

ARCTIC WEST-EAST SUMMER 2005

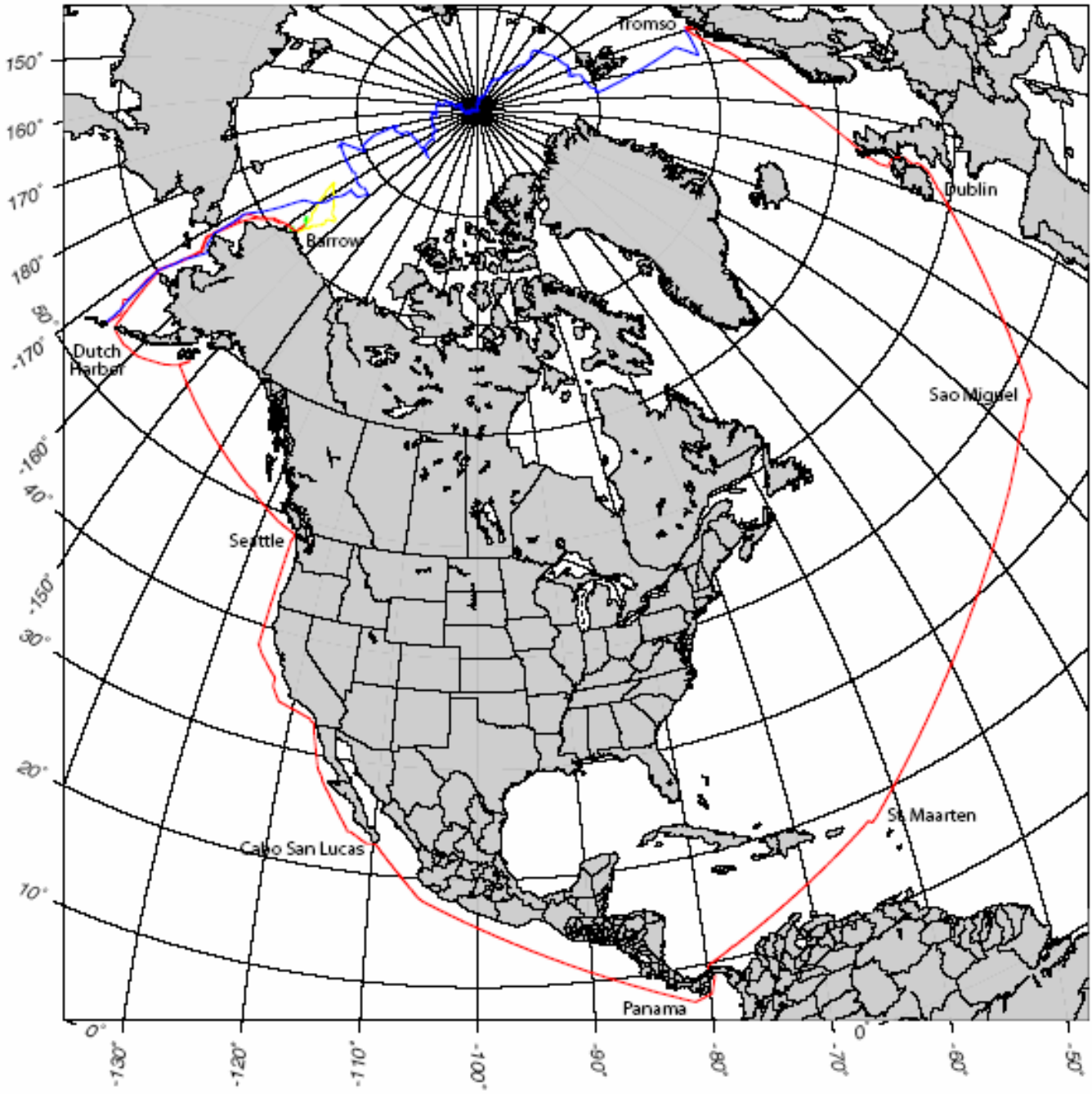


USCGC HEALY (WAGB-20)

1 JUNE – 28 NOVEMBER 2005

Cruise Report

USCGC Healy 2005



- HLY-05-01 (Darby)
- HLY-05-02 (Gradinger)
- HLY-05-03 (Coakley & Darby)
- Transit

Lamont-Doherty Earth Observatory of Columbia University



16155
11 Apr 06

MEMORANDUM

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

To: PACAREA

Subj: ARCTIC WEST-EAST SUMMER 2005 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 1 June to 28 November 2005.
2. HEALY completed three missions to support Arctic research during AWES-05. HLY 05-01 and 05-03, the first and third missions, were NSF funded and focused on coring and collecting geo-physical transect data via a towed seismic gun and streamer. HLY 05-02 was funded by NOAA Ocean Exploration. This mission focused on cataloging the biomass of the Arctic marine species. This phase was characterized by around the clock evolutions as five distinct groups studied marine mammals, species on the ice, under the ice, in the pelagic (mid-water) region, and benthic (bottom) region. Coast Guard divers logged 50 hours underwater in support of this second science mission. A Remote Operated Vehicle (ROV) was also used to explore and capture live specimens from the pelagic and benthic regions.
3. HLY 05-03 included a visit to the geographic North Pole on September 12. This was the second visit for HEALY and the third for a US surface ship. The 12 day transits immediately preceding and following the North Pole were joined by the Swedish Icebreaker ODEN. Together the two ships worked to collect data for joint scientific analysis and to escort each other depending on the ice conditions.
4. During Arctic West-East Summer 05, HEALY provided 106 supported science days, 24 of which were in conjunction with the Swedish Icebreaker ODEN. AWES05 marks the final deployment for the Coast Guard's Polar Operations Division.

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Enclosure: Arctic West Summer 2005 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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Aerial view of HEALY amongst small ice flows with melt ponds characteristic of mid summer

CHAPTER I – SHIP OPERATIONS

1. Summary

A. Deployment Preparations

Cruise planning formally began with the annual planning meeting in September at the National Science Foundation (NSF) headquarters in Ballston, VA. Participants included NSF, OPN, POPDIV, NOAA, and PACAREA.

The Berengia Expedition, to be done in conjunction with research on the Swedish I/B ODEN, dominated the schedule as it involved the majority of August and September and terminated in Europe. NSF and the Coast Guard had committed to Berengia more than a year earlier, and several projects were funded in conjunction with this participation. The focus of the work to be completed on HEALY during this mission was seismographic and geologic in order to learn more about the history and composition of the Arctic Ocean.

This left the June and July timeframe as the scheduling focus for the remaining projects. Funded projects included: 1) another portion of the Law of the Sea bottom mapping headed by Dr. Larry Mayer, follow-on work from 2003 and 2004, 2) a two-week coring mission to be completed as a pre-cursor to the research expected on the Berengia expedition, led by Dr. Dennis Darby, and 3) a 30-day coring and seismic project headed by Dr. Larry Lawver.

Both the Mayer and Lawver cruises had primary opareas in the high latitudes, mainly between 78 and 80 degrees North. The experience of HEALY and Mayer of operating in this area the last two years indicated that success would be highest for him in the August timeframe. For that reason, Mayer chose to defer his cruise until 2006, asking NSF to guarantee he would get that time slot. Likewise, the ship recommended against scheduling the Lawver cruise in the July time, stressing that it would be highly unlikely to be a successful event. The Lawver cruise was subsequently deferred to 2006 as well.

NOAA representatives lobbied for and received authorization to pursue a project in the July time slot. The Oceans Exploration office of NOAA formed a cruise focusing on the diversity of life in the arctic called “The Hidden Ocean,” part of a larger international effort titled the Census of Marine Life.

The schedule was finally settled with the decision to proceed with the 14 day Darby mission. Conducting this cruise in the probable ice conditions in June was a big topic of discussion, since the scientists were planning to tow sonar behind the ship. In the end, the risk was considered acceptable and planning proceeded.

The Operations department began preparation for the deployment by sending members to several intensive training courses. Once again, we sent a contingent to

Charlottesville to the Sperry facility to attend a week of Integrated Bridge System (IBS) training. This year the class was 6 days long to include instruction on the new Bridgmaster radar. Although focused on newly reported personnel filling OOD billets, we were also able to send one BM from the Navigation division and one of the ETs to better improve that division's ability to support the equipment. The Marine Science Officer (MSO) coordinated 3 MSTs to sail on UNOLS vessels to obtain some coring expertise due to the intense coring operations anticipated. Funded by Coast Guard Headquarters training funds, these cruises provided excellent training and exposure for the CG participants.

A shakedown cruise was scheduled again as a vital evolution to prepare the ship and crew after a long layoff. For this reason, the original plan was for a 2-week cruise starting approximately three weeks after the finish of the dockside availability, allowing some time for ship's force to get the plant running. The advantage of a hard sailing date also forces the conclusion of maintenance that might otherwise drag on ad infinitum.

On April 3rd, one day before the scheduled start of the cruise, the turbocharger on the ADG came apart during light offs/testing. The shakedown was delayed for three weeks to allow for repairs. The delay compressed the time between the shakedown and the sail date of 1 June, down to 3 ½ weeks. We used the extra three weeks before the shakedown to continue deployment preps, give some personnel leave, and complete a fair share of the science onload.

It was the original intent to set up a good portion of the seismic equipment and practice towing on the shakedown. In the end, that equipment was not available in that time frame. Alternatively, with the solidification of the Darby cruise, Science and Deck divisions coordinated the arrival and onload of the IMI towed sonar system coming from University of Hawaii for this cruise, allowing the system to be tested during the shakedown.

The shakedown cruise was divided into a week focused on engineering testing and crew training and the second week targeting science system testing, with a planned 48-hour port call in Victoria separating the segments. Additionally, a dependent's cruise was planned on the final day from Port Angeles back to Seattle. With the ADG casualty and the schedule push, it was decided to fuel on the last day of the shakedown at Manchester fuel pier, rather than spend a full inport day back in Seattle to do so. Given all the testing and training objectives of shakedown, the fueling decision made it necessary to forego the Victoria visit and dependent's cruise.

The E&E division set up and executed the TACAN certification process. The naval SESEF range provided very simple instructions for when and where to keep the ship, which basically included turning in slow circles at approximately 5 knots, in the designated opearea to the NW of the Eastern Bank area.

Aviation facilities and STAN certifications were current, but a day of flight operations training was scheduled, which Air Station PA supported. The day of flight deck training included time to organize the flight deck party and conduct walk through training. The helo arrived overhead late afternoon for daylight training evolutions with a recovery and shutdown followed by a crash on deck drill and night evolutions. Although the helo developed some torque splits that required them to RTB prior to completion of all evolutions, good training was obtained.

The majority of the first week was spent on machinery testing, such as MDE break-in, and damage control training & drills. This allowed for general watchstander training in the course of normal events, and bridge personnel familiarized themselves with the new Automatic Identification System and the new BME radars. Once again, we utilized Group and AirSta Port Angeles as our “port of entry” for contractors, riders, and ship’s crew to join or leave the ship during the two week period. On Saturday, May 7, we anchored 3 NM east of Ediz Hook for boat ops to disembark 10 and embark 17 contractors and crew. Utilizing the ship’s boats for this function dually supported training for boat crews and exercising the Miranda davits. Additionally, the 20 hour break-in of the new engine in the starboard RHI was finally completed.

The second week of shakedown focused on science system testing. Significant science evolutions included successful CTD, multicore, gravity core and jumbo piston core casts, as well as tests of all winch drives and controls. After much tinkering, LDEO personnel completed a satisfactory Seabeam pitch and roll bias test using navigation input from the POS/MV system. Over the course of two days, Science and Deck divisions finished the setup, deployment, tow and recovery of the IMI sonar, to the satisfaction of the embarked University of Hawaii technicians.

On May 11, during a DC drill, BM3 Traver severely crushed his finger in a NTD. The XO and HSC decided medevac was necessary, so arrangements were made with AirSta Port Angeles. Three hours later, HEALY was within HH65 range and two birds arrived onscene, with one flying high cover while the other helo hoisted PO Traver in a basket. He was treated, sent home and subsequently met the ship upon return to Seattle.

On the final day of shakedown, Friday, May 13th, we tied up at Manchester at 0700 and fueled all day. This proved to be a good evolution, considering the few shiphandling opportunities afforded to the OODs on HEALY. Although the Polars have routinely fueled at Manchester, HEALY has not, but it proved to be easily arranged and avoided the complications associated with fueling during an inport day at ISC Seattle. After fueling, HEALY completed the transit to Pier 36 and moored at 1800.

An important aspect of the shakedown cruise is training incoming personnel. All the senior personnel rotating in for the Ops department, as well as the XO, were able to participate in some or the entire shakedown cruise. Additionally, the incoming XO, Ops Officer, Navigator and BMC all completed their PCS moves prior to departure on the deployment, and all four attended the IBS training at Sperry. Furthermore, the new BMC's early arrival in January allowed the current BMC to fleet up into the 1LT billet when the existing 1LT left in February for a WPB command.

The science equipment loading took place mostly between shakedown and the departure on the deployment. While it is described in some detail in the science section of the cruise report, there are two points worth mentioning here: The layout of all the deck equipment was particularly important, and difficult to coordinate, especially with the late decision on the Darby cruise, finalizing the shuffle of equipment could not be accomplished as early as was desired. Drawings the ship provided to the science parties were not as detailed or as accurate as they could be, and working with dimensions provided by the research teams is not as precise as having the equipment present, so there was considerable uncertainty that the equipment would actually fit when it arrived. One risk mitigation is to stress the importance of ship checks by the PI's or someone who can speak with authority and make binding decisions about equipment placement. The need for ship checks should be stated early in the planning process to allow for time and money budgeting by the project.

The planning and arranging for Helo support for this mission was unusual. The Coast Guard decommissioned the Polar Operations Division (POPDIV) at ATC Mobile with AWES 2005 as the last polar deployment supported by POPDIV. Possible support for future deployments includes involvement of Kodiak ALPAT personnel and aircraft. In light of this, one of the two aircraft came from Kodiak, with a POPDIV crew and was scheduled to embark the ship from Kodiak on the transit from Seattle to Barrow. The other aircraft and POPDIV personnel were scheduled for a normal embarkation; i.e. personnel arriving a few days prior to sail and embarking the aircraft Port Angeles as the ship transits through the Sound.

HSK onload was accomplished the final week prior to departure with few problems. The personnel from Mobile efficiently ran this evolution, needing primarily crane support from ship's force. Deconflicting the various inport evolutions such as stores and lube oil onloads and excess property offloads requires good communications but was accomplished without too many problems.

AWES-05 was set forth and completed as follows:

01 Jun	Depart Homeport Seattle en route Barrow (3,000 NM)
13 Jun – 26 Jun	AWES 05-01 (14 day Darby coring cruise)
27 Jun – 26 Jul	AWES 05-02 (30 day Gradinger NOAA Ocean Exploration cruise)
27 Jul – 31 Jul	ATGPACNW LTT Barrow – Dutch Harbor (1,200 NM)
31 July – 05 Aug	5 day working portcall in Dutch Harbor
05 Aug – 30 Sep	AWES 05-03 (57 day Darby / Coakley trans-Arctic coring & seismic survey cruise) (4,000 trackline miles)
30 Sep – 05 Oct	5 day working portcall in Tromso, Norway
10 Oct – 17 Oct	7 day liberty portcall in Dublin, Ireland
22 Oct – 26 Oct	4 day liberty portcall in Ponta Delgada, San Miguel, Azores
03 Nov – 06 Nov	3 day liberty portcall in St. Maarten, Netherland Antilles
10 Nov – 11 Nov	Transit Panama Canal Atlantic – Pacific thru the night
18 Nov – 21 Nov	3 day liberty portcall in Cabo San Lucas, Mexico
28 Nov	Return to Homeport Seattle

B. Seattle - Barrow

On Wednesday, June 1st, HEALY got underway as scheduled at 1000. Sailing for the six month deployment after only a two week shakedown and with a myriad of new personnel associated with the onset of the transfer season elevates the risk associated with this annual event. Parting emotions are prevalent and the week prior is usually a mix of last minute onload confusion throughout our best attempts at a standdown period. Unlike any other cutter, HEALY operates on a well defined annual cycle. Arctic Deployment Spring thru Fall, Holiday standdown, early CY maintenance and training, shakedown and deployment. And so goes the cycle. Add to this that a sailing date anywhere between May 1st and June 1st will result in the vast majority of that year's assignment year (AY) inbound and outbound permanent change of station folks departing and/or arriving whenever possible during the deployment.

At 1500 on the day of sailing, HEALY embarked the first of its two AVDET HH-65B's. Tail number 6567 (after a cross-country flight from Mobile, AL the week prior) landed on HEALY in the vicinity of Eastern Bank, Puget Sound northeast of Dungeness Spit Light. Our second helo 6529 from AirSta Kodiak, AK would not arrive until four days later. The splitting of aircraft between two sources was a derivative of the pending disestablishment of Polar Operations Division (POPDIV), Aviation Training Center, Mobile effective the day HEALY concludes AWES-05 (November 28th, 2005). HEALY cleared Cape Flattery, Washington exiting the Straits of Juan de Fuca and entering the Pacific Ocean the evening of Wednesday, June 1st. We proceeded on a WNW course for four days over the 1250 NM to the vicinity south of the town of Kodiak, AK, Kodiak Island for the purpose of embarking our second helo 6529. During these four days, we conducted night helicopter operations whenever the weather permitted to update

our night flying qualifications prior to losing daylight this time of year, this far north. 6529 embarked 40 NM south of AirSta Kodiak the morning of Sunday, June 5th.

While in the vicinity south of Kodiak, HEALY hove to for a three hour fish call -- always a popular event with the crew. We sought the 20 fathom curve over Albatross Bank and landed almost exactly 100 Halibut averaging 30 pounds each. We proceeded en route Barrow via the Unimak Pass which was navigated without incident on Tuesday, June 7th. About the time we departed the Unimak Pass, the scullery dishwashing machine had been rendered inoperable due to a broken part for which we did not have a spare onboard. The Support Department worked their magic and expressed shipped a part to Nome, AK which we were scheduled to pass close by on Thursday, June 9th. The scullery part retrieval from Nome was successful via one round-trip helo sortie and demonstrated the value of Nome as a minor logistics port. HEALY cannot moor in Nome but we can safely navigate within 5 NM and conduct either helicopter or boat operations weather conditions permitting.

Our first ice was encountered southeast of Saint Lawrence Island. The ice amounted to an eight mile wide band of 3/10th coverage rotten and did not create a navigational concern nor did it slow our progress. HEALY crossed the Arctic Circle northbound on the morning of Friday, June 10th. By midday Saturday, June 11th we had arrived within striking distance of Barrow, AK. Barrow would prove to be the main logistics hub on which we relied throughout the entire course of phases I and II (of three total). On June 11 we flew our 1st round trip sortie to Barrow to recover an awaiting engineering part. The evening of June 11th and all day on the 12th, HEALY entered the ice to a distance of 20 NM to practice ice driving, mooring to the ice and simulating setting up on science station. This proved to be valuable training on the early side of the deployment with minimal qualifications in Ship's company following a personnel transfer season.

“Barrow I,” the first of three logistical visits to Barrow, was scheduled for the sole purpose of embarking the Science Party of HLY 05-01, the National Science Foundation funded coring cruise headed by Chief Scientist Dr. Dennis Darby of Old Dominion University, Norfolk, Virginia. The Science Party consisted of 19 members and HEALY took the opportunity at Barrow I to embark and disembark various other inbound or outbound personnel such as permanent crew, temporary crew or civilian contractors.

HEALY took station 5 NM northwest of Barrow on the evening of Sunday, June 12th in preparation for the onload the next day. Our location was tempered with the desire to not interfere with seasonal whale hunts by the local Inupiat residents. We received confirmation that the hunt had concluded for the season thus enabling us the heave to in a convenient location. If the hunt were still on, it would have been appropriate for HEALY to remain to the northeast of Barrow, out of sight of the hunters. Likewise, any helicopter flights would be expected to

cross the beach far enough east of the hunting area and then circle around to the airport and equipment and people staging area. Had this been necessary, the time for Barrow I would have doubled. The fast ice off Barrow stretched the entire visible coastline, was rugged in nature, high in profile and two miles wide from the beach to the seaward extent.

On the morning of Monday, June 13th, we planned for the first helo flight to Barrow at 0800. Morning fog - a near chronic condition for the spring and summer Arctic - precluded our flying until closer to 1000. We maintained both helos for the completion of embarking all personnel and their personal effects. At the onset of the operation, three of HEALY's crew were posted shoreside to assist in the coordination efforts which always prove to be more complicated than what is planned on paper. Key elements of a fluid operation are effective radio communications with the shore party and a shore party leader who is handy in taking charge and providing task direction. Personal luggage was grouped in a central location and clearly marked for HEALY to avoid confusion with any outbound baggage. 6529 ran baggage while 6567 took passengers. Onboard HEALY, bags were laid out in the empty hangar to be identified and collected by the rightful owner.

The initial moments of embarking HEALY via helicopter ride, jumping out on the flight deck with the helo still running, not knowing exactly where to go or where your bag is and being loudly escorted into the hangar can provide a good amount of shock value. The first minutes aboard are exhilarating to say the least. It was determined early on that a well planned and orchestrated reception was necessary to ensure the embarking person knew, at a minimum, which way to go onboard. Receiving the party via helicopter allows management of between two and four persons at a time. This allowed us to receive the passengers in the hangar, see them unsuited from their Mustang suits, offer them a welcome aboard package, berthing assignment and pager. Later that night after the evening meal, new arrivals are assembled in the Science Conference Lounge where they are introduced to the Command and offered the general and abbreviated (25 minute) welcome aboard presentation.

Barrow I consisted of 26 people plus personal gear arriving and 9 people plus personal gear departing. It was completed with 11 total roundtrips between the two embarked Coast Guard helicopters and took 6 hours. We were on our way north by 1600, Monday June 13th.

C. AWES 05-01 (14 day NSF Darby Coring)

Upon conclusion of Barrow I, HEALY steamed north and entered the ice 17 NM north of Barrow at 1800 on Monday, June 13th. The impetus of this phase was coring on the Northwind Ridge north and northwest of Barrow at up to 9 pre-designated sites. The coring team was led by Dr. Dennis Darby of Old Dominion University, Norfolk, Virginia. A sub mission was the slow ice-towed deployment

of the University of Hawaii's Imaging and Mapping Instrument (IMI pronounced Eee-Mee), this sub-mission was headed by Dr. Margo Edwards of the University of Hawaii.

