identified. To help remedy this problem, a GE man up drill was held to time personnel on how quickly they arrived at their billets, dressed out, and arrived at a designated site with the appropriate gear. The following day, a Toxic Gas drill in the CO<sub>2</sub> room was held. This drill caught the majority of the ship completely off guard as the drill was unannounced, and was on a Wednesday versus the typical Thursday. The following Friday, a Class Charlie fire drill in the TV on the mess deck was held.
6. Welding and installation continued to be a major work item for the DC Shop. With the arrival of steel stock, the DC's finished building storage shelves for the SK's in MICA. Also, several vidmars were installed in forward GSK which necessitated the gas-freeing of the 3-9-1-W ballast tank. While gas-freeing the ballast tank, it was noted that the ballast tank to be in good condition with a couple of places of peeling paint.
7. During the middle of SBI, the DC division shifted from welding jobs to completing much needed PMS. Two of the DC's spent the better portion of a week performing PMS on all the ship's fire stations and fire plugs. DCC Schaffner worked on performing PMS on the main drainage valves in the lower AMRs and Motor Room after finding that several valves could not be opened.
8. As the end of the deployment neared, the division concentrated on finishing the updates of the Fire fighting workbook and the Stability workbook. By the end of the trip, updates of both workbooks had been completed.

#### **F. Nome to Seattle**

1. Nightly DC PQS continued on the mess deck Monday through Saturday. At the conclusion of the trip, 98% of all personnel had completed their Firemain

drawing, Ship Familiarization packet, AFFF JQR, CO<sub>2</sub> JQR, Range Guard JQR, and SCBA/FFE JQR. Furthermore, 90% of all personnel were basic qualified. Overall, the DC PQS program was a great success that was spearheaded by DCC Schaffner that resulted in an increase of 60% personnel qualified to 90% of personnel qualified as basic DC PQS.

2. A DC man up drill was held to time how quick it took to get manned and ready reports, and how long it took personnel to get dressed out and report to designated areas.
3. DC2 Pentecost returned to NESU Seattle and DC1 Witkowski returned from leadership school and CBR school.
4. Several critical PMS items were completed including PMS on all EEBDs.

## **G. Recommendations**

All hands damage control training should be held once a month on Tuesdays as part of the general military training program that is held every Tuesday. Because of science operations and the busy in port schedule, opportunities to hold all hands damage control training are infrequent. Training on the new P-100 pump was postponed for over a month. Only a few people knew how to operate the P-100 pumps which replaced the P-250. This was evident when ship's force attempted to use them during the O-2 deck pipe rupture.

During each inport period, personnel should be sent to the following schools: North Bend advanced marine fire fighting school, North Bed fire fighting team trainer, helicopter fire fighting team trainer, and a wet trainer such as Buttercup.

Damage Control drills should be held unannounced and on random days more often. This will help alleviate complacency problems that were experienced towards the end of the trip. Also, by surprising the crew with a drill, personnel did not have the opportunity to loiter in the location of their GE billets. This will allow for a more realistic drill in the end.

## **7. Fueling**

### **A. Pre-Deployment Preparations**

1. MK3 Bowley assumed the full duties of the Fuel Oil Water King from MK2 Laeger. In addition, ENS Hasselman relieved LTJG Kowalczyk as the fueling officer.
2. On May 27<sup>th</sup> and 29<sup>th</sup>, a total 910,718 gallons of F-76 fuel was on loaded via barge from Manchester, Washington. The average transfer rate was 1,200

gallons per minute. This brought HEALY's fuel capacity to 1,161,882 gallons (95.2% of full capacity).

3. On May 28<sup>th</sup>, a total of 44,513 gallons of JP-5 was on loaded via barge from Manchester, Washington. This brought HEALY's JP-5 capacity to 53,962 gallons (90.2% of full capacity).
4. On May 27<sup>th</sup> and May 28<sup>th</sup>, a total 8,637 gallons of lube oil was on loaded via trucks by main propulsion. The transfer rate was approximately 2,000 gallons per minute. The initial on load brought HEALY's lube oil capacity to 19,413 gallons (77.2% of full capacity).
5. On May 28<sup>th</sup>, approximately 4,000 gallons of contaminated hydraulic oil was off-loaded from 3-114-1-F Hydraulic Oil storage tank so it could be cleaned before new hydraulic oil was added. On May 29<sup>th</sup>, 2,258 gallons of hydraulic oil was loaded into 3-114-3-F. On June 6<sup>th</sup>, 1,958 gallons of hydraulic oil was loaded into 3-114-1-F to bring HEALY's hydraulic oil capacity to 5,048 gallons (55.9% of full capacity).

#### **B. Seattle to St. John's**

1. Expended 528,684 gallons of fuel. Daily consumption averaged 15,550 gallons per day.
2. 618 gallons of JP-5 was transferred to CG6519 and CG6521.
3. During HEALY's port call in St. Johns, Newfoundland, the fueling group on-loaded 484,824 gallons of Marine Gas Oil (MGO) from Irving Fuel Depot. The transfer system at Irving was a gravity fed system via a three inch hose. The fueling evolution took approximately thirteen hours to complete. The initial transfer rate was one thousand gallons per minute and slowed to approximately seven hundred gallons per minute halfway through the evolution. Irving had the ability to supply a second four inch hose for the ship's other fuel deck connection; however, the ship did not have a proper fitting to connect the hose to the ship's eight inch fitting.

#### **C. Falkner Mission**

1. Expended 313,076 gallons of fuel. Daily consumption averaged 12,041 gallons per day.
2. 1,245 gallons of JP-5 was transferred to CG6519 and CG6521.
3. During this mission, water was found in the Auxiliary Diesel Generator Service Tank (03-72-1-F). The exact cause for water intrusion into the service tank is unknown, but believed to be the result of condensation buildup during

HEALY's transit through the tropics. The service tank was drained by the FOWK and re-filled with new fuel from the ship's storage tanks via the fuel oil purifiers.

#### **D. Northwest Passage and NOAA Mission**

1. For the Northwest Passage transit and the NOAA mapping mission, HEALY expended 255,470 gallons of fuel. Daily consumption averaged 9,726 gallons per day. For the majority of this transit, HEALY ran on two main diesel engines. For the majority of the Northwest Passage transit, HEALY experienced open water with some ice fields. During the NOAA mapping mission, HEALY was breaking ice in 8/10<sup>th</sup> to 9/10<sup>th</sup> ice.
2. 1,786 gallons of JP-6 was transferred to CG6519 and CG6521.
3. The fuel team on-loaded 434,214 gallons of DF-2 via a barge from Delta Western stationed out of Dutch Harbor, Alaska. The initial set-up time took longer than anticipated due to heavy seas. Additionally, several fittings had to be rigged to allow the connection of the fuel and lube oil hose to the ship. The ship has a 3 inch flange for lube oil and a 11 inch flange for the deck connection. The barge provided a 4 inch cam lock connection for both the fuel hose and lube oil use. Using a combination of fittings from the barge and ship, the fuel detail was able to connect the hoses to the deck connections. Once the set-up was completed, the on-load went smoothly. The crew of the barge was very professional and highly competent, which aided in the smooth on-load. The average transfer rate was approximately 1,200 gallons per minute. The total time to on-load the fuel was approximately seven hours.
4. On August 31<sup>st</sup>, on-loaded ninety 55 gallon barrels of lube oil from a Delta Western barge. The lube oil was pumped directly from each barrel using an air operated pump on the barge. Because of very cold temperatures, the process of pumping the oil out of the barrels took approximately fourteen hours. Many problems were experienced with the air operated pump as it froze up numerous times. A garden hose was run from HEALY to the barge to allow barge personnel to spray the air operated pump down with hot water to prevent it from freezing up.
5. MK2 Bowley, the fuel-oil water king, departed to AC&R school. MK3 Nesvold assumed the duties of the fuel-oil water king upon MK2 Bowley's departure.

#### **E. SBI Mission**

1. For the SBI mission, HEALY expended 340,874 gallons of fuel. Daily consumption averaged 9,075 gallons per day. For the majority of this transit,

HEALY ran on two main diesel engines. For the majority of the SBI Mission HEALY experienced open water with some ice fields.

2. 960 gallons of JP-5 was transferred to CG6519 and CG6521.

#### **F. Nome to Seattle**

1. Expended 194,173 gallons for an average daily consumption of 12,945 gallons.
2. 349 gallons of JP-5 was transferred to CG6519 and CG6521.

#### **G. Entire Trip, Seattle to Seattle**

1. Consumed 1,632,277 gallons of propulsion fuel with an average daily consumption of 11,576 gallons. 4,958 gallons of JP-5 was transferred to CG6519 and CG6521.
2. 35,184 gallons of JP-5 was transferred to the 5-84-3-F fuel storage tank from both JP-5 storage tanks and the starboard JP-5 service tank to meet liquid loading requirements for dry dock.
3. During the week preceding arrival in Juneau, filters for the fuel coalescers for number 2 and number 4 MDE's had to be changed five times. A fuel sample from the port service tank was obtained. The fuel was not clear and bright. As a result, the number 2 FOP was left on during the Juneau port call to re-circulate the fuel in the port service tank in hopes of cleaning out any contaminants. Upon departure, a fuel sample was taken again. Once again, the sample failed to be clear and bright. Next, a sample was taken from the bottom of the service tank with the fuel not being clear and bright. In addition, water was found in the fuel. After that, daily samples were taken. With each daily sample, the amount of the water in the fuel decreased; however, the fuel still was not clear and bright. As a result, the port service tank was CASREPed (03060). The ship is in the process of having the tank inspected and cleaned during the scheduled dry dock availability.

#### **H. Recommendations**

The fueling group needs to obtain more fittings to allow HEALY to connect to different sizes of hoses. The fueling time in St. John's, Newfoundland could have been shortened considerably if the ship had the proper fittings. Also, communications in advance with the fuel facility may also help.

## **CHAPTER VI - ADMINISTRATION**

### **1. Personnel**

#### **A. Seattle, Washington to Puerto Vallarta, Mexico.**

All the crew and one AVDET crew deployed with the HEALY on June 13, 2003 with the exception of SK1 Robert Pierce, who stayed behind to manage the SK Support Office, ET2 Timothy Marvin, who was on medical hold, and FN Crystal Keeler TDY in Seattle prior to PCSing to BM "A" School.

#### **B. Puerta Vallerta, Mexico to Curacao, Netherlands, Greater Antilles.**

1. Panama Canal: MKCS G. Wenzinger MEDEVACed off the HEALY with HSCS K. Gordon as his medical attendant on 01JUL03.
2. MK2 John Tebo dpted on emergency leave on Jun 21, 2003.
3. CDR D. Russell and YNC S. Brock departed PCS in Puerta Vallerta.
4. CDR W. J. Rall reported PCS.
5. EMC F. Donzé and EM2 Fratto returned from TDY.
6. On 10 July 2003, embarked second AVDET with HSCS K. Gordon returning to HEALY.
7. LCDR J. Segalla, LT G. Stanclik, QM3 J. Lobherr and MK3 M. Bowley advanced to next higher pay grade on 01 July 2003 while transiting through the Panama Canal.

#### **C. Curacao, Netherlands, Antilles to St John's, Newfoundland, Canada.**

1. ENS D. Kawamoto, MKC J. Diaz, DCC P. Schaffner, ET2 Marvin reported back from TDY.
2. ENS J. Plumley, ENS Cooley, ENS S. Runyan and SA G. Swibold reported PCS.
3. MK2 Tebo arrived back from emergency leave.
4. Embarked 8 LTT members on board at Curacao, Netherlands, Antilles.
5. BMCM Schwarz and OSC Delouie dpted PCS.

#### **D. St. John's, Newfoundland, Canada to Thule, Greenland**

1. BMC J. Bride and FN R. Brock arrived PCS in St. John's.
2. LTJG D. Kowalski, MK2 N. Laeger, FN Nathaniel and FN Wilson departed PCS in St. John's.
3. The following personnel returned to Seattle TDY: SK2 David M. Joseph, EM3 Noah C. Haugk, BM3 Samuel E. Traver, EM3 Dustin G. Black.
4. AVDET dpt to St. John's on 15 August for training and parts run.
5. BMC Bride departed 28 July on Emergency Leave from Pond Inlet, Canada.
6. Debarked LTT in St. John's.

#### **E. Thule, Greenland to Barrow, Alaska**

1. ENS Kevin A. Beaudoin reported PCS in Thule, Greenland.
2. SK1 Robert A. Pierce, SK2 David M. Joseph, EM3 Noah C. Haugk, BM3 Samuel Traver and EM3 Dustin G. Black returned from TDY.
3. BMC James W. Bride returned from Emergency Leave.
4. LTJG Joseph L. V. Castañeda departed PCS.
5. SK1 Susan M. Peterson departed TDY.
6. Falkner Science group departed Thule, Greenland.
7. New Northwest Passage ad hoc group arrived.

#### **F. Barrow, Alaska to Barrow, Alaska**

1. ET3 Leppo reported PCS in Barrow, Alaska.
2. MK3 Gogolla departed TAD.
3. Science group departed.
4. SBI science group arrived in Barrow, Alaska.
5. SK1 Peterson met HEALY with supplies.
6. SKC Keyes departing TDY to assist with warehouse.

#### **G. Barrow, Alaska to Nome, Alaska**

1. SN Young dpt PCS on 11SEP.
2. DC2 Gillick dpt TDY.
3. MK2 Bowley dpt TDY.
4. MK2 Titus dpt on emergency leave.
5. FN Dawlidowicz dpt TDY on medical orders.
6. FS2 Gaulkie rpting PCS.
7. SN Hannon rpting PCS.
8. MK3 Christian and DC2 Pentecost arrived TDY from NESU.
9. EM3 Black arrived TAD.
10. DC1 Witkoski dpt TDY.
11. Science party departed.
12. Science party arrived.
13. AMT1 Raymond O'Dell departed for medical issues.

#### **H. Nome, Alaska to Juneau, Alaska**

1. Three Alstom employees arrived.
2. Three VSC employees arrived.
3. LT Remmers of NESU arrived.
4. AMT3 Justice arrived TAD for AVDET.
5. DC1 Witkowski returned.
6. SK1 Peterson returned.
7. SKC Keyes returned.
8. DC2 Pentecost of NESU departed to Seattle.

9. Science Party departed.

## **I. Juneau, Alaska to Seattle, WA**

1. 45 dependents and guests arrived onboard.
2. All VSC and ALSTOM personnel departed.
3. LT Remmers departed.

## **J. Seattle, Washington**

1. FN Dawlidowicz and MK2 Titus reported back aboard 01NOV.
2. MKCS Huff reported PCS on 1NOV.
3. ETC Rodda reported PCS on 3NOV.
4. MK3 Christian departed back to NESU 01NOV.

## **2. Morale**

### **A. Pre-Deployment Preparations**

1. Upon returning from Damage Control Assistant School, ENS Hasselman resumed his duties as the morale officer. BM1 Sandoval, morale petty officer, departed PCS during the in port period necessitating a new morale petty officer be chosen once the ship departed on AEWS '03.
2. Approximately \$11,000 in new morale gear was bought with appropriated funds. This included two new Bose surround sound systems for the crew's lounge and officer's lounge. These two lounges were the only lounges onboard that did not have a surround sound system. Other items purchased include 8 mm players for all the lounges and new audio-visual equipment for the gym. Lastly, a sauna was purchased to be installed sometime during the deployment as time permitted.
3. Several items for the gym that were purchased through Evergreen funds arrived shortly before HEALY departed. A new Concept 2 rowing machine, a shoulder press bench, and two fully adjustable benches arrived to replace worn and broken gym equipment.
4. Morale financed a technician to service and repair both of the ship's treadmills. The new fan for the smaller treadmill had not arrived by the time the ship departed. The technician said the company will install the new fan when HEALY returns in the fall at no charge to the ship.
5. In preparation for the upcoming trip, approximately \$3,500 dollars in non-appropriated funds were spent. Expenditures included \$1,000 dollars in soda, \$1,200 dollars in prizes, \$1,000 in blackout prizes, and \$200 in morale alcohol. The blackout prizes bought consisted of a Sony Digital Camera, 10

gigabyte MP3 Player, Sony Play Station 2 prize package, Mountain Bike prize package, and a TV/VCR combination with a separate DVD player.

6. The correct morale checks finally arrived. With the short in-port periods, it was difficult to obtain new checks from the Bank of America. Several times, the new checks were incorrect. Also, one set of checks had been lost in the mail. All checks were cancelled free of charge.
7. The morale account mailing address was changed from the FPO address to the shore side address because many merchants will not accept a check with the FPO address on it. Furthermore, it will decrease the time that it takes for bank statements to arrive.



Figure 1: Crewmembers Shooting Hoops in the Caribbean

## **B. Seattle To St. John's**

1. With the warm weather of the tropics, several morale activities were held outside. Flight deck movies were shown on Saturday evenings after bingo. Movies shown were *Die Another Day*, *Old School*, and *Gangs of New York*. *Gangs of New York* was easily the favorite movie with the largest crowd. This trip, the officers decided to break away from the tradition of cooking pizza and try something else. Instead, the officer's held a barbecue outside consisting of hamburgers, chicken, and shrimp. ATG PACNORWEST volunteered to cook pizza for the next morale night. Other morale events consisted of daily basketball games on the flight deck and a skeet shoot.



Figure 2: SKC Keyes, HSCS Gordon, and LTJG Kowalczyk Awaiting a Flight Deck Movie

2. The day after we got underway, bingo was held on Saturday per our typical Saturday night routine. The first blackout prize was a Sony Digital Camera. Because all three port calls during this transit fell on the weekends, bingo was held only three times resulting in an average of \$55 per bingo night. Upon our arrival in St. John's, the blackout prize still had not been won.
3. With the ship's transit through the Caribbean Sea, the amount of soda sold increased because of the tropical weather. The first leg of the trip resulted in \$243.50 in soda machine proceeds with a daily sales average of \$7.38.
4. During the initial leg, a new morale committee was formed with a representative from each division. Secondly, a new morale petty officer was picked to replace BM1 Sandoval who departed PCS during the in port period. The new morale petty officer chosen was MK2 Titus. No morale committee meetings were held during the early part of the trip due to numerous causalities, Limited Team Training (LTT), and port calls. The first morale committee meeting was scheduled to take place after HEALY departs St. John's for the Falkner mission.
5. Morale assumed responsibility for the operation of the ship's barbershop. With this new responsibility morale was now responsible for selling haircut cards for \$5 each. This directly benefits morale because all profits from the barbershop go into morale's non-appropriated fund.