HEALY had achieved a position 70 NM to the north-northwest of Barrow on the afternoon of Tuesday, June 14th in increasingly tougher multi-year ice conditions when we were nipped by a large floe that collapsed on our track. With easterly winds pressing on the starboard beam of our northerly heading, we became beset in moderate athwart ships pressure and remained so for 96 hours. The wind persisted for most of this time and our heading did not change appreciably. The pack drifted to the northwest at approximately 1/4 knot. All told, we drifted slightly over 20 NM during the 4 days beset. 2 or 3 times per day, we would power up the plant to nearly 100% on 3 engines for 15 to 20 minutes both ahead and astern. The ahead prop wash in particular caused notable decay on the ice astern. In particular, a single piece of ice, with the surface area of a 2 car garage and 4 feet thick had lodged itself under our port stern at an angle. It apparently forced the port rudder over to such an extent that the steering pump, still energized, attempting to reset to it's order amidships, burned out. Once the casualty was realized, we secured the steering pumps and allowed the hydraulics to hold the rudders in place with the ability to bleed position if the pressure became too great. The rudder offset neared 20 degrees at times and raised concern that the stops may be met. We eventually rigged 4 fire-hoses off the fantail and energized them tied in place and trained on different parts of the 2 car garage-sized piece of ice. The fire-hoses were taking suction from the sea bay at 45 to 50 degrees F. The erosive action of the fire-hoses appeared instrumental in the degradation of the lodged piece and it eventually rolled clear of the stern. This enabled 10 yards of stern-way and led to a small track set up for back and ram. We made progress astern only with each successive backing and the ice collapsed handily after having been eroded by the days of ahead prop-wash. We eventually pried our way free and proceeded on the mission.

During the remaining 10 days of this 2 week mission, we pulled 8 jumbo piston cores in various locations along the Northwind Ridge as far as 110 NM north-northwest of Barrow. The day after freeing ourselves, a helo ice reconnaissance flight revealed an easily navigated path to the northwest. Additionally, ice conditions eased notably by the day. Air temperatures occasioned the upper 40's F. Science made the decision to conduct the 8th and final jumbo piston core the day prior to their departure offshore Barrow, that is, Saturday, June 25th. This was somewhat of a close call since the Science Party has significant obligations to secure and clean all their spaces and gear including personal spaces, laundry and the like. They were able to prep the spaces just fine but it essentially called for an all-nighter.

The final aspect of phase I was the deployment of Dr. Edward's "IMI." This was done only 20NM NW of Barrow south of the primary ice edge and among 5/10th

coverage rotten ice. The deployment was made the afternoon of Saturday, June 25th and was secured during the early morning hours of Sunday, June 26th.

“Barrow II” was a two day dual purpose logistics stop. We disembarked HLY 05-01 on Sunday, June 26th and embarked HLY 05-02 on Monday, June 27th. This event was expected to be the single most complicated logistics event of the deployment. It went well but was long and tiresome.

HEALY took station 5NM northwest of Barrow on the early morning of Sunday, June 26th in preparation for the departure of 26 people and embarkation of 12. Disembarking were the 19 members of phase I with some departing Coast Guard and embarking were 6 advance members of phase II and arriving Coast Guard. Day 1 of Barrow II was also used for the on load of equipment associated with phase II. Most notably, an underwater remotely operated vehicle (ROV) unit and associated consoles. The Barrow Arctic Science Consortium (BASC), assisted with logistics details and arranged the gratis services of North Slope Borough SAR whose Bell 412 ‘Huey’ ultimately picked 6 heavy sling loads, including the ROV, which were beyond the capability of our embarked Coast Guard H-65's.

The second day of Barrow II was dedicated to the on load of the remaining science party members. 39 persons and their personal effects were transported via the dual sorties of 6529 and 6567 during 16 total roundtrips.

D. AWES 05-02 (30 day NOAA Gradinger Ocean Exploration)

Phase II was the 30 day NOAA funded Ocean Exploration headed by Chief Scientist Dr. Rolf Gradinger of the University of Alaska, Fairbanks. The focus was biology and the five primary categories were marine mammal observation, top ice, under ice, pelagic (mid water) and benthic (ocean bottom). The Science Party had identified 15 total stations over approximately 850 NM of trackline as far away as 330NM NNW of Barrow. Within a few days into the phase, a rhythm was established wherein we would set up on station for 24 to 30 hours followed by a 10 to 15 hour transit to the follow-on station.

Equally supporting the five primary categories as stated above required positive involvement and deconfliction by the Chief Scientist. Dr. Gradinger did a superb job of equally representing all of the parties' interests. With time closing in during the last days of the phase, Dr. Gradinger was itemizing and adhering to A-frame wire times in 15 minute increments.

Once outside 100NM from Barrow, we considered ourselves out of range of the embarked Coast Guard H-65's. We did, however, find ourselves faced, on three occasions, with the need to receive parts from shore or transport personnel to shore for emergency reasons. At distances up to 200NM from Barrow, these needs were accommodated once again by Northslope Borough SAR as requested thru the Barrow Arctic Science Consortium (BASC).

NOAA OE had scheduled for the embarkation of a media party of 8 during the final 3 days of the 30 day phase. Once within 100NM of Barrow on the appointed day, we ran 3 roundtrips of both our embarked H-65's to embark them.

“Barrow III” was our third and final significant logistics event offshore Barrow for the purpose of embarking or disembarking a science party. In this instance, it was for disembarkation of the 45 personnel associated with HLY 05-03 and the embarkation of 6 personnel from the Naval Afloat Training Group Pacific Northwest. Once again, we positioned HEALY within just a few miles offshore Barrow. The majority of gear and samples from phase II were scheduled for offload in Dutch Harbor.

At this point in the season, the fast ice was completely gone and the weather and sea conditions permitted use of the LCVP for personnel transport. Only one roundtrip of the LCVP was necessary. We also limited ourselves to the use of one H-65 for sling loading of baggage and the carriage of approximately 8 persons in the science party during their 6 total roundtrips. The HH-65 was also used to bring aboard the 6 members of ATGPNW. Barrow III went smoothly a result of our familiarity with the territory by that point in the deployment.

E. LTT (Limited Team Trainer by U.S. Navy's Afloat Training Group (ATG))

This five day ‘empty-handed’ transit over the 1200 NM from Barrow to Dutch Harbor was dedicated to training provided by Naval Afloat Training Group Everett. This training is a unique fit for HEALY due to our unique schedule. If HEALY is going to participate in TSTA or LTT, it must be during a deployment and embedded within the phases of our science missions. Our daily routine was standard with the exception of extra drills, training and exercises.

F. Dutch Harbor, AK

We arrived at Dutch Harbor, Alaska at 1000 on the morning of Sunday, July 31st. This marked our first portcall since clearing Seattle on June 1st. It would also be the only portcall prior to our arrival in Tromso, Norway, scheduled for September 30th. The five day portcall included 3½ days of work. Of significant note was the offload of the most gear and samples from phase II, refueling, unloading stores, offloading trash and embarking the 47 person science party team for phase III.

G. AWES 05-03 (57 day NSF Darby Coring and Coakley Geo-Physical)

Phase III was the 57 day trans-arctic voyage led by Co-Chief Scientists Dr. Dennis Darby (Coring) of Old Dominion University, Norfolk, VA and Dr. Bernie Coakley (Geo-physical) of University of Alaska - Fairbanks. The origin of this leg of the cruise was the departure from Dutch Harbor, AK on Friday, August 5th with a scheduled arrival in Tromso, Norway on Friday, September 30th, a straight

line distance of 3,378 NM. The planned science route took HEALY through 2,400 NM of ice over a zig-zag path from ice entry at approximately 74N, 163W to ice exit at 80N, 006E via the North Pole. We had scheduled coring sites between western and eastern longitudes to investigate the Northwind Ridge, Chukchi Plateau, Mendeleev Ridge, Alpha Ridge, Lomonosov Ridge, Gakkel Ridge and Yermak Plateau. En route between these coring sites and whenever possible, we deployed the seismic streamer and dual air-gun assembly for the collection of geo-physical data. Also of note during this phase was our tandem operation with the Swedish Icebreaker ODEN between the 1st and 24th of September.

Towing the 300 meter, neutrally buoyant, semi-flexible listening device tube behind the dual air-gun assembly while breaking ice required an ingenious and extremely rugged design concept. Dr. Yngve Kristoffersen of University of Bergen, Norway led and managed this aspect of data collection. Ship's speed during streaming and data collection was ideally 4.5kts. A 20m long, 15cm interior diameter wire-mesh inlaid rugged rubber exhaust hose was the crux of the ice capable streamer. The leading edge was bolted into a deck-fitted yoke on the after-most portion of the fantail. The trailing edge of this hose was fitted with the weighted, hydroplane towing "bird" to which each side was affixed one of two seismic air-guns. The pneumatic hoses led to the guns along the rugged hose and from the diesel air compressor set up in a gear box on the fantail and under the starboard aft portion of the flight deck. Once deployed with an aft-rigged winch crane, the towed gun assembly would trail back and 70 degrees down from the fantail at a depth of approximately 3m below the surface at 4.5kts. Speed during launch and recovery of the guns was 1kt. Ice conditions which allowed a continuous speed of 4.5kts would result in broken ice simply rolling down the side of the ship to the fantail, at which point the broken ice path would close back up well astern of the rugged black hose. Thru this hose, the seismic streamer listening device itself was hand-fed or retrieved in a similar manner. Ship's speed for deployment or recovery of the streamer was 3kts. In a few, instances with the seismic streamer deployed, ice was met which required HEALY to back and ram. Backing was done in a very controlled manner with the ice pilot closely monitoring the aft cameras. Even at 300m in length, the streamer did not risk fouling the screws. This was especially the case when HEALY was able to slide back with very slight ahead wash over the propellers. Remaining hove-to for any length of time (4 minutes) was deemed unacceptable due to concern that the streamer (slightly negatively buoyant) would sink below its expected crush depth of 60 meters. Over the hundreds of miles towed the seismic streamer took a beating. All gear and replacement parts were expended and totaled.

As discussed in the Pre-Deployment Preparations section (para A), our commitment to work with the Swedish Icebreaker ODEN was arranged well in advance. Both Captain Dan Oliver of HEALY and Captain Tomas Arnell of ODEN concurred that "it is good to have company this far North." HEALY and ODEN rendezvoused on Thursday, September 1st and departed company on Saturday, September 24th. The two vessels are notably different in icebreaking

capabilities. ODEN is exceptionally maneuverable in the ice while it is a challenge for HEALY to alter course. HEALY has a bit more power and is capable of breaking tougher ice. There were numerous occasions both before and after the North Pole where both vessels relied upon each other. Making the trip to the North Pole alone would increase the risk of wintering over for either ship.

The single greatest contribution provided by ODEN was the presence of their civilian contracted ice reconnaissance helicopter. ODEN's contracted helicopter was on 15 minute call 24 hours a day. The ability to take off based on environmental conditions was solely at the discretion of the pilot. HEALY's H-65 Coast Guard helicopters, on the other hand, were quite limited in their ability to contribute during this phase of our deployment. Wind parameters, visibility (always foggy in the summer Arctic), ceiling and the mechanical limitations of the HH-65 B model gave us essentially a 50/50 opportunity to fly.

Days prior to the rendezvous with ODEN (late August) and just after the North Pole (mid September) ice conditions proved exceedingly difficult. There was constant consideration given to both the possibility of not being able to reach the North Pole or being forced to winter over. Three things ensured our success. First was the joint decision by both captains to approach the North Pole from a more westerly direction. Second, was the multiple, daily tactical ice reconnaissance flights provided by ODEN's contracted civilian helicopter. The third item contributing to the successful trans-Arctic voyage were the daily, high-resolution satellite ice images provided and analyzed by the U.S. Navy's National Ice Center in Arlington, Virginia.

H. North Pole

HEALY and ODEN arrived at the geographic North Pole on September 12. This marked the second arrival for HEALY and only the third time a U.S. surface ship had reached the landmark. ODEN was also a North Pole veteran, having become the first non-nuclear ship to reach the North Pole in 1991. The crew of both ships enjoyed four hours of ice liberty allowing time for members to walk across the ice to the other ship for open house tours.

I. Tromso, Norway

We arrived in Tromso, Norway, as scheduled, on the morning of Friday, September 30th. The two primary mooring options for HEALY in Tromso are the downtown district of Breivika on the east side of the island of Tromsoya or the Olavsvern Naval Base south and east of the island of Tromsoya. The straight line distance between the two is only 4 miles but the island of Tromsoya is connected by two bridges on the east and west sides, the water underneath which precludes safe navigation for HEALY. The HEALY's navigational trackline between Breivika and the Naval Base, which required circling several islands, was closer

to 150 miles. Breivika where HEALY moored must be approached from the North with a straight-forward 60 mile transit thru deep and wide fjords.

The first day in Tromso was dedicated to science offload. All the logistical pieces fell into line and crane services were rendered. HEALY took fuel on the last day of the port call after moving to the Esso fuel pier one mile south of the Breidvika mooring. The Esso pier is unacceptable for routine use. The pier face is only 64 meters, exactly one half the length of HEALY and of degraded maintenance. Wire rope runs are available to be rigged fore and aft but the quality of the underwater moorage of those wires is unknown. The flow rate was slow and we remained moored for 12 hours thru the night. Winds were reliably from the SSE up the fjord and worked directly on the bow of HEALY. Our time at the Esso fuel pier was an uncomfortable stay. The best fuel option for Tromso is via barge while moored at Breidvika.

J. Dublin to Seattle

After the five day logistics portcall in Tromso, HEALY commenced the return to homeport transit to Seattle thru the Atlantic, via the Panama Canal and up the West Coast of Central and North America. Ports of call were made in Dublin, Ireland; The Azores; St. Martin and Cabo San Lucas, Mexico. Aside from exceptionally rough weather in the Norwegian Sea during the five day transit from Tromso to Dublin and a nighttime helo medevac conducted off San Francisco on the night of Thanksgiving, the return to homeport transit was without incident.

The rough weather of the October Norwegian Sea was caused by passing south of three deep low pressure systems in five days over the 1,500 mile transit (Tromso - Dublin). Sea swells varied from 30 to 50 feet and green water over the bow (rail height of 32 feet) was common. Significant damage was sustained including green water shearing off the bow crane cab and "relocating" it to the 02 porch where it landed after smashing into the forward bulkhead and crushing exterior firemain piping. This crane cab resides 40 feet above the waterline. Other damage included bent angle iron and flooding to the 01 berthing spaces, library and junior crew's lounge. Flooding was caused by intrusion through ventilation as well as penetration of the forward leading water-tight doors after repeated green water opened the door handles. Once accessible, we lashed the doors closed and they remained water-tight. We also lost the port anchor which broke at the shank. It is suspected that a casting flaw in the metal served as a weak link which enabled this surprising breakage. Fortunately, these storm seas were directly out of the SW - the exact direction we were heading. If these seas had met us on the beam, quarter or stern, the ship's ride may've been unmanageable on our desired course.

2. Navigation Operations

A. Seattle, Washington: 01 June 2005

U/W @ 1026T From Berth Charlie, Pier 36, USCG ISC Seattle, WA to commence Artic West East Summer 2005. The tug PROTECTOR was made fast to starboard but not used. All Bridge equipment was operational and working properly. Winds were light (less than 10 knots) from the SW. The current was flooding at less than ½ knot. LCDR DALITSCH, conned HEALY underway. Once clear the pier the conning officer twisted to starboard and proceeded on the outbound track line. As HEALY entered Elliott Bay, it encountered the east-west ferry routes; the conning officer ordered 6 knots of speed and arranged for the westbound ferry to pass south of our track. HEALY entered the northbound traffic scheme and headed outbound for sea.

B. Dutch Harbor, Alaska: 31 July to 05 Aug 2005

After sixty one days at sea HEALY moored portside to Unalaska Marine Center USCG Dock, Dutch Harbor, Alaska @ 1036U on July 31, 2005. The Conning Officer (LCDR Dalitsch) approached the pier using Dynamic Positioning (DP) in the Joystick Auto Head Mode and without an experienced pilot onboard. The tug: JAMES DUNLAP was made off to the starboard quarter but was not used. Light traffic was encountered on the approaches and our track into the harbor was similar to the route from all previous trips into Dutch Harbor. Winds were variable, as were currents, however there were a few gusts of wind up to 40kts onto the dock as we were along side the pier. The state of tide was -0.9 feet and rising. Range of tide during the ship's stay averaged 3.6 feet.



Good water leading up to pier allows for a port or starboard side landing with the pier face at 052 degrees true. UMC Dock offered excellent services including cable, telephone, SWIII connectivity, sewage, and potable water.

HEALY departed Dutch Harbor @ 1000U 05 August 2005, with light winds and currents. The tide was +1 foot and rising. The Conning Officer, BMCS SULLIVAN, used the tug JAMES DUNLAP and again no pilot was used for departure. HEALY stood into the Bering Sea and headed for the North Pole.

C. Tromso, Norway 30 Sep to 05 Oct 2005

HEALY arrived at the Tromso Pilot Station in position 70-06N 19-13E at 0600B 30 September 2005. HEALY embarked the Harbor Pilot, CAPT. Garberson, and proceeded with the 40 NM transit to Tromso with little current. The tide was rising with a range of 6 feet. HEALY moored at 0950B 30 September 2005 at Breivika Pier 25 in position 69-40.756N 018-59.750E, depth 50 feet. Mooring was accomplished using standard commands on the engines and bow thruster, and the tug LUPUS gave assistance by pushing lightly against the pier. Winds were light and on the dock from the southwest @ 10-15 knots. Breivika Pier 25 is a new terminal with 500 feet of mooring with a good fendering system installed on the pier face, and the approach from the north allowed HEALY to avoid a shallow spot well marked by a red pile just 50 yards north of the pier. The pier face is 231-T. Traffic was lighter upon our departure than arrival.



Breivika Pier 25

At 0900B 04 September 2005 we shifted moorings to receive fuel at the ESSO bunker station in position 69-39.0N 018-59.7E. After receiving 500,000 gallons of

fuel HEALY departed at 0800B 05 October 2005 and headed north to the pilot station. Once HEALY disembarked the pilot we continued on track enroute Dublin, Ireland.

D. The Little Minch, Scotland 09 October 2005

Due to gale force winds gusting over 70 knots, HEALY diverted from the deep water track and transited through the Little Minch on the morning of 9 October 2005. HEALY encountered heavy currents and high winds from the south and proceeded through the Minch by following the recommended route in the sailing directions that followed the western shore as we headed south. Once clear of the Minch, HEALY stood into the Sea of the Hebrides and continued to the North Channel and into the Irish Sea.

E. Dublin, Ireland: 10 – 17 October 2005

HEALY checked in with DUBLIN Port Radio on CH-12 two hours before arriving at the Pilot Station off the entrance of the port. At 1400A HEALY embarked the Dublin Harbor Pilot, Capt. Dempsey. The Executive Officer, CDR JACKSON had the Conn and guided HEALY into Dublin Harbor with winds gusting from the south at 25 knots. The Tug CLUAIN TARBA was taken alongside to port and was used to assist in turning the ship onto Ocean Pier 33 in the Alexander Basin. Currents at the entrance to Dublin were from the south at 1.5 kts. The pilot was knowledgeable of the area and was transported to HEALY via a small, black hulled pilot boat. The pick up and drop off point was at the Dublin Bay Safe Water Buoy. HEALY used NGA and SDNC charts for the evolution with no noticeable problems.



Ocean Pier 33 in the Alexander Basin

HEALY departed the port of Dublin at 1122A on the morning of the 17th of October 2005 at the required high tide, due to depth. LTJG NOEL was the Conning Officer and was assisted by the tug DELGINIS. HEALY backed away from Ocean Pier 33 and turned its bow to starboard to line up with the outbound track of the harbor entrance. Once clear of the break wall HEALY encountered a slight current setting HEALY to the south, winds were slight at 15 knots, after disembarking the Harbor Pilot Capt. Caffery, HEALY attempted to anchor in Dublin Bay Anchorage # 2. The starboard anchor was set up for use, however due to problems with the break, it was unable to be deployed. HEALY departed DUBLIN BAY via KIRSH BANK and headed South through the Irish Sea to St. Georges Channel, and on to the Azores.

F. Ponta Delgada, San Miguel, Azores, Portugal: 22 – 26 October 2005

Arrived at the Ponta Delgada pilot station 1 mile off the break wall at 0730B and embarked Harbor Pilot, Capt Carreira. BM1 HINES the Conning Officer, approached using the outer range to steer a course of 312-T. Weather was the best we had seen in four months. HEALY made the approach at sunrise with calm winds and little current. At 0833B HEALY moored port side to East Quay 12, NATO Fuel Pier in Ponta Delgada, San Miguel, Azores, Portugal, in position 37-25.546N 025-30.500W depth 50 feet. HEALY departed at 1425B on the 26th of October 2005. Winds were on the dock at 30 knots, the Harbor Pilot Capt Carreira and Tug SAO MIGUEL assisted the Conning Officer LCDR DALITSCH in turning inside the basin with the Port bow clearing the pier with no problems. Prior to clearing the break wall HEALY disembarked the Harbor Pilot and cleared

the tug to keep them out of the 8 foot swell just outside the break water. The recommend moorage is as far forward on the NATO Pier as possible due to heavy surging near the entrance of the harbor.



East Quay 12, NATO Pier

G. Philipsburg, Saint Martin, Netherlands 03 November – 06 November 2005

HEALY anchored at 0930Q in position 18-00.226N 063-03.682W depth 50 feet, with a sandy bottom with 3 shots of chain on deck. Winds were from the East at 15 knots. At 1730Q HEALY embarked the Harbor Pilot J.P. Craane and at 1800Q HEALY weighed anchor and proceeded to the A.C. Wathey Cruise and Cargo Facility in Position 18-00.756N 63-02.742W depth 35 feet. At 1936Q HEALY moored starboard side to and all the way forward on the bay side of the pier. LCDR REEVES, the Conning Officer did a very good job of mooring without the use of a tug. Winds were light and variable, and no current was observed. The state of tide was +1.5 and falling. The range of tide during ship's stay averaged 1.4 feet. BM2 LOBHERR conned the ship on our departure at 1835Q on the 6th of November 2005. No tug was used and the wind was off the pier at 10 kts. HEALY stood into the Caribbean Sea en route the Panama Canal.