### **C. Falkner Mission**

1. With the much colder weather of the Artic regions, morale dinners were moved inside. During the Falkner science mission, morale dinners were cooked by the 3<sup>rd</sup> Class Petty Officers and Non-rates, 2<sup>nd</sup> Class Petty Officers, and the scientist. 3<sup>rd</sup> Class petty Officers and Non-rates cooked shishkabobs,

2<sup>nd</sup> Class Petty Officers prepared breakfast for dinner, and the scientist cooked pizza.

2. At the beginning of the Falkner mission, the Sony Digital Camera was still the blackout prize. However, on the second bingo night, the blackout prize went to EM2 Garret on the 63<sup>rd</sup> of 65 balls. The new blackout prize was a Sony Play Station II prize package consisting of a Sony Play Station II. Bingo was held three times during the Falkner Mission with an average income of \$47 per night.
3. Soda machines sales declined with the colder weather. Due to lack of sales of Nestea, the Nestea was removed from the machine and replaced with Pepsi in an attempt to bolster sales. Total soda sales during the Falkner mission were \$105.10, making a daily sales average of \$3.39.
4. The traditional Spades Tournament kicked off about half-way through the mission. A \$50 cash prize was up for grabs to the winning team.
5. With numerous mail problems, morale finally received a bank statement in the mail. The June statement was missing; however, the July statement was received. It was discovered that the Bank of America had inadvertently deposited the June 5<sup>th</sup> deposit into the savings account. Due to all the checks from the morale purchases prior to getting underway, the account was overdrawn. After talking with a customer service agent from the Bank of America, all funds in the savings account were transferred to the checking account. Secondly, the bank credited the account and removed all the overdraft charges (\$75 in overdraft charges).

#### **D. Northwest Passage And NOAA Mission**

1. Several different morale dinners were prepared. The 1<sup>st</sup> Class prepared an appropriate meal for the cold weather consisting of Chili. Next up were the Chiefs who prepared their usual Philly Cheese Steak meal. Instead of cooking pizza, the officers prepared a Mexican meal consisting of burritos, fajitas, quesadillas, and several other Mexican dishes. The NOAA science party volunteered to cook pizza.
2. With the increasing time between port calls, the number of people showing up for bingo increased. The Sony Play Station II prize package was eventually won by ship rider Joe DiGiovanni on the 58<sup>th</sup> ball of 60. The new blackout prize was a 10 gigabyte MP3 player. At the end of the NOAA Mapping segment, this blackout prize still remained. Bingo night proceeds averaged \$85 per night for this leg of AEWS '03.
3. Soda sales remained consistent throughout this transit as the weather stayed cold. However, the amount of Diet Coke being consumed had increased

dramatically and overtook Mountain Dew as the number one seller for several weeks. Total sales for this portion were \$99.96 with daily sales average of \$3.84.



Figure 3: Crewmember Surveys Ice Conditions During a Morale Flight combined with ice reconnaissance.

4. During the Northwest Passage transit, several morale flights were held to allow interested crewmembers to see various sights that HEALY was passing. In the end, approximately fifteen crewmembers were able to fly.



Figure 4: Captain Oliver Enjoys Ice Liberty

5. During the NOAA Mapping portion of this phase, HEALY spent a lot of time breaking ice, and transiting through numerous ice fields. On a nice sunny afternoon, HEALY found a flow large enough for the ship to be able to stop and grant ice liberty. . Due to the location of science, and ice conditions, there was only one opportunity to get the crew on the ice.



Figure 5: King Neptune and his Royal Court

6. After the main portion of the NOAA Mapping Mission was completed, King Neptune and his royal court paid a visit to initiate all WOGs (including the science party). In the end, 70 crew members, aviators, and scientists went through the initiation. Proceeds from the WOG auction, haircut insurance, and pie auction resulted in \$1,160 for the morale fund.



Figure 6: Davy Jones Addressing the Wogs

## E. SBI Mission

1. Morale dinners continued even after an intense debate ensued at a morale committee meeting on whether to continue morale nights. First up were the 3<sup>rd</sup> Class Petty Officers who cooked seafood gumbo, chili, and cornbread. The Officer's jumped in and cooked a meal consisting of fillet minion and lobster. The following week, the 2<sup>nd</sup> Class Petty Officers served taquitos, mozzarella sticks, chicken fingers, chili, corn dogs, and hamburgers.
2. As the number of balls keep rising for the blackout prize, the number of people playing Bingo increased. The MP3 player, which had been up for

grabs since the start of the SBI Mission, was finally won by CDR Schoen on the 59<sup>th</sup> ball of 60.

3. The traditional spades tournament began during the Falkner mission came to a close with FS1 Casteel and MK2 Tebo as the winners. Another spades tournament was started with teams decided by drawing names out of a hat. A cribbage tournament was also put together.
4. The annual beard-growing contest took place September 13<sup>th</sup> and October 18<sup>th</sup>. Crewmembers were allowed to participate by purchasing a \$5 no shave chit. To ensure female crewmembers did not feel too left out, they were allowed to wear their hair down, but had to also pay \$5. CDR Rall and IT1 Chipman tied for the most hair with the least effort, FN Brock had the least hair with the most effort, and SN Hughes had the most creative facial hair. FN Brock was awarded shaving cream, and all other winners were given razors as their prizes. In the end, this event raised \$405 for morale.
5. In preparation for the upcoming in-port period, Seattle Seahawk tickets were sold for games against the Pittsburgh Steelers and the Detroit Lions. The tickets were sold by ISC Seattle MWR for \$35 a piece. In sum, the crew purchased approximately 50 tickets between the two games.
6. Casino night was held on October 4<sup>th</sup> from 1900 until 2230 followed by an auction at 2300. Several prizes were auctioned off: TV/VCR combo, 2 DVD players, sleeping bag, tent, camping chair, gift certificate, and others. The night brought in a \$165 for morale.



Figure 7: Crewmembers and Scientists Intent on a Game of Craps

7. XO/CO for a day was held on October 10<sup>th</sup>. Raffle tickets were sold for \$1 per ticket for five days. On October 6, the drawing was held on the messdeck with the XO and the CO drawing tickets out of a hat to see who had won. ETC McGuire earned the right to be Captain for the day while SA Comon-Pearce won the right to be the Executive Officer, and made a fine XO. This event raised \$203 for morale.

## F. Nome To Seattle

1. In October the following bingo prizes were won: electronic hand games, music CDs, DVDs, gift certificates, pairs of movie tickets, portable CD player with headphones, a cooler, and a mountain bike. Bingo proceeds for the month of October amounted to \$285.10.
2. The spades tournament started during the SBI Mission came to a close with IT1 Chipman and LT Clarke as winners. Each was awarded \$25.00.
3. On 22 October, the crew was treated to eight hours of fishing at Albatross Banks. Well over five hundred pounds of halibut was caught.



Figure 8: MK3 Schreck, LT Clarke and IT1 Flaying a Halibut



Figure 9: EM1 Garret With his Catch

4. The dependent's cruise took place from October 28 through November 1. Bingo was played every night, eight pumpkins were distributed amongst pay grades, door decorating was authorized, and a trip in review movie was shown on the last night before HEALY's arrival in Seattle.



Figure 10: The SN/SA/FN/FA Pumpkin



Figure 11: Chiefs' Mess Door

## **CHAPTER VII – PUBLIC RELATIONS**

### **A. 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 "AEWS 2003". See the next page for the home page.
2. Each science phase also maintained their own website with detailed updates and and personal comments on their respective studies.
  1. Phase I – Falkner Mission, CANADIAN ARCHIPELAGO THROUGH FLOW STUDY: <http://newark.cms.udel.edu/~cats>
  2. Phase II – Mayer/NOAA Mission, Sea Beam Mapping: <http://www.ccom-jhc.unh.edu/healy/index.htm>
  3. Phase III – Woodgate Mission, WESTERN ARCTIC SHELF BASIN INTERACTIONS (SBI): <http://sbi.utk.edu>  
[http://www.whoi.edu/science/PO/arcticedge/arctic\\_west03/expedition/index.html](http://www.whoi.edu/science/PO/arcticedge/arctic_west03/expedition/index.html)
3. **Tours** were only given on a case by case basis to local military, dignitaries, and other support personnel. Crew members also gave tours to locals. No public tours were sponsored due to force protection concerns.
  1. Cuaracao: 30 personnel coordinated through the American Consulate.
  2. St. John's, New Foundland: Limited to Canadian Coast Guard personnel, sponsored by crew members.
  3. Thule, Greenland: Three US Air Force and one Danish representative came for a tour and lunch in the cabin.
  4. 50 Coast Guard military and civilians toured during two, 2 hour periods. This was only advertised through District 17.

### **B. Falkner Mission**

In St. John's Newfoundland, local TV reporters took the opportunity to interview Dr. Falkner on the bridge. The highlight of the article lay in the science mission and the Canadian, specifically Eastern Canadian involvement.

### **C. Northwest Passage**

*Outside* magazine sponsored a writer and a photographer to document life on an icebreaker and the experience of transiting through the North West Passage.



# **USCGC HEALY**

## **(WAGB - 20)**

**SEATTLE, WASHINGTON**

**HOME**

**WELCOME ABOARD**

**HEALY HISTORY**

**SHIP'S:**

**CHARACTERISTICS**

**CREW**

**SCIENCE PLANNING**

**PRESENT & PAST  
DEPLOYMENTS**

**CONTACT THE SHIP**

**LINKS**



Welcome to the United States' newest and most technologically advanced icebreaker, the Coast Guard Cutter HEALY (WAGB - 20).

HEALY is designed to conduct a wide range of research activities, providing more than 4,200 square feet of scientific laboratory space, numerous electronic sensor systems, oceanographic winches, and accommodations for up to 50 scientists. HEALY is designed to break 4 ½ feet of ice continuously at three knots and can operate in temperatures as low as -50 degrees F. The science community provided invaluable input on lab lay-outs and science capabilities during design and construction of the ship. At a time when scientific interest in the Arctic Ocean basin is intensifying, HEALY substantially enhances the United States Arctic research capability

As a Coast Guard cutter, HEALY is also a capable platform for supporting other potential missions in the polar regions, including logistics, search and rescue, ship escort, environmental protection, and enforcement of laws and treaties.

## **CHAPTER VIII - SUPPLY/LOGISTICS**

### **1. Supply Summary**

#### **A. Pre-deployment Preparations**

1. HEALY Supply Division started resupplying prior to its arrival in Hobart, AU, while still deployed on DF03. This was necessary to ensure that supplies would be available immediately upon return to homeport, given HEALY only had two-and-a-half months to prepare.

<i>TYPE</i>	<i>Number of Orders</i>	<i>Amount</i>
<i>Commercial Procurement</i>	<b>213</b>	<b>\$381,151</b>
<i>MILSTRIP</i>	<b>249</b>	<b>\$84,606</b>
	<i>Total</i>	<b>\$465,757</b>

2. Obtained 726,387 gallons of F-76 fuel at ¢.81 a gallon, and 8,892 gallons 9250 lube oil at \$2.49 a gallon from DESC Manchester Fuel Department, PO Box 8, Manchester, WA 98353. Fuel was delivered by barge over a two day period, and lube oil was delivered by truck.
3. HEALY got underway for AEWS03 on 13Jun03. Tugs were arranged through Crowley Marine Services (2401 Fourth Ave, Seattle, WA (206) 443-8100). Puget Sound Pilots (101 Stewart St., Suite 900, Seattle, WA (206) 728-6400) provided a pilot for departure. One HEALY Storekeeper was assigned to the Shore Support Office to manage all logistics for the trip. This individual handled receiving, including notifying the ship of what had been received, and arranged to ship all needed materials to our port calls.

#### **B. Seattle, WA to St Johns, NF**

1. Puerto Vallarta, MX, 20-24Jun2003: The husbanding agent for the portcall was Mr. Carlos Iglesias of USS Mexico (Cell 011-52-322-227-5322). He was very helpful in meeting all of our requirements. He provided a thorough inbrief upon arrival, and maintained a presence on the pier 24 hours a day during our portcall to respond to any of our needs. USS Mexico also arranged for waterside and pier security for the portcall. Total cost for all services was \$18,410.50, very reasonable compared to other ports.



2. Panama Canal, 1Jul2003: The husbanding agent for the Panama Canal was Fernando Ayala of Inchcape Shipping Services. Mr. Ayala was fully prepared for our arrival, and even reminded us of the requirement to submit a message 24 hours prior to arrival which we had overlooked. Upon arrival at the anchorage, Mr. Ayala met the ship and provided the required tracking system, and arranged the final payment for the transit. In addition, HEALY unexpectedly need to arrange a MEDEVAC of one of the crewmembers, which Mr. Ayala was able to facilitate through his POCs, and the use of his cell phone. Billing for the transit was processed in a timely manner this time, vice the months it took in 2001. PCA recently raised their rates, so the final cost for the transit was \$49,714.34, plus \$1288.58 for HA fees, for a total of \$51,002.92.
  
3. Willemstad, Curacao, NA, 4-8Jul2003: The husbanding agent for Curacao was S.E.L. Maduro and Sons. Their representative was enthusiastic and provided for all of our needs. The ship was also met by a representative from the American Consulate, who arranged for our mail deliveries. Overall the service provided was good, however the agent failed to provide an invoice on the morning of our departure, as requested. He finally showed just before our scheduled sail time with the invoice, causing our departure to be delayed. Total cost for the portcall was \$10,526.63, again, a very reasonable price.



4. St Johns, NF 16-21Jul2003: All requirements for the portcall were arranged through Canadian Forces (CF) in St Johns. Their POCs were Chief Decorcy ((709)570-4507) and Master Corporal Bennett ((709)570-4659). Both were very helpful, providing a full inbrief upon our arrival, and assisting with deliveries of cargo during the visit. Upon arrival HEALY moored at the Irving Jetty to take on 500,000 gallons of Fuel. This was arranged via MLC PAC. Fueling was a long process as the fuel was delivered via a gravity fed system.



After completion of fueling, we shifted berths the next day to Pier 17, which is the only pier with enough water for the HEALY to moor at (other than Irving). One difficulty

encountered was with the Pilots. St Johns Pilots come from Halifax, NS. Even though they had been notified in advance we would be shifting berths that morning, they did not show up on time. We encountered the same problem on the day of our departure. Despite numerous calls from the ship and CF, come the time of departure they were not there. With the help of Chief Decorcey of CF, we were able to get the pilot on scene, and our departure was only delayed by approximately 1 hour.



Port costs in St Johns were minimal. Water was arranged through the city, and sewage was dumped directly into the harbor (local policy). Black water was held as much as possible, and pumped after departure. Garbage and a waste oil offload were arranged through local vendors, and paid by credit card. HEALY also received several pallets of supplies shipped from Seattle. Unfortunately 1 pallet did not make it in time due to delays in clearing Canadian customs. This was eventually returned to Seattle.

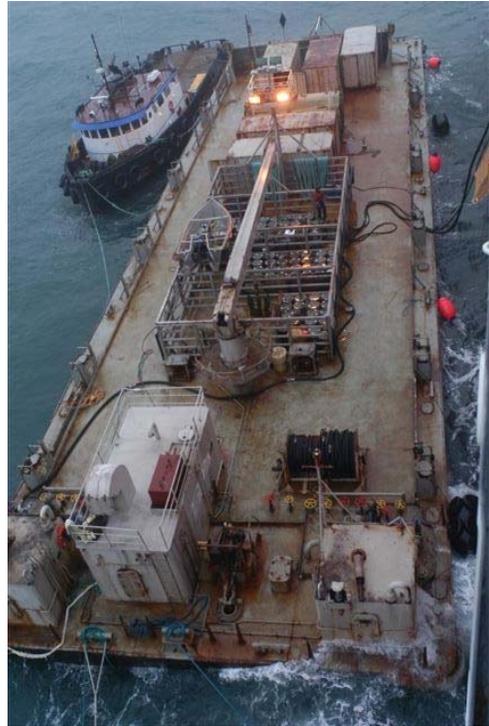
### **C. Falkner Mission**

1. Thule AFB, Greenland 16-19Aug2003: A LOGREQ was submitted to USDAO Copenhagen at the same time that communications were being established with Thule via email. A LOGREQ Reply was never received, but all arrangements were able to be made via email. The primary POC was TSGT Charlie Dickens, a logistician for the Air Force. He coordinated our requirements, and interfaced with the civilian commercial contractor who handles most of the operations for the base. Vehicles, delivery of cargo, and use of their tug were all provided by the Air Force. Initially we had requested that the AF tug be utilized for a liberty launch just in the evenings. However, the weather degraded quickly, and they were willing to change to all day runs with no notice. In the end, the Air Force opted not to charge us for any of the services they provided. The help and support provided by the Command of Thule AFB was outstanding, and made the portcall a good one.
2. To get cargo to Thule we had to ship through McGuire AFB, the only AMC terminal with a flight to Thule. They fly twice a week, a cargo flight on Monday, and a passenger flight on Wednesday. Both flights are able to accommodate cargo. In

addition, NSF arranged for an Air National Guard flight from Stratton ANG Base to pick-up the Scientists in Thule. We were able to load several pallets of supplies onto this flight at no cost, other than shipping costs to the ANG base.

#### D. NW Passage

1. Upon completing the transit of the NW Passage HEALY received 434,214 gallons of MGO via Barge, while offshore Barrow. The fuel was loaded in Dutch Harbor by Delta Western under DESC contract, and then brought all the way to Barrow. On arrival, the weather was uncooperative which provided for a rough fueling evolution.