Dr. A.C. Wathey Cruise and Cargo Facility

H. Panama Canal, November 10th & 11th 2005

HEALY arrived at the Atlantic anchorage at 0600R 10 Nov 2005. HEALY contacted Cristabol Signal Station on VHF 16/12 at 10 NM from the sea buoy and was advised to anchor North of the break wall entrance. ENS BIEMILLER maneuvered HEALY and anchored in position 09-24.415N 079-55.938W in 80 feet of water with the starboard anchor and three shots of chain on deck. At 1000R HEALY was advised by Cristabol Signal Station on 16/12 to weigh anchor and re-anchor inside the break wall in Anchorage "Delta". HEALY anchored in position 09-22.826N 079-54.778W, depth 41 feet with one shot of chain at the waters edge. HEALY stood at anchor and was boarded by the Panama Canal Inspectors at 1400R.



Entering the northernmost lock of the Panama Canal from the Atlantic Ocean

HEALY remained anchored for seven hours. At 1820R HEALY embarked Panama Canal Pilots Capt. Juan Fernando, and Capt. Forern Clemente. At 1830R HEALY weighed anchor en route Gatun Locks. One tug was used throughout transit and a second tug was required as a stand-by due to HEALY having only one anchor. The canal transit was made in darkness. Transit of Gatun Locks, Gaillard Cut, Pedro Miguel and Miraflores Locks were all made without incident. Eleven line handlers were embarked before entering and disembarked upon exiting each set of locks. One Pilot disembarked, along with the line handlers, shortly after Miraflores Locks. The entire transit of the canal was completed in approximately 10 hours. All ranges and ATON appeared to be on station and in good working order. At 0353 on November 11th after giving us shipping information on inbound traffic that we might encounter, Pilot Forern Clemente disembarked and HEALY stood into the North Pacific Ocean en route Cabo San Lucas, Mexico.

I. Cabo San Lucas: 18 November to 21 November 2005

Anchored @ 0904T, 18 November 2005, in position 22-53.300N 109-42.740W, in 90 feet of water to a sandy bottom with 5 shots of chain on deck. ENS BUSER conned the HEALY to anchorage in Bahia San Lucas. Winds and current were light. HEALY stood at anchorage for 76 hours without problems. Radar and visual bearings were used as well as DGPS to ensure HEALY stayed in position. At 1352T 21 November 2005, BM2 DAWALT conned HEALY without incident as we weighed anchor and headed South out of the bay and into the North Pacific Ocean, en route Seattle.



Land's End of Cabo San Lucas viewed from HEALY's anchorage

J. Seattle, Washington: 28 November 2005

After 180 days away from home port, sailing 22,970 nautical miles and completing a circumnavigation of North America, HEALY moored at 0906U on 28 November 2005 @ Berth Alpha, Pier 36, USCG ISC Seattle, WA. Currents were light, with light and variable winds. LTJG NIEMANN made a direct approach without a pilot and used the tug PROTECTOR to control the stern due to the lack of maneuvering room.

3. Deck Operations

A. Pre-Deployment Preparations & Seattle to Barrow

During the dock side availability, Deck Force provided inspectors and/or equipment operators for painting, weight handling and ground tackle work. Level 2 overhaul was completed on the starboard aft knuckle crane. Level 1 inspections were completed on all remaining cranes and both Miranda davits. All cranes were weight tested. Deck Force also supervised the paint contractor in resurfacing the deck on the forecastle, 06 deck, and aloft conn deck. Deck Force also supervised the prepping, priming and painting of the entire starboard side 01 weather deck, 02 deck athwart ship passageway and the entire underside of the exterior flight deck amounting to 1000 square feet throughout the ship. Extensive small boat training was conducted resulting in the qualifications of 3 coxswains and 1 boat crewmember.

During the two-week shakedown cruise, Deck Force assisted in deck landing qualifications, fully qualifying 2 LSO's and 2 tie-down crewmembers. Deck also conducted boat crew and bridge watchstander training.

During the pre-deployment load-out preps, Deck Force worked with other departments to on load supplies and ship's stores. Of particular note, Deck loaded

3 science vans and assisted the MST's in the on load of science gear and related equipment. Deck also provided crane operators and riggers to remove tools and related equipment for several civilian contractors and NESU prior to the ship's departure. Deck scheduled the range and qualified 12 personnel on 9mm, six on M-16, 14 on riot shotgun and five on bear rifle.

Once again, we departed on deployment with only three qualified bridge watchstanders. After recovering the AVDET helos, deck provided LSO, Tie-downs and break-ins during flight evolutions.



Extensive boat training was conducted to increase the number of qualified small boat personnel resulting in the qualification of four boat crewmen.

B. AWES 05-01

Science support needed from Deck Force during this phase was limited to deploying persons to the ice by man-lift cage, brow and small boat.

The brow acquired during the inport was tested for the first time and after a failed attempt to rig it to the quarterdeck cutout it was tried again at the port aft rail and was used for ice liberty as well as science operations on the ice. Potential for damage to the brow exists if the ship moves alongside the ice flow so it was determined best to leave it attached to the crane. The steep angle highlights the need for having steps and an ice skid attachment for the foot of the



Setup of the brow aft of the quarterdeck brow added by the manufacturer during the next inport. When the vessel became beset June 14th, deck force assisted in the rigging of makeshift fire hoses allowing

the vessel to break free after its four day delay. The division had one scheduled personnel departure but also suffered two unexpected personnel losses including the 1st Lt.

C. AWES 05-02

This phase was the most trying for the Deck Division. Multiple science teams, conflicting interests and extended stations tasked all available personnel for numerous and often simultaneous evolutions to ensure that all science party objectives were met. With one division member a diver and only one qualified



LCVP coxswain, the watch schedules tightened up as well. The result was multiple 18 and 20 hour all-hands days for a division that was already short handed. Despite this heavy workload,

LCVP moored alongside an ice flow for science ops

qualifications continued on the bridge and flight deck as two JOODs, one OOD, one bridge watch stander, one helicopter tiedown and one LSO were qualified.

The LCVP accumulated over 50 hours of operational time carrying Coast Guard and civilian dive teams to the ice. This was equivalent to 3 years of normal operational use.

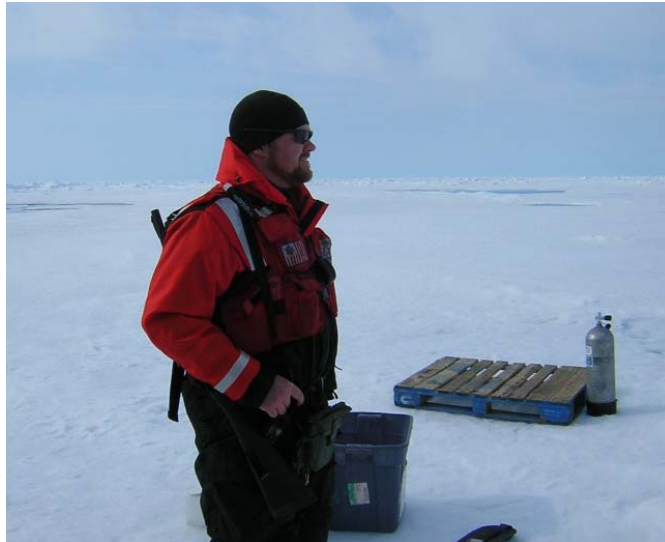


Multiple cranes in simultaneous operation during science ops

One of the propellers was replaced after damage suffered in brash ice conditions. The heavy usage gave time for three coxswains and one crewman to complete their qualifications.

While the senior Petty Officers of the division were underway on the LCVP, the remainder of deck force was confronted with the daunting task of safely deploying science party members to the ice to conduct experiments. Often both 04 deck cranes were in operation simultaneously. Each of the 24-36 hour stations

required deploying science party members to the ice. Varying ice conditions meant the division had to be flexible and able to use several different methods including rigging the brow eight separate times as well as conducting over 50 individual basket hoists. The RHI's were employed for 15 sorties ferrying science party members back and forth to the ice.



A diligent bear watch

An armed Bear Watch accompanied every science party that went to the ice. During this phase over 110 hours of Bear Watch were accumulated in freezing and often snowy conditions. On this deployment we struggled with only 6 qualified bear watches. This can be addressed by a more vigorous weapons qualification program though advanced planning will be required as range time is difficult to get in homeport.

To lighten the load on the helos during the offload in Barrow, an RHI scout party found a suitable landing point for the LCVP and 25 science party personnel were transferred to the beach in one trip. Despite the convenience of the LCVP, the offload still made for a moderately long day of landings, takeoffs and vertreps.



LCVP underway transporting scientist to Barrow in late summer

Logistical limitations and damage to the starboard 04 crane

complicated the science off- and on-load in Dutch Harbor. Deck Division was able to effect temporary repairs to the main block of the crane prior to pulling in, allowing the offload of the science van housed forward of the LCVP without the ship having to shift berths multiple times.

D. LTT

NSTR

E. Dutch Harbor, AK

NSTR

F. AWES 05-03



Setup of the brow from the focsle

For Deck Division, this mission was a lot less intensive than the last. In the beginning, before the ice got difficult, we used HEALY RHI's numerous times to put people on the ice for surveys. Once the floes got bigger and the leads were few and far between, Deck used the basket and occasionally the brow forward on the port side to deploy personnel to the ice. Additionally, Deck rigged the brow for Ice Liberty and provided crane operators for recovery of a

bent JPC. Deck provided nearly all Bear Watches for ice deployments. The transit with ODEN to the North Pole was great for Deck. We used ODEN's Helo for Ice recon which meant less helo ops using our helo, fewer personnel on deck, less time to get in the air, and less restrictions. When the ceiling did not allow for flight, we assisted with personnel transfers from ODEN's basket. With heavy icing and snow conditions as the ship sailed further north, Deck worked to keep



View of ODEN from HEALY during passenger transfer between two ships using ODEN's crane and basket



the decks free of ice and snow, however, with temperatures below zero, it was difficult to keep the decks clear.

G. Tromso, Norway

HEALY moored starboard side to Breivika Pier in Tromso, Norway with standard mooring lines doubled. The pier and approach were outstanding for our setup. We used the starboard 04 deck crane to rig the brow and offload garbage with our cargo nets. A total of 5 small dumpsters were filled with garbage with the help of all hands. Deck loaded a majority of stores and supplies with the forward crane.



The remaining anchor shank after loss of the port anchor

HEALY letters were showing bare metal. The paint float was a day to day rental and needed for only two days. The underway evolution from Breivika Pier was uneventful; however the mooring to a 64 meter fuel pier was unconventional. The bollards were not set up for a ship our size, but we made due. The line setup was less than standard and the language barrier did not help with the evolution. We used a wire rope attached to a sinker on the bottom for our line 1 through the bullnose. The other lines were attached where we could set them to get the best mooring position. We rode well through the night, not comfortable, but no damage to the pier or ship. Getting underway was longer than usual because of the wire cast off and unusual line configuration, but once again using the bow thruster and tug on the quarter proved to be the best

Deck also prepped, primed, and painted the transom utilizing the paint float brought over by the tug LUPUS. Due to towing the seismic array in the ice, parts of the transom including the



Anchor solution showing the port anchor chain connected to the starboard anchor

way to moor and un-moor. During the transit from Tromso to Dublin we hit some very rough weather; the prevailing conditions were 20' seas and 50 knot winds. We were taking some green water over the bow. At one point we struck a larger wave. Initial scan of the bow did not show any damage, but after checking again the lookout noticed the bow crane cab torn off and placed on the 02 deck patio. Deck secured the crane cab where it rested and noticed the port anchor chain slack on deck. It was too rough to make a further assessment that night. The next morning HEALY turned down swell and Deck investigated and found the port anchor broken at the shank approximately three feet from the eye.

H. Dublin to Seattle

Moored starboard side to industrial pier in Dublin with standard HEALY mooring lines doubled. The pier was set up well except for a poor fender system between the ship and concrete pier. Future visits to Dublin should include the use of HEALY fenders. After departing Dublin we attempted to exercise the starboard anchor and found the brake on the windlass to be broken and unable set properly. Deck had to transfer the port chain to the starboard anchor. We then exercised the starboard anchor with the port chain. We only lost one link from the wildcat and the switch was a success, enabling the ship to keep all of its scheduled port calls.

San Miguel in the Azores was another standard HEALY mooring with good bollards on a concrete pier in an industrial facility. Because of our position on the pier and the mountains in San Miguel the wind funneled through and pushed us off the pier and chaffed our lines.

In St Maarten we anchored while waiting for our pier to open at the cruise ship terminal. We ran HEALY 2 in to the pier to receive servicewide exams, parts, and four NESU Seattle ship riders. The cruise ship pier was a little difficult for line placement. We had some leads that did not allow us to be as tight to the pier as we would have liked, but rode well.

We anchored outside of the Panama Canal basin initially before receiving permission to move inside. We kept the anchor at the waters edge while maneuvering HEALY inside the basin to anchor again. After anchoring we tested HEALY 1 due to recent throttle repairs. While at anchor Deck also set up six lines for belaying inside the three locks. Two on the focsle, two amidships and two on the fantail. Once we got permission to enter the canal, we manned anchor detail and rotated 3 – four person details throughout the transit. Then on the last outbound leg we secured the lines below and lastly secured the anchor detail in open water.



HEALY anchored off Cabo San Lucas, Mexico with the Accomodation ladder and boat platform attached

Cabo San Lucas was the last port call. We anchored out and rigged the accommodation ladder on the starboard side. We initially thought we would receive a barge to set our A-comm ladder on, but instead had to rig the entire platform. It was good training for all the members of deck. The ladder had not been rigged in three years. We had the ladder set up in about two hours and were able to receive water taxis. We used a painter to allow the taxis to press into the rubber bumpers on the ladder making it easier for loading. The ladder took a little beating when the chop began to build in the wind.

I. Recommendations

1. **BACK-UP/SECONDARY BROW:** The secondary brow purchased during the inport proved very useful for deploying persons to the ice. It is quicker to set up and after being shifted to the forecastle does not impact flight operations. Currently it can only be rigged to the port side. Recommend starboard railing be modified to allow use of the brow from both sides of the ship. Also recommend brow be modified to add step treads and a removable ice skid which would improve the ease of use.
2. **TRAINING:** Several casualties to the 04 cranes as well as a damaged flight deck net are likely attributable to operator error and highlight the need for formal training for all crane operators and deck supervisors. Recommend commercial training be procured locally for Deck and Science division personnel.
3. **POLAR BEAR DETERRENCE:** Deck has researched the use of non-lethal methods to prevent polar bears from damaging science equipment in the future. HEALY has forwarded a letter and requested the use of “Shell Cracker” type rounds that have been used elsewhere to deter bears from airports, bases and housing areas.

CHAPTER II – AIR OPERATIONS

1. Summary

A. Pre-Deployment Preparations & Seattle to Barrow 1

1. Personnel Assignments: Polar Operations Division (POPDIV) assigned Aviation Detachment (AVDET) 162 for HEALY's 2005 Arctic West/East Summer deployment. AVDET 162 formed on 18 April 2005 with four (4) pilots LT Andrea Sacchetti (Senior Aviator), LT Matthew Weller (Engineering Officer), LT David Merriman (Admin support officer) and LT Kenny Eller (Operations Officer) and four (4) flight mechanics AMTC Timothy Santmyer, AMT1 Johnny Charles, AMT1 Dan Kelly, and AET2 Louis Bishop. On 26 June, LT Brian Erickson replaced LT Weller as the AVDET Engineering Officer. From 5-26 June the AVDET was supplemented with a crew from Air Station Kodiak. These members were LT Winston Wood, AMTC Thomas Pudish, and AMT3 Jeffrey Kortis. This supplemental crew was embarked to get a few weeks of POPDIV familiarization in order to bring this information and experience back to Kodiak for crews that will be taking over the Arctic mission on the icebreakers starting in 2006 due to the dissolution of POPDIV.



AVDET 162 onboard HEALY, from L to R: AMT1 Charles, AMTC Santmyer, AMTC Pudish, LT Eller, LT Weller, AET2 Bishop, LT Sacchetti, AMT3 Kortis, LT Wood, AMT1 Kelly, LT Merriman.

2. Maintenance: AVDET 162 received the 6567 from ATC Mobile on the 25th April for pre-deployment maintenance. The standard pre-deployment inspections were performed; along with 125/150-hour inspections and

maintenance out for a 6-month period were completed for pre deployment. The AVDET was augmented by an average of 2 people per day to assist.

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

4. Administration: All eight (8) deploying AVDET members completed training, a medical screening, and administrative requirements through 31 December 2005. ATC's admin and medical departments were exceptionally helpful and efficient during the pre-deployment phase. Additionally, identifying the Admin Officer early and allowing him/her to begin their duties prior to the official form up aided greatly in the smooth completion of administrative requirements.

5. Cross-Country: Aircraft 6567 departed ATC Mobile on the 25th of May. Arrived in Tusla, OK for the first night. On the 26th of May, the 6567 made it to Colorado Springs, CO. On the 27th of May 6567 made it to Jackson Hole, WY. After a great amount of coordination with the United States Secret Service, 6567 departed Jackson Hole with a wave to the Vice President and finally arrived at Boeing field in Seattle on the 28th of May. The only maintenance issues noted during the entire flight were an intermittent RADAR and TCAS systems.



The view from CG 6567 approaching HEALY in the Straights of Juan De Fuca. This marks 6567 and aVDET 162's official tart to AWES '05.

6. Embarkation and transit to Barrow: A rendezvous with HEALY was arranged offshore Air Station Port Angeles on 1 June 05. Aircraft 6567 departed Boeing Field about the time Healy was departing the pier. 6567 landed at Air Station Port Angeles and performed several maintenance requirements while waiting for Healy to receive them. Aircraft 6567 arrived aboard HEALY with LT Sacchetti, LT Merriman, AMT1 Charles and AET2 Bishop. AMTC Santmyer remained aboard HEALY. LT Eller, and AMT1 Kelly flew commercially to Kodiak, Alaska to coordinate receipt of aircraft 6529 from Air Station Kodiak. LT Weller departed Sector-Air Station North Bend and flew commercially to Kodiak. 6567 was hangared and the AVDET stowed for sea.

Night flight operations were conducted during the transit phase on the evening of the 2nd. AVDET members and HEALY crew were able to complete 20 night landings qualifying LSO's and tiedown crews for night operations. AVDET crewmembers gained recurrency for night landings aboard ship.

7. 6529 Arrives from Kodiak: On the 5th of June, 6529 arrived onboard Healy. This aircraft was administratively transferred to Polar Operations Division from Air Station Kodiak for the duration of the deployment. LT Weller, LT Eller, and AMT1 Kelly arrived on board during this transfer. With the Coast Guard's plans to have Air Station Kodiak responsible for future Arctic deployments on the icebreakers, AVDET 162 was supplemented with a small contingent of representatives from Kodiak to observe and glean any possible knowledge concerning future deployments onboard Healy. The Kodiak crew, also fondly referred to as "AL-PO" was comprised of LT Wood, AMTC Puddish, and AMT3 Kortus. They were fully integrated into the daily activities of the permanent AVDET and proved to be an invaluable resource for ideas and planning to facilitate mission success.

A logistics flight was conducted into Nome, Alaska on the 9th of June to retrieve parts and another flight to Barrow was flown on the 11th for similar reasons.

8. Barrow I: 13 June: On the 13th of June the AVDET had its first major onload/offload of personnel and cargo in Barrow, AK. 28 scientists and personnel were transferred onto Healy while 9 personnel were transferred ashore. Over 3,800 pounds of cargo was also transferred between the ship and Barrow. Poor visibility delayed the start of the passenger transfer. The weather improved by late morning and flight operations commenced soon after. As this was the first of many logistics evolutions, some lessons were learned. Survival suits and cranials needed to be transported more rapidly from ship to shore as more personnel were transferring onto the ship than off. It was also determined that the next passenger transfer the AVDET would try to VERTREP all luggage and non-fragile cargo in order to reduce the number of trips between the ship and Barrow.



On a lunch break during the first logistics flight of the deployment.

B. AWES 05-01

1. Operations: During this phase of science operations the AVDET conducted 5 ice recon flights which served two purposes, to look at ice conditions for the ship and to look for “dirty ice” (ice which contains sediment) for one of the science missions. Several dirty ice samples were taken during these flights with the helos landing on the ice and having the scientists walk out onto the ice to take their samples. Most of these flights were conducted single pilot so that more passengers could be taken. On the 22nd of June, a flight was made into Barrow (Healy was approximately 50 miles north), in order to take a crewmember in for emergency leave.

This phase of science used 29.1 flight hours in 21 sorties. Approximately 92 passengers were transported along with 7,800 pounds of cargo.

2. Barrow 2: 26-27 June: This was our largest onload/offload planned for the deployment. On the 26th 14 personnel and their gear were transferred to Barrow and on the 27th, 32 personnel and their gear were transferred to the ship. For the luggage and gear transfer, the AVDET decided it would be more efficient to sling load as much as possible. Several sling loads were completed from the ship using one helicopter while the other was used primarily for personnel transfer. After “stepping” on each other several times, it was decided to use both helicopters for sling loads on the second day until all gear was transferred and then use both helos for personnel transfer. This method was much more efficient and gear and personnel were transferred in no time.

The 26th also involved some sling loads from Barrow's North Slope Borough Search and Rescue helicopter. The science party embarking during this period had some equipment that was too large and heavy for the H-65 to load onto the ship. NSBSAR was extremely helpful and proved to be an invaluable resource for this onload. We also did all of our own sling loads and passenger transfers on their ramp and they were more than accommodating with their office space, lounge areas, and phones.



6529 starts first of four sling loads to VERTREP to Healy. This was a much more efficient method of transferring luggage and cargo from shore to ship and vice versa.

AVDET Personnel Changes in Barrow 2: The Kodiak crew departed the Healy on the 26th via C-130 and LT Matt Weller was replaced by LT Brian Erickson as the AVDET Engineering Officer. On the 28th, LT Sacchetti departed on emergency leave. It was determined that no replacement for the Senior Aviator was needed for this portion of the deployment, so LT Eller stepped up as interim Senior Aviator until her return or replacement arrived during the next onload.

C. AWES 05-02

1. Operations: During this phase of science operations the AVDET flew 6 ice recon flights which included flights with Sue Moore who was looking for Bowhead whales in the Arctic. No whales were sighted until the final flights transporting the passengers back to Barrow! However, many of the flights did have Ring Seal sightings.

This phase also included a public affairs portion, 3 media networks were represented on the ship and a flight was conducted to enable some filming for the news crew.

2. HH-65 Shipboard Limitations: This phase of operations called attention to the limitations imposed by OCA's message restricting HH-65 shipboard operations, 032039Z OCT 03. This message required that any HH-65 operating from a ship was to conduct preflight planning to ensure 50-foot fly-out capability in the event of an engine failure on takeoff or landing. This means one of two things, either a lot of wind is required in order to assist with power availability, or fuel and weight needs to be reduced to compensate. Since most icebreaker helicopter operations are conducted while the ship is hove to in the ice, wind was not adjustable. During calm and sunny days in the Arctic, the fuel load required in order to adhere to the 50-foot fly-out requirement was not enough to provide even a 20-minute flight with no passengers or equipment. A waiver request message was drafted by the AVDET in order to have OCA consider HEALY as a platform while the ship is moored at a pier, hove to in the ice, at anchor, or operating using DP with no flight deck motion. This meant that the pilots could plan on take-offs and landings maintaining a 10% power available requirement, which essentially increased our maximum gross weight from well below 8,000 lbs to 8,900 lbs, the maximum allowable for shipboard operations. This message immediately increased our productivity and provided much better customer service for the ship and the scientists' missions.
3. Barrow 3: 25-26 July: The third and final offload was conducted in Barrow on the 26th of July. The day before however, the helo flew in to pick up the new Supply Department Head as well as a temporary pilot, LT Wendy Hart to assist prior to operations on the 26th. LT Hart aided the AVDET until LT Sacchetti's scheduled return in Dutch Harbor the following week.

On the morning of the 26th, the offload of the 02-05 science party commenced and the LTT administrators were transported to the Healy. 18 passengers and 2,500 lbs of cargo were transferred to and from Barrow via both helicopters.

D. LTT

The entire AVDET participated in different aspects of LTT. There was a medical drill held near the Aviation Offices. Our own Academy Award deserving actor, LT Dave Merriman gave a masterful performance of a man falling down a ladderwell. His "injuries" included an eviscerated intestine and a compound fracture of the right tibia/fibula. The AVDET hopped to action to provide first aid for our ailing aviator.

AMT1 Charles and AET2 Bishop also participated in fire fighting and boundaryman training. They provided valuable input to the ships' training crew by pointing out a possible communications problem. The ships' company uses

the term “advance” to get the hose team to advance on a fire. They use “avast” for the stop command. These two words sound very similar when used together.

E. Dutch Harbor:

HEALY’s first port call was a logistics port call in Dutch Harbor, AK. The AVDET had intended on flying off the ship in order to conduct some semi-annual training and to fly around the island, but strong winds prevented this evolution. The winds were outside of the allowable wind limitations, so the helos remained on the ship throughout the port call.

F. AWES 05-03:

1. Operations: The bulk of aviation missions for this phase was to provide a stable platform for photographing the ice conditions. This was accomplished using the CRREL pod attached to the spotlight mount on the left side of the helicopter. The science party provided the AVDET with a set pattern to fly between an altitude of 500’-5,000’. The average day allowed us to fly at approximately 1,000’.

During the course of the 2 month phase, the AVDET conducted 10 photo flights for the “Ice Team” providing them 12 hours of survey time and allowing them to collect thousands of photos. LT Merriman also devised a way to use his handheld GPS to provide the science team with a time stamped route so they could more closely match their photos with exact positions.

2. Notable Operations: The AVDET contributed heavily to several notable operations during this phase.
 - a. 25 Aug: 6 semi-permanent buoys were placed in a hexagon shaped pattern around a specific position. These buoys weighed approximately 90 lbs a piece and were the size of a small barrel. 3 fit in the helicopter at once with one passenger and our flight mechanic to help place the buoys. This project was relatively easy and quick with each buoy placement taking less than 5 minutes. The first 3 were placed before the helo had to go back to the ship, refuel and collect the last 3 buoys.
 - b. 3 Sep: One group of scientists were working on a project to place a weather buoy at a sight the HEALY had stopped at for a science station. Since his buoy placement would take longer than the HEALY would be on station, a helo was spotted on the ice to wait with him while the ship began its transit to the next station with the I/B ODEN. This evolution was a good example for how the helo can be used to allow the ship the flexibility to continue a transit and stay on schedule while allowing an important science mission to be completed.
 - c. 11 & 14 Sep: Our Japanese team of scientists had a secondary objective to retrieve data from two buoys that have been on station for some time. The objective was to land near the buoy and deploy a data retrieval device into

the water as close as possible in order to receive a data download. This mission was notable for several reasons. The first was that the science team needed to get power from the helicopter in order to work the computer equipment. Our resident Avionics mechanic, PO Bishop, devised a way for the team to get power from the battery in the helicopter. The next step was to ensure the battery power from the helo didn't completely drain before the data retrieval was complete and to also allow the helo enough battery power for start up at the end. LT Erickson researched the appropriate circuit breakers to pull in order to ensure maximum battery life during this evolution. Both of their efforts in this project were highly valuable. The last obstacle that needed to be overcome for the success of this project was communications. With the distance from the ship (approximately 15nm) we were unable to meet the ship's requirement for a 30 minute comms check. During the 1st attempt at this mission, only ¼ of the data was retrieved due to the fact that they had to abort the mission in order to take off to regain comms with the ship. No other method worked (they tried, FM handheld and in the helo, UHF, and HF with no success). In order to ensure the completion of this mission, we established a solid time estimate from the science party as to how long the data collection would take and then added 30 minutes to this time. The ship was informed that if we didn't contact them within that period of time (2.5 hours) to consider us late and to start the search efforts. We completed the second mission almost exactly within that time window and were airborne in time to contact this ship at the end of our "non-comms" window. AVDET's initiative was crucial to the accomplishment of this mission.

2. Obstacles to Operations: Unfortunately this phase of the deployment was plagued with poor weather, dominated by icing fog and poor visibility. Many flights were cancelled due to weather conditions. Often even when the weather looked promising, the conditions changed so rapidly that it could go from a relatively clear day to less than 1000yds visibility in the amount of time it took to start the helicopter on the flight deck.

Another obstacle to operations during this phase was the emphasis on towing the seismic streamer for science operations. With this gear in tow, the ship could not maintain a "hove to" platform for flight operations. Since the stipulations in our waiver to the Commandant-mandated 50' fly-out restrictions stated the ship needed to be hove to with no flight deck motion, towing the streamer dictated we would need to adhere to the original restriction since the ship would be underway. With the ship underway at only 3-5 knots, this didn't provide enough wind to compensate for the 50' fly-out limitations. So, while the waiver did increase our mission capabilities by 300%, the primary mission for this phase of science did not allow easy facilitation of flight operations.



HEALY after a full day of flight ops off the coast of Barrow, AK

CHAPTER III – COMMUNICATIONS

1. Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. Communications:
 - a. Upon HEALY's return from AWS 04, Mackay communications/TISCOM upgraded all three Inmarsat B terminals to version 7.12 and replaced the antenna rotary joints. 90-degree offset of stack antenna was corrected.
 - b. The annual Satellite Communications (SATCOM) Groom was completed. The keymat for circuits HEALY does not actively use (IE. CUDIX, Fleet Broadcast, HF/SAT RATT) was acquired for the SATCOM groom from CGC Polar Sea. Pacific Area EKMS manager has eliminated support for the unused short titles until deemed necessary for operations on HEALY.
 - c. During the shakedown cruise we had a problem sending outgoing message traffic. The PacCutterMsg.out address was not functioning properly. We were able to by-pass the address by sending our traffic to the CAMSPAC CWO who manually put our outgoing message traffic into the system.
 - d. Once U/W for AWES-05 Healy's U/W outgoing message traffic problem was corrected with support from TISCOM. A new outgoing message traffic address, CGChealy.msg, was created. However, a new problem was encountered when they also changed Healy's incoming message traffic inbox. CAMSPAC shifted our unclas message traffic to the new inbox before it was tested resulting in non-delivery of our unclas message traffic. Once the problem was discovered we shifted our unclas message delivery to HFDX. The new inbox problem was corrected by TISCOM after the weekend.
2. Electronics:
 - a. All electronic equipment in Radio was groomed.
 - b. Completed SESEF groom, which included the TACAN, IFF, and OE-82 antenna group.
 - c. ESU Seattle completed the TEMPEST inspection in Radio.
 - d. Still working on the 100MB CPU upgrade. Once the crossover is complete the CG and Science Data Networks will be totally segregated and will centrally locate all network switches in Radio. HEALY will be up to TISCOM standards and casualty isolation/solutions will be improved. To complete this crossover, the remaining 10MB capable computers will be recapped with 100MB computers.
 - e. The Mitel telephone system was upgraded to the EON phone system.

B. AWES 05-01

NSTR

C. AWES 05-02

1. Communications:

Highest latitude for this phase was 76-26N. At this latitude Inmarsat-B connectivity was steady. No Mini-M connectivity. No DTS-TV.

2. Electronics:

- a. Completed 5.1 Server upgrade.
- b. Mini-M antenna failed. New antenna ordered.
- c. Completed upgrade to Microsoft Outlook 2003.

D. LTT

NSTR

E. Dutch Harbor, AK

1. Communications:

Received and delivered 800lbs of mail to an anxious crew.

2. Electronics:

Established shore tie connection for internet connectivity.

F. AWES 05-03

1. Communications:

- a. At Latitude 80-50N terminated Inmarsat-B 142W lease channel.
- b. Poor HF propagation rendered the HFDX circuit useless for transmission and receipt of message traffic for days on end during this phase.
- c. At Latitude 80-22N entered 25E Inmarsat-B satellite footprint. CGDN E-mail and Internet brought on line. This was accomplished with the support of CAMSLANT and TISCOM. With simple e-mail requests to OS1 Swann at CAMSLANT we were able to get on the 25E and later the 98W.

2. Electronics:

- a. Mini-M antenna installed. Circuit restored.
- b. Homemade iridium e-mail solution brought online for morale e-mail from 22 August to 28 September while outside of Inmarsat footprint and off of CGDN. Worked great!

G. Tromso, Norway

NSTR

H. Dublin to Seattle

1. Communications:

- a. Switched from Inmarsat-B satellite 25E to 98W on 28 October. Again, this was accomplished with an e-mail request to OS1 Swann at CAMSLANT.
- b. Switched from Inmarsat-B satellite 98W to 142W on 09 November. This was accomplished by sending an Inmarsat-B leased channel request message to CAMSPAC.

2. Electronics: NSTR

2. Recommendations:

- A. Use Iridium e-mail solution for passing unclassified message traffic during periods HEALY is out of Inmarsat-B satellite footprints. HFDX is unreliable at high latitudes. The Iridium e-mail solution was a great success and should be used for unclassified message traffic in the future.
- B. Install moral hard drive for storage of crew photos to ease burden and space restrictions on server hard drive.

CHAPTER IV - SCIENCE

1. Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. Prior to departure and during the first week of the shakedown cruise (2-7May), the Marine Science Technicians (MSTs) brought the ship's science systems online, tested and calibrated them as needed with support from NSF-funded Lamont-Doherty Earth Observatory (LDEO) personnel on board. These systems were the SeaBeam 2112 (multibeam profiler), Bathy2000 (sub-bottom profiler), Knudsen (sub-bottom profiler), Acoustic Doppler Current Profiler (ADCP) 75 and 150, forward and aft Thermosalinographs (TSG), Current-Temperature-Depth profiler (CTD), XBT system (expendable temperature probe), POS/MV, and Science Data Network (SDN).
2. The second week of shakedown (8-12May) consisted of extensive trials for over-the-side science evolutions and sonar systems. Support and personnel from LDEO, Allied Technology Group (ATG), L3 Communications, RD Instruments, SeaSpace, and InterOcean were aboard to groom instruments. Technicians from Oregon State University (OSU) and University of Hawaii (UH) were onboard to set-up and test the Jumbo Piston Core (JPC) and IMI-30 deep-towed mapping sonar, respectively.
 - a. 8 May: 2 CTD casts, 3/8-inch winch test with multi-core cast, and gravity core set-up. The CTD was deployed to ensure the sensor probes worked accurately and the bottles fired when triggered. Water was left in the bottles overnight to ensure there were no leaks. The cast and leak test were satisfactory, as was the winch test.
 - b. 9 May: gravity core, IMI tow & JPC set-up, initial IMI buoyancy test and deployment practice, ADCP training.
 - c. 10 May: inbound transit to medi-vac injured crewmember, then continued JPC set-up; 1st attempt of JPC was unsuccessful due to position of HiAb crane in relation to starboard a-frame and faulty hydraulics on the starboard knuckle crane; knuckle crane was repaired and functioning again on 11 May.
 - d. 11 May: successful JPC deployment and IMI towing; ADCP tests; SeaBeam roll bias test with POS/MV as vertical reference; IMI deployment also included training time for OODs to practice consistent



**MSTs and Science personnel
deploying the IMI**

1kt speed, even around wide turns. For JPC operations, the knuckle crane is needed to hold the pilot core while it is attached to the release lever on the JPC. The MSTs worked with the OSU technicians to assemble the JPC with 40ft of tubing for a test core. Set-up took nearly one hour; then the assembly was lowered at 60meters/minute until the pilot core touched bottom and triggered the free-fall of the JPC; the core was recovered at 100meters/minute.



Connecting the trigger core to the JPC for deployment

- e. 12 May: successful pitch bias calibration for SeaBeam; MSTs participated in systems training (ADCP, TeraScan, SeaBeam).
3. Between the shakedown cruise and departure for AWES'05, HEALY conducted the science load-out. Most of the exceptionally large gear had been loaded prior to the shakedown cruise; this included the IMI-30 winch and cable drum, traction unit, and work van, the ROV winch and cable drum, and the seismic winch and cable drum and compressor van. This equipment required special handling and arrangement on the ship, as each piece weighed 5 to 15 tons. A 90-ton pier crane was required for the on-load of such equipment as it far exceeds the capabilities of the ship's cranes. Due to the circumstances surrounding these items in regards to their use on other vessels and the distances they were shipped, they were loaded on HEALY as they arrived. A specific range of dates for standard equipment onloads was scheduled well in advance. All chief scientists were made aware of the 3-day loadout window and were requested to have their shipments arrive at HEALY only during those days. This limited our requests for ISC forklift support and the demand on the MSTs for long workdays. This procedure of setting a limited number of days for loadout has worked well both for the AWS'04 off-load and again for the AWES'05 on-load. There are always exceptions, but as long as they are minimal and occur during the workday, they do not create negative impacts.
4. During the transit from Seattle, WA to Barrow, AK (1-12Jun) the MST division assisted LDEO personnel with installing a prototype Watch Stander's Work Station (WSWS) for the underway science watch standers. This set-up moved the SeaBeam, Bathy, Knudsen, and ADCP monitors from the forward end of the computer lab to a more user-friendly and efficient arrangement in the center of the computer lab. The forward counter spaces were turned into instrument workbenches. Additional preparations for being at sea were made and the MSTs continued training amongst themselves on TeraScan and SeaBeam.

B. AWES 05-01

1. The first science mission of AWES'05 commenced on 13Jun with the transfer of Dennis Darby and his crew of 16 scientists and graduate students from Barrow to HEALY by helicopters. The focus of this mission was to take long sediment cores in areas of high sediment accumulation along the western edge of the Canada Basin. They hoped to use the IMI-30 deep towed bottom mapping system to identify nine specific sampling sites for coring with the JPC and multi-core.
2. The first obstacle faced during this mission was the ice cover, which was at 80-100% with the ice edge starting less than 20nm offshore of Barrow. This much ice precluded use of the IMI. The ship's sub-bottom profiler and multibeam sonar were used instead. The second obstacle occurred when the ship became beset for four days between two large ice floes pushing together (14-18Jun). On 18Jun, HEALY was able to break free of the pressure and slowly move on to the first desired location.

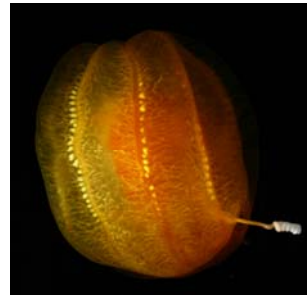


HEALY beset between two pressure ridges

3. As this mission was only scheduled for two weeks, the scientists were down to 7 days to meet their objectives. With a lot of hard work and a little good luck, we completed eight successful JPCs, six multi-cores, six vertical plankton tows, and two CTD casts. The JPC deployments produced well over 100 meters of sediment samples. The helicopters conducted seven ice-reconnaissance sorties in search of “dirty ice” – ice infused with sediment; during four flights, the helo landed in order for the science party member to collect samples. A total of seven dirty ice samples were collected. One small boat deployment was made to collect dirty ice from a nearby floe.
4. The JPC set-up and deployment from the starboard a-frame required use of the knuckle crane and HiAb crane (OSU). The maximum core length is 21.5m (70ft) due to the core tube reaching beyond the fantail and cannot be reached. Two of the deployments resulted in slightly bent core tubes, but the samples were extracted and usable. The MSTs reterminated the .322 wire due to chaffing.
5. A day prior to disembarking the science party, we were able to tow the IMI for six hours in the open water just north of Barrow. Despite the 4-day setback, it was a successful mission, and ended on 26Jun with the transfer of personnel back to Barrow.

C. AWES 05-02

1. This 30-day NOAA Ocean Exploration mission with 33 science personnel onboard began with embarkation from Barrow on 27Jun. The major objective was to improve the inventory of life in the Canada Basin as part of the worldwide Census of Marine Life study. Sample stations were designated along the slope and within the deep basin and included studies of biota in the sea ice, water column and sea floor. Each of the 14 stations was projected to last 24 to 40 hours and would encompass CTD casts, plankton net tows, ice team deployments, divers, pelagic and benthic ROV deployments, box cores, and a towed camera platform.



A squid and a Comb Jelly Fish viewed by the ROV

2. The ROV required placement of a 6ton winch as forward and close to centerline on the fantail as possible. Although loaded in Seattle prior to departure, there were initial placement conflicts with the IMI 15ton winch and 10ton traction unit which were already in place with similar requirements. A couple weeks before HEALY sailed, a technician from the ROV company came out for a ship check. The winch was satisfactorily installed beside the traction unit, slightly starboard of centerline but forward enough to allow for the correct wire angle. The ROV block was placed to the starboard side of the aft a-frame to minimize the lateral angle. This configuration worked well.
3. The ROV personnel required a space where light and noise could be limited so that the ROV controller could watch the video stream and drive accordingly, and the science personnel could watch the video for species identification and collection. The space had to house three consoles of approximately 450 lbs and 6ft H x 6ft L x 3ft W. The space chosen to accommodate these needs was the science reefer in the main lab. The temperature control was secured to eliminate the noise of the fan and to make it a comfortable work space temperature. The door was propped open and a small fan for air circulation was placed in the entry; the entry was also covered with a dark tarp to limit light intrusion and glare on the screens. It worked out very well.



Deep Sea System's ROV returning with samples

4. One of the ship's entertainment channels was dedicated to the live video stream from the ROV. The crew thoroughly enjoyed watching jellyfish cruise by the ROV and squid, starfish, and octopi get sucked or scooped into collection canisters.
5. The MSTs worked efficiently to coordinate over-the-side evolutions to minimize lag time between deployments. With 10-12 operations occurring at each station, time was critical. The ice teams and science dive team were deployed via brow or stage for their 4-6 hour operations. Deck force launched the LCVP with the CG dive team. The MSTs began shipboard deployments of the ROV, multi-net, and box core from the aft a-frame, and plankton net tows, CTD casts, and photo platform tows from the starboard a-frame. Several flights for buoy deployments, photo recon, and ice sampling were also coordinated with the Aviation Detachment. Approximately 180 over-the-side deployments were made.
6. To achieve the under-ice objectives, both the science diver team and CG dive team deployed at least once at each station. They collected ctenophores (comb jellies), amphipods, and Arctic cod, as well as took video transects of the under-ice profile.



A science diver collects video footage under the ice

7. The ice team preferred deployment via the crane-and-stage (aka "man basket") over the brow because it was easier to move the equipment used on the ice. However, it the stage made it more difficult on the deck personnel if the scientists needed to retrieve forgotten items or to bring personnel back and forth.
8. This mission was successfully completed with a final near-shore station and several media personnel came onboard to document the discoveries and daily operations. These scientists discovered some new species of pelagic and benthic organisms and determined range extensions for some known species.



Sea organisms that live under the ice: shrimp and Comb Jelly Fish

D. LTT

1. The transit from Barrow to Dutch Harbor facilitated the drills and training associated with LTT. The MSTs participated in the drills in their assigned billets while continuing to secure science equipment and prepare for the major off-load in Dutch Harbor. The majority of the science personnel departed in Barrow.
2. The MSTs worked with the remaining civilian science technicians to ready the large amount of science equipment for removal in Dutch Harbor. This included detaching hydraulic hoses from the traction unit, removing the block from the winch drum, and moving crates up from the cargo holds.

E. Dutch Harbor, AK

1. After mooring port side-to the pier in Dutch Harbor, the MSTs and technicians immediately began moving the ROV winch and IMI winch and traction unit towards the port side for quicker removal by the pier crane. As much gear was pre-staged on the fantail as possible.
2. We had requested the largest pier crane available and received a 65ton crane. The only larger crane was a barge crane and was deployed at another island at the time. The 65t was only barely sufficient for picking the 15ton drum winch off the fantail. The drum had to be situated as close as possible to the port side of the fantail and the ship had to minimize the distance to the pier in order to facilitate this lift.
3. After one and half days of off-load, the MSTs began loading the on-coming gear for HLY05-03. They also moved the air compressor from the port 02 deck to the fantail and the scientists began setting up the seismic instruments. The marine mammal observers had a set of big-eye binoculars that we mounted on the foundation for the ship's big-eyes on the fly bridge. The science reefer was returned to its normal operations as a refrigerated space for storing samples. The core logger was mounted in the main lab and the core

splitter was installed in aft-staging. The ice profiler was installed on the port bow.