In addition, HEALY procured lube oil from ISC Kodiak. This had to be flown to Dutch Harbor, then loaded onto the Delta Western barge. When fueling was completed, HEALY had taken on 66,000 gallons less than anticipated, which we had to then pay to return to Dutch Harbor. Even though successful, fueling via barge off of Barrow will not be a preferred method in the future due to the uncertainty of the weather.

2. Arrangements for the fuel and lube oil were made by John Porter and the staff of MLC Pacific (Vpl). Without their tireless efforts on our behalf, working with DESC, ISC Kodiak, and Delta Western in Dutch Harbor, this entire evolution would not have been as successful as it was. Their assistance was much appreciated.
3. HEALY also took the opportunity to on-load needed spare parts and mail while off Barrow. Shipment was arranged through ISC Seattle, via Alaskan Air Lines. Alaskan has again proven itself to be a reliable method for delivery of parts to northern Alaska.

## **E. Nome, AK to Seattle, WA**

1. HEALY made a portcall at Juneau, AK on 24-28 October. The depth of water at the Coast Guard pier was questionable, so we opted to utilize a city pier. The city provided the pier space at no charge. A LOGREQ was sent to ISC Ketchikan, and handled by their detachment in Juneau. There was some confusion when we updated our arrival time, which resulted in tugs and a Pilot not being available for our arrival. However, HEALY safely entered the port and moored without incident.



2. One disadvantage of using the city pier was that they had already shut down most services on the pier for the winter. Water had to be hooked up from a fire hydrant that was located several hundred feet from the pier face. However, the City of Juneau was kind enough to provide additional hose so that we could reach it. A garbage dumpster was arranged through Arrow Refuse (907-780-7800), and water was arranged through the city. Sewage was removed via truck, arranged through R&S Pumping (907-209-8744). Total costs for the portcall were just over \$10k, making it very reasonable.

## **F. Transaction Methods**

1. Costs for Puerto Vallarta and Curacao, where a Navy contracted Husbanding Agent was available were handled by Purchase Order. The costs for Panama Canal were paid for by Credit Card per the Navy contract.
2. While in St Johns, we paid for the majority of items by Credit Card. Potable water and the purchase of Fresh Eggs was required to be paid by cash. In both instances, the vendors presented their invoices calculated in USD.
3. The fuel delivery in Barrow, AK was paid for by Delivery Order. The majority of the costs for Juneau were paid for by Credit Card, with the exception of the Tugs and Pilot, which were paid for by Purchase Order.
4. The breakdown of all costs for the trip are summarized in the following pages.

Total Port Services		\$110,357.75									
Port Services											
Date	Port	Steam	Water	Trash	Electricity	Oily Waste	Emergency Services	Vehicles	Cranes	Telephones	Pilot
12APR-13JUN03	SEATTLE, WA										\$244.00
20-24JUN03	PUERTO VALLARTA, MX			\$675.00				\$2,320.00		\$1,765.50	\$1,700.00
1-Jul-03	PANAMA CANAL										
4-8JUL03	CURACAO, NA		\$789.33	\$188.76				\$1,600.00		\$360.00	\$400.00
16-21JUL03	ST JOHNS, NF		\$568.00	\$1,698.00		\$924.21		\$554.00			\$1,826.31
16-19AUG03	THULE, GREENLAND										
30AUG - 1SEP03	BARROW, AK										
11-13SEP03	BARROW, AK										
19-Oct-03	NOME, AK										
23-26OCT03	JUNEAU, AK		\$46.38	\$2,097.00				\$602.00			
	<b>Column Total</b>	\$0.00	\$1,403.71	\$4,658.76	\$0.00	\$924.21	\$0.00	\$5,076.00	\$0.00	\$2,125.50	\$4,170.31

Total Port Services		\$110,357.75								
Date	Port	Tugs	Husbandry Fee	Berthing Fee	Harbour Fee	Cable TV	Sewage	Line Handlers	Other Services	Total Port Services Cost
12APR-13JUN03	SEATTLE, WA	\$2,530.00								\$2,774.00
20-24JUN03	PUERTO VALLARTA, MX		\$1,850.00				\$6,740.00	\$520.00	\$2,840.00	\$18,410.50
1-Jul-03	PANAMA CANAL		\$500.00						\$50,502.92	\$51,002.92
4-8JUL03	CURACAO, NA	\$1,385.06	\$515.00				\$3,575.00	\$663.48	\$1,050.00	\$10,526.63
16-21JUL03	ST JOHNS, NF	\$1,000.00								\$6,570.52
16-19AUG03	THULE, GREENLAND									\$0.00
30AUG - 1SEP03	BARROW, AK								\$10,894.80	\$10,894.80
11-13SEP03	BARROW, AK									\$0.00
19-Oct-03	NOME, AK									\$0.00
23-26OCT03	JUNEAU, AK	\$3,275.00					\$4,158.00			\$10,178.38
	<b>Column Total</b>	\$8,190.06	\$2,865.00	\$0.00	\$0.00	\$0.00	\$14,473.00	\$1,183.48	\$65,287.72	\$110,357.75

Total Port Services		Engineering Services						
	\$110,357.75							
Date	Port	Waste Oil	Ship Fuel	Aviation Fuel	Lube Oil	Hydraulic Oil	Engineering Services Total	GrandTotal
12APR-13JUN03	SEATTLE, WA		\$737,681.58	\$38,281.18	\$21,506.13	\$7,793.76	\$805,262.65	\$808,036.65
20-24JUN03	PUERTO VALLARTA, MX						\$0.00	\$18,410.50
1-Jul-03	PANAMA CANAL						\$0.00	\$51,002.92
4-8JUL03	CURACAO, NA						\$0.00	\$10,526.63
16-21JUL03	ST JOHNS, NF						\$0.00	\$6,570.52
16-19AUG03	THULE, GREENLAND						\$0.00	\$0.00
30AUG - 1SEP03	BARROW, AK		\$356,055.48		\$22,001.95		\$378,057.43	\$388,952.23
11-13SEP03	BARROW, AK						\$0.00	\$0.00
19-Oct-03	NOME, AK						\$0.00	\$0.00
23-26OCT03	JUNEAU, AK						\$0.00	\$10,178.38
	<b>Column Total</b>	\$0.00	\$1,093,737.06	\$38,281.18	\$43,508.08	\$7,793.76	\$1,183,320.08	\$1,293,677.83

5. Only two cash purchases were made during the trip, and that was in St Johns, NF. No travel advances were issued.

## **2. General Mess**

### **A. Pre-deployment Preparations**

After a short in-port between deployments, and a Change of Command three days before getting underway on AEWS 03, the General Mess was fully prepared for the deployment. The total amount of food stores onboard \$216,779.01.

### **B. St. Johns to Thule Greenland:**

The food stores replenishment for St. Johns was arranged through the Canadian Forces Liaison. A total of \$1,953.48 of fresh produce and dairy was procured while in St Johns. All of this was purchased utilizing Credit Card, except for the eggs, which had to be paid for with cash.

### **D. Falkner Mission:**

The food stores replenishment for Thule Greenland was handled through DPSC for a total of \$5,235.17. The majority of what was purchased was fresh produce. DPSC shipped all goods to Thule AFB via the regularly scheduled flights from McGuire AFB. Once in THULE, the commissary placed our goods in cold storage until our arrival. Upon all arrival, all stores were brought to the ship by the tugboat from Thule AFB.

### **E. NW Passage**

The Food Stores replenishment for Barrow was handled through the Prime Vender for Alaska, which is Food Service Of America (FSA). The total cost of stores \$8,461.82. Again, the majority of what was purchased was fresh produce. The goods were shipped to Barrow via Alaskan Air Lines. Upon arrival the produce was flown to the ship via CG Helo.

### **H. Nome, AK to Seattle, WA**

Food Service of America was again utilized for replenishing stores in Juneau. We purchased only enough fresh produce to make the transit to Seattle and the first four days home. After this, the galley was closed for the drydock. The total cost of stores \$1,401.32. Unfortunately, due to the ship's position on the Juneau City pier, we were unable to utilize the bow crane, so stores had to be loaded by hand.

## **3. Ship's Exchange**

### **A. Pre-Deployment Preparations & Seattle to St. Johns**

1. Preparations for AEWS '03 began during HEALY's inport. Recommendations from the last 3 trips (AEWS '01, AWS '02, & DF '03), as well as lessons learned with respect to re-supply while deployed were incorporated into the planning stages for AEWS '03.

2. In order to provide more efficient bookkeeping while deployed, the use of electronic bookkeeping methods was researched and employed. In addition, with the availability of INMARSAT, access to the Exchange's bank account was established. This allowed for up-to-date account balance information, as well as the ability to obtain statements online and bill pay to various vendors on the web.
3. With the unreliability of the FPO mail system in delivering merchandise while deployed, research was conducted into the use of Federal Express service. In the event of having to re-supply items to the exchange, using Federal Express will prove more reliable in transporting merchandise to the exchange.
4. All major exchange on-loads were scheduled to arrive on two different days. Final major purchase breakdown is as follows:
  - Northstar Sportswear (Ballcaps/Shirts/Coffee Cups): \$13,279.40
  - Tully's Coffee Corporation (Coffee/Syrups/Cups/Lids): \$2,788.51
  - Cloud Trading Company (Tobacco): \$4032.00
  - H&H Studios (Ship's Plaques): \$932.30
  - Misc Vendors: \$300
  - Uniform Distribution Center: \$195.76
 Total: \$21,528.00
5. A total of \$9,347.85 sales were conducted during the transit from Seattle, WA to St. Johns. 15% was coffee related, 24% was tobacco related, and 21% was HEALY Crew Hooded sweatshirt.

**B. Falkner Mission (St. Johns to Thule)**

1. A total of \$6,617 sales were conducted during the Falkner Mission. 24% was coffee related, 8% was from HEALY's coffee mugs, 11% was HEALY's Crew Hooded sweatshirt related and 18% was tobacco related.
2. Delivery of HEALY crew ball caps was set up and accomplished via E-Mail.

**C. Northwest Passage Transit (Thule to Barrow)**

A total of \$2,402.76 sales were conducted during the Northwest Transit. 29% was coffee related, 3% was from HEALY's coffee mugs, 17% was HEALY sweatshirt related, and 17% was tobacco related.

**D. NOAA Mapping Mission**

A total of \$2,286.36 sales were conducted during NOAA Mapping Mission. 25% was coffee related, 14% was from HEALY's coffee mugs, 11% was HEALY sweatshirt related, and 25% was tobacco related.

### **E. Barrow to Seattle**

1. A total of \$11,029.31 sales were conducted during the SBI Mission and Dependents' Cruise. 22% was coffee related, 7% was from HEALY coffee mugs, 20% was HEALY sweatshirts, and shirt related, 25% was tobacco related, and 5% was from uniform articles including HEALY ballcaps.
2. Purchased extra vanilla syrup in Juneau due to popularity of vanilla containing coffee drinks.

### **F. Recommendations**

1. Delivery of items should take place at least a week before departure. This gives adequate times to buy last minute items.
2. Recommend purchasing entire inventory prior to deployment. Limiting the amount of purchases in a foreign port will optimize the best prices for the crew.
3. Determine the number of personnel PCS during the deployment and account for the number of crew ball caps needed for the whole deployment.
4. Online banking provided a valuable means of checking balances and paying off suppliers using Bank of America's Webpay.



## **CHAPTER IX – MEDICAL**

### **A. Pre-Deployment Preparations**

1. CDR Barbara L. Schoen and HSCS Kevin Gordon were the health care providers for the Arctic East/West Summer 2003 patrol.
2. Pharmaceuticals and supplies were ordered and received through the ISC Seattle Pharmacy. HSCS Gordon entered into inventory, all drugs received.
3. One crewmember left on shore for dental treatment.
4. DeRat completed on 6Jun03. SAT.
5. Inventoried and restocked all medications as needed.
6. Inventoried and restocked all medical supplies as needed.
7. Collect medical history screening forms from science members.
8. Completed 85% of crew for small pox vaccinations.

### **B. Seattle, WA-Puerto Vallarta, Mexico**

1. 13JUN03– Underway to Puerto Vallarta. Sailing at 1100 with all crewmembers but one. Crew in good spirits, ready to assume responsibilities of the mission. Proceeded underway to Puerto Vallarta, Mexico.
2. 14JUN03 – Normal work day. Inspections of staterooms and berthing areas. Rough seas. Many crewmembers and civilians presented to sickbay for treatment of motion sickness. Abandon ship and Man overboard drills completed today.
3. 15JUN – Holiday Routine. Ongoing record reviews and prescription refills. Seas remain rough with members reporting to sickbay with motion sickness. One civilian presents for treatment of GU symptoms. Other members treated for early bronchitis, HSV1, viral URI, Ingrown toenail and paronychia infection. Medication refills as they present.
4. 16JUN03 – Normal work day.
5. 17JUN03 – Normal work day. Member treated for pharyngitis. Formal galley inspection today. Score 91.
6. 18JUN03 – Normal work day. 16JAN03 – Normal workday. DC drill in the afternoon. One member treated for multiple abrasions from a fall.
7. 19JUN03 – Normal work day. TX for sub-ungual hematoma. TX for Left knee pain.

### **C. Puerto Vallarta, MX to St. Johns NF**

1. 20JUN03 – Port call Puerto Vallarta MX. Ship unable to connect to local water supply as positive for coliform growth. Laundry secure and sea showers. Maintained own water supply at 1ppm Bromine. Pest control negative.
2. 21JUN03 – Liberty Puerto Vallarta, MX. Various members presenting with complaints of Travelers Diarrhea.
3. 22JUN03 – Liberty Puerto Vallarta, MX. Various members treated for Travelers Diarrhea.

4. 23JUN03 – Liberty Puerto Vallarta, MX. Various members treated for Travelers Diarrhea.
5. 24JUN03 - Depart Puerto Vallarta, MX. at noon today. One member presents to sickbay with rash right axilla.
6. 24JUN03 – Normal work day.
7. 25JUN03 – Normal work day.
8. 26JUN03 – Normal work day. General Emergency Training conducted.
9. 27JUN03 – Normal work day.
10. 28JUN03 – Normal work day until quarters, then holiday routine and morale barbeque on the flight deck. One member treated for foreign body imbedded in right eye.
11. 29JUN03 – Holiday routine. Follow up eye injury. Doing well, will follow up with ophthalmology in Curacao.
12. 30JUN03 – Normal work day. Man overboard drill completed. One member treated for blunt trauma to left hand w/o fracture.
13. 01JUL03 – Normal work day to include transit of the Panama Canal. Medivac of one member to Panamanian hospital, with HSCS escort to R/O pulmonary embolism. Members also treated for viral URI, Facial laceration, Sinusitis, URI and enteritis, f/u blunt trauma to left hand and injury to tongue. Water 0.0 ppm. A-gang notified.
14. 02JUL03 – Holiday routine in the AM. Normal work routine after quarters. DC drill completed in the afternoon. F/u injury to right eye, chronic bilat. tinea pedis, gingival bleeding, bronchitis, laceration finger tip, puncture wound left arm, motion sickness, sinus pressure and f/u blunt trauma to left hand. Water: 0.0 ppm bromine.
15. 03JUL03 – Normal work day. Sinusitis and chronic tinea pedis /w xetosis, motion Sickness, f/u FB right eye, f/u motion sickness.
16. 04JUL 03 – Port call Curacao. Water samples obtained.
17. 05JUL03 – Port call Curacao. Water negative for bacti. No measurable bromine. Engineering notified. Taking on water from the pier. One member escorted to ophthalmology for appointment.
18. 06JUL03 – water: 0.0 ppm bromine. Engineering notified.
19. 07JUL03 – Members treated for sinusitis and low back pain.
20. 08JUL03 – Depart Curacao at 1252. Enroute to Puerto Rico. Will pick up HSCS Gordon there. Two LTT drills completed this afternoon. Members treated for laceration left hand, bursitis right knee, f/u sinusitis and sunburn. Bromine 0.00ppm.
21. 09JUL03 – Normal work day. DC drill completed this afternoon. HSCS Gordon returned today at approx. 1900. Members treated for plantar warts, sunburn, wound inspection and viral pharyngitis.
22. 10JUL03 – Normal work day. Member treated for conjunctivitis.
23. 11JUL03 – Normal work day. DC drills in the afternoon. Two members treated for heat stress. Treatment for URI, sinusitis, and laceration to forehead. Bromine 0.00 ppm.

24. 12JUL03 – Normal work day until DC drill completed in the afternoon. Morale pizza by aviation and riders. Members treated for sinusitis, second-degree sunburns to upper back, persistent LBP and dehydration.
25. 13JUL03 – Holiday Routine. Suture removal left hand. F/U puncture wound right hand. **SANITATION/HABITABILITY: MESSDECK:** Walk through only: Good **SCULLERY:** Walk through only: Good **GALLEY:** Walk through only: Good **FOOD HANDLERS:** Good **BERTHING AREAS: None conducted this week.** **PEST CONTROL SURVEY:** Negative **CHLORINE/BROMINE RESIDUAL: Location:** Sickbay **Results:** 0.0 ppm. EO notified and MPA working on solutions. **BACTERIOLOGICAL RESULTS:** Location: (1) Medical Results: Negative. Location: (2) Galley S/B Results: Negative. **PREVENTIVE MAINTENANCE:** Restocked gun bag on mess deck. **GENERAL COMMENTS:** Escorted MKCS Wenzinger from Panama to Seattle then return to ship. LTT review and training during week. Developed and conducted 6 medical training scenarios.
26. 14JUL03 – Normal work day. DC drill completed this afternoon. Member treated for Sinusitis. All temps in the following compartments were less than 85 degrees so no heat stress, Memo is required for High Voltage Drill. 2-33-1-L = 79.1 Passage. 2-33-0-L = 80.7 Gym. 2-21-0-A = 81.8 Dry Stores. 2-48-0-A = 78.6 MICA.
27. 15JUL03 – Bacti testing on water continues to be negative.
28. Medications expended:
  - a. Meclizine HCL 4 btl
  - b. Promethazine HCL inj 3 vi
  - c. Lactated Ringers 1000's, 4 bags
  - d. Promethazine HCL Supp's 1
  - e. Tylenol 50's 14 btl
  - f. Albuterol inh 1
  - g. Z-pak 1
  - h. Ketorolac Tromethamine 1 vi
  - i. 1% Lidocaine w/o epi 1 vi
  - j. Biaxin XL Pac 2
29. Supplies expended:
  - a. Knee brace 2
  - b. Wrist brace 1
  - c. Hydrogen Peroxide 2 btl
  - d. IV drip set Macro 2 set
  - e. Telfa Non-Adherent 3x4 pads 1 bx
  - f. Disposable Suture Pack 2
  - g. Sun Tan Lotion 3 btl
  - h. X-Ray film 1 bx

#### D. St. Johns NF to Thule, Greenland

1. 16JUL03 – Arrive St. Johns, New Foundland 0900. Fueling in St. Johns. Three members to clinic for required lab work. Liberty. Water at pier 0.2 ppm Bromine. Scientists and gear arriving. Civilian Health records accounted for.
2. 17JUL03 – Moved HEALY to different dock at 1030. Members treated for cystitis and cervical myositis. Liberty.
3. 18JUL03 – Liberty, St Johns, Newfoundland.
4. 19JUL03 – Liberty, St Johns, Newfoundland. One member treated in local ER for crush injury to right forearm.
5. 20JUL03 – Liberty, St Johns, Newfoundland. F/u in sickbay of crush injury to right arm. XR negative for fracture.
6. 21JUL03 – Member treated for pharyngitis and plantar warts.
7. 22JUL03 – Members treated for viral URI's. Chart reviews.
8. 23JUL03 – Bromine level remains 0.00 ppm. Bacti negative.
9. 24JUL03 – Crush injury to right arm doing well and FFFD.
10. 25JUL03 –DC drill completed today. No bromine in tanks since Puerto Vallarta. Engineering working to correct problem with brominator.
11. 26JUL03 –Normal work day until quarters, then holiday routine in the afternoon. Stateroom and berthing area inspections completed. E4's and below served morale dinner.
12. 27JUL03 – Holiday Routine
13. 28JUL03 – Members treated for post auricular abscess right ear, headache, cerumen impaction, plantar warts left foot. BMC has flown home d/t death in family. B/P checks. Chart reviews.
14. 29JUL03 – All hands Thermal training by medical. Treatment for Possible GC / Chlamydia, Cold sore lower lip, Tendonitis left wrist.
15. 30JUL03 – Bromine level 0.1 ppm. Chart reviews. Members treated for URI. Thoracic myositis, excision of a skin tag.
16. 31JUL03 – DC drill completed today with training for stretcher-bearers.
17. 01AUG03 – Members treated for Rosacea, Ear infection/headache, tension headache, and viral syndrome
18. 02AUG03 – **SANITATION/HABITABILITY:** **MESSDECK:** Good **SCULLERY:** Good **GALLEY:** Good **FOOD HANDLERS:** Good **BERTHING AREAS:** **PEST CONTROL SURVEY:** Negative **PREVENTIVE MAINTENANCE:** Restocked gun bags on mess deck **HEAT STRESS SURVEY:** None requested/required. **WATER TEST RESULTS:** Location: Fresh water tank 3-48-1 Results 0.1 ppm Bromine. **BACTERIOLOGICAL RESULTS:** Location: Berth 103, negative and Berth, 212 negative. E5's prepared morale dinner.
19. 03AUG03 – Holiday routine.
20. 04AUG03 – HAPPY COAST GUARD DAY!! Holiday routine.
21. 05AUG03 – Chart reviews. Member treated for right wrist sprain.
22. 06AUG03 - Bromine level results 0.1 ppm. Members treated for sprain left wrist and URI.
23. 07AUG03 –Chart reviews. Members treated for 3<sup>rd</sup> molar pain and tinea pedis.

24. 08AUG03 - Members treated for acute epistaxis, tinea pedis and sprain left elbow. DC drill completed today. Stretcher-bearer training. Galley inspection complete. Trash van locked. Members treated for sinusitis and epicondylitis.
25. 09AUG03 –Stateroom and berthing area inspection completed in the AM. Holiday routine after quarters. Science party prepared morale dinner tonight. Divers in the water.
26. 10AUG03 – Holiday Routine. Divers in the water. **SANITATION/HABITABILITY: MESSDECK: Good SCULLERY: Good GALLEY: Good FOOD HANDLERS: Good BERTHING AREAS: PEST CONTROL SURVEY: Negative WATER TEST RESULTS: 0.1 ppm Bromine. BACTERIOLOGICAL RESULTS: Location: CO's pantry: negative and Bridge S/B: negative.**
27. 11AUG03 – Controlled drug audit completed. Additional medical screening forms received today. Member counseling.
28. 12AUG03 – Thule clinic has been previously advised of need for lab and possibly dental services. Member TX for ankle inversion.
29. 13AUG03 – Advised by ISC of need to maintain Anthrax regimen on crewmembers who have begun immunizations. Divers in the water. Hyperlite moved to hanger for dive ops. Medication refills.
30. 14AUG03 – Holiday routine. Divers in the water today.
31. 15AUG03 – Anchored off Thule Greenland. Made our own water. Medication refills. Member TX for plantar warts.
32. 16AUG03 – Liberty granted to Thule after the workday. No injuries. One member check-in and a medication refill.
33. 17AUG03 – Liberty in Thule. One member of AVDET grounded for low back pain and medication. TAD member treated for knee pain and swelling.
34. 18AUG03 – Liberty in Thule. Four members escorted to base hospital for required lab studies. No problems. POC is: Clare, Frederick W. Capt. 821SPTS/SG email: [Frederick.Clare@thule.af.mil](mailto:Frederick.Clare@thule.af.mil) Member treated for Achilles heel strain.
35. Medications expended:
  - a. Meclizine HCL 1 btl
  - b. Lactated Ringers 1000's, 2 bags
  - c. Tylenol 50's 16 btl
  - d. Biaxin XL Pac 2
36. Supplies expended:
  - a. Wrist brace 3
  - b. Hydrogen Peroxide 1 btl
  - c. IV drip set Macro 1 set
  - d. Ankle brace 1
  - e. Water test tablets 1 bx AUG03 – Departed Thule, Greenland. No illness or injury reported.

## E. NW Passage & NOAA Mission

1. 20AUG03–. **PREVENTIVE MAINTAINANCE:** hard plumbed eyewash stations flushed. As per ISC Clinic's request, health records reviewed to confirm physical dates and smallpox vaccinations for entire crew. Health record review of entire crew also performed to verify individuals who have started the Anthrax vaccines. Blood pressure checks. Medication refills. First Aid training completed.
2. 21AUG03 – DC drill completed. Airway management and CPR training completed with stretcher-bearers. Members treated for decreased ROM of left elbow (member will see Ortho in Seattle) and resolving LBP.
3. 22AUG03 – Hump Day! Holiday routine.
4. 23AUG03 – Berthing and Stateroom inspections in the AM. Holiday Routine after quarters. Three-day blood pressure check complete. **SANITATION/HABITABILITY: MESSDECK: Good SCULLERY: Good GALLEY: Good FOOD HANDLERS: Good BERTHING AREAS: Good PEST CONTROL SURVERY: Negative BROMINE LEVEL: 0.1 ppm BACTERIOLOGICAL RESULTS:** Location Medical, Negative. Main Science Lab, Negative. First class prepared morale dinner. Civilian treated for muscle spasm
5. 24AUG03 – Chart reviews for required dental exams in Seattle.
6. 25AUG03 – Medication refills. Chart reviews. Members treated for wrist sprain, and retreatment for GU infection.
7. 26AUG03 – One member treated for skin lesions. CPR training for four members conducted in the afternoon. Civilian treated for conjunctivitis.
8. 27AUG03 – Medication refills. Members treated for conjunctivitis and strep pharyngitis.
9. 28AUG03 – DC drill completed with stretcher-bearer training.
10. 29AUG03 – Members treated for three-day blood pressure check and epistaxis. Three members for advancement weight checks.
11. 30AUG03 – Chiefs prepared morale dinner tonight. Member treated for acute contusion right hand.
12. 31AUG – Holiday routine. One member treated for skin lesions.
13. 01SEP03 – Holiday Routine. **SANITATION/HABITABILITY: MESSDECK: Good SCULLERY: Good GALLEY: Good FOOD HANDLERS: Good BERTHING AREAS:** Not conducted in Barrow. **PEST CONTROL SURVERY: Negative BROMINE LEVEL: 0.1ppm. BACTERIOLOGICAL RESULTS:** Galley deep sink: negative. **GENERAL COMMENTS:** Submitted budget request for FY-04. Completed dental record review for required dental appointments next in port. Completed CPR training for Stretcher Bearers and Rescue swimmer. Medical training with stretcher-bearers during DCTT drill covered compound fracture and patient transport.
14. 02SEP03 – Member treated for acute migraine cephalgia.
15. 03SEP03 – Record reviews. Two members for weight checks.
16. 04SEP03 – WOG auction and skit night. No injuries. Medication refills.

17. 04SEP03 – Polar Bear initiation in the early AM, prior to the workday. No injuries. Members treated for spontaneous epistaxis and testalgia. Ice party in the afternoon. No injuries.
18. 05SEP03 – Berthing and stateroom inspections in the AM. Holiday routine after quarters. Scientists made pizza for morale dinner. Member treated for removal of two skin tags. Consult to urology.
19. 06SEP03 – Holiday routine. One member treated for viral illness. **SANITATION/HABITABILITY: MESSDECK: Good SCULLERY: Good GALLEY: Good FOOD HANDLERS: Good BERTHING AREAS:** Late sleepers in rooms 109, 110, 108, 106, 104, 103, and 311. High dust is common discrepancy. **PEST CONTROL SURVERY:** Negative **BROMINE LEVEL:** 0.2ppm. **BACTERIOLOGICAL RESULTS:** CO's pantry and medical: negative. **GENERAL COMMENTS:** Gathering data for medical evaluation needed in Seattle.
20. 07SEP03 - Holiday routine.
21. 08SEP03 – Two members counseled for smoking cessation. Will try behavior modification and medication. F/U in two weeks.
22. 09SEP03 – Member treated for persistent unexplained pain and loss of ROM left elbow. Will return this member to Seattle for Ortho. Intervention.
23. 10SEP03 – DC drill completed with training for stretcher-bearers.
24. 11SEP03 – PAX exchange off coast of Barrow for next phase of science ops. Three members with medication refills.
25. 12SEP03 – Three members present for medication refills. Still trying unsuccessfully to recover lab results from Thule clinic.
26. Medications expended:
  - a. Meclizine HCL 1 btl
  - b. Lactated Ringers 1000's, 2 bags
  - c. Tylenol 50's 10 bottles
  - d. Biaxin XL Pac 1
  - e. Loperamide HCL 1 btl
  - f. Cyclobenzaprine HCL
  - g. Chlorzoxazone 1 btl
  - h. Ibuprofen 400mg 1btl
  - i. Midrin 1btl
  - j. Zyban 3btl
27. Supplies expended:
  - a. Wrist brace 1
  - b. Hydrogen Peroxide 1 btl
  - c. Disposable suture set 1
  - e. X-Ray Film 1 bx
  - d. Disposable Suture Pack 1

## **F. SBI Mission**

1. 13SEP03 – Stateroom and berthing inspection in the morning. Holiday routine after quarters. Officers cooking Mexican for Morale dinner.

2. 14SEP03 – Holiday routine. Medication refill. Three members on weight program given grace period until January 4, 2004.  
**SANITATION/HABITABILITY: MESSDECK:** Walk through good.  
**SCULLERY:** Walk through good. **GALLEY:** Walk through good. **FOOD HANDLERS:** Good. **BERTHING AREAS:** Very good. **PEST CONTROL SURVERY:** Negative **BROMINE LEVEL:** 0.1ppm. **BACTERIOLOGICAL RESULTS:** Galley and Main lab head, negative. **PREVENTIVE MAINTENANCE:** inventory of PML's completed.
3. 15SEP03 – Members treated for strep pharyngitis, shoulder pain and vertigo. Reefer in medical overheated and OOC. Drugs removed. Retirement Physical completed.
4. 16SEP03 –Preliminary preparations completed for physical exams.
5. 17SEP03 –Members treated for cystic mass/hip and hordeolum left eye.
6. 18SEP03 –DC drill completed with training for stretcher bearers included.
7. 19SEP03 – Preliminary preparations completed for physical exams.
8. 20SEP03 – Stateroom and berthing inspection in the morning. Holiday routine after quarters. Third Class cooked morale dinner. Three members on weight program weighed in today (end date 01JAN04)  
**SANITATION/HABITABILITY: MESSDECK:** Good. **SCULLERY:** Good. **GALLEY:** Good. **FOOD HANDLERS:** Good. **BERTHING AREAS:** High dust. **PEST CONTROL SURVERY:** Negative **BROMINE LEVEL:** 0.1ppm. **BACTERIOLOGICAL RESULTS:** Requirements completed for the month of September. **PREVENTIVE MAINTENANCE:** 1. Fixed eyewash stations flushed weekly: 18SEPT03. 2. Oxygen levels: Medial, 1600 psi. SAR bag, 1350 psi.
9. 21SEP03 - Holiday routine.
10. 22SEP03 – Members treated for LBP and vertigo. Medications refilled.
11. 23SEP03 – DCPQS first aid hands-on training for several members conducted in sickbay for section 302. Retirement PE completed for one member.
12. 24SEP03 –Toxic gas DC drill completed with training for stretcher-bearers. One aircrew member with recurring low back pain will be returned to Mobile for definitive treatment.
13. 25SEPT03 – Quint. exams completed for two members. Three referrals completed and forwarded to ISC Clinic. After several emails, still unsuccessful in retrieving lab reports from clinic in Thule Greenland. Air Force POC (Miller, Carl J TSgt 821SPTS/SG) appears to be ineffective in securing reports.
14. 26SEP03 – Quint exams for three members completed. Two referrals completed and forwarded to the ISC for processing.
15. 27SEP03 – Members treated for diarrhea and dyshydrosis of the right palm.
16. 28SEP03 –Members seen for recurrent LBP and consultation.
17. 29SEP03 –Members seen for medication refills. Completed mandatory all-hands “Sexually Transmitted Diseases” training.
18. 30SEP03 –Inflammation right eye. HSCS Gordon passed in-port OOD board!!
19. 01OCT03-Member for ongoing treatment of smoking Cessation.
20. 02OCT03 – Preliminary preparations for flight physical, inc. EKG. Currently there are four members included in the weight-program.

21. 03OCT03 - **SANITATION/HABITABILITY: MESSDECK:** Walk through good. **SCULLERY:** Walk through good. **GALLEY:** Walk through good. **FOOD HANDLERS:** Good. **BERTHING AREAS:** High dust but good overall. **PEST CONTROL SURVERY:** Negative **BROMINE LEVEL:** 0.1ppm. **BACTERIOLOGICAL RESULTS:** Requirements completed for the month of September. **PREVENTIVE MAINTENANCE:** Fixed eyewash stations flushed weekly: 24SEPT03 and Oxygen levels: Medical 1600psi, SAR bag: 1350psi.
22. 04OCT03 – Inspection of staterooms and berthing areas in the AM. Holiday routine after quarters. E5's prepared morale dinner, followed by Casino night. One member treated for headache.
23. 05OCT03 – Holiday routine.
24. 06OCT03 – Two Members treated for F/U LBP. Members treated for torticollis and cryo to wart on hand. Heavy seas. Two members for preliminary preparation for physical exams.
25. 07OCT03 – Several members reporting for treatment of motion sickness. All hands medical training on splinting and wrapping.
26. 08OCT03 – Member presents for ongoing treatment for tobacco cessation.
27. 09OCT03 – Four members remain on the weight-program.  
**SANITATION/HABITABILITY: MESSDECK:** Good. **SCULLERY:** Good. **GALLEY:** Good. **FOOD HANDLERS:** Good. **BERTHING AREAS:** Good. (Discrepancy list sent to DCC for possible correction before port Seattle) **PEST CONTROL SURVERY:** Negative **BROMINE LEVEL:** Medical 0.1ppm. **BACTERIOLOGICAL RESULTS:** Location: (1) Sickbay Results: negative. Location: (2) XO Stateroom Results: Negative. **PREVENTIVE MAINTENANCE:** Fixed eyewash stations flushed weekly: 07OCT03 and Oxygen levels: Medical 1600psi, SAR bag: 1250psi. Completed DCPQS training over section 224 with MST2 Robinson. Monthly check of eye wash stations completed 01OCT03. Monthly check of gun bags completed 01OCT03. Completed DCPQS training over section 302 with MST2 Robinson on 5OCT03. Conducted all hands training covering First Aid on 7OCT03. Completed DCPQS training over section 105 for ENS Beaudoin, SK1 Pierce, PO Black, PO Leppo and SN Hannon on 07OCT03.
28. 10OCT03 – DC drill this afternoon. PO O'Dell returned to Mobile for on-going treatment of chronic LBP.
29. 11OCT03 – Inspection of staterooms and berthing areas in the AM. Holiday routine after quarters. Member for f/u of LBP.
30. 12OCT03 – Holiday routine. Member treated with cryo for skin lesion left leg.
31. 13OCT03 – Member given treatment for upper back discomfort. Medication refills for two members. Cryo for skin lesion.
32. 14OCT03 – PE exam completed on one member. One member treated for otitis media. Ongoing scheduling for necessary medical and dental appointments for members while in port.
33. 15OCT03 – Member referral for PRK prepared for ISC. DC drill completed today. Training for stretcher-bearers in accessing emergency supplies. Four members monitored on the weight program. **SANITATION/HABITABILITY: MESSDECK:** Walk through good. **SCULLERY:** Walk through good.