F. AWES 05-03

1. This mission was focused on high-resolution sub-bottom profiling via towed multi-channel seismic streamer (MCS) and/or hull-mounted Knudsen acoustic profiler and collecting bottom samples in areas of high sedimentation via JPC and multi-core. Much of the Arctic seafloor has been vaguely described, if at all. This mission aimed to provide more accurate information for many of the questionable areas, as well as collect physical samples that would provide insight on how water moves through the Arctic. During this mission, HEALY worked with the Swedish icebreaker ODEN to ensure both ships met their science objectives across the basins and ridges and to ensure both were able to get to the North Pole and back to the ice edge. This mission was dubbed HOTRAX: HEALY-ODEN TransArctic Expedition 2005.
2. Early in the mission, the MSTs reterminated the .322 wire again due to a kink. Although use of this wire for CTD casts was forecasted to be low, the conductivity would not work properly if not fixed.
3. The MCS required relatively constant speed at 4-5 knots. This was often difficult when ice conditions varied between light first year ice and thick multi-year ice. If the ship needed to back and ram, the streamer had to be recovered; depending on the track ahead, it was either retained onboard or re-deployed for as long as possible. When conditions



Deploying the seismic air guns and acoustic streamer



Seismic air gun

permitted, HEALY trailed the ODEN so as to reduce the potential of slowing speed or backing. Due to the noise created by the airguns, the National Marine Fisheries Service Incidental Harassment Assessment required trained Marine Mammal Observers (MMO) to scan for mammals prior to and during all MCS operations. Fortunately, there were only two occasions when the MMO spotted a seal within the “harassment distance” and called for the airguns to

stop for 15 minutes. The airguns suffered almost daily damage from the large ice pieces that popped out of the prop wash. Eventually, the technicians padded the guns with thick rubber matting to help protect them. This significantly reduced the damage. The MCS technicians handled the majority of repairs on their own, including welding. When we were not able to tow the streamer, the scientists relied on the Knudsen sub-bottom profiler for bottom mapping. Although the resolution was not as high, it still provided good data. This mission proved that the Knudsen is a viable option for this type of surveying. Approximately 2200 nm of bottom was surveyed with the MCS, resulting in the discovery of sandy mud waves on the Arctic seafloor and that the extent of glacial ice erosion on the Chukchi Borderland was greater and deeper than expected. Also, two unsurveyed lows in the major ridge systems dividing the Arctic Ocean into separate basins were profiled and revealed the true nature of these "gaps" in the ridges. The combined survey data nearly doubled the global data base of the Arctic Ocean bottom map. This was the first trans-Arctic seismic survey by a ship.

4. The bottom profiling was also used to locate areas suitable for obtaining deep cores. Samples were collected from areas rarely visited like the Mendeleev



Scientist splitting Jumbo Piston Core samples in the main lab



Badly bent JPC recovered on the flight deck

dges. The JPC was used to sample deep into the sediment, with the multi-core taking samples of the surface sediments in the same area. Although on a couple occasions the JPC tubes were slightly bent when the hard sediment layer was shallower than anticipated, there was only one time that the bent JPC tubes could not be recovered via normal procedure. The innovative MSTs used the 04 deck crane to bring the JPC up to flight deck; the core cutter was placed on wheels. Then the JPC was lowered to the cutter and rolled diagonally across the flight deck with tethers for control. This allowed the JPC to be cradled on deck and the core liners to be extruded without loss of any portion of the sample. In total, over 480 meters of sediment core was collected, more than any previous coring expedition to the central Arctic Ocean.

5. This mission also included scientists studying the thickness of ice floes. At each station, these members were deployed to the ice via brow or basket. They took various cores, surface ice samples, and acoustic profiles.



Science teams conducting a variety of on-ice projects

6. During the North Pole crossing and the lack of internet capabilities, the MSTs used NOAA email in order to maintain synoptic weather observations for Navy forecasts. For future reference, instructions for this procedure are in meteorological lab computer.

G. Tromso, Norway

1. This port call represented the final off-load point until Seattle. A 100ton crane met us at the pier in Tromso for off-load of the reefer van on the bow, which was now filled with approximately 15,000 lbs of sediment cores. The MSTs used the ship's cranes to remove all other equipment. Only one day



Jumbo Piston Core secured horizontally on deck

- was required to conduct this off-load. Scientists with items remaining onboard until Seattle were reminded to ensure their gear was well labeled and secured.
2. The compressor on the reefer van had failed during the mission and required repairs prior to shipping. Some support was provided by the EM division but OSU hired contractors to finish the repairs.

H. Dublin to Seattle

1. Without scientists onboard, the MST workload was greatly reduced. The division spent the return transit organizing the remaining science equipment for efficient offload in Seattle. Since most of the equipment had already been offloaded, we determined that one workday would be sufficient for the rest.
2. The MSTs continued to drop XBTs daily to maintain the SeaBeam sound speed velocity profile. LDEO and/or ESU technicians were onboard throughout the transit to maintain the various science systems and science data network. Training and light preparations were started to ready personnel for the inport and the 2006 deployment.

2. Recommendations

- A. The scientists made a few suggestions that would make the lab spaces more accommodating; primarily, they asked for more chairs and more storage shelves/drawers in the main lab.
- B. After the difficulties in finding a suitable arrangement for the ROV & IMI winches, it should be made mandatory that PI's and their senior scientists and technicians conduct onsite ship checks prior to sending any equipment to the ship. This idea is putting put into effect for the AWS'06 missions and will be addressed with AICC.
- C. There were several lessons learned throughout the preparation and deployment of the AWES'05 mission.
 1. Pier 36A ("new pier") at ISC Seattle cannot support a 90ton crane. Large equipment onloads requiring such a crane must be done via barge crane or the old pier.
 2. When scheduling pier or barge cranes, be sure to communicate with the other cutters inport to ensure there are no pier space conflicts (i.e. stores onload, fueling, other deliveries).
 3. When a mission is planning ice, dive or extended boat ops, talk about length of time away from HEALY and need for meals. This will help ensure the galley has enough 'boxed lunch' supplies prior to deployment. Also find out if there are any vegetarians in the science party and inform the FS personnel.
 4. For passenger transfers between science parties via helo/boat (i.e. Barrow, Nome) have incoming and outgoing persons place different colored tags or tape on their associated luggage and gear to avoid items being taken ashore that had just been brought to the ship, or vice-versa.

	HLY05-01	HLY05-02	HLY05-03
JPC	8	0	18
Multi-core	6	0	19
Plankton nets*	6	41	0
CTD	0	32	3
Box core	0	36	0
ROV	0	26	0
Multi-net	0	29	0
Photo platform	0	12	0
Otter trawl	0	1	0
MCS streamer	0	0	57
IMI profiler	1	0	0
Total per mission	21	177	97

* Includes handnets, live nets, and vertical plankton tows

CHAPTER V – ENGINEERING

1. Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. Major items completed from SMP by NESU Seattle CMD.
 - a. Replaced Galley ovens
 - b. Installed A/Cs in quarterdeck
 - c. 440 cable, panel, and knife switch for fantail high amperage service
 - d. Change out of all con-rod bearings in all 4 MDEs
 - e. Turbo and Generator repair to ADG



ADG Turbo Damage

- f. Hourly PMS for Engines
 - g. Annual and Semiannual PMS for DCs, EMs, Aux, and MP.
 - h. Welding for new science gear on working decks
2. The Dockside Availability awarded to Puglia Engineering of California Inc., performance period 18 Jan –Mar 18 2005. Major items that were included in the Dockside were:
 - a. CASREP items completed in DS05:
 - 1) Steam Heater Coil Renewal – Replaced 10 preheaters.
 - 2) Boiler Tube Renewal – Renewed all tubes in starboard boiler and select tubes in port boiler.
 - b. CSMP Items completed in DS05:
 - 1) Forecastle Weather Vent Intake Modification
 - 2) MP Fuel Storage and Incinerator Sludge Tank Clean and Inspect
 - 3) Automatic Lube Oil Filter Overhaul
 - 4) MDE Exhaust Stack Gas Leak Repairs

- 5) Miscellaneous Piping Repairs
 - 6) Intake Louver Overhaul
 - 7) Air Conditioning Condenser ASW Valves Replacement
 - 8) Steam Reducing Station Overhaul
 - 9) DC PMS (Fire Extinguishing Systems)
 - 10) Warping Capstan Hydraulic Piping Replacement
 - 11) Warping Capstan Hydraulic Test and Evaluation
 - 12) Incinerator Drain Valve Installation
 - 13) Concrete Decking Repair
 - 14) Galley & Scullery Deck Repair
 - 15) Interior Carpet Renewal for 01 Deck
 - 16) Mica Storeroom Deck Bracket Removal
 - 17) Miscellaneous Lagging Repairs
 - 18) Sickbay Modifications
 - 19) Boiler Fuel Service Tanks Preserve 100%
 - 20) Modify Deck Sockets on working decks
 - c Routine Maintenance completed in DS05:
 - 1) Fuel Oil Purifier (FOP) Overhaul
 - 2) Lube Oil Purifier (LOP) Overhaul
 - 3) Pressure Gauges and Thermometers (Critical) Calibration
 - 4) Pyrometers and Thermocouples (Critical) Calibration
 - 5) # 3 Main Diesel Engine Hose Renewal
 - 6) Boiler 5 Year Strength and Integrity Inspection
 - 7) Compressed Air Receivers (All) Clean Inspect and Hydro
 - 8) Hawser Reel Overhaul
 - 9) Deck Cranes A-Frames And Davits Level 1 Test and Inspect
 - 10) Starboard Aft Crane Level 2 Inspect and Repair
 - 11) Flight Deck Nets & Frames Load Or Wt Test
 - 12) Electric Meter Calibration
 - 13) Incinerator Annual Maintenance And Refractory Repairs
 - 14) Port Aft Crane Level 2 Inspect And Repair
 - d Special Projects completed in DS05:
 - 1) Mafo-Holtkampt Door Installation
3. Conducted the following BECCEs during Shakedown:
- a. MOB-E1007.1 (MOB-E-012-SF) Charlie Fire in ADG
 - b. MOB-E1005.1 (MOB-E-016-SF) MDE Engine Overheat
 - c. MOB-E1008.4 (MOB-D-21-SF) Flooding in AMR 5
 - d. MOB-E1008.4 (MOB-D-21-SF) Flooding in Stbd Shaft Alley
 - e. MOB-E1005.16 (MOB-E-211-SF) Hot Pedestal Bearing
 - f. MOB-E1005.14 (MOB-E-200-SF) MDG Crankcase Explosion
 - g. MOB-E1005.11 (MOB-E-208-SF) MDE Governor Malfunction
 - h. MOB-E1008.2 (MOB-E-010-SF) Major Lube Oil Leak #2 MDE
 - i. MOB-E1008.5 (MOB-E-003-SF) Steering Casualty
 - j. MOB-E1006.9 (MOB-E-203-SF) Unusual Noise/Vibration on ADG

- k. MOB-E1005.7 (MOB-E-007-SF) Unusual Noise/Vibration from Propulsion Shaft.
4. HEALY sailed with the following outstanding CASREPS:
- a. **03057 - Aft warping Capstan:** Holdover CASREP from AEWIS 2003. The aft warping capstan only works in slow speed mode. Capstan remains at low speed when high-speed mode is selected. The cause of the problem, extensively analyzed by NESU, ship's force, and hydraulics contractor personnel over the course of the entire 2003 – 2004 inport, was believed to be pipe size restriction. Definite work item for correcting hydraulic supply pipe sizes was completed during DS05. Subsequent optest demonstrated some increase in line speed, but did not achieve rated speed. Exercised optional work item to conduct further performance testing. Testing indicated some increase in flow and line speed, but did not achieve capstan's design flow (43 gpm) or line speed (72 fpm). NESU PE's discovered that installed flow control valve in aft general services hydraulic distribution manifold is not capable of achieving rated flow demanded by warping capstan (max rated 33 gpm). Optested with internal cone of flow control valve removed and achieved 39 gpm flow. NESU PE's ordered new flow control valve rated for higher flow rate. Replacement valve cartridge installed and tested. Two-speed operation still not controllable due to excessive hydraulic backpressure on hydraulic return line exceeding 100 psi; two-speed motor requires hydraulic return pressure to drop below 100 psi to shift to low-speed mode. Currently working with NESU PE's and DS contractor on best technical solution to eliminate system backpressure's effect on motor. Further investigations underway. CANCELED CASREP for entry into CMPlus and reissued as 05034.
 - b. **04024 - Continuous Test and Evaluation System (CTES) Keyboard:** CTES keyboard started to experience malfunctions. Awaiting parts. CANCELED CASREP for entry into CMPlus and reissued as 05035.
 - c. **04026 – Bow Thruster:** SF attempted bow thruster temporary seal installation. Vane shaft roller bearing inner race caught on vane shaft halting roller bearing carrier removal. To avoid damage to roller bearing carrier or roller bearing and because no spare parts are on board, SF opted to reassemble unit. Attempted repairs during 2005 inport period unsuccessful. Requested MLCPAC contract repairs in the 2006 availability. CANCELED CASREP for entry into CMPlus and reissued as 05036.
 - d. **05018 - #4 MDE Heat Exchanger:** Watchstander noticed 5-8 gallons of jacket water and steam condensate on deck. NR4 MDE jacket water keep warm heat exchanger had blown gaskets. Impact was inability to heat engine block to clear start permissive. Shore side SKs shipped plates to Healy via a logistics run to Barrow, AK. Installed and OP TEST SAT. CASCORed 12Jun05.

- e **05021 – Starboard Anchor Windlass:** NESU Seattle installed new universal joints to replace the old love joy couplings on the starboard anchor windlass prior to HEALY's departure on 1 June 05. Further inspection of pedestal found that a nut on the brake tightening mechanism broke free. Replacement part ordered. Also identified that pedestal wheels on forecastle need to be overhauled. SF submitted CSMP for inclusion in 2006 availability. Lost Port Anchor due to rough weather. Unable to exercise stbd anchor brake. Successfully attached chain for port windlass to stbd anchor and restored anchoring capability. Requested MLC include renewal of the brake assembly, parts listed in CASREP, and installation of the nut, which was purchased by the ship, in DS06. Parts were identified from TP DWG only, E 274-5445. Unable to remove and inspect components due to inaccessibility.



Anchor Windlass corrosion

- f **05024 – Vital Alarm System:** High jacket water temperature alarm energized on NR4 MDE, all local gauges indicated normal temperature, attempts to recalibrate switches unsuccessful. Switch is only a VAS initial indication, all MPCMS monitoring and VAS shutdown sensors were operational. Received part in Dutch Harbor, installed, OPTTEST SAT. CASCORed 09Aug05.
- g **05025 – Steam Coil 114:** Steam coil leaking badly. SF drilled into coil end chamber and found full of water. Due to magnitude of leak and inspection of similarly failed coils during DS 05, coil probably un-repairable. Requested MLCPAC contract renewal of failed coil in DS06. Preheater Steam Coils 114, 12, 58, 37, 66, and 101; and reheaters 9, 18, 70, and 75 added to 2006 availability.
- h **05026 – NR1 CFW Pump:** During shakedown watchstander noticed 3 gallons of jacket water on deck. Investigated and found NR1 CFW

mechanical seal blown. Requested NESU Seattle install new mechanical seal and gasket upon HEALY'S return from shakedown, but due to lack of a spare shaft as a contingency part maintenance was deferred. Parts received 13Jun, Barrow 1. CASREP CANCELLED as NR1 CFW pump showed no signs of leaking and mechanical seal was checked and found to be intact.

- i **05027 – TACAN:** After receiving multiple fault indications, SF conducted an inspection and test of the antenna. The results from the inspection and test in conjunction with a phone tech assist indicated that the RF monitor and regulated power supply circuit card assembly had failed. The circuit card assembly was received and installed but the faults were not corrected. SF replaced the A5 Card and CCA Trigger Control, TACAN worked for 1 hour. TACAN still not operational. Troubleshooting continues. Mr. Ray Bell, contractor with SPAWAR, ET1 Gordon and ET3 Davis from ESU Seattle met HEALY in Dutch Harbor to assist with TACAN failure. Troubleshooting verified original problem with antenna, further, a bad card was found in the high level modulator (HLM) module and verified with MTR computer brought by ESU Techs. Mr. Bell replaced card with a spare he carried. A bad gyro filter slug was found and by-passed and it was noted that other filter slugs had been by-passed; an order will be placed for a replacement gyro filter module. There is no reduction in system performance at this time due to the gyro filter module. A complete system operation and verification test was completed. Mr. Bell reported that our alignment was quite good. System is currently operating at rated power but with no monitor functions, as it was at the completion of SESEF. Ability to pinpoint problem by using ESU'S MTR station highlights the need for having HEALY 2M/MTR certified as well. HLM, HV power supply, and C/K monitor were replaced by SPAWAR prior to deployment. Antenna was newly installed prior to sailing and seemed to work, although it was only run for a short time. Antenna issue cannot be addressed until RTHP. HEALY, ESU Seattle, MLCPAC, and SPAWAR establishing a plan of action.
- j **05028 –Starboard Davit HPU:** While running HPU, oil began coming out of the fill tube. After shutdown, found seawater in tank. Cooler repaired (one tube plugged) by local shop, system flushed. Operation delayed for receipt of return filters which were not a stock item. All parts received, installed, OP Test SAT. CASCORed 11Jun.

B. AWES 05-01

1. Conducted the following BECCES:
 - a. MOB-E1005.16 (MOB-E-214-SF) High Temperature in the Main Motor
 - b. MOB-E1008.1 (MOB-E-005A-SF) Major Fuel Oil Leak #2 MDE
 - c. MOB-E1008.1 (MOB-E-005B-SF) Major Fuel Oil Leak #1 Boiler
 - d. MOB-E1007.2 (MOB-E-011D-SF) Charlie Fire in Low Voltage SNS Bus
 - e. MOB-E1005.3 (MOB-E-202-SF) Unusual Noise/Vibration in a MDE.

- f. MOB-E1007.2 (MOB-E-0011D-SF) Charlie Fire in Low Voltage SS Bus
 - g. MOB-E1005.3 (MOB-E-202-SF) Unusual Noise/Vibration in a MDE.
2. HEALY experienced the following CASREPS:
- a. **05030 - NR4 MDE Oil Mist Detector:** LED lamp on NR4 MDE Oil Mist Detector burned out. No lamps in stock. Submitted ACR to stock 2 lamps for Oil Mist Detectors. Received lamp in Barrow, 10 Jun. Installed. OP TEST SAT after circuit card also renewed and sampling hoses cleaned. CASCORed 12Jun.
 - b. **05031 - NR3 MDE JW Leak:** NR3 MDE 2A cylinder o-ring liner leaked jacket water. Enough parts onboard for 7 cylinders, remainder with two exceptions available in 10 days. NESU team onboard 13-26Jun to assist. Completed change out of o-rings on 9 cylinders on NR3 MDE. OPTEST SAT. Coupled with inport work, all 12 cylinders of this engine have new liner o-rings. BRAVO ZULU to NESU Seattle, specifically MKC Brogan, MK2 Christian, and MK2 Barrett, for their assistance in completing repairs to NR 3 MDE. 100 cutter and 300 CMD man-hours expended to correct casualty. CASCORed 25Jun05.
 - c. **05032- NR2 A/C Plant:** Printed Circuit Boards in Control Circuit not giving correct output to open Liquid Line Solenoid Valve. Parts received in Barrow. Parts installed, optest unsat. Solenoid Valve also missing valve seat. Valve replaced, system charged and OPTEST SAT. CASCOR'd 17Sep05.
 - d. **05033 - Dishwasher:** Galley dishwasher pump had a faulty mechanical seal. Parts received, installed, and tested. OP TEST SAT CASCORed 10Jun05.
 - e. **05034 - Aft Warping Capstan:** In order to facilitate placing all CASREPS in CMPLUS, this CASREP replaces cancelled CASREP 03057. CASREP Summary: during AEWS 03, SF noticed that capstan only operated at one speed. Capstan was overhauled in DD04. OPTEST of capstan after ovhl was SAT, but capstan still only operated at low speed. SF completed CSMP for piping modifications to be done in DS05. Piping mods completed with no results. Replaced flow control vlv with little improvement. Exercised optional DS item to conduct performance testing. Requested NESU Seattle pass findings of final report to HEALY. Once final report is received, will determine what course of action to take. Two-speed operation still not controllable due to excessive hydraulic backpressure on hydraulic return line exceeding 100 psi; two-speed motor requires hydraulic return pressure to drop below 100 psi to shift to low-speed mode. Currently working with NESU PE'S and DS contractor on best technical solution to eliminate system backpressure's effect on motor.
 - f. **05035 - CTES Keyboard:** In order to facilitate placing all CASREPS in CMPLUS, this CASREP replaced cancelled CASREP 04024. CASREP Summary: ECC'S Continuous Test And Evaluation System (CTES) keyboard and mouse experienced malfunctions. MLCPAC purchased new keyboard. Part received, installed, test UNSAT. Cursor did not work.

Requested Alstom provide guidance on fixing keyboard here or sending it back to be redone. Continuing to troubleshoot.