- GALLEY:** Walk through good. **FOOD HANDLERS:** Good. **PEST CONTROL SURVERY:** Negative **BROMINE LEVEL:** Medical 0.1ppm. **BACTERIOLOGICAL RESULTS:** Location: (1) Berthing 201 Results: negative. **PREVENTIVE MAINTENANCE:** Fixed eye wash stations flushed weekly. 14OCT03. Oxygen levels: Medical 1600 psi, SAR bag: 1240 psi.
34. 16OCT03 – Referrals and appointments arranged for members.
  35. 17OCT03 –Two medical referrals sent to ISC. Chart reviews for emplid numbers.
  36. 18OCT03 –Offloaded scientists to Nome. Room inspections for departing science members went well. Holiday routine after quarters. First class prepared morale dinner.
  37. Medication expended:
    - a. Scopolamine patches 4
    - b. Tylenol 5 btl
    - c. Ibuprofen 800 1 btl
    - d. Hydrocortisone 3 tubes
    - e. Sulfacetamide Sodium Ophth Oint 2 tubes
    - f. Tylenol #3 1 btl
    - g. Loperamide HCL 1 btl
    - h. Amoxicillin 1 btl
  38. Supplies expended:
    - a. Stat Strep tests 1 bx
    - b. Water test tablets 1 bx
    - c. Cryo Tx 1 can

## G. Nome to Seattle

1. 19OCT03 –Holiday routine
2. 20OCT03 – Two members for referrals to Ophthalmology for PRK. One member treated for facial acne.
3. 21OCT03 - Member treated for rash. Physical completed
4. 22OCT03 – Rough seas. Motion sickness medication dispensed to several crewmembers. Medication refill for positive PPD. Member treated for vaginal yeast.
5. 23OCT03 – Physical exam completed. One member treated for pharyngitis. Referral to Bremerton Ortho for pin removal/ankle. Four members on weight control program. **SANITATION/HABITABILITY: MESSDECK:** Walk through good. **SCULLERY:** Walk through good. **GALLEY:** Walk through good. **FOOD HANDLERS:** Good. **PEST CONTROL SURVERY:** Negative **BROMINE LEVEL:** Medical 0.1ppm. **BACTERIOLOGICAL RESULTS:** Location: (1) Science lab Results: negative. **PREVENTIVE MAINTENANCE:** Fixed eye wash stations flushed weekly. 21OCT03. Oxygen levels: Medical 1600 psi, SAR bag: 1240 psi. **GENERAL COMMENTS:** Completed and handed out Memo's for 120 appointments in Seattle. Submitted 12 referrals for patients needing specialized care and/or procedures.
6. 24OCT03 – Quint. exam completed. Member treated for scalp folliculitis.

7. 25OCT03 – Liberty Juneau. Member treated for superficial laceration finger.
  8. 26OCT03 – Liberty Juneau. Member treated for cervical strain.
  9. 27OCT03 – Liberty Juneau. Dependents boarded. Medication for motion sickness dispensed upon request.
  10. 28OCT03 – Depart Juneau. No serious illness or injury in port.
  11. 29OCT03 – Members treated for acute torticollis and acute cystitis.
  12. 30OCT03 – Dependent spouse treated for acute motion sickness.
  13. 31OCT03 – AVDET departed in Port Angeles with all medical records. Four members remain on weight control program. Member treated for injury to right lower leg. 01NOV03 – Members treated for 2<sup>nd</sup> degree ankle sprain, left and Pytiriasis rosea. Medication refills. HEALY arrives port Seattle at 1300. FN Dawlidowicz and MKCS Wenzinger and MK2 Titus on pier. .  
**SANITATION/HABITABILITY: MESSDECK:** Walk through good.  
**SCULLERY:** Walk through good. **GALLEY:** Walk through good. **FOOD HANDLERS:** Good. **PEST CONTROL SURVEY:** Negative **HEAT STRESS SURVEY:** None requested/required. **BROMINE LEVEL:** Medical 0.1ppm. **BACTERIOLOGICAL RESULTS:** Completed for month.  
**PREVENTIVE MAINTENANCE:** Fixed eye wash stations flushed weekly.  
 28OCT03. Oxygen levels: Medical 1600 psi, SAR bag: 1230 psi. **GENERAL COMMENTS:** Prepared rooms after science party departed and prior to dependents cruise. Lab work drawn on members, in August was never reported to CDR Schoen by POC at lab in Thule despite numerous requests. Unsatisfactory medical support from Thule.
15. Medication expended:
    - a. Scopolamine patches 12
    - b. Meclizine 2 bt
    - c. Claritin 1 bt
  16. Supplies expended
    - a. Ace wraps 4” 1 bx
    - b. Sterile gauze 2 pks



## **CHAPTER X - DIVING**

### **A. Pre-Deployment Preparations**

1. The usual, Navy-prescribed PMS was conducted on all dive equipment prior to AEWS 03. Air was sampled and tested satisfactory from the compressor while dry suit seals were replaced and regulators switched out for new ones in accordance with new Coast Guard PMS procedures.
2. HEALY's dive team completed a series of dives in support of science even before the deployment. Divers inspected and photographed all of the transducer windows and reported successfully on the status of each one. A lot of preparations were made before these dives even took place, most notably a "pig" line. Divers noted the approximate frame number of the transducer wells, found this same frame number on the port and starboard 01 deck and were able to string this "pig" line athwartships and under the hull. This time consuming evolution ultimately lead divers right to the transducers without having to search for them.
3. Additionally, a cracked MSW required divers to plug a thru hull so that HEALY's DCs could complete the necessary work from inside the ship. These dives gave the team an opportunity to get comfortable with the EXO26 Full Face Mask that would be used during cold water diving in the Canadian Archipelago. All comms lines were confirmed operational as well as the team's Hyperlite Stretcher during completion of these dives.

### **B. Falkner Mission**

1. "Jamming" of bottles or filling them with air had to be cut short once due to the ship's exhaust entering the hangar and dive locker. Dive team members should always be aware of where the ship's emissions are directed when "jamming" or refilling SCUBA bottles.
2. More training and testing was done on the Hyperlite Stretcher before dive operations commenced on this leg. Every diver was required to dive the mini-chamber as well as familiarize him/herself with treatment tables, treatment depth, and travel time. By the time the science community asked divers to splash, each diver had a strong working knowledge of the Hyperlite Stretcher, the different roles that have to be played, and procedures to successfully "press" or treat a symptomatic diver in the stretcher.
3. HEALY's LCVP was the perfect platform for launching divers, and it should be stressed that if conditions warrant taking the Hyperlite Stretcher with the divers to the dive site, there is sufficient room onboard the LCVP to do so. This should be done if the ship will be further than 10 minutes from the LCVP. During these dives though, when divers deployed five pressure

moorings and retrieved clams, HEALY could be reached in ten minutes, so the chamber was left on board the ship.

4. As early as the second day of diving, the divers decided not to wear fins considering the nature of the jobs and the stiff currents. The jobs required divers to comb the bottom for clams and the currents dictated they do that heavily weighted and on all fours. The mooring jobs also required divers to be heavily weighted and grounded while driving stakes into the bottom. Fins would have hampered divers' ability to complete these jobs.



5. As mentioned divers deployed five pressure sensors. Prior to each dive, scientists surveyed potential sites with an underwater camera. 60-70 feet was the target depth. Once sites were decided on, a second anchor line was placed at short stay so that divers could travel to the bottom using the second anchor line as a down line. The scientist-fabricated hammer was attached to the down line and lowered to the bottom before the divers. There can never be enough carabineers for these types of dives. Divers then descended with stakes in hand which were driven into the ocean bottom by the hammer.

Once stakes were in place, the mooring assembly was lowered on either diver's tending line. The assemblies proved very diver friendly and fit right onto the stakes. An easily identifiable pull pin allowed divers to secure the assembly to the stake. Divers could either see, or feel the pull pin with their gloved hands, in case visibility is poor.

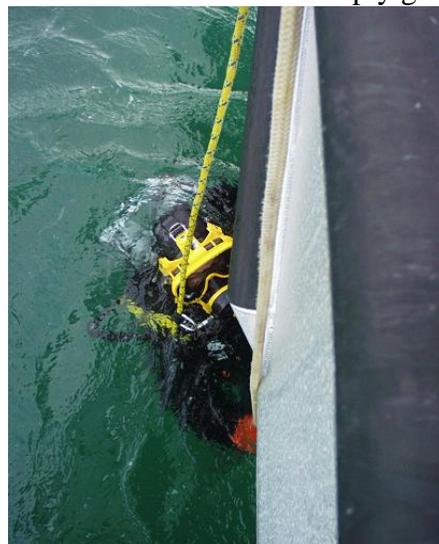
A couple of dives required extra stakes due to the soft bottom that divers encountered. It was concluded that the best ocean bottom for these moorings was a sandy to gravel bottom. The extra stakes are relatively light, so they must be weighted first prior to sending them down on the divers' tending

lines, especially given the driving heavy currents experienced in this region. Again there can never be enough carabineers for these types of dives.



6. Bivalve retrievals were completed in conjunction with deployment of pressure sensor moorings. Underwater camera surveillance was again completed prior to selection of a dive site. Siphons were evident on the TV screen in several instances, and divers promised a good clambake before they really discovered the elusive nature of bivalves.

The “stinger” or pump-hose assembly brought by scientists turned out to be unwieldy and binding, not to mention the hose became chinked on one occasion. Whenever it was aimed and fired into the bottom, visibility turned to zero as a cloud of mud was kicked up. Divers decided instead to resort to more hands-on methods like knives, pails and scoopers, some of which were fabricated in the DC shop. Bivalves were very evasive and no sooner did divers spot their siphons open in the mud than the bivalves closed their siphons making it difficult for divers to simply grab and bag them.



### C. Recommendations

1. It is strongly recommended that everything be pre-staged before splashing divers. The duration of these evolutions was short for the most part but divers were still occasionally forced to wait on the bottom while the assembly package was being prepared for lowering. All testing that can be conducted by scientists prior to splashing divers is strongly encouraged.
2. HEALY's dive officer judged that 20 minutes was the maximum amount of bottom time during which divers would be able to function effectively in 30-degree water. This applied to dives dedicated to both moorings and bivalve retrieval. Dive supervisors should use the next schedule when determining RNT or residual nitrogen time in order to benefit the cold water diver who may be called on to conduct a "repeat" or second dive.

DATE	DIVER	DIVER	MAX DEPTH	BOTTOM TIME
02AUG03	BM3 LUSSIER	MST3 SCRIVEN	20'/20'	:36/:30
02AUG03	BM1 GROB	BM2 BRESNAHAN	44'/44'	:32/:41
03AUG03	LTJG AMARAL		38'	:20
03AUG03	DC2 GILLICK	BM3 LUSSIER	73'/73'	:18/:18
07AUG03	LTJG AMARAL		69'	:20
07AUG03	BM3 LUSSIER		76'	:23
07AUG03	BM1 GROB	DC2 GILLICK	61'/61'	:3/:22
07AUG03	MST3 SCRIVEN		44'	:11
07AUG03	BM2 BRESNAHAN		46'	:23
07AUG03	BM1 GROB		75'	:21
10AUG03	BM1 GROB	MST3 SCRIVEN	62'/60'	:26/:26
12AUG03	LTJG AMARAL	BM2 BRESNAHAN	42'/42'	:25/:25
12AUG03	BM1 GROB	DC2 GILLICK	56'/56'	:25/:25
12AUG03	BM3 LUSSIER	MST3 SCRIVEN	68'/68'	:21/:16
14AUG03	LTJG AMARAL	BM3 LUSSIER	66'/66'	:24/:23
14AUG03	DC2 GILLICK	MST3 SCRIVEN	29'/29'	:20/:25

## Appendix A

### ARCTIC EAST/WEST 2003 CHRONOLOGY OF MAJOR EVENTS

DATE	TIME	EVENT
13Jun03	11:15T	Underway from Seattle, Washington, for AEWS 2003; en route Puerto Vallarta, Mexico.
	18:47T	Completed TACAN and DF calibrations in vicinity of Port Angeles, Washington.
	21:40T	Embarked CG 6519 HH-65B Helo and AVDET.
15Jun03	10:16T	Departed D13 waters; entered D11 waters.
18Jun03	23:52T	Stood into Tropic of Cancer at Longitude 111-13.3W.
19Jun03	15:00T	Advanced ship's clocks one hour to conform to +6 Sierra.
20Jun03	06:15S	Advanced ship's clocks one hour to conform to +5 Romeo.
	08:47R	Moored portside to Pier N2, Puerto Vallarta, Mexico.
24Jun03	12:30R	Underway en route Panama Canal.
01Jul03	09:00R	Anchored off Panama City, PN awaiting Canal Transit.
01Jul03	18:30R	Commenced Panama Canal Transit.
02Jul03	04:35R	Completed Panama Canal Transit, stood into the Caribbean Sea.
03Jul03	15:00R	Advanced ship's clocks one hour to conform to +4 Quebec.
04Jul03	08:00Q	Moored portside to Admiral Brion Wharf, Willemstad Curacao.
08Jul03	12:46Q	U/W En Route Saint John's Newfoundland via the Mona Passage for embarkation of CG 6521. LTT also aboard for Training.
13Jul03	16:30P/O	Adjusted clocks to conform to +2 ½ Newfoundland DST.
16Jul03	08:54PP/O	Moored portside to Irving Oil Fuel Pier; Saint John's Newfoundland, Canada.

17Jul03	09:28P/O	U/W to shift berths in Saint John's Harbor
17Jul03	10:13P/O	Moored portside to Berth 17; Saint John's Newfoundland
21Jul03	10:02P/O	U/W En Route Baffin Bay.
22Jul03	16:30P/O	Retarded ship's clocks ½ hour to conform to +3 Papa.
24Jul03	16:50P	Crossed North of the Arctic Circle @ 66-33N 056-00W, in Northern Baffin Bay.
04Aug03	01:00P	Stood into Kennedy Channel portion of the Nares Straits @ 79-55.5N 070-09.9W
07Aug03	23:10P	Stood into the Robeson Channel @ 81-50.1N 062-00.7W
11Aug 03	08:00P	Stood into Hall Basin @ 81-37.2N 063-14-7W
12Aug03	00:10P	Stood into Kennedy Channel portion of the Nares Straits @ 79-55.5N 070-09.9W
13Aug03	07:45P	Stood into Scoresby Bay @ 79-16.3N 072-34.8W
15Aug03	1350P	Anchored in North Bugt off Thule AFB, Greenland.
19Aug03	1021P	U/W En Route Barrow, Alaska via the North West Passage.
21Aug03	16:00P	Stood into Lancaster Sound @ 74-24.9N 089-50.8W
21Aug03	20:00P	Adjusted ship's clocks to conform to +4 Quebec.
22Aug03	12:00P	Stood into Hayes Channel @ 74-45.8N 099-40.1W
24Aug03	20:00Q	Adjusted ship's clocks to conform to +8 Uniform.
24Aug03	20:00U	Stood into Perry Channel @ 71-50.0W 120-00.00
25Aug03	15:15U	Stood into Amundsen Gulf @ 70-27.6N 125-48.7W
26Aug03	00:01U	Stood into the Beaufort Sea @ 70-53.4N 128-37.8W
31Aug03	00:01U	Stood into the Chukchi Sea @ 71-26.7N 157-22.5W

31Aug03	06:59U	Anchored off Barrow, Alaska for fueling.
01Sep03	02:25U	U/W for 10 day NOAA Mapping Mission (HLY-03-02)
02Sep03	00:01U	Stood into the Beaufort Sea @ 74-40.4N 160-30.8W
03Sep03	12:00U	Stood into the Arctic Ocean @ 78-14.1N 167-47-.3W
07Sep03	13:00U	Stood into the Beaufort Sea @ 78-50.6N 157-15.3W
11Sep03	08:20U	Off-shore Barrow, AK To off-load NOAA Mapping Mission personnel and on-load SBI Mooring Mission personnel. U/W for HLY-03-03.
11Sep03	12:00U	Stood into the Chukchi Sea @ 71-16.9N 158-21.5W
24Sep03	12:00U	Stood into the Beaufort Sea @ 71-40.0N 151-47.0W
17Oct03	12:00U	Stood into the Chukchi Sea @ 68-35.3N 168-30.3W
18Oct03	00:01U	Stood into the Bering Strait @ 65-21.4N 168-09.6W
18Oct03	13:14U	Off-shore Nome, AK to off-load SBI personnel.
18Oct03	20:16U	U/W en route Juneau, AK for port call.
19Oct03	12:00U	Stood into Norton Sound @ 60-25.4N 168-17.5W
20Oct03	00:01U	Stood into the Bering Sea @ 57-20.9N 166-43.3W
21Oct03	00:01U	Stood into the Gulf of Alaska @ 54-26.9N 159-37.9W
24Oct03	01:00U	Stood into Cross Sound @ 58-12.7N 136-30.5W
24Oct03	13:24U	Moored Cruise Ship/Ferry Terminal in Juneau, AK.
26Oct03	02:00U	Shifted ship's clocks back 1 hour to conform with +9V
28Oct03	13:10V	U/W en route Home-Port.
29Oct03	03:45U	Stood into Glacier Bay @ 58-49.1N 136-27.8W
29Oct03	15:00V	Shifted ship's clocks ahead 1 hour to conform to +8U.
30Oct03	00:01U	Stood into Chatham Strait @ 56-45.1N 134-32.5W

31Oct03	04:00U	Stood into the N. Pacific Ocean @ 51-32.7N 131-16.6W
31Oct03	09:06U	CG6519 Departed HEALY en route AirSta Mobile
31Oct03	10:52U	CG6521 Departed HEALY en route AirSta Mobile
01Nov03	03:30U	Stood into the Strait of Juan De Fuca @ Buoy "J".
01Nov03	13:08U	Moored Pier 5 Todd Pacific Shipyard, Seattle, WA.

## Appendix B

### 1200 POSITIONS

DATE/TIME	1200 POSITION	DAILY NM	CUMULATIVE
131115T JUN 2003	DEPART SEATTLE, WA	0.0	0.0
131200T JUN 2003	47-36.9N 122-23.1W	116.9	116.9
141200T JUN 2003	46-31.3N 125-07.9W	303.5	420.4
151200T JUN 2003	41-31.3N 125-07.5W	363.3	783.7
161200T JUN 2003	35-27.0N 122-04.9W	386.7	1170.4
171200T JUN 2003	30-19.5N 117-38.1W	343.1	1513.5
181200T JUN 2003	25-20.2N 113-14.3W	342.0	1855.5
191200T JUN 2003	21-44.1N 108-21.9W	184.5	2040.0
251200R JUN 2003	17-38.2N 102-44.1W	458.0	2498.0
261200R JUN 2003	15-42.2N 098-53.8W	248.4	2746.4
271200R JUN 2003	13-19.5N 094-13.5W	306.6	3053.0
281200R JUN 2003	11-26.2N 090-32.9W	153.4	3206.4
291200R JUN 2003	09-49.2N 087-53.3W	445.2	3651.6
301200R JUN 2003	07-00.0N 081-40.9W	362.7	4014.3
011200R JUL 2003	Panama Canal Zone	201.3	4215.6
021200R JUL 2003	10-19.2N 078-16.9W	153.0	4368.6
031200R JUL 2003	12-17.3N 072-48.1W	304.3	4672.9
041200Q JUL 2003	Moored Curacao		
091200Q JUL 2003	17-13.6N 067-52.3W	379.0	5051.9
101200Q JUL 2003	21-49.2N 065-59.5W	312.0	5369.9
111200Q JUL 2003	27-39.4N 063-13.3W	380.0	5749.9
121200Q JUL 2003	33-40.6N 060-11.5W	391.0	6140.9
131200Q JUL 2003	39-00.8N 057-19.6W	352.8	6493.7
141200Q JUL 2003	43-47.8N 054-35.0W	309.0	6802.7
151200P/Q JUL 2003	46-46.0N 052-45.7W	240.0	7042.7
161200P/Q JUL 2003	Moored Saint John's	170.2	7212.9
211200P/Q JUL 2003	47-45.2N 052-24.9W	19.0	7231.9
221200P/Q JUL 2003	53-56.3N 053-34.3W	377.0	7608.9
231200P JUL 2003	59-19.1N 055-03.1W	330.9	7939.8
241200P JUL 2003	65-44.5N 056-00.0W	390.0	8329.8
251200P JUL 2003	72-06.9N 060-12.6W	409.0	8738.8
261200P JUL 2003	72-45.0N 068-00.0W	150.2	8889.0
271200P JUL 2003	72-23.1N 073-45.7W	117.0	9006.0
281200P JUL 2003	72-40.9N 073-06.3W	197.0	9203.0
291200P JUL 2003	72-34.9N 071-25.7W	134.0	9337.0
301200P JUL 2003	73-22.9N 066-56.6W	172.0	9509.0

311200P JUL 2003	75-18.7N 066-59.9W	126.0	9635.0
011200P AUG 2003	76-14.9N 071-06.9W	205.0	9840.0
021200P AUG 2003	78-22.4N 072-57.3W	215.0	10055.0
031200P AUG 2003	78-45.0N 073-54.7W	82.0	10137.0
041200P AUG 2003	80-26.3N 067-55.8W	194.0	10331.0
051200P AUG 2003	80-25.3N 067-49.3W	107.0	10438.0
061200P AUG 2003	81-03.8N 066-04.6W	95.0	10533.0
071200P AUG 2003	81-41.8N 064-36.9W	122.0	10655.0
081200P AUG 2003	82-19.9N 060-42.8W	146.0	10801.0
091200P AUG 2003	82-08.7N 061-29.0W	161.0	10962.0
101200P AUG 2003	81-08.2N 061-50.6W	129.0	11091.0
111200P AUG 2003	81-37.3N 063-15.4W	74.0	11165.0
121200P AUG 2003	79-56.4N 071-03.7W	61.3	11226.3
131200P AUG 2003	78-56.9N 075-17.0W	92.0	11318.3
141200P AUG 2003	78-56.4N 075-36.6W	170.0	11488.3
151200P AUG 2003	76-39.9N 06936.2W	236.0	11724.3
161200P AUG 2003	76-32.5N 068-55.0W	17.0	11741.3
191200P AUG 2003	76-40.0N 069-53.3W	22.0	11763.3
201200P AUG 2003	75-54.8N 079-57.8W	244.0	12007.3
211200P AUG 2003	74-24.9N 089-50.1W	276.0	12283.3
221200Q AUG 2003	74-45.3N 099-39.7W	181.0	12464.3
231200Q AUG 2003	74-33.6N 110-30.9W	205.0	12669.3
241200Q AUG 2003	73-09.2N 116-19.3W	102.9	12772.2
251200U AUG 2003	70-27.5N 125-46.5W	270.0	13042.2
261200U AUG 2003	71-04.9N 133-52.6W	270.0	13312.2
271200U AUG 2003	71-19.6N 140-24.6W	162.0	13474.2
281200U AUG 2003	71-01.0N 143-37.5W	193.0	13667.2
291200U AUG 2003	71-30.8N 149-00.5W	173.0	13840.2
301200U AUG 2003	71-21.6N 156-45.5W	202.3	14042.5
311200U AUG 2003	71-18.7N 156-50.1W	55.4	14097.9
011200U SEP 2003	73-13.9N 158-54.1W	106.3	14204.2
021200U SEP 2003	75-57.2N 162-38.8W	193.0	14397.2
031200U SEP 2003	78-14.1N 167-47.3W	131.2	14528.4
041200U SEP 2003	79-13.6N 166-21.7W	124.0	14652.4
051200U SEP 2003	79-19.2N 163-32.7W	80.9	14733.3
061200U SEP 2003	78-59.5N 158-56.2W	91.0	14824.3
071200U SEP 2003	78-50.6N 157-15.0W	60.0	14884.3
081200U SEP 2003	77-28.6N 164-42.5W	144.0	15028.3
091200U SEP 2003	76-33.6N 163-44.2W	111.0	15139.3
101200U SEP 2003	74-10.0N 159-38.9W	178.0	15317.3
111200U SEP 2003	71-25.1N 156-55.4W	226.0	15543.3
121200U SEP 2003	71-12.5N 159-49.5W	213.7	15757.0

131200U SEP 2003	71-16.9N 158-21.5W	164.1	15921.1
141200U SEP 2003	70-57.8N 159-22.1W	100.0	16021.1
151200U SEP 2003	73-20.2N 166-03.8W	134.2	16155.3
161200U SEP 2003	73-41.6N 167-53.2W	90.0	16245.3
171200U SEP 2003	73-30.3N 166-00.7W	165.5	16410.8
181200U SEP 2003	74-05.0N 166-00.3W	57.0	16467.8
191200U SEP 2003	72-41.2N 166-00.3W	95.0	16562.8
201200U SEP 2003	71-43.3N 161-55.4W	92.0	16664.8
211200U SEP 2003	70-39.3N 166-19.8W	103.0	16827.8
221200U SEP 2003	70-42.4N 166-39.3W	130.2	16958.0
231200U SEP 2003	71-18.4N 159-18.2W	210.0	17168.0
241200U SEP 2003	71-40.0N 151-47.9W	227.0	17395.0
251200U SEP 2003	71-26.3N 152-00.0W	100.0	17495.0
261200U SEP 2003	71-33.1N 151-48.7W	99.0	17594.0
271200U SEP 2003	71-30.1N 151-54.2W	128.0	17722.0
281200U SEP 2003	71-39.9N 151-48.9W	88.0	17810.0
291200U SEP 2003	71-50.3N 151-41.1W	199.0	18009.0
301200U SEP 2003	71-25.2N 151-35.7W	69.0	18078.0
011200U OCT 2003	71-20.9N 152-29.3W	3.0	18081.0
021200U OCT 2003	71-40.8N 151-54.0W	58.1	18139.1
031200U OCT 2003	71-31.5N 151-56.2W	232.0	18371.1
041200U OCT 2003	71-34.8N 151-54.5W	155.0	18526.1
051200U OCT 2003	71-23.7N 152-04.8W	166.0	18692.1
061200U OCT 2003	71-21.3N 152-03.0W	106.0	18798.1
071200U OCT 2003	71-25.6N 152-01.9W	104.0	18902.1
081200U OCT 2003	71-32.2N 151-56.9W	65.0	18967.1
091200U OCT 2003	71-55.4N 151-36.2W	38.0	19005.1
101200U OCT 2003	71-08.2N 158-22.6W	254.0	19259.1
111200U OCT 2003	72-14.9N 162-18.1W	123.0	19382.1
121200U OCT 2003	73-05.6N 160-31.2W	101.0	19483.1
131200U OCT 2003	73-38.1N 159-33.4W	56.0	19539.1
141200U OCT 2003	73-13.1N 158-00.9W	67.0	19606.1
151200U OCT 2003	72-56.9W 156-45.1W	173.0	19779.1
161200U OCT 2003	72-13.2N 160-13.9W	100.0	19879.1
171200U OCT 2003	68-35.6N 168-30.0W	345.0	20224.1
181200U OCT 2003	64-25.2N 165-28.1W	331.0	20555.1
191200U OCT 2003	60-25.1N 168-17.3W	297.0	20852.1
201200U OCT 2003	54-23.3N 165-04.4W	214.8	21066.9
211200U OCT 2003	55-49.6N 154-32.2W	384.0	21450.9
221200U OCT 2003	56-48.5N 148-59.4W	214.0	21664.9
231200U OCT 2003	57-43.2N 140-33.4W	283.0	21947.9
241200U OCT 2003	58-13.5N 134-16.7W	249.0	22196.9

251200U OCT 2003	Moored Juneau, Alaska	10.0	22206.9
281200U OCT 2003	Moored Juneau, Alaska		
291200U OCT 2003	58-52.3N 137-04.2W	168.0	22374.9
301200U OCT 2003	53-23.7N 133-47.1W	379.0	22753.9
311200U OCT 2003	50-07.8N 128-36.9W	294.0	23047.9
011200U NOV 2003	47-40.4N 122-28.2W	155.6	23203.5

## Appendix C

### EMBARKED PERSONNEL AEWS03

<b>A. OFFICER PERSONNEL ABOARD</b>	<b>ARRIVE</b>	<b>DEPART</b>	<b>ARRIVE</b>	<b>DEPART</b>
CAPT DANIEL OLIVER	13-Jun-03	1-Nov-03		
CDR DOUGLAS RUSSELL	13-Jun-03	24-Jun-03		
CDR WILLIAM J. RALL	24-Jun-03	1-Nov-03		
LCDR JOSEPH SEGALLA	13-Jun-03	4-Jul-03		
LCDR DARYL PELOQUIN	1-Jul-03	1-Nov-03		
LT GREGORY STANCLIK	13-Jun-03	1-Nov-03		
LT ROBERT CLARKE	13-Jun-03	28-Oct-03		
LTJG NEAL AMARAL	13-Jun-03	1-Nov-03		
LTJG JOSEPH CASTANEDA	13-Jun-03	16-Aug-03		
LTJG DAVID KOWALCZYK	13-Jun-03	16-Jul-03		
ENS DARAIN S. KAWAMOTO	4-Jul-03	1-Nov-03		
ENS JAMES COOLEY	4-Jul-03	1-Nov-03		
ENS SARA RUNYAN	4-Jul-03	1-Nov-03		
ENS JASON PLUMLEY	4-Jul-03	1-Nov-03		
ENS KEVIN A. BEAUDOIN	16-Aug-03	1-Nov-03		
ENS KEVIN M. HASSELMAN	13-Jun-03	1-Nov-03		
CWO2 RICHARD MILLS	13-Jun-03	1-Nov-03		
CWO4 JAMES A. ROBSON	13-Jun-03	1-Nov-03		
CWO2 WILLIAM LEVITCH	13-Jun-03	1-Nov-03		
<b>B. OFFICER PERSONNEL TAD</b>				
CDR BARBARA SCHOEN (ISC SEATTLE)	13-Jun-03	1-Nov-03		
LCDR APRIL BROWN (PACAREA)	16-Aug-03	30-Aug-03		
LCDR ROBERT YOUNG (POPDIV)	21-Jul-03	31-Oct-03		
LT GREGORY MATYAS (AVDET)	13-Jun-03	31-Oct-03		
LT GARY NAUS (POPDIV)	21-Jul-03	31-Oct-03		
CWO4 COX (ATG)	8-Jul-03	16-Jul-03		
LT STRICKLAND (ATG)	8-Jul	16-Jul-03		
LT DAMON WILLIAMS (AVDET)	13-Jun-03	31-Oct-03		
CADET JOSEPH GRAHAM (CG ACADEMY)	13-Jun-03	16-Jul-03		
CADET ANTHONY DONIS (CG ACADEMY)	13-Jun-03	16-Jul-03		
CADET ELISHA SIVILS (CG ACADEMY)	13-Jun-03	16-Jul-03		
<b>C. ENLISTED PERSONNEL ABOARD</b>				
EMCM JOHN P. MOSPENS	13-Jun-03	1-Nov-03		
ETCM JAMES L. O'BRIEN	13-Jun-03	1-Nov-03		
QMCM GEORGE J. SCHWARZ	13-Jun-03	4-Jul-03		
QMCM JOSEPH GISPERT	13-Jun-03	1-Nov-03		
MKCS GEORGE A. WENZINGER	13-Jun-03	1-Nov-03		
MSTCS GLEN T. HENDRICKSON	13-Jun-03	1-Nov-03		
FSCS KARL KANISS	13-Jun-03	1-Nov-03		

HSCS KEVIN GORDON	13-Jun-03	1-Jul-03	10-Jul-03	1-Nov-03
BMC JAMES W. BRIDE	13-Jun-03	28-Jul-03	16-Aug-03	1-Nov-03
EMC FRANK R. DONZE	24-Jun-03	1-Nov-03		
DCC PETER A. SCHAFFNER	4-Jul-03	1-Nov-03		
ETC MICHAEL F. MCGUIRE	13-Jun-03	1-Nov-03		
MKC JOSEPH DIAZ	4-Jul-03	1-Nov-03		
SKC KARL KEYES	13-Jun-03	1-Sep-03	19-Oct-03	1-Nov-03
TCC JOHN F. DILOUIE	13-Jun-03	4-Jul-03		
OSC LEWIS WINNINGHAM	13-Jun-03	1-Nov-03		
YNC SELINDE A. BROCK	13-Jun-03	24-Jun-03		
YNC MARIA KIRBY	13-Jun-03	1-Nov-03		
BM1 PATRICK W. MORKIS	13-Jun-03	1-Nov-03		
DC1 BIANCA P. WITKOWSKI	13-Jun-03	11-Sep-03	19-Oct-03	1-Nov-03
EM1 DEVIN D. PRITCHARD	13-Jun-03	28-Oct-03		
ET1 ROGER J. RETZLAFF	13-Jun-03	1-Nov-03		
ET1 CHRIS MARTIN	13-Jun-03	1-Nov-03		
FS1 JASON GAULKIE	11-Sep-03	1-Nov-03		
FS1 DAVID P. CASTEEL	13-Jun-03	1-Nov-03		
MK1 CHAD J. SERFASS	13-Jun-03	1-Nov-03		
MK1 JUSTIN P. FITZPATRICK	13-Jun-03	1-Nov-03		
MK1 MICHAEL WEAVER	13-Jun-03	1-Nov-03		
MK1 GARRETT ROGERS	13-Jun-03	1-Nov-03		
MST1 BRIDGET A. CULLERS	13-Jun-03	1-Nov-03		
QM1 DAVID J. GROB	13-Jun-03	1-Nov-03		
SK1 SUSAN M. PETERSON	13-Jun-03	17-Jul-03	19-Oct-03	1-Nov-03
OS1 ELIZABETH NEILL	13-Jun-03	1-Nov-03		
IT1 STEPHEN A. CHIPMAN	13-Jun-03	1-Nov-03		
BM2 JAMES GEIST	13-Jun-03	1-Nov-03		
BM2 DARREL L. BRESNAHAN	13-Jun-03	1-Nov-03		
DC2 PAUL THOMAS	13-Jun-03	1-Nov-03		
DC2 TODD A. GILLICK	13-Jun-03	11-Sep-03		
EM2 JOSEPH A. FRATTO	13-Jun-03	1-Nov-03		
EM2 BENJAMIN GARRETT	13-Jun-03	1-Nov-03		
EM2 BRAD JOPLING	13-Jun-03	28-Oct-03		
ET2 RYAN P. MACNEIL	13-Jun-03	1-Nov-03		
ET2 JOSHUA J. RASMUSSEN	13-Jun-03	1-Nov-03		
MK2 MARTIN A. BOWLEY	13-Jun-03	11-Sep-03		
MK2 NICOLE R. LAEGER	13-Jun-03	21-Jul-03		
MK2 RICHARD TITUS	13-Jun-03	11-Sep-03		
MK2 JOHN W. TEBO	13-Jun-03	21-Jun-03	4-Jul-03	1-Nov-03
MST2 JOSHUA T. ROBINSON	13-Jun-03	1-Nov-03		
MST2 DANIEL GAONA	13-Jun-03	1-Nov-03		
SK2 DAVID M. JOSEPH	13-Jun-03	16-Jul-03	16-Aug-03	1-Nov-03
SK2 CHRISTOPHER SISON	13-Jun-03	1-Nov-03		
FS2 JOSEPH J. STODDARD	13-Jun-03	1-Nov-03		
ET3 LEROY LEPP0	30-Aug-03	1-Nov-03		
BM3 SCOTT A. LUSSIER	13-Jun-03	1-Nov-03		
BM3 SAMUEL TRAVER	13-Jun-03	16-Jul-03	16-Aug-03	01NOV03