- g. **05036 - Bow Thruster:** In order to facilitate placing all CASREPs in CMPlus, this CASREP replaced cancelled CASREP 04026. CASREP Summary: during AWS04, while Healy was operating in dynamic positioning mode with directional vanes open, SF found Healy's bow thruster's port vane shaft seal to be leaking at a rate of approximately one gallon per minute. Parts ordered and received. SF attempt to make bow thruster temporary repairs underway were unsuccessful. Tech support suggested waiting until RTHP for repairs. SF and NESU Seattle's attempt to make repairs during 6 month inport NOV04 - MAY05 were also unsuccessful. Unit is operational. Requested MLCPAC contract bow thruster repairs during Healy's next inport.
- h. **05037 - NR2 MSW Pump:** NR 2 MSW pump leaked from both upper and lower shaft seals. Secured pump. Upon further investigation, lower radial bearing were seized. SF will submitted ACRs for non-stocked parts. This is the third patrol that the NR 2 MSW pump failed during the first weeks underway, investigating causal factor(s). Parts received in Barrow. Installed, additional parts ordered. Received entire new MSW pump from Stock System in Dutch Harbor. Installed new pump, carcass returned via CG C-130 flight from Tromso, Norway. OPTTEST SAT. CASCOR'd 20Aug05.
- i. **05038 – NR 2B Steering Pump:** While sitting beset with rudder amidships and 15srpms both shafts, ice floe pushed the port rudder 5 degrees to port. Steering pump 2a in follow-up mode overheated attempting to maintain zero rudder angle. IAW CCM, TOW invx overheat and OOD shifted steering to 2B. 2B motor unable to overcome deadheaded flow situation to start turning and overloaded. Breaker in controller and contactor overload circuit failed to protect system, motor leads in junction box burned, and breaker in SWBD opened under heavy load released conductive smoke in motor and SWBD. Increased shaft speed to 50 srpms through the night to await relief of floe pressure. Secured stbd steering gear system to prevent similar problem. Attempted to clear ice with full thrust with negative results. Floe pressure continued to drive under the stern, causing internal hydraulic relief and moving the rudders. Evaluated CCM and will add jammed rudder guidance. 2B hydraulic tank was drained, system intact, except found pieces of upper return filter in sump. Pump inlet filter caught all debris. Upon further inspection found identical damage in 1B sys, hydraulic flow from return line damaged top of filter. Sent digital picture via email to NESU for further discussion with manufacturer. Received all parts in Barrow 26Jun log run. Coupling damaged while installing motor. Parts ordered but lost in transit and not received before RTHP.
- j. **05039 – Boiler Condensate Leslie Valves:** Proper feed water sharing between the condensate drain and feed water tank and the reserve feed water tank intermittent, resulting in overflowing of the tanks to AMR1

bilges. This caused excessive distilled water consumption, and feed water additives impair OWS operation. Both of the Leslie valves that control the water level in the condensate tank did not operate properly. MLC PAC purchased Leslie valves and pilot controllers for delivery to Healy. Temporarily aligned system to remove backup capability of RFWT, but this also removed ability to absorb large fluctuations in steam loading. Received one Leslie valve, other backordered. Received four pilot valves. Two were the correct size, two were the wrong size, but both styles had the same part number. Installed and tested one Leslie valve and one pilot valve. Awaiting arrival of 2nd Leslie valve. Completed temporary repairs to 2nd Leslie valve for proper operation. CASCOR'd 20Aug05.

- k. **05040 – NR2 LOP:** LOP tripped off line continuously due to a faulty oil supply pressure switch. Part ordered and received in Dutch Harbor. Extra switch also purchased and placed in MICA. CASCOR'd 09Aug05.

C. AWES 05-02

1. Conducted the following BECCES:
 - a. MOB-E1007.2 (MOB-E-011B-SF) Charlie Fire in Low Voltage SA Bus
 - b. MOB-E1006.7 (MOB-E-201-SF) ADG Crankcase Explosion.
 - c. MOB-E1007.2 (MOB-E-011A-SF) Charlie Fire in High Voltage Switchgear.
 - d. MOB-E1008.1 (MOB-E-005-SF) Major Fuel Oil Leak in AMR 4
 - e. MOB-E1008.1 (MOB-E-005-SF) Major Fuel Oil Leak in #2 Boiler
 - f. MOB-E1005.12 (MOB-E-006-SF) Loss of Control Air
 - g. MOB-E1008.1 (MOB-E-005-SF) Major Fuel Oil Leak in #2 Boiler
 - h. MOB-E1008.1 (MOB-E-005-SF) Major Fuel Oil Leak in #2 Boiler
2. HEALY experienced the following CASREPS:
 - a. **05041 – NR1 FOP:** Arranged for Alfa-Laval tech rep was to meet ship 26Jul05, to investigate intermittent (over last two deployments) contamination of 4-72-2-F. Email troubleshooting with the manufacturer determined that the source was the conditioning water, which is not necessary for processing distillate fuel. Tech rep cancelled. CANCEL'd CASREP 20Aug05.
 - b. **05042 – 2CC1 Port Cyclo:** 2CC1 tripped off line. Resets initially successful, but cyclo tripped anywhere from 5 minutes to 1 hour of being placed back on line, usually when the cutter decreased speed in small increments. Troubleshooting with ALSTOM hotline indicated Type C interface board problem. Replaced board, NEGRES. Experienced 6 add'l trips of 2CC1 cyclo between following troubleshooting efforts: replaced 'R' Phase Current Transformer, SIGMA Controller, 'R' Phase Pulse Distribution board, and Type C Circuit Board (again). Inspected 'R' Phase Gate board Resistors, SAT. Resistance of all phases 2 GIGA OHMS or better. Replaced both fish tanks in PCC2. 100 man hours expended to correct casualty. CASCOR'd 02Jul05.

- c. **05043 – 2CC2 Port Cyclo:** Unable to reset tripping 2CC2. Onboard efforts unable to identify cause. Alstom Cyclo Drive Tech Rep brought to the ship 22Jul05. Never able to definitively determine cause of the casualty, but possible causes were: current transformer (CT) lead loose on Type C board terminal, CT control lead touching the high voltage bus, and/or sigma control power under-voltage relay faulty. Achieved successful test of 2CC2 ahead and astern during two transits with ice and open water and station keeping for science phase offload. CASCOR'd 26Jul05.
- d. **05044 – Flight Deck Net:** Stbd side flight deck net suffered damage when stbd knuckle boom hit it during science operations. Lower left corner pad-eye and upper right corner lanyard attachment were both damaged. Fabricated new frame from onboard steel pipe, installed, weight test sat. Full repairs scheduled for inport 2006, upon receipt of new fiberglass frame.
- e. **05045 – NR2 MDE J/W Heater:** Heater gaskets failed. Received parts in Dutch Harbor, installed, optest SAT. CASCORed 07Aug05.
- f. **05046 – NR3 MDE J/W Heater:** Heater gaskets failed. Received parts in Dutch Harbor, installed, optest SAT. CASCORed 07Aug05.
- g. **05047 – STBD 04 Deck Crane:** Cable kinked/frayed 6 inches from terminal fitting. Contracted cable repairs and weight test in Dutch Harbor. Weight test only completed to 20,000 lbs, full testing scheduled for Level 1 overhaul in upcoming availability. Cause of casualty was disabled two-blocking protection, to be corrected with prototype load management system and operator training.



Kink in 04 Deck Crane cable

- h. **05048 – Port Knuckleboom:** Main boom cylinders leaked out the main seals on the rod end. Contract repairs scheduled for Level 2 overhaul during 2006 availability.



Main boom cylinders corroded and leaking

D. LTT

1. Conducted the following BECCES:
 - a. MOB-E1005.7 (MOB-E-007-SF) Unusual Noise/Vibration on Propulsion Shaft (STBD)
 - b. MOB-E1005.14 (MOB-E-200-SF) Main Diesel Engine Crankcase Explosion #3 MDE
 - c. MOB-E1005.14 (MOB-E-200-SF) Main Diesel Engine Crankcase Explosion #2 MDE with ship going dark.
 - d. MOB-E1005.2 (MOB-E-204-SF) MDE Low L/O Pressure (#2 MDE)
 - e. MOB-E1005.5 (MOB-E-008-SF) Hot Propulsion Shaft Bearing (STBD)
 - f. MOB-E1008.1 (MOB-E-005-SF) Major Fuel Oil Leak in Gen Rm #2
 - g. MOB-E1005.7 (MOB-E-007-SF) Unusual Noise/Vibration on Propulsion Shaft (STBD)
 - h. MOB-E1005.1 (MOB-E-016-SF) MDG Engine Overheat
 - i. MOB-E1005.15 (MOB-E-211-SF) MDG Hot Pedestal Bearing
 - j. MOB-E1007.2D (MOB-E-011D-SF) Class C Fire in low voltage SNS Bus

E. Dutch Harbor, AK

1. HEALY experienced the following CASREP:

05049 – MINI-M Antenna: Faults displayed on handset upon power up, antenna link failure and platform failure. Voltage was tested at antenna, voltage test sat. Received new antenna via CG6529 log flight to Nome, Alaska. Installed, optest Sat. CASCOR'd 07Aug05.

F. AWES 05-03

1. Conducted the following BECCES:
 - a. MOB-E1005.6 (MOB-E-009-SF) Low/Loss of Main Motor L/O Pressure
 - b. MOB-E1007.1 (MOB-E-012A-SF) Class C fire in MDG
 - c. MOB-E1005.1 (MOB-E-016-SF) Control MDE Overheat
 - d. MOB-E1006.8 (MOB-E-209-SF) ADG Governor Malfunction
 - e. MOB-E1006.9 (MOB-E-203-SF) Unusual Noise/Vibration in ADG
 - f. MOB-E1006.6 (MOB-E-212-SF) ADG Overload
 - g. MOB-E1005.16 (MOB-E-214-SF) High Temperature in Main Motor
 - h. MOB-E1005.2 (MOB-E-204-SF) MDE Low/Loss of L/O Pressure
 - i. MOB-E1008.2 (MOB-E-010-SF) Control Major Lube Oil Leak/Class Bravo Fire
 - j. MOB-E1005.11 (MOB-E-208-SF) MDE Governor Malfunction
 - k. MOB-E1006.5 (MOB-E-016A-SF) ADG Overheat
 - l. MOB-E1006.7 (MOB-E-201-SF) ADG Crankcase Explosion
 - m. MOB-E1008.5 (MOB-E-003-SF) Steering Casualty
 - n. MOB-E1008.4 (MOB-D-21-SF) Flooding in AMR 5 and 1
 - o. MOB-E1007.2C (MOB-E-011C-SF) Class Charlie fire in SS Switchboard
 - p. MOB-E1008.1 (MOB-E-005-SF) Major Fuel Oil Leak in Gen Rm #1
 - q. MOB-E1005.11 (MOB-E-208-SF) MDE Governor Malfunction
 - r. MOB-E1007.2B (MOB-E-011B-SF) Charlie Fire in Low Voltage SA Bus
 - s. MOB-E1007.1B (MOB-E-012B-SF) Class C fire in ADG

2. HEALY experienced the following CASREPS:
 - a. **05050 – Incinerator:** Sluice Gate failed to operate due to faulty actuator and transformer. Transformer received and installed in Azores. CWO Harold of NESU delivered actuator parts to St. Martin. Installation and optest Sat. CASCOR'd 08Nov05.
 - b. **05051 – 2CC2 Power Supply:** 2CC2 tripped and would not reset due to failed gating power supply circuit board. Installed spare power supply which also failed, but due to mis-wired capacitors within the unit. Combined parts from both units to restore operation. CASCOR'd 08Sep05.
 - c. **05052 – NR1 MDE Exhaust:** NR1 MDE exhaust bellows at B-bank turbocharger failed. Temporary repairs made with fire cloth and banding, OPTEST showed exhaust leak slowed but not stopped. Monitored closely until part received in Tromso, Norway. Installed, optest Sat. CASCOR'd 07Oct05.
 - d. **05053 – NR3 CFW Pump:** NR3 central fresh water (CFW) pump made a loud unusual noise due to severely damaged rubber inserts on the coupling. Unusual wear occurring on leading edge of coupling teeth and one of the teeth had a large chip on the leading edge. Replaced coupling inserts, but coupling itself is not stocked and long lead time, only used NR3 CFW pump as standby pump in an emergency. Repairs to be completed upon return to Seattle.

- e. **05054 – Port Main Motor Pressure Switch:** Lift pump strainer differential switch for lift pumps NR 2 and 6 for NR 2 main motor failed. Switch was jumpered out to keep shaft running at lower speeds and while backing and ramming in the ice. NESU Seattle assisted in locating source of supply as no information was onboard or in MICA. ESU's ETCM Passalacqua delivered switch to Cabo San Lucas, Mexico. Installed, optest SAT, CASCOR'd 22Nov05
- f. **05055 – 2CC1:** 2CC1 tripped and would not reset due to field excitation ground faults. Inspection of basic drive module and Type C interface board SAT. Basic drive module power board and Type C interface card changed with negative results. Renewed an SCR in the field monitoring circuit, a pulse distribution board, and 4 thyristors. CASCOR'd 19SEP05.
- g. **05056 – Oily Water Separator Pressure Switch:** Oil content meter pressure switch failed. No spare unit on board. Jumpered the switch to run OWS. Oil content measurement capability not impacted. Part received in Tromso, Norway, installed, optest Sat. CASCOR'd 07Oct05.
- h. **05057 – 1CC1:** 1CC1 tripped and will not reset with trip codes TR3, TR4 & TR11. Replaced the pulse distribution board, Type 'C' interface card and both 'R' phase fish tanks with negative results. Burden resistors around the Type 'C' and all thyristors in the 'R' phase Sat. Received Tech Rep in Dublin, Ireland. Broken connector on a gate lead for Thyristor 2A was cause of casualty. Replaced connector and tested Sat. CASCOR'd 19Oct05.

G. Tromso, Norway to Dublin, Ireland

- 1. No BECCes conducted due to weather and casualties, but the following BECCes were completed during actual casualties:
 - a. MOB-E1008.4 (MOB-D-21-SF) Flooding in Winch Room – Due to firemain drain valve being opened.
 - b. MOB-E1008.4 (MOB-D-21-SF) Flooding in Main Lab – Due to firemain drain valve being opened.
 - c. MOB-E1008.4 (MOB-D-21-SF) Flooding in Fwd Machinery Space – Due to cable through hole open to elements.
 - d. MOB-E1008.4 (MOB-D-21-SF) Flooding in Generator Rm 2 – Due to ruptured JW hose on #4 MDE.
 - e. MOB-E1008.2 (MOB-E-010-SF) Major Lube Oil Leak on #4 MDE – Due to loose motor and bolts on Ball and Kirsch candles.
 - f. MOB-E1008.4 (MOB-D-21-SF) Flooding in Motor Room - Due to Rupture in MSW return line in Motor Room
 - g. MOB-E1008.4 (MOB-D-21-SF) Flooding in AMR 3 – Due to Rupture in ASW return line in AMR 3.

2. HEALY experienced the following CASREPS:
 - a. **05058 – MSW Recirc 3-Way Valve:** Leslie valve not operating automatically. Procured new pneumatic operator which was installed and tested Sat. CASCOR'd 28NOV05.
 - b. **05059 – Port Anchor:** During Healy's transit from Tromso to Dublin, heavy weather broke the port anchor. Requested MLCPAC procure new anchor and install during 2006 availability.



Port Anchor Shank

- c. **05060 – Bow Crane Cab:** High seas sheared off bow crane cab and set it on the 02 deck. Fwd Crane Ladder, firemain piping, Cab, and 02 Deck railing were damaged.



Cab on 02 Deck

Cab Base

- d. **05061 – NR 3 MDE 6A JW Leak:** NR3 MDE 6A cylinder leaked jacket water from cylinder o-ring. Operation limited due to water loss, and standby capability removed due to need to close valves when not in use. Cylinder overhaul added to 2006 availability.
- e. **05062 – CTES Server:** Trending and data collection capabilities inoperable due to system failure to read the RAID arrays. Received Hewlett Packard Tech Rep in Dublin, Ireland, who found and replaced faulty components. CASCOR'd 31Oct05.

H. Dublin to Seattle

1. Conducted the following BECCES:
 - a. MOB-E1005.1 (MOB-E-016-SF) MDE Engine Overheat
 - b. MOB-E1005.3 (MOB-E-202-2-SF) Unusual Noise Vibration on MDE
 - c. MOB-E1007.2B (MOB-D-011-B-SF) Class Charlie fire in SNS Swbd
 - d. MOB-E1005.12 (MOB-E-211-B-SF) Hot Pedestal Bearing MDG
 - e. MOB-E1005.1 (MOB-E-016-SF) MDE Engine Overheat

- f. MOB-E1005.2 (MOB-E-204-SF) MDE Low/Loss of L/O Pressure
 - g. MOB-E1008.2 (MOB-D-010-SF) Major Lube Oil Leak
 - h. MOB-E1007.1 (MOB-E-012-SF) Class Charlie fire in MDG
 - i. MOB-E1005.1 (MOB-E-016-SF) MDE Engine Overheat
2. HEALY experienced the following CASREPS:
- a. **05063 – RHI HEALY 1:** Bracket for shift cable sheath broke. Part not listed in Tech Pub. Picture emailed to NESU Seattle for assistance with identification. Part delivered in St Martin by CWO Harrold of NESU Seattle. Part installed, optest Sat. CASCOR'd 11Nov05
 - b. **05064 – Shaft Bulkhead Seal:** Diaphragm Assembly came unbolted on one side causing unusual noise in stbd shaft. O-Ring subsequently fell out of groove and was destroyed by shaft. Stopped and locked the shaft to remove the Diaphragm and O-Ring. Shaft seal housing reinstalled, but without damaged sealing elements. Lead time of parts precluded underway repair. Requested NESU complete repairs upon receipt of parts.
 - c. **05065 – Stbd Main Motor Lift Pump Pressure Diff Switch:** Lift pump strainer differential switch for lift pumps NR3 and NR7 for NR1 main motor failed. Part delivered by ESU's ETCM Passalacqua in Cabo San Lucas, Mexico. Installed, optest Sat, CASCOR'd 22Nov05.
 - d. **05065 – Trash Hoist:** Cable on trash hoist kinked and bound on the drum spool due to a keyboard falling over and jamming the cart. An apparently faulty slack cable system then allowed the drum to unspool on itself. Requested MLC PAC include repair of trash hoist in 2006 availability.
 - e. **05067 – MK37 Gyro:** NR 2 Gyrocompass display indicated fault NR 11, high rotor current. SF troubleshooting assisted via e-mail by SPERRY and ESU Seattle indicated a failed master compass assembly. Requested ESU Seattle assistance coordinating repair or replacement upon return to homeport.
 - f. **05068 – NR1 MDE JW Cooler:** NR 1 MDE unable to stay operating due to overheating Jacketwater. Central Fresh Water temperature normal AMOT valve fully opened. Ordered parts to disassemble and clean Jacketwater cooler. Failure resulted in operating NR3 MDE in spite of it's cylinder o-ring casualty. Parts delivered in Cabo San Lucas, Mexico, by ETCM Passalacqua.
 - g. **05069 – Aft IC Cathodic Protection:** Consistent 5 volt signal to ground on terminals 1 and 2 of board AQ-CCB-323A and failure of the 3 amp fuse on the same board. Unable to determine cause and requested MLC coordinate a tech rep visit in Seattle, WA, 05-07DEC05.
 - h. **05070 – OWS:** Oil content meter (OCM) failed to operate due to faulty Power PC board. OCM scheduled for annual calibration and will be repaired at that time. Due to single OWS installation, oily water processing capability was eliminated.

2. Main Prop Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. Wartsila completed MDE liner o-ring change out on #2 and #4 main diesel engines.
2. Replaced pilot nozzle and main burner nozzle on the #2 boiler.
3. NESU completed all required scheduled PMS.
4. NESU replaced all con-rod bearings on the #1, #2, #3, and #4 main diesel engines.
5. Evening of April 10, 2005. The bottom of ADG's turbocharger was blown out, resulting in a bilge fire between the engine and the generator. The event took place while operating in hove-to mode with power provided by ADG for MDE troubleshooting. ADG had been test ran for 20 minutes the morning of the event. In the afternoon the EOW shifted from shore power to ADG power. The TOW completed a round, and ECC personnel monitoring ADG on MPCMS saw no abnormal indications. After 10 minutes of running on ADG, the ship went dark and the smoke alarm sounded in ADG's compartment. Response by the TOW and fire teams found the space full of black smoke. The space was accessed and a bilge fire between the engine and generator was extinguished with a portable extinguisher. The EMD roller clutch turbocharger was replaced, the by-products of the fire were cleaned up and ADG was returned to full operation three weeks after the above event. Casualty resulted in dealy and rescheduling of the pre-deployment shakedown cruise.

B. AWES 05-01

1. NESU replaced liner o-rings on #3 main diesel engine.
2. Conducted water wash on all 4 MDES.
3. Repaired leak on the #1 MDE Boll and Kirsch pilot valve.
4. Replaced Fuel Oil Coalescer filters on the #4 MDE
5. Replaced exhaust gasket on the #4 MDE, along with 5 broken bolts in exhaust system.

C. AWES 05-02

1. Replaced F/O Coalescer on #1 MDE and #4 MDE.

2. Conducted water wash on all 4 MDES
3. Adjusted the ASW to Bow thruster water pressure switch to correct invalid alarm condition.

D. LTT

1. ASW leak on #2 S/A compressor. DC shop fabricated new line
2. 3 MSW leaks in Cycloconverter room. DC shop fixed leaks
3. Repaired J/W heater on the #4 MDE

E. Dutch Harbor, AK

1. Repaired J/W heater on the #3 and #1 MDE
2. Replaced fuel oil filters on the ADG
3. Replaced Racor filters on the ADG
4. Replaced check valves on the fuel oil manifold on the ADG
5. Replaced seal on the #2 MDE keep warm pump

F. AWES 05-03

1. #2 MSW pump found to be leaking from both upper and lower shaft seals. Lower radial bearing appears to have seized. Replaced seals and tested. Test sat.
2. #2 MDE J/W heater cooler – replaced plates, gaskets and seals.
3. #1 S/A compressor tube bundle started leaking and filling up the jacket water head tank on the compressor. Removed tube bundle and inspected in shop. Pressure test revealed leaking tubes. Leaking tubes were plugged and pressure tested. Test sat.
4. During EOW pre round, EOW found l/o coming out of the relief valve on the side of the Boll & Kirsch. #2 MDE was secured pending an investigation. Valve going to the backflush filter was found to be closed. Valve was opened and filter replaced. Test sat
5. FN was making round of space found #2 MDE J/W keep warm pump spraying water from around the mechanical seal. Pump was disassembled and mechanical seal was found to be broken. Replaced seal, test run sat.