BM3 ADAM GUNTER	13-Jun-03	1-Nov-03		
EM3 DUSTIN BLACK	13-Jun-03	16-Jul-03	11-Sep-03	1-Nov-03
EM3 NOAH HAUGK	13-Jun-03	16-Jul-03	16-Aug-03	1-Nov-03
FS3 JONATHAN D. SCOTT	13-Jun-03	1-Nov-03		
FS3 VANESSA A. AGOSTO	13-Jun-03	1-Nov-03		
FS3 JOHNNY M. HANIKA	13-Jun-03	1-Nov-03		
MK3 TIMOTHY B. GOGOLLA	13-Jun-03	1-Sep-03		
MK3 RICHARD ERICKSON	13-Jun-03	1-Nov-03		
MK3 MICHAEL J. LUND	13-Jun-03	1-Nov-03		
MK3 MALINDA A. NESVOLD	13-Jun-03	1-Nov-03		
MK3 BRANDON S. SHREK	13-Jun-03	1-Nov-03		
MST3 SUZANNE SCRIVEN	13-Jun-03	1-Nov-03		
QM3 JOHN C. LOBHERR	13-Jun-03	1-Nov-03		
FN ROBERT J. BROCK	16-Jul-03	1-Nov-03		
FN COURTNEY T. WILSON	13-Jun-03	16-Jul-03		
SN ISSAC K. NATHANIEL	13-Jun-03	16-Jul-03		
SN HEIDI M. SCHUMANN	13-Jun-03	1-Nov-03		
SN TREVOR A. HUGHES	13-Jun-03	1-Nov-03		
SN GARRETT YOUNG	13-Jun-03	11-Sep-03		
SN JOHN HANNON	11-Sep-03	1-Nov-03		
SN JONATHAN BILBY	13-Jun-03	1-Nov-03		
FA TOMASZ M. DAWLIDOWICZ	13-Jun-03	11-Sep-03		
FA SHAWN CHAPIN	13-Jun-03	1-Nov-03		
SA ROBERT TROHA	13-Jun-03	1-Nov-03		
SA SHERYLL COMON-PEARCE	13-Jun-03	1-Nov-03		
SA GAYLIN SWIBOLD	13-Jun-03	1-Nov-03		

**D. ENLISTED PERSONNEL TAD**

ETC FLYNN (ESU SEATTLE)	8-Jul-03	16-Jul-03		
ET2 KIFFER (ESU SEATTLE)	8-Jul-03	16-Jul-03		
EM2 WALLER (NESU SEATTLE)	13-Jun-03	8-Jul-03		
EM2 WOOLEVER (NESU SEATTLE)	13-Jun-03	8-Jul-03		
EM2 PAUL STEVICK (NESU SEATTLE)	13-Jun-03	8-Jul-03		
EM3 KELVIN HERNANDEZ (NESU SEATTLE)	13-Jun-03	8-Jul-03		
MST1 MCFADDEN (ESU SEATTLE)	13-Jun-03	8-Jul-03		
BM1 D. QUIDORT (MSST 91103 SAN DIEGO)	13-Jun-03	20-Jun-03		
AMTC LORION LEDKINS (AVDET)	13-Jun-03	1-Nov-03		
AMT1 TREVIN DABNEY (POPDIV)	21-Jul-03	28-Oct-03		
AMT1 RAYMOND O'DELL (AVDET)	13-Jun-03	19-Oct-03		
AVT2 JOHN MAGHUPOY (AVDET)	13-Jun-03	1-Nov-03		
AMT3 JUSTICE (POPDIV)	19-Oct-03	28-Oct-03		
MKC MCCLELLION (NESU SEATTLE)	24-Jun-03	8-Jul-03		
MK2 JEFF REYNOLDS (NESU SEATTLE)	24-Jun-03	16-Jul-03		
MK3 BARRETT (NESU SEATTLE)	24-Jun-03	8-Jul-03		
FN ALSON (NESU SEATTLE)	24-Jun-03	8-Jul-03		
BM1 VELASQUEZ (ATG)	8-Jul-03	16-Jul-03		
HM1 NAVARRO (ATG)	8-Jul-03	16-Jul-03		
MMCS RIDENS (ATG)	8-Jul-03	16-Jul-03		

DCCS JOHNSON (ATG)	8-Jul-03	16-Jul-03		
DCC SIMPSON (ATG)	8-Jul-03	16-Jul-03		
DC2 JAMES PENTECOST (	12-Sep-03	19-Oct-03		
MK2 NATHANIEL CHRISTIAN	12-Sep-03	1-Nov-03		

**E. CIVILIANS**

DARREN BRICK	13-Jun-03	20-Jun-03	16-Aug-03	30-Aug-03
DOUG JONES	13-Jun-03	20-Jun-03	16-Aug-03	30-Aug-03
CHARLIE FORD	13-Jun-03	20-Jun-03	16-Aug-03	30-Aug-03
STEPHEN ROBINSON	13-Jun-03	20-Jun-03		
ANTHONY ALLEN	13-Jun-03	20-Jun-03	16-Aug-03	30-Aug-03
HERBERT GINN	13-Jun-03	20-Jun-03	16-Aug-03	30-Aug-03
DON CHAMBERS	13-Jun-03	20-Jun-03	8-Jul-03	16-Jul-03
KEVIN MAILLET	13-Jun-03	4-Jul-03		
JEFF MCGUCKIN	13-Jun-03	20-Jun-03		
JEFF PLATTER	13-Jun-03	20-Jun-03		
DALE CHAYES	13-Jun-03	20-Jun-03	19-Aug-03	11-Sep-03
ROGER DAVIS	13-Jun-03	20-Jun-03		
VAL SCHMIDT	13-Jun-03	20-Jun-03		
BRUCE APPLGATE	13-Jun-03	20-Jun-03		
JOSEPH DIGIOVANNI	13-Jun-03	4-Jul-03	16-Jul-03	19-Oct-03
CARL MATTSON	20-Jun-03	1-Jul-03		
DAVE BUTCHY	20-Jun-03	4-Jul-03	19-Oct-03	26-Oct-03
GREG BUSCARELLO	20-Jun-03	4-Jul-03		
DAVE SMITH	20-Jun-03	4-Jul-03		
ANDREAS MUENCHOW	4-Jul-03	16-Aug-03	11-Sep-03	19-Oct-03
DAVE HUNTLEY	4-Jul-03	30-Aug-03		
MIKE CHAPPEL	8-Jul-03	16-Jul-03		
DAVE POWERS	8-Jul-03	16-Jul-03		
FRED MORRIS	8-Jul-03	16-Jul-03		
KELLY FALKNER	16-Jul-03	21-Jun-03		
HUMFREY MELLING	16-Jul-03	21-Jun-03		
ROBIE MACDONALD	16-Jul-03	21-Jun-03		
DAVE FORCUCCI	16-Jul-03	21-Jun-03		
MARY O'BRIEN	16-Jul-03	21-Jun-03		
CHARLOTTE MEREDITH	16-Jul-03	21-Jun-03		
PETE GAMBLE	16-Jul-03	21-Jun-03		
RON LINSDAY	16-Jul-03	21-Jun-03		
JAY SIMPKINS	16-Jul-03	21-Jun-03		
PETE KALK	16-Jul-03	21-Jun-03		
CHRIS MOSER	16-Jul-03	21-Jun-03		
DALE HUBBARD	16-Jul-03	21-Jun-03		
JOE JENNINGS	16-Jul-03	21-Jun-03		
ED JUDSON	16-Jul-03	21-Jun-03		
YVES SIVRET	16-Jul-03	21-Jun-03		
PAULOOSIE AKEEAGOK	16-Jul-03	21-Jun-03		
SCOTT MCAULIFFE	16-Jul-03	21-Jun-03		
LEE NARRAWAY	16-Jul-03	21-Jun-03		

KUMIO AZETSU-SCOTT	16-Jul-03	21-Jun-03
GERHARD BEHRENS	16-Jul-03	21-Jun-03
ROBERT MCCARTHY	16-Jul-03	21-Jun-03
HELGNA SCHAFFRIN	16-Jul-03	21-Jun-03
HELEN JOHNSON	16-Jul-03	21-Jun-03
MELISSA ZWENG	16-Jul-03	21-Jun-03
ELINOR KEITH	16-Jul-03	21-Jun-03
LAUREN BROWN	16-Jul-03	21-Jun-03
ROGER DAVIS	16-Jul-03	21-Jun-03
JASON RESSLER	16-Jul-03	21-Jun-03
CHIP HEIL	16-Jul-03	21-Jun-03
JOHN HARRIS	16-Jul-03	21-Jun-03
TRAVIS ST. PIERRE	19-Aug-03	30-Aug-03
G. MARSHALL MOLEN, PHD. G.	19-Aug-03	30-Aug-03
JAMES DONALD CHAMBERS	19-Aug-03	30-Aug-03
NATASHA SINGER	19-Aug-03	30-Aug-03
ALVO MARTIN	19-Aug-03	30-Aug-03
KEVIN R. WOOD	19-Aug-03	30-Aug-03
JOHN TRONE	19-Aug-03	30-Aug-03
ROBERT ARKO	19-Aug-03	30-Aug-03
DAVID MONAHAN	19-Aug-03	30-Aug-03
STEPHANIE M. BURKHART	19-Aug-03	30-Aug-03
JOSHUA PAUL	19-Aug-03	30-Aug-03
MARC WEBBER	19-Aug-03	30-Aug-03
RUBIN SCHEINBERG	19-Aug-03	30-Aug-03
CHRISTOPHER A. SZORC	19-Aug-03	13-Sep-03
ALAN K. HAYASHIDA	19-Aug-03	13-Sep-03
DIANE L. BENTLEY	19-Aug-03	13-Sep-03
ANDY ARMSTRONG	30-Aug-04	11-Sep-03
JAN BACMAN	30-Aug-04	11-Sep-03
BRICHARD BRENNAN	30-Aug-04	11-Sep-03
BRIAN CLADER	30-Aug-04	11-Sep-03
KATHLEEN CRANE	30-Aug-04	11-Sep-03
JOAN GARDNER	30-Aug-04	11-Sep-03
JOHN HALL	30-Aug-04	11-Sep-03
MARTIN JAKOBSSON	30-Aug-04	11-Sep-03
KEVIN KELLY	30-Aug-04	11-Sep-03
BARBARA KRAFT	30-Aug-04	11-Sep-03
LARRY MAYER	30-Aug-04	11-Sep-03
NAJA MIKKELSEN	30-Aug-04	11-Sep-03
MORTEN SOLVSTEN	30-Aug-04	11-Sep-03
JEREMY WEIRICH	30-Aug-04	11-Sep-03
PETER R. VOGT	30-Aug-04	11-Sep-03
JESSICA ABRAMS	30-Aug-04	11-Sep-03
REBECCA WOODGATE	11-Sep-03	19-Oct-03
JIM JOHNSON	11-Sep-03	19-Oct-03
DAVID LEECH	11-Sep-03	19-Oct-03
ROBERT PICART	11-Sep-03	19-Oct-03

DEAN STOCKWELL	11-Sep-03	19-Oct-03
JOHN KEMP	11-Sep-03	19-Oct-03
RYAN SCHRAWDER	11-Sep-03	19-Oct-03
HOWARD MARSHALL SWARTZ	11-Sep-03	19-Oct-03
DANIEL TORRES	11-Sep-03	19-Oct-03
CHRIS LINDER	11-Sep-03	19-Oct-03
SARHA LUKEN ZIMMERMANN	11-Sep-03	19-Oct-03
JEREMY KASPAR	11-Sep-03	19-Oct-03
MARTHA DELANEY	11-Sep-03	19-Oct-03
DANIEL SCHULLER	11-Sep-03	19-Oct-03
ROBERT PALOMARES	11-Sep-03	19-Oct-03
CHRISTINA COURCIER	11-Sep-03	19-Oct-03
CARIN JESSICA ASHJIAN	11-Sep-03	19-Oct-03
LISA MUNGER	11-Sep-03	19-Oct-03
JASON JASINSKI	19-Oct-03	26-Oct-03
STUART FARRELL	19-Oct-03	26-Oct-03
MARK DEMYAN	19-Oct-03	26-Oct-03
BRIAN SCHNITZER GERALD WOLFORD	19-Oct-03	26-Oct-03

## Appendix D

### FUEL CONSUMPTION

<b>Date</b>	<b># of Engines</b>	<b>Percent Remaining</b>		<b>Fuel Remaining at Midnight</b>	<b>Daily JP-5 Consumption</b>	<b>JP-5 Remaining</b>
13-Jun	2	94.30%	10,850	1,151,032	0	53,962
14-Jun	2	93.80%	18,491	1,132,541	180	53,782
15-Jun	3	90.60%	26,842	1,105,699	0	53,782
16-Jun	3	87.90%	33,103	1,072,596	0	53,782
17-Jun	3	86.10%	21,675	1,050,921	0	53,782
18-Jun	3	83.80%	27,425	1,023,496	0	53,782
19-Jun	2	82.30%	19,237	1,004,259	0	53,782
20-Jun	2	81.30%	11,199	993,060	0	53,782
24-Jun	2	80.00%	16,413	976,647	0	53,782
25-Jun	2	78.80%	14,942	961,705	148	53,634
26-Jun	2	77.60%	13,860	947,845	0	53,634
27-Jun	2	76.10%	18,398	929,447	117	53,517
28-Jun	2	74.70%	17,644	911,803	0	53,517
29-Jun	3	72.50%	26,473	885,330	0	53,517
30-Jun	3	69.90%	36,100	853,138	0	51,774
1-Jul	2	69.10%	9,886	843,252	0	51,774
2-Jul	2	68.00%	12,815	830,437	0	51,774
3-Jul	2	70.10%	23,107	855,937	0	51,774
4-Jul	3	69.10%	12,418	843,519	0	51,774
8-Jul	3	67.70%	17,186	926,333	0	51,774
9-Jan	3	65.80%	23,098	803,235	0	51,774
10-Jul	2	64.40%	16,737	786,498	173	51,601
11-Jul	2	62.60%	22,501	763,997	0	51,601
12-Jul	3	59.80%	33,329	730,668	0	51,601
13-Jul	2	58.30%	19,140	711,528	0	51,601
14-Jul	2	57.30%	11,360	700,168	0	51,601
15-Jul	1	56.60%	8,673	691,495	0	51,601
16-Jul	2	95.90%	5,782	1,170,537	0	51,601
21-Jul	3	94.00%	22,750	1,147,787	0	51,601
22-Jul	3	92.40%	19,170	1,128,617	0	51,601
23-Jul	3	90.40%	24,399	1,104,218	0	51,601
24-Jul	3	88.00%	29,831	1,074,387	78	51,523
25-Jul	3	85.30%	32,530	1,041,857	0	51,523
26-Jul	2	84.20%	13,505	1,028,352	0	51,523
27-Jul	2	82.90%	15,770	1,012,582	0	51,523
28-Jul	2	82.20%	8,961	1,003,621	142	51,381
29-Jul	2	81.50%	8,564	995,057	0	51,381
30-Jul	2	80.70%	9,249	985,808	0	51,381
31-Jul	2	79.20%	8,904	967,351	0	50,009

## Appendix D

### FUEL CONSUMPTION

<b>Date</b>	<b># of Engines</b>	<b>Percent Remaining</b>		<b>Fuel Remaining at Midnight</b>	<b>Daily JP-5 Consumption</b>	<b>JP-5 Remaining</b>
1-Aug	2	78.30%	10,855	956,496	0	50,009
2-Aug	2	77.40%	11,732	944,764	39	49,970
3-Aug	2	76.70%	8,461	936,303	157	49,813
4-Aug	2	76.00%	8,139	928,164	115	49,698
5-Aug	2	75.50%	6,399	921,765	0	49,698
6-Aug	2	75.00%	5,802	915,963	342	49,356
7-Aug	2	74.50%	6,829	909,134	0	49,356
8-Aug	2	73.80%	7,763	901,371	136	49,220
9-Aug	2	73.30%	6,656	894,715	0	49,220
10-Aug	2	72.70%	7,605	887,110	135	49,085
11-Aug	2	72.10%	6,375	880,735	0	49,085
12-Aug	2	71.50%	7,591	873,144	0	49,085
13-Aug	2	71.00%	6,489	866,655	0	49,085
14-Aug	2	70.30%	8,170	858,485	0	49,085
15-Aug	2	69.40%	10,577	847,908	101	48,984
19-Aug	2	67.30%	26,631	821,277	0	48,984
20-Aug	2	66.10%	14,859	806,418	123	48,861
21-Aug	2	65.20%	9,916	796,502	196	48,665
22-Aug	2	64.40%	9,807	786,695	89	48,576
23-Aug	2	63.40%	12,389	774,306	0	48,576
24-Aug	2	62.50%	10,770	763,536	107	48,469
25-Aug	2	61.50%	13,055	750,481	196	48,273
26-Aug	2	60.80%	8,028	742,453	0	48,273
27-Aug	2	60.20%	7,696	734,757	0	48,273
28-Aug	2	59.50%	8,689	726,068	0	48,273
29-Aug	2	58.90%	6,528	719,540	0	48,273
30-Aug	2	58.30%	8,034	711,506	558	47,715
31-Aug	1	94.20%	9,412	1,149,854	0	50,417
1-Sep	2	93.10%	13,447	1,136,407	0	50,417
2-Sep	2	92.40%	8,008	1,128,399	0	50,417
3-Sep	2	91.50%	11,079	1,117,320	0	50,417
4-Sep	2	90.90%	7,816	1,109,504	0	50,417
5-Sep	2	89.80%	13,404	1,096,100	0	50,417
6-Sep	2	88.80%	11,547	1,084,553	0	50,417
7-Sep	2	88.00%	10,443	1,074,110	0	50,417
8-Sep	2	87.10%	10,303	1,063,807	0	50,417
9-Sep	2	86.70%	5,067	1,058,740	0	50,417
10-Sep	2	86.00%	8,388	1,050,352	0	50,417
11-Sep	2	85.20%	10,154	1,040,198	517	49,900

## Appendix D

### FUEL CONSUMPTION

<b>Date</b>	<b># of Engines</b>	<b>Percent Remaining</b>		<b>Fuel Remaining at Midnight</b>	<b>Daily JP-5 Consumption</b>	<b>JP-5 Remaining</b>
12-Sep	2	84.30%	11,222	1,028,976	0	49,900
13-Sep	2	83.40%	10,253	1,018,723	137	49,763
14-Sep	2	82.70%	9,077	1,009,646	0	49,763
15-Sep	2	81.80%	10,563	999,083	0	49,763
16-Sep	2	81.20%	8,301	991,052	0	49,763
17-Sep	2	80.40%	9,410	981,642	0	49,763
18-Sep	2	79.80%	7,585	974,057	0	49,763
19-Sep	2	79.10%	8,260	965,797	0	49,763
20-Sep	2	78.40%	8,202	957,595	0	49,763
21-Sep	2	77.70%	9,534	948,061	0	49,763
22-Sep	2	77.00%	8,508	939,553	0	49,763
23-Sep	2	75.90%	13,133	926,420	85	49,678
24-Sep	2	74.70%	13,866	912,554	0	49,678
25-Sep	2	74.10%	7,447	905,107	0	49,678
26-Sep	2	73.50%	7,983	897,124	0	49,678
27-Sep	2	72.90%	6,930	890,194	0	49,678
28-Sep	2	72.30%	7,946	882,248	0	49,678
29-Sep	2	71.60%	7,970	874,278	186	49,492
30-Sep	2	72.50%	6,800	885,459	0	48,123
1-Oct	2	71.80%	8,545	876,914	0	48,123
2-Oct	2	71.30%	6,896	870,018	0	48,123
3-Oct	2	70.60%	7,940	862,078	0	48,123
4-Oct	2	70.10%	5,703	856,375	0	48,123
5-Oct	2	69.40%	9,310	847,065	0	48,123
6-Oct	2	68.70%	8,290	838,775	0	48,123
7-Oct	2	68.10%	7,225	831,550	0	48,123
8-Oct	2	67.40%	8,853	822,697	0	48,123
9-Oct	2	66.80%	7,053	815,644	0	48,123
10-Oct	2	65.90%	11,466	804,178	323	47,800
11-Oct	2	65.20%	8,423	795,755	0	47,800
12-Oct	2	64.50%	7,843	787,912	0	47,800
13-Oct	2	63.90%	7,611	780,301	0	47,800
14-Oct	2	63.20%	8,381	771,920	0	47,800
15-Oct	2	62.50%	8,339	763,581	0	47,800
16-Oct	2	61.90%	8,300	755,281	0	47,800
17-Oct	3	60.00%	23,291	731,990	0	47,800
18-Oct	2	58.80%	14,685	717,305	229	47,571
19-Oct	2	57.40%	16,408	700,891	110	47,461
20-Oct	2	55.60%	22,238	7,678,659	0	47,461

## Appendix D

### FUEL CONSUMPTION

<b>Date</b>	<b># of Engines</b>	<b>Percent Remaining</b>		<b>Fuel Remaining at Midnight</b>	<b>Daily JP-5 Consumption</b>	<b>JP-5 Remaining</b>
21-Oct	2	55.00%	31,056	671,793	0	23,271
22-Oct	2	54.10%	22,414	660,373	0	12,277
23-Oct	2	52.60%	17,678	642,695	0	12,277
24-Oct	2	51.20%	17,516	625,179	0	12,277
28-Oct	2	50.20%	12,603	612,576	0	12,277
29-Oct	2	49.20%	11,885	600,691	0	12,277
30-Oct	2	47.20%	24,463	576,228	0	12,277
31-Oct	2	48.80%	9,014	595,926	239	8,000
1-Nov	2	48.10%	8,898	587,028	0	8,000
Total Fuel Consumed:			1,632,277 gal			
Average Daily Use:			11,576 gal			
Total JP-5 Consumed:			4,958 gal			

## Appendix E

### FUEL CONSUMPTION MESSAGE REPORTS

FY 2003

R 072147Z NOV 03 ZUI ASN-P03311000040  
FM USCGC HEALY  
TO COMDT COGARD WASHINGTON DC//G-CFM-2//  
BT

UNCLAS //N01340//

SUBJ: FUEL CONSUMPTION FOR AEWS 03 THRU 30SEP03

A. E-MAIL FROM LT MARTEL TO CDR RALL 26 SEP 03

UNIT NAME: USCGC HEALY (WAGB-20)

DAFIS DISTRICT AND OPFAC: 21-14102

PERIOD OF REPORT 17MAY03 THRU 30SEP03

	GALS
1. DFM BEGINNING INVENTORY:	251,164
2. RECEIPTS:	0
A. PURCHASES:	1,829,756

GALLONS	FUEL U/P	TYPE
910,718	\$ .81	F-76

DOCUMENT #: Z14102-3125-F004

SOURCE: NFF MANCHESTER ON LOADED BY BARGE  
AT PIER 37 SEATTLE, WA

DATE: 27 AND 29 JUN 03

GALLONS	FUEL U/P	TYPE
484,824	UNKNOWN	MGO

DOCUMENT NO.: UNKNOWN

SOURCE: IRVING OIL ON LOADED BY PIPELINE  
AT FUEL JETTY IN ST. JOHN'S,  
NEWFOUNDLAND, CANADA

DATE: 16 JULY 03

GALLONS	FUEL U/P	TYPE
434,214	\$0.81	DF-2

DOCUMENT #: Z14102-3238-0793

SOURCE: DELTA WESTERN VIA BARGE AT POINT  
BARROW, ALASKA

DATE: 31 AUGUST 03

B. TRANSFERRED IN:	0
C. GAIN FROM SOUNDINGS:	74,489
3. ISSUES:	0
A. TRANSFERRED OUT:	0
B. LOSS FROM SOUNDINGS:	0
C. CONSUMPTION:	1,269,950
4. DFM ENDING INVENTORY:	885,459
5. JP-5 AVIATION BEGINNING INVENTORY:	9,449

6. RECEIPTS: 0  
 A. PURCHASES: 44,513  
 GALLONS FUEL U/P TYPE  
 44,513 \$0.86 J-P5  
 DOCUMENT #: Z14102-3125-F004  
 SOURCE: NFF MANCHESTER ONLOAD BY BARGE AT  
 PIER 37, WA  
 DATE: 28 MAY 03  
 B. TRANSFERRED IN: 0  
 C. GAIN FROM SOUNDINGS: 0  
 7. ISSUES: 0  
 A. TRANSFERRED OUT 0  
 B. LOSS FROM SOUNDINGS: 1,782  
 C. CONSUMPTION(TO TAIL NUMBER CG6519 AND  
 CG6521 FROM ATC MOBILE, POLAR OPS DIV) 4,057  
 8. JP-5 AVIATION ENDING INVENTORY: 48,123  
 9. PUERTO VALLARTA, MEXICO PORT CALL  
 DATE: 20 JUNE 03 - 24 JUNE 03  
 FUEL CONSUMED: 8,422 GAL  
 10. PANAMA CANAL TO CURACAO TRANSIT  
 DATE: 02 JULY 03 - 04 JULY 03  
 FUEL CONSUMED:  
 11. CURACAO PORT CALL  
 DATE: 04 JULY 03 - 08 JULY 03  
 FUEL CONSUMED: 8,133 GAL  
 12. 48,607 GALS OF GAIN IN SOUNDINGS OF DFM  
 INVENTORY IS A RESULT OF THE SHIP BEGINNING  
 TO INCLUDE THE FUEL SERVICE TANKS AS PART OF  
 THE DFM INVENTORY AS THIS WAS NOT DONE IN THE  
 PAST.  
 13. POC: ENS HASSELMAN AT KHASSELMAN@HEALY.USCG.MIL  
 14. AUTHORIZED SIGNATURE: D. K. OLIVER, CAPT, USCG, CO  
 BT  
 NNNN

FY 2004

R 072151Z NOV 03 ZUI ASN-P03311000042  
FM USCGC HEALY  
TO COMDT COGARD WASHINGTON DC//G-CFM-2//  
BT

UNCLAS //N01340//

SUBJ: FUEL CONSUMPTION FOR AEWIS 2003

A. E-MAIL FROM LT MARTEL TO CDR RALL 26 SEP 03

UNIT NAME: USCGC HEALY (WAGB-20)

DAFIS DISTRICT AND OPFAC: 21-14102

PERIOD OF REPORT 01OCT03 THRU 01NOV03

	GALS
1. DFM BEGINNING INVENTORY:	885,459
2. RECEIPTS:	0
A. PURCHASES:	0
B. TRANSFERRED IN:	0
C. GAIN FROM SOUNDINGS:	63,896
3. ISSUES:	0
A. TRANSFERRED OUT:	0
B. LOSS FROM SOUNDINGS:	0
C. CONSUMPTION:	362,327
4. DFM ENDING INVENTORY:	587,028
5. JP-5 AVIATION BEGINNING INVENTORY:	44,774
6. RECEIPTS:	0
A. PURCHASES:	0
B. TRANSFERRED IN:	0
C. GAIN FROM SOUNDINGS:	0
7. ISSUES:	0
A. TRANSFERRED OUT:	0
B. LOSS FROM SOUNDINGS:	35,873
C. CONSUMPTION(TO TAIL NUMBER CG6519 AND CG6521 FROM ATC MOBILE, POLAR OPS DIV)	901
8. JP-5 AVIATION ENDING INVENTORY:	8,000

9. JUNEAU, ALASKA PORT CALL

DATE: 24 OCTOBER 03 - 28 OCTOBER 03

FUEL CONSUMED: 11,752 GAL

10. TRANSFERRED 35,184 GALLONS OF JP-5 FROM  
SHIP'S JP-5 STORAGE TANKS AND SERVICE TANKS  
TO SHIP'S FUEL STORAGE TANKS IN PREPARATION  
FOR INPORT PERIOD COMMENCING 01 NOV 03.

11. POC: ENS HASSELMAN AT KHASSELMAN@HEALY.USCG.MIL

12. AUTHORIZED SIGNATURE: D. K. OLIVER, CAPT, USCG, CO

BT

NNNN



## Appendix F

### DEPLOYMENT SUMMARY MESSAGE REPORT

R 012300Z NOV 03  
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//  
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  
COGARD CAMSPAC PT REYES CA  
COGARD COMMSTA KODIAK AK  
NAVICECEN SUITLAND MD  
NAVPACMETOCEN SAN DIEGO CA  
NSF POLAR WASHINGTON DC  
BT  
UNCLAS //N16240//  
SUBJ: HEALY ARCTIC EAST-WEST SUMMER 2003 (AEWS03) DEPLOYMENT SUMMARY  
1. DEPLOYMENT STATISTICS:  
A. DEPARTED SEATTLE WA 1115T 13JUN03  
B. ARRIVED SEATTLE WA 1308T 1NOV03  
C. PURPOSE: CONDUCT MULTIPLE MISSIONS IN SUPPORT OF ARCTIC RESEARCH:  
MISSION HLY03-01: 26-DAY FALKNER PHASE (FRESHWATER FLUXES STUDY IN  
BAFFIN BAY AND NARES STRAIT)  
MISSION HLY03-NWP: 11-DAY TRANSIT OF NORTHWEST PASSAGE (SOO)  
MISSION HLY03-02: 10-DAY CRANE PHASE (NOAA ARCTIC MAPPING CRUISE)  
MISSION HLY03-03: 36-DAY WOODGATE PHASE (SBI MOORING TURNAROUND CRUISE)  
D. DAYS AFHP THIS DEPLOYMENT: 141 (FY03: 110/FY04: 31)  
E. DAYS AFHP FY03: 205  
F. DAYS AFHP FY04: 31  
G. DAYS IN TRANSIT: 45  
H. DAYS IN SUPPORT OF SCIENCE: 72 UNDERWAY, 6 LOGISTICS I/P, AT  
ANCHOR, OR U/W (1 I/P ST. JOHN'S, 1 OFF THULE, 3 OFF BARROW, 1 OFF NOME)  
I. PORT CALL DAYS: 18 (NOT INCL SCIENCE LOGISTICS)  
2. VESSELS BOARDED: N/A  
3. SAR INCIDENTS: N/A  
4. LAW ENFORCEMENT INCIDENTS: N/A  
5. HELICOPTER OPERATIONS:  
SORTIES: 63  
FLT HOURS: 78.9  
MISSIONS: ICE RECON, SCIENCE SUPPORT, AND LOGISTICS  
COMMENTS: THE CONTRIBUTION OF AVDET 158 WAS INSTRUMENTAL TO HEALY'S  
SUCCESS ON AEW03. ASIDE FROM THE TYPICAL ICE RECONNAISSANCE FUNCTION,  
OF PARTICULAR IMPORTANCE WAS THE LOGISTICS CAPABILITY PROVIDED BY  
HELICOPTER IN PLACES SUCH AS BARROW, NOME AND POND INLET, CA. FLIGHTS

WERE NECESSARY BOTH FOR EMERGENT PASSENGER AND CRITICAL EQUIPMENT MOVEMENTS, AS WELL AS FOR SCHEDULED SCIENCE PARTY TRANSFERS. AVDET 158 ALSO PERFORMED MULTIPLE RECON SORTIES FOR SITE EVALUATION DURING THE FALKNER PHASE. LOCATIONS WERE EVALUATED FOR BIVALVE HARVESTING POTENTIAL, SUITABILITY AS SUPPLY CACHES AND SERVICEABILITY AS SHALLOW WATER, PRESSURE SENSOR MOORING POSITIONS.

6. MAJOR CASUALTIES:

A. CASREPS 03036, 03037, AND 03040 CYCLO DRIVES: PRIOR TO GETTING U/W AND FOR THE FIRST THREE WEEKS OF AEWS03 WE EXPERIENCED NUMEROUS TRIPS OF THE CYCLO DRIVES. EXTENSIVE TROUBLESHOOTING EFFORTS FOUND NO MAJOR COMPONENT FAILURES BUT DID RESOLVE SEVERAL CONNECTOR ISSUES. IMPORTANCE OF CONDUCTING SHAKEDOWN CRUISE FOLLING EXTENSIVE MAINTENANCE GROOM ON THE SYSTEM CANNOT BE OVER-EMPHASIZED.

B. CASREP 03041 ADG: EXCITER PERMANENT MAGNETS CAME LOSE IN HOUSING AT RATED SPEED AND WERE EJECTED FROM HOUSING. MAGNET SHRAPNEL FOUND DISPERSED THROUGHOUT ADG SPACE. EXCITER WINDINGS WERE DAMAGED BEYOND REPAIR. NO OTHER DAMAGE TO OTHER EQUIPMENT IN SPACE OR PERSONNEL CASUALTIES, WATCHSTANDER WAS MONITORING PLANT IN ECC. CASUALTY WAS SIMILAR IN NATURE TO HEALY CASREP 02032, DTG 252315Z JUL 02.

C. CASREP 03044 STBD RHIB DAVIT: STBD RHIB DAVIT WAS RENDERED INOPERABLE DUE TO A FAILURE OF THE DAVIT LOWERING BRAKE MECHANISM. DAVIT WAS CYCLED APPROXIMATELY 20 TIMES IN A SHORT PERIOD OF TIME FOR BOAT CREW AND COXSWAIN TRAINING. UPON DISASSEMBLY, SHIP'S FORCE FOUND THE THRUST BEARINGS DESTROYED BEYOND REPAIR AND A DEEPLY SCORED BEARING SUPPORT HOUSING UNIT AND SHAFT. FOUND BRAKE SHOES AND BRAKE DISC SEVERELY WORN.

D. CASREP 03048 BOW THRUSTER: SHORTLY AFTER BOW THRUSTER ENERGIZED IT EMITTED A LOUD NOISE AND IMMEDIATELY SECURED ITSELF. INVESTIGATION REVEALED THAT A 6,600 VOLT FUSE ON THE 1P HIGH VOLTAGE SWITCH BOARD HAD BLOWN ON THE C PHASE. CAUSE OF BLOWN FUSE WAS NEVER DETERMINED. ON 14 OCT, BOW THRUSTER BLEW ANOTHER FUSE, THIS TIME IT WAS ON THE A PHASE. UNDER CASREP 03048 WE RECEIVED AND INSTALLED 3 NEW FUSES AND HELD 2 USED-BUT-GOOD FUSES AS SPARES. TWO DAYS LATER ANOTHER FUSE BLEW ON THE C PHASE. EM'S MEGGERED THE MOTOR, ALL TESTS AND MOTOR INSPECTIONS WERE SAT. LAST ONBOARD SPARE FUSE WAS INSTALLED. IN AN UNRELATED INCIDENT, BOW THRUSTER EXPERIENCED A MOMENT ARM FAILURE, THE THIRD SUCH FAILURE IN THE SHIPS HISTORY. REPAIRS WERE MADE WITH AN ONBOARD SPARE.

E. CASREP 03052 PORT ANCHOR: DURING THULE GREENLAND PORT CALL ON 17 AUG 03, WEATHER UNEXPECTEDLY TURNED AND HEALY EXPERIENCED OFF-SHORE WIND GUSTS UP TO 86 KTS AND SUSTAINED WIND SPEEDS ABOVE 50 KTS. ANCHOR DRAGGED APPROXIMATELY 500 YARDS BEFORE GETTING PROPULSION ON-LINE FROM HOVE-TO MODE. UPON WEIGHING ANCHOR ON 19 AUG 03, IT WAS DISCOVERED THAT ONE OF THE TWO FLUKES HAD BROKEN OFF.

F. CASREP 03058 VOYAGE MANAGEMENT SYSTEM: HEALY'S VOYAGE MANAGEMENT SYSTEM (VMS) INTERMITTENTLY LOCKS UP. SYSTEM LOCKS UP DUE TO TIME ERRORS AND MEMORY FAULTS. SYSTEM LOCK UP IS PRECEDED BY A TIME AND DATE JUMPS. TIME AND DATE JUMPS ADVERSELY EFFECT SEABEAM 2112 MULTI-BEAM OPERATIONS, IMPACTING SCIENCE MISSION.

G. CASREP 03046 #2 SHIP SERVICE MOTOR GENERATOR SET: NUMBER 2 SHIP SERVICE MOTOR GENERATOR (SSMG) FAILS TO START. INITIALLY THE PROBLEM WAS INTERMITTENT AND DIFFICULT TO TROUBLESHOOT. SOMETIMES THE MOTOR MANAGEMENT RELAY (MMR) WOULD INDICATE AN UNBALANCED TRIP, OR THE CONTACTOR SIMPLY OPENED WITH NO INDICATION OF A FAULT. WHEN THE MMR DID TRIP, IT INDICATED AN UNBALANCE OF 20-30 PERCENT. FURTHER TROUBLESHOOTING REVEALED DAMAGED STARTER WINDINGS. ELECTRICAL ARCING WAS VISIBLE BETWEEN THE HIGH VOLTAGE ROTOR AND STATOR CAUSING