6. Fuel was discovered to be dripping onto exhaust blow down. Banjo fitting was taken apart and banjo crush rings replaced. Test sat
7. After install of new #2 MSW pump, the gauge line was leaking through the threads. Pipe was removed, cleaned up and sealed with Teflon tape. Test sat
8. On the #4 Ship's Service air receiver, a blow down line started leaking due to a pin hole in a weld. DC's re-welded. Test sat.
9. Lube oil leaked from the #4 MDE Boll & Kirsch backflush filter housing. Replaced o-rings and tested. Test sat.
10. #4 MDE F/O leak off line leaked at cylinder 3A. Tightened up fittings. Test run sat.
11. Replaced one spiral gasket (ks81296) on #4 MDE exhaust bellows.
12. Replaced expansion joint and spiral gaskets on #4 MDE exhaust to turbo.
13. Replaced #3 MDE Boll & Kirsch backflush filters.

G. Tromso, Norway to Dublin, Ireland

1. Changed out NR1 MDE fuel oil coalescer filters.
2. While working in engine room MK3 found lube oil spray around NR4 MDE Boll & Kirch candles and motor coupling. Secured engine and found that the mounting bolts inside coupling had backed out loosening the coupling that holds down the seal. Pulled motor, inspected seal and reinstalled motor with new hardware. Tests SAT.
3. While on a round TOW found water to be "raining" down from up between the exhaust risers on NR4 MDE. Flex hose on NR4 MDE jacket water vent line ruptured between the turbochargers. Ship's force fabricated and replaced hose. Tests SAT.
4. Replaced 4B fuel injection pump on #4 MDE due to high leak off line temps. Test sat
5. #2 Start Air Compressor lube oil pressure switch found loose and damaged. Repaired and tested SAT.

H. Dublin to Seattle

1. Changed out NR1 MDE fuel oil coalescer filters.
2. Pulled #1 Start Air Compressor ASW cooler inlet piping elbow due to leaks. DC's brazed leaks. The elbow is made up of threaded pipe fittings that have been brazed. Reinstalled and tested SAT. 10 days later fittings found leaking again. Syntho-glassed piping due to lack of correct size pipe fittings/flanges onboard. Scheduled for renewal in 2006 availability.
3. Conducted PMS items M-Q-7374, Change out ADG Turbo l/o filter and M-Q-7375, Change out ADG Soak Back filter. Also replaced o-ring kits on ADG Explosion covers due to leaks. Test ran SAT.
4. Fabricated 3 jacket water hoses. 1 hose for the inlet to bank "A" on NR2 MDE and 1 for each bank inlet on NR4 MDE due to catastrophic failures resulting in ruptures. Ship's Force used 4" hose from Skimmer in Aft Hose Room. Old hoses to be sent out for failure analysis upon RTHP.



Jacket water hose

5. Changed out Boll & Kirch Backflush filter on NR1 MDE.
6. Repaired NR3 & NR4 MDE F/O Duplex Strainer drain lines leaking at the swageloc fittings. Test SAT.
7. NR2 MDE Boll & Kirch Candle and Motor were found loose and vibrating. Removed hardware, applied loctite and tightened bolts to specs. Test SAT.
8. Changed out NR2 MDE Boll & Kirch Backflush filter 2 times in November. Added cleaning candles on all 4 MDE's to SMP.
9. Found NR4 MDE Boll & Kirch motor loose and vibrating. Found mounting bolt to be sheared off. Tapped out and replaced with new hardware. Test SAT.
10. Found fuel foaming up out of the NR4 MDE f/o leak off funnel. Investigation/troubleshooting found hot upper leak off lines on fuel pumps 3A

and 5B. Exhaust temps were approx. 200 degrees cooler. Pulled high Pressure Fuel supply line and found uneven wear marks at mating surfaces. Kept guide/flange blocks loose and reinstalled lines. Torqued to specs and tightened blocks. Test SAT.

3. Auxiliary Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. Completed overhaul of Healy 2 RHI engine, AWS-04 mission repairs.
2. Rebuilt #1 & #2 evaporator to include installation of new gaskets. Removed scale build-up and successfully hydrostatically tested shell.
3. Renewed end caps on #2 A/C
4. Fabricated and installed a new flywheel for #3 reefer compressor.
5. NESU completed all annual and semi-annual PMS
6. Completed incinerator maintenance and training during shakedown deployment.

B. AWES 05-01

1. Identified ventilation pre-heaters #12, #58, and #114 with blown tubes. Pre-heater #114 blew a tube during shakedown. Cause unknown. Pre-heater #12 blew a tube in the 3rd week of June. Pre-heater #58 blew a tube during steam system test during the 2nd week of June. Believe the pre-heater was blown from ASW-04. There are two pre-heaters inline; #58 & #59. Pre-heater #59 was renewed during DS-05.
2. Changed out upper and lower plates on the OWS during the 4th week of June due to sludge build up and chemical fouling from the treated boiler water and MBT from the MDE's. Fouling prevented Healy from processing oily waste. This is an ongoing problem that requires further research.
3. Sick Bay freezer was unable to maintain require temps. Troubleshooting revealed low R-12 system charge and back side of box iced up. Inspected system for leaks. Discovered one fitting leaking on discharge side of compressor. Recovered system and repaired fitting. Charged system and conducted leak tests. System operating normally.

C. AWES 05-02

1. Recovered #3 A/C unit and repaired leaks. Found system approximately 16 lbs short of full charge. Placed #3 A/C system under a deep vacuum for 5

days. Achieved a vacuum of less than 400 microns, which held vacuum for the required time. Charged system with 70 lbs of R-22 and conducted operational tests. Test sat. Set superheat and placed system back in service.

2. #1 evaporator was suspected of having a steam leak on the 1st stage tube bundle. Removed cover and tested all tubes. No leaks detected. Renewed all gaskets on 1st stage. Tested with steam on steam side and water on water side of tube bundle. No leaks detected. Placed system back in service for 24 hours and the operational test was sat.
3. Science ROV hydraulic winch failed. Investigations revealed possible incorrect oil type for application and/or letting unit free fall was causing motor to act as a pump causing cavitations of the system. Checked all system filters and fittings for leaks. None found. Revised operating procedures with operators. No further problems noted.
4. Renewed WRV's on both aft general services HPUs. System continues to operate in 155-160°F range. System adjusted for optimum cooling.
5. During dive ops, LCVP stbd drive prop hit a large piece of ice and sheared one blade from hub. Installed new duel-prop assy.
6. #3 A/C unit gauge line developed a pinhole leak. Cut section out of line and renewed with stainless steel tubing and swedge-lock fittings. System remains operational.

D. LTT

1. Rising outside ambient temperatures required shifting all ventilation fans from winter mode to summer mode.
2. Experienced constant incinerator flame failure. Troubleshooting revealed that the main burn chamber access cover gaskets were no longer sealing. Renewed gasket. Also found two of four studs with galled and stripped threads. Ship's force welded four new studs on burner and renewed door access gasket. Operational tests sat.
3. Experienced liquid flood back on #1 climate control chamber compressor. Discovered inadequate defrost cycle setting due to change in science requirements. Scientists loaded several open containers of sea water in box and overloaded the capacity for the small compressor creating excessive humid condition. Science restrictions prevented timely response to remedy evaporator coil freeze up. Conducted three manual 45 minute defrost cycles to control and stabilize conditions. Defrosted climate control chamber in Dutch Harbor after it was unloaded.

E. Dutch Harbor

Removed a two foot length of wire rope from stbd 04 deck crane due to a kink in the wire. Load tested the crane to 20 tons (max available weight pier side). Intend to conduct weight test with Level 1 inspection in 2006 Availability.

F. AWES 05-03

1. Completed MPC A-A-7207 Clean OWS coalescing plate packs. Processing oily water is still an issue regarding machinery chemicals. Electric solenoids have been problematic. They freeze up and stick in recirculation mode. Pressure sensor in oil content meter (OCM) failed with no spare on board or in MICA allowance. CASREP 05056 applies.
2. Ship's force fabricated science seismic air compressor refueling rig enabling successful seismic charting of over 2200 kilometers of data.
3. The galley dishwasher motor bearings failed allowing the shaft, impellor and motor assemblies to wear to limits causing great concern about equipment reliability. Repair parts were ordered but not received in Tromso.
4. The incinerator port sluice door air actuating cylinder failed. Ship's force attempted and was partially successful in restoring normal operation. System capable of burning sludge 24/7 and solids when assisted with a wooden strongback to support the sluice door. Repair parts were ordered but not received in Tromso. Refer to CASREP 05050.
5. Ventilation coils continue to be of great concern in the arctic regions. Ship's force discovered coils improperly installed horizontally vice vertically. Some valves were discovered to be installed with gaskets blocking passage of flow. Humidifiers are in need of calibration to regulate steam properly. Regulating temperature in compartments converted to berthing extremely difficult due to installation design.
6. Ship's force discovered solenoid valve on #2 A/C was installed without the valve seat. Recovered all refrigerant and troubleshot system expending many man hours. System put back in service after operational testing was successful. Refer to CASREP 05032.
7. Number 3 Reefer compressor was placed back in service after ship's force recovered all refrigerant and repaired several leaks.
8. CASREP 05041 was canceled after ship's force isolated FOP conditioning water. Corrective action still pending.
9. Offloaded science cores.

G. Tromso, Norway to Dublin, Ireland

1. Ship refueled on first day of port call.
2. Hydraulic gage line failed inside the cab on the starboard aft knuckle crane. 45 gallons of oil leaked inside of the cab. Oil removed, line repaired and crane operation restored, but without gage lines because they were not in stock, order pending.
3. Bow crane severely damaged during transit to Dublin. Refer to CASREP 05060.
4. Port anchor broke off at shank due to heavy seas during transit to Dublin. Refer to CASREP 05059.
5. Heavy seas during the Tromso – Dublin transit caused minor flooding in several fan spaces. The drains became clogged and are now clear. The systems affected are dry and operational, but caused ventilation shutdowns for system checks and troubleshooting.

H. Dublin to Seattle

1. Starboard anchor windlass brake stripped inside pedestal base during operational test to determine reliability of anchor handling equipment. Refer to CASREP 05021 updates.
2. Conducted oily waste offload in Dublin. Approximately 100 gallons of oily waste spilled on pier due to contactor's hose failure.
3. Healy 1 Morse cable throttle cable failed. Refer to CASREP 05063. Parts received in St. Martin. Parts installed and operational test sat.
4. Incinerator parts received in St. Martin. Renewed entire auxiliary burner assembly and both sluice door air cylinders. Operational test sat.
5. OWS Oil Content Monitor (OCM) circuit card failed. Refer to CASREP. This system continues to be unreliable and labor intensive to the minimally manned crew concept.
6. Seasonal damper failed on exhaust fan #75 and jammed in the closed position inside duct blocking air flow from Motor Room. Ship's force conducted temporary repairs.

4. Electrical

A. Pre-Deployment Preparations & Seattle to Barrow

1. Groom 2005
 - a. MPCMS changes. See IPP Groom 2005 report.
 - b. Cycloconverter and MPCMS modifications and repairs. See IPP Groom 2005 report
2. Electrical Training (Alstom & Cadick)
 - a. Alstom completed training for MPCMS Operation & Maintenance (2007C & 2007F), Cycloconverters Operation & Maintenance (2007K & 2007L), and Science Winch Drives Operation & Maintenance (2007H & 2007I). Specific emphasis on GEM 80 theory and operation, SIGMA theory and operation, and troubleshooting.
 - b. Cadick completed training on Power Generation & Distribution System Fault Analysis (2007B), and Test/Cal of Protective Relays (2007D).
3. Non-Groom In Port Issues
 - a. Vital Alarm System was determined to have two nonfunctional high temperature jacket water switches. Calibrated and installed replacement switches. Op tests sat.
 - b. SSTF #2's LV breaker did not rack-in or out properly. Tech rep found that cradle frame was not bent but found that the contact blocks were not seating as the manufacturer designed them to. Contact blocks were replaced, op tests sat.
 - c. Evap #2's condensate pump motor was found to have a seized bearing and a corroded non-repairable shaft. Motor replaced and op tests sat.
 - d. HEALY had warranty torque motor upgrades conducted IAW the applicable service bulletin. After the upgrade the synchronizing control to parallel load from all MDE generator sets to the HV bus was unstable. Problem solved with correct installation of the dampening arm between actuator and fuel rack.
 - e. NESU Seattle completed the work as documented on CMPLUS.
 - f. ECR for the installation of a 400 Amp switch for a science van was submitted in January 2005.
 - g. The following references were generated: Lock-Out Instruction, Live Circuit Chit, Portable Equipment Instruction.
 - h. The Tag Out Instruction was updated.
 - i. Healy's EM shop received and replaced faulty signal conditioner for ADG's load sharing circuit and installed. Tested satisfactory.
 - j. Ships force re-configured ECC communication system by installing two an additional 21MC ICC box on the Starboard side of ECC and the other in the Cycloconverter room. Also added new sound power phone remote speakers.

- k. Replaced Cycloconverter panel vent covers and filter material on cabinet's port and starboard door panels.
 - l. Continued adjustments on the 721 governor control settings for all MDE's to help allow better load and speed control while paralleling and load sharing functions while under load. This is a result of item b. of the above.
 - m. Continuing to troubleshoot the ships reefer and freezer box temperatures on MPCMS.
 - n. Re-seated and repaired grounding brush rigging on all MDE's and generator bearing pedestals as well as both port and starboard shafts in port and starboard shaft alleys.
 - o. Replaced thermostat on boost heater for dishwasher in ships scullery.
 - p. Replaced potable water hot water tank electrical heating element.
 - q. Assisted Auxiliary with trouble shooting and replacing various items on both #1 and #2 evaporators in preparation for deployment.
 - r. Assisted in trouble shooting #1 and #2 boilers in preparation for out patrol.
 - s. Assisted Alstom and Cadick in relocating and adding, grounding balls on both HV switchgear.
 - t. Continually troubleshooting various inputs and outputs to and from MPCMS to help allow a better and more reliable monitoring system due to the optimal manning of Cutter Healy.
4. Shakedown
- a. A signal conditioner for ADG's load sharing circuit failed, resulting in ADG being incapable of paralleling to the ship's motor generator sets. Healy's SK's ordered signal conditioner, part receipt pends.
 - b. CTES computer failed to be capable of trending functions and the UPS powering Dexter and workstation 1 also failed. HP tech rep reconfigured the raid controller, replaced the power supply in the workstation 1 next to the server, successfully pinged the IP address of the router in radio, conducted IMS calls in and out, replaced the batteries in the UPS powering the Dexter and workstation 1 and all units are now fully functional.
 - c. Testing/calibrating completed during the Shakedown as documented in ALSTOM Groom 2005 write-up.

B. AWES 05-01

- 1. Alstom replaced all the Fiber optic cables from for each Cycloconverter from Gate cards to the Fiber driver cards.
- 2. Conducted a test while on 6 pulse and found out that we could not sustain more that 120-shaft turn on any of the 4 Cycloconverter. Found that during this year's groom the over current relays were adjusted to the wrong (as per drawings) current. Alstom and ships force determined and corrected setting, 10 amps. Conducted sea trials and test SAT.

3. Replaced fiber driver cards in Cycloconverter 1CC1 & 1CC2. 1CC2 tripped during normal steaming. Conducted sea trials test and sat.
4. Trouble shot #1 Boiler and replaced faulty operating limit switches. Test Sat.
5. Replaced #4 MDE oil mist detector LED.
6. Replaced #4 MDE F/O MPCMS transducer.
7. Replaced power supply for Aft Con winch control stations and re-set FIP network to allow transfer of winch control at all winch control stations.
8. Removed the 2A steering pump motor due to motor overheating caused by over current damage. (SNS breaker also overheated and will need to be replaced).
9. Trouble shot OWS and replaced electrical solenoid. Test sat.
10. #1 LOP failure found bad pressure switch, part ordered.

C. AWES 05-02

1. Replaced Opto link fiber cards in Cycloconverter 2CC2. 2CC2 tripped during normal steaming. Conducted sea trials test. SAT.
2. Replaced Fish tank in 2CC1 in Cycloconverter 2CC1 tripped during normal steaming. Conducted sea trials test. SAT.
3. Alstom Tech Rep O.P. Sharma assisted repairing 2CC2 Cycloconverter, replaced Control transformer, type C card and verified various interconnection cables for loose and shorted connections.
4. Disconnected 440vac power to ROV control station located in the Science Reefer box.
5. Wired up Hi-Ab portable crane Starboard aft for JPC coring operations.
6. Removed various electrical cable van tie from Vans used during AWES 01-05.
7. Disconnected 200 amp services for winch control on fantail used for the ROV.
8. Installed additional receptacle in climate control area to allow Science party to us additional test equipment. Assisted science technicians with installing fiber optic cable inside the fwd climate control chamber to allow them to monitor their experiments more accurately.

D. LTT

NSTR

E. Dutch Harbor, AK

NSTR

F. AWES 05-03

1. Install Bow Thruster Hydraulic low pressure cut out switch. Existing switch broke off from excessive vibration.
2. Re-built boost heater in Port Aft vestibule 01 deck.
3. Trouble shoot #2 Boiler Combustion Air heater, repaired and placed back in service.
4. Replace sea water cooling flow switch for #1 A/C compressor.
5. Re located #2 Boiler Remote control brain box outside of main controller.
6. Replace remote controlled Fire Pump controls outside hanger due to excessive corrosion from weather elements. (Aft).
7. Trouble shoot Charge air cooling temp #4 MDG 'B' bank ordered repair parts will fix when return to Home port.
8. Un-wired Hi-AB portable crane Starboard aft for JPC coring operations.
9. Wired up various electrical cable van ties for Vans used during for AWES 03-05.
10. Located fault in Flooding alarm in AMR #3 and replace.
11. Repaired and re-calibrated Fire main supply valve for #1 Eductor in the Main drainage system de-watering valve.
12. Charge air cooling temp #3 'A' Bank thermocouple.
13. Trouble shot and repaired automatic start capabilities for the bow thruster to allow remote start and stop abilities.
14. Investigated why 5-84-1-F was reading 800 gals off / replaced TLI.

15. Located and repaired Aft Conn Window washer system (Grounded control box).
16. Replaced Main Motor Sea Water cooler zincs (Quarterly).
17. Replaced STBD navigation light fixture on the LCVP.
18. Re-lamped EM spaces and changed ballasts as needed
19. Wired FWD Science Van & Aft Hi- ab crane.
20. Un-wire STBD VAN, 440V for ROV control, & winch on fantail.
21. Fixed 3 Window wash switches on Bridge, 3 on Aloft Con & 1 in Aft Con.
22. Wired 230V cable for Coring science equipment
23. Installed portable light fixture in Aft science space for science personnel to use for Core exam area.
24. Various Cyclo trips on all Cyclos
 - a. 2CC2 had 3 separate trips
 - b. 1CC1 had 0 separate trips
 - c. 2CC1 had 3 separate trips
 - d. 1CC2 had 0 separate trips

G. Tromso, Norway to Dublin, Ireland

1. Re-built 4 STBD Staging Blast HTR due to grounded heating coils.
2. Trouble shoot AFFF and Sea water Sprinkler systems for grounds, opens, Shorted sensors as well as correct wiring.
3. Install a light fixture in galley by newly installed flattop/oven.
4. Investigate why #4 MDG is shutting down on Low low Lube oil shutdown during initial start up of off line Main diesel generator
5. Install dedicated outlet for Ice Cream Freezer in store.
6. Replace various emergence Ballast and normal ballasts in various fluorescent fixtures in the Cyclo room, Starboard transformer, Port transformer rooms.
7. Replace weather deck Fuel E-Stops remote control boxes due to heavy corrosion from weather conditions.

8. Repaired various Window Heaters on Bridge / found shorted and broken heater contact connections.
9. Various Cyclo trips on all Cyclos
 - a. 2CC2 had 1 separate trips
 - b. 1CC1 had 1 separate trips
 - c. 2CC1 had 2 separate trips
 - d. 1CC2 had 1 separate trips

H. Dublin to Seattle

1. Remove battle lanterns from escape trunks.
2. Check Steam dump valves on Evap's.
3. Rewire Hanger lighting.
4. Remove SK1 & SKC's office desk lights.
5. Fix ADG Governor Cannon Plug (strain relief).
6. Fix incinerator sludge tank temp sensor.
7. Lower Boiler F/O fill auto shut valve limit switch to close valve at 1750g.
8. Forward mast light & stern light relamped
9. Unwired all Science Equipment.
10. Replaced lamps in paint locker.
11. Ballasts replaced in Port Transformer and Cyclo Rooms
12. Fixed OWS MOV.
13. Repaired #2 Sea Strainer Back Flush MOV's
14. Cleaned MDG make-up fan filters, M/M make-up fan filters, Port M/M slip rings
15. Cleaned and inspected shaft grounding.
16. Replaced M/M cooler zincs.
17. Repaired FWD inboard dryer.

18. Trouble shoot and repair #1 SSMG set high motor amperage
19. Rewire Medical berthing lighting.
20. #2 F/O xfer pump fantail e-stop installed.
21. Checked MSW valves for indication problems.
22. Replaced e-stops on fantail.

5. Electronics

A. Pre-Deployment Preparations & Seattle to Barrow

1. Sailed on shakedown with no open casreps.
2. TACAN, IFF, and all RDF's were calibrated or certified by the SESEF at Ediz Hook in Port Angeles, 360-396-7024.
3. AIS system installed by ESU Seattle and Sperry Marine working to spec. This system was required to transit the Panama Canal and engineered and installed in record time.
4. BME Radar system installed and old RASCAR system removed by ESU Seattle/Sperry Marine
5. New Gyro distribution system installed by ESU Seattle/MLCPac
6. New forward looking pan/tilt and camera installed on aloft conn for use when conning from the aft facing science conn. Installed by ESU Seattle.
7. Most Intercolor monitors replaced and new location for use in aft conn when using the new aloft conn pan/tilt camera.
8. ESU sailed on shakedown for direct support.

B. AWES 05-01

1. Sailed on mission with 1 open casrep, TACAN, 05027.
2. Integrated bridge system had a problem with voyage plan. Problem was that the voyage plan arbiter and the autopilot arbiter were not running on the same node, a new config.ini file was received that forced the system to always use the same node for these two arbiters.

3. ESU rep ETC Flynn sailed on first 2 weeks and completed multiple installations primarily of fiber in support of science.

C. AWES 05-02

TACAN problem persists.

D. LTT

TACAN problem persists.

E. Dutch Harbor, AK

ESU Seattle reps ET1 Gordon and ET3 Davis are aboard with SPAWAR techrep Ray Bell to help with the TACAN problem. Troubleshooting effort confirms our bad antenna; this will have to be dealt with upon RTHP. A bad card was found in the HLM, ET3 Davis verified it with his 2M station. The card was replaced with a spare that Mr. Bell had and the carcass was taken back to ESU for repair and return. System operates as it did during SESEF with good power out and no faults with the antenna monitor bypass operational.

F. AWES 05-03

1. Heavy Ice Bill: Healy experienced a Doppler speed log transducer problem that was caused by heavy ice breaking. Also have seen heavy icing and icebreaking problems with antennas, lightning rod, radar scanners, proper glycol mix in transducer wells, etc. Healy should develop a Heavy icing and icebreaking Bill for the elix suite. It should include lifting the doppler transducer into the ship and closing the seagate during heavy icebreaking.
2. HF Comms: Hf comms are critical at high latitudes as we have no standard INMARSAT or NAVMACS connectivity. Healy's HF suite is unique and unsupported by the CG and the manufacturer. Healy should have a suite of CG standard HF communications equipment and spares. Any CG initiative to install HF antennas should be vetted through the senior ET and OS. Healy has a unique AOR and does not operate the HF suite in the same manner or areas as other CG ships including the Polar Sea or Polar Star.
3. TACAN: Tacan operation at extreme latitudes: Problems developed determining magnetic variation for the TACAN and the Helo. Due to the close spacing of variation lines helo could travel through several variation lines while Healy stayed in the same as launch or Healy may also move across lines. The end result was inability to maintain same base numbers and heading became more of a threat than a nav aid. It is worth researching if the electronics aboard the helo make relying on TACAN for heading info in such a variable (no pun intended) magnetic environment obsolete. Additionally we

derive magnetic heading from Gyro with TACAN adjustment by thumbwheel for variation at these Latitudes the gyro is plagued with error so our source is completely unreliable. Doctrine should be developed for high latitude TACAN use.

4. Gyro: Gyro is unusable at the highest latitudes, we have alternate heading sources including 3-D GPS which is very accurate but there are 2 systems that cannot use an input from the 3-D GPS. The OE-82 satellite antennas and the TACAN. The NAVMACS/OE-82 is not used above 80 deg. TACAN is and the heading function of TACAN is unreliable when we are above 80 degrees.

G. Tromso, Norway to Dublin, Ireland

NSTR

H. Dublin to Seattle

1. Inspect and test Panama Canal kit. Kit worked again for transit and met the needs of the Panama Canal transit. Purchasing better storage for the kit this year.
2. Integrated Bridge System was significantly more reliable, post upgrade of VMS, Radar, and install of AIS, than in past years. For example, this deployment, the ETShop re-booted the system as many times in the deployment as we had done in 2 weeks in previous deployments. A letter describing the improvement and the specifics of the few problems we did have will be sent to Northrup Grumman Sperry Division.

6. Damage Control Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. Major work items completed during DS-05:
 - a. Miscellaneous piping repairs: Firemain, Steam, Hot potable water, MSW, and ASW.
 - b. Pipe lagging repairs: 41 locations.
 - c. Concrete Decking Repairs: 800 square feet in 10 compartments.
 - d. Completion of all applicable fire system DC PMS: Range Guard, Fire/AFFF Hose, Fixed CO₂ systems, CO₂ Portable extinguishers, PKP extinguishers, AFFF fire extinguishers.
 - e. Inspection and testing of electric submersible pumps, ladders/handrails.
 - f. Installation of 10 New-style Mafo-Holtkamp QAWTD's and inspection of existing Ellison doors.
 - g. Forecastle Weather Vent Intake Modification: The forward vents were extended to the 02 Level and turned aft to prevent sea- water intrusion.

2. Two sessions of students comprised from the HEALY crew were sent to Aviation Fire Fighting Training in Whidbey Island. All left the school with basic fire fighting qualifications.



Aviation Fire Fighting Training in Whidbey Island

3. The following was conducted during HEALY '05 Shake Down Cruise
 - a. Training with flight deck fire fighting parties including a crash on deck drill.
 - b. All hands man-up, 1 toxic gas, 1 Main space fire, 2 class "A" fire, 1 High Voltage, and 1 flooding drill.
4. Prior to departing on AWES '05 65% of HEALY personnel were basic DC PQS qualified and approximately 5% are advanced DC PQS qualified.

B. AWES 05-01

1. Conducted DCPQS training M-F at 1815. 62% of crew is Basic qualified as of 08AUG.
2. Fabricated blank flange for #2 MSW pump.
3. Made permanent welding repairs to QAWTSs to AMR #s 1, 2 and 3.
4. Made permanent welding repair to MDE F/O header piping.
5. DC1 Pentecost and DC3 Hunter achieved U/W TOW qualifications.
6. DCC Smelser relieved DCC Schaffner as DC Shop Property Custodian.

C. AWES 05-02

1. Flushed Aft Grey Water tank vent as part of troubleshooting ongoing venting issue.
2. Fabricated and attached risers to heavy duty pallet skates for Science offload in Dutch Harbor.
3. Made permanent repairs to 2” MSW return piping from 1CC1 and 1CC2 Cycloconverters.
4. Fabricated new flight deck net out of steel after original was damaged by STBD knuckle crane.
5. Conducted CART checklist prior to LTT visit.
6. Conducted ADG and in port duty section training prior to Dutch Harbor.

D. LTT

1. Conducted the following DCTT drills:
 - a. MOB-D1001 - Respond to and extinguish a non-main engineering space fire
 - b. MOB-D1002 - Respond to and take corrective actions for a structural damage casualty.
 - c. MOB-D1005 - Respond to and take corrective actions for a toxic gas casualty.
 - d. MOB-E1010 - Combat a class 'B' main machinery space fire.
2. Conducted all-hands hose handling training.

E. Dutch Harbor, AK

Performed urgent re-piping of ASW outlet on #2 Start Air jacket water cooler prior to getting u/w from Dutch Harbor.

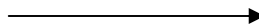
F. AWES 05-03

1. Conducted the following DCTT drills:
 - a. MOB-D1001 – Respond to and extinguish a non-main engineering space fire
 - b. MOB-D1002 - Respond to and take corrective actions for a structural damage casualty.
 - c. MOB-D1005 - Respond to and take corrective actions for a toxic gas casualty.
 - d. MOB-E1010 - Combat a class 'B' main machinery space fire.

2. Conducted DCPQS training M-F at 1815. 78% of crew was Basic DCPQS qualified on 06SEP.
3. The following work was completed to various ship systems and stations:
 - a. Fabricated pulley system for ice reflectivity science gear.
 - b. Made permanent repairs to ice brow after crack was discovered in anchor point.
 - c. Mounted binocular stand for ice observation team on bridge top.
 - d. Mounted freezer in ship's store.
 - e. Made numerous welding repairs to ash door on Incinerator.
 - f. Disassembled black water discharge pumps numerous times to clear debris.
 - g. Mounted mud coring saw in Aft Staging Area.
 - h. Made permanent welding repair to fuel oil header pipe to #3 MDE.
 - i. Fabricated copper nickel flange pieces for temporary J/W hose repair on #4 MDE.
4. Submitted CSMPs for Galley deck replacement, Dry Stores cage fabrications and MAFO QAWTD installations.



Standard Navy QAWTD



Mafo-Holtkamp QAWTD

5. Submitted CMA for Scullery dishwasher replacement.
6. Opened Aft Grey Water Tank to inspect vent piping location as part of ongoing trouble shooting possible venting issues.

G. Tromso, Norway to Dublin, Ireland

1. Used “Healy Type-1” soft patch on MSW return line from #2 M/M air cooler.
2. Compiled the following information for DS '06:
 - a. Concrete deck square footage in various engineering spaces
 - b. Insulation/lagging locations and dimensions
 - c. Ballast and Main Drainage valves needing inspection/overhaul

H. Dublin to Seattle

1. Conducted the following DCTT drill:
 - a. MOB-D1001 – Respond to and extinguish a non-main engineering space fire (HV Fire)
 - b. MOB-D1001 – Respond to and extinguish a non-main engineering space fire (Alpha Fire)
 - c. MOB-D1005 - Respond to and take corrective actions for a toxic gas casualty.
 - d. Conducted Advanced DCPQS training for all duty sections for new Augmented Duty Section DC billet assignment.
2. Performed urgent braze of ASW cooler outlet on #1 Start Air jacket water cooler prior to getting u/w from Dutch Harbor.
3. Syntho-Glass patched ASW return line pinhole in Main Prop machine shop.
4. Isolated AMR 3 MSW/ASW and used “Healy Type-1” soft patch on MSW return line in lower AMR 4.
5. Isolated AMR 2 MSW/ASW and Syntho-Glass patched ASW return line in upper AMR 2. Routed ADGSW/ASW return to selected ballast tanks, then ovbd with Main Drainage aligned to ballast system.
6. Installed Uni-Strut for Science in Aft-Staging Area.
7. Replaced JP-5 pump E-stop mounting bracket on aft Hangar bulkhead.
8. Removed, cleaned and reinstalled Air Ejector for sewage vacuum system after entire sewage system became inoperable.

7. Fueling Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. During Dockside, transferred all fuel from 5-48-1-F (60,000 g) to 5-48-0-F for tank cleaning and MICA bracket installation (DS item D-30). Additionally, HEALY off-loaded 19,000 gallons of oily water, waste oil, and dirty H/O.
2. 6 April 05: On-loaded 471,305 gallons F-76 via barge from Manchester, Washington. The average transfer rate was 1800 gallons per minute. This brought HEALY's fuel oil load to 816,538 gallons (66.9% of full capacity).
3. 7-8 April 05: Off-loaded 9,000 gallons of Oily waste/waste oil.
4. 26 April 05: On loaded 8,934 gallons grade L06 lube oil from Manchester Fuel Department via Rainier Petroleum trucks. The transfer rate was approximately 200 gallons per minute. This brought HEALY's lube oil load to 12,717 gallons (26% of full capacity).
5. 27 April 05: Off-loaded 9,500 gallons of Oily Waste/Waste oil.
6. 13 May 05: On-loaded 433,281 gallons F-76, 12,361 gallons JP-5, and 5,699 gallons L/O at NFF Manchester Fueling Pier. HEALY was at 93.3% load for F-76 at 1,139,404 gallons, 92.8% load for JP-5 at 55,113 gallons, and 34.9% load for L/O at 16,963 gallons.
7. 13 May 05: Expended 107 gallons JP-5 and 110,415 gallons F-76 during shakedown. HEALY averaged 10,038 gallons per day during shakedown.
8. 19 May 05: Onloaded 8,324 gallons grade L06 lube oil from Manchester Fuel Department via Rainier Petroleum trucks. The transfer rate was approximately 200 gallons per minute. This brought HEALY's lube oil load to 45,764 gallons (94% of full capacity).
9. 31 May 05: Off-loaded 6,449 gallons of Oily Waste/Waste oil.

B. AWES 05-01

1. Burned 173,104 gal F/O and 355 gal JP-5 during initial transit.
2. Burned 150,193 gal F/O and 1409 gal JP-5 during Coring mission.
3. Total for AWES 01-05: 323,297 gal F/O, 1,764 gal JP-5

C. AWES 05-02

Burned 195,966 gal F/O and 2,432 gal JP-5 during NOAA mission.

D. LTT

Burned 62,594 gal F/O and 2,432 gal JP-5 during LTT.

E. Dutch Harbor, AK

1. 01 August 05: On-loaded 580,079 gallons MGO diesel fuel (178,987 gal by pier connection, 401,092 gal by barge) at Dutch Harbor Fueling Pier. HEALY was at 94.7% load for F/O at 1,156,001 gallons.

Note: For future Dutch Harbor onloads (and possibly at other locations), recommend requesting all fuel from a barge such as we had, as it could accommodate Healy's maximum onload rate of 2,000 gal/min. The pier connection's 600 gal/min delayed completion of the fueling evolution by several hours.

2. Burned 17,089 gal F/O during the Dutch Harbor port call.

F. AWES 03-05

Burned 654,431 gallons diesel oil and 2120 gallons JP-5 going over the top.

G. Tromso, Norway to Dublin, Ireland

1. 01 October 05: Bunkered 500,000 gallons MGO diesel fuel from the fuel pier in Tromso, Norway, leaving us at 80.1% capacity. Having an extra 200' of fuel hose would have been helpful, as we could have attached a secondary hose to the port side fueling connection and doubled the rate of transfer.
2. Burned 100,868 gallons diesel fuel in Tromso and in transit to Dublin.

H. Dublin to Seattle

1. Burned 469,402 gallons diesel fuel in transit home, with 31.9% of total fuel capacity remaining at the conclusion of AWES '05.

I. Summary for AWES 05:

1. Burned 1,806,558 gallons diesel fuel.
2. Burned 6,360 gallons JP-5.

CHAPTER VI - ADMINISTRATION

1. Personnel

A. Pre-Deployment Preparations & Seattle to Barrow

1. All the crew and one AVDET crew deployed with HEALY on June 1, 2005 with the exception of the following permanent personnel:
 - a. LTJG Jason Plumely, TDY to NESU
 - b. BMCM Joseph Gispert, terminal leave pending retirement
 - c. MK1 Diane Wallingford, TDY to NESU
 - d. ET1 Shane Hyde, TDY to NESU
 - e. EM1 Brad Jopling, TDY to NESU
 - f. DC2 Todd Gillick, terminal leave pending RELAD
 - g. BM3 Adam Gunter, TDY to CGC BAYBERRY
 - h. EM3 Dustin Black, terminal leave pending RELAD

2. The following TDY personnel were on board to augment the crew:
 - a. LT Andrea Sacchetti - AVDET
 - b. LT David Merriman - AVDET
 - c. LTJG Melissa Hentges, CGC POLAR SEA
 - d. ENS Michael Carr – ISC Seattle
 - e. ENS Brian K. Meadowcroft – NESU
 - f. ENS Ariel Piedmont – CGC POLAR SEA
 - g. 1/C Nora Basile – CG Academy
 - h. AMTC Tim Santmyer - AVDET
 - i. ETC James Flynn – ESU Seattle
 - j. AMT1 Johnny Charles - AVDET
 - k. AG1 Gene Swope – US Navy
 - l. MK1 Kevin Whalen – NESU Seattle
 - m. MST1 El McFadden – ESU Seattle
 - n. AET2 Louis Biship -AVDET
 - o. EM2 Shaun Bastian – NESU Seattle
 - p. IT2 Chad Burroughs – ESU Seattle
 - q. DC3 Cory Hunter – MSO Valdez
 - r. ST3 Travis Corbett – CGC POLAR SEA

3. BMC James Bride promoted to CWO2 on 01 June 2005.

4. DC1 Phillip Smelser advanced to DCC on 01 June 2005.

5. The following AVDET members embarked on 06 June 2005 from Kodiak, Alaska:
 - a. LT Kenneth Eller
 - b. LT Matthew Weller
 - c. LT Winston Wood

- d. AMTC Thomas Pudish
 - e. AMT1 Daniel Kelly
 - f. AMT3 Jeffrey Kortis
6. Crossed the Arctic Circle on 10 June 2005.

B. AWES 05-01

1. The following personnel returned to HEALY in Barrow, Alaska:
 - a. LTJG Jason Plumley
 - b. ET1 Shane Hyde
- a)
2. The following personnel reported TDY the CGC HEALY:
 - a. MKC John Brogan
 - b. MK2 Brian Barrett
 - c. MK2 Nathaniel Christian
 - d. PA2 Nyxolyno Cangemi
3. Brought on 19 scientists in Nome, Alaska via helo.
4. CWO2 James Bride departed via helicopter to Barrow, Alaska on emergency leave on 22 June 2005.

C. AWES 05-02

1. The following personnel departed PCS from HEALY via helo on 26 June 2005:
 - a. EM1 Joseph Fratto
 - b. FS2 Vanessa Agosto
 - c. SN Amanda Wingrove
2. The following personnel reported PCS to HEALY via helo on 26 June 2005:
 - a. ENS Erin Biemiller
 - b. ENS Nathaniel Selavka
 - c. SK1 Stephen Selph
 - d. FS1 Arrene Zitting
 - e. SN Brittany Rasmussen
 - f. FN Eric Whitlock
3. The following personnel departed TDY from HEALY via helo on 26 June 2005:
 - a. ET2 Matthew Regele, EMT Recertification
 - b. BM3 Meredith Hitchcock, ISC Seattle, ADASGN
4. The following personnel departed HEALY back to their units via helo on 26 June 2005:
 - a. CDR David Vaughn
 - b. LT Matthew Weller

- c. AMTC Thomas Pudish
 - d. AMT3 Jeffrey Kortis
 - e. MKC John Brogan
 - f. MK2 Brian Barrett
 - g. MK2 Nathaniel Christian
 - h. PA2 Nyxolyno Cangemi
5. LT Brian Erickson reported TDY to HEALY on 26 June 2005:
 6. Embarked 12 scientists via helo in Barrow on 26 June 2005.
 7. Debarked 19 scientists via helo in Barrow on 26 June 2005.
 8. Embarked 23 scientists via helo in Barrow on 27 June 2005.
 9. LT Andrea Sacchetti – AVDET, departed on emergency leave on 28 June 2005.
 10. Issued the Arctic Service Medal on 30 June 2005.
 11. Flew SN Christopher Phillips off on emergency leave on 3 July 2005.
 12. LTJG Melissa Hentges flown off via helo to return to the POLAR STAR on 24 July 2005.
 13. Embarked eight media personnel and one ALSTOM contractor on board 24 July 2005.
 14. LT Wendy Hart arrived TDY from ATC Mobile to augment the AVDET on 25 July 2005.
 15. CWO2 Gustavo Tyler arrives PCS on 25 July 2005.
 16. Debarked 30 science party members via helo to Barrow, Alaska 26 July 2005.
 17. Left Arctic Circle on 28 July 2005.

D. LTT

NSTR.

E. Dutch Harbor, AK

1. Disembarked 8 science party members in Dutch Harbor, AK.
2. The following personnel reported onboard PCS to HEALY:
 - a. CWO Timothy Tyler

- b. MKCS Joseph Bisson
 - c. ET3 Steven Daem
 - d. SNBM Aimee Buford
 - e. FNEM Nathan Finely
3. The following personnel departed PCS:
- a. LTJG Jason Plumley
 - b. CWO William Levitch
 - c. MKCS Michael Huff
 - d. DCC Peter Schaffner
 - e. MK3 Tomasz Dawlidowicz
4. The following personnel returned from TDY:
- a. MK1 Diane Wallingford
 - b. EM1 Kenneth Worrell
 - c. ET2 Matthew Regele
5. The following personnel returned to their units:
- a. ENS Ariel Piedmont
 - b. 1/C Nora Basile
 - c. EM2 Shaun Bastian
 - d. MST2 Travis Corbett
 - e. IT2 Chad Burroughs
6. The following personnel came to augment the HEALY:
- a. DC3 Courtney Wilson – ISC Alameda
 - b. SN Robert Melvin – Station Neah Bay
7. The following personnel departed Dutch Harbor and returned for medical care:
- a. EMCM Curtis Podhora
 - b. MK3 Malinda Nesvold
8. Due to weather, Alaska Airlines flights were cancelled and delayed. YNC contacted Penair and Alaska Airlines to put members in priority status to ensure their arrival to Dutch Harbor. Dutch Harbor was the only port call until Tromso, Norway to have new members meet vessel.
9. Due to weather, Alaska Airlines flights were cancelled and delayed. Thanks to MSD Unalaska, were able to obtain 2 seats on flight from Dutch Harbor to Anchorage, Alaska and return for dental issues. Due to travel contracts, US Travel can not reserve and book flights for HEALY. Our contracted travel agent is one hour ahead due to time zone. Members had to pay for their ticket departing Dutch Harbor; one via their government charge card, the other via advance from the cash cage.

F. AWES 05-03

1. Crossed the Arctic Circle on 08 August 2005.
2. Issued Arctic Service Medal on 28 August 2005.
3. BM3 Adam Gunter advanced to BM2 on 1 September 2005.
4. The following personnel reported PCS in Tromso, Norway on 30 September:
 - a. SN Robert Kenney
 - b. SA Joseph Abel

G. Tromso, Norway to Dublin, Ireland

1. SKC Karl Keyes departed 01OCT and SK1 Stephen Selph departed 14OCT to work at the HEALY support office in Seattle.
2. MKC Joseph Diaz, FN Dike Jeffrey and SN Kenneth McWilliams dpted PCS on 02OCT.
3. SNFS Wright advanced to FS3 on 08 Oct 2005.
4. MK2 Andrew Benigno departed HEALY for ISC Seattle TDY for medical reasons on 12 October 2005.
5. The following AVDET members departed to return to ATC Mobile:
 - a. LT Sacchetti - 05OCT
 - b. LT Eller - 03OCT
 - c. LT Merriman - 13OCT
 - d. LT Erickson - 15OCT
 - e. AMT1 Charles - 16OCT
 - f. AET2 Bishop - 16OCT

H. Dublin to Seattle

1. The following personnel reported TDY in San Miguel, Azores:
 - a. EMCM Donald Witt, ESU
 - b. EM1 Hans Shaffer, NESU
 - c. EM2 Kevin Hernandez, NESU
 - d. Civilian Anthony Johnson, LDEO
2. ETC James Flynn, ESU departed HEALY back to his unit from San Miguel, Azores.
3. The following reported to HEALY TDY in St. Marteen, Netherland Antilles:
 - a. CWO4 Eric Harrold

- b. MK1 Kevin Whalen
 - c. EM2 Shaun Bastian
 - d. ET2 Jared Bishop
 - e. IT2 Michael Merchant
 - f. EM3 Natasha McBride
 - g. ET3 Jonathon Davis
 - h. MK3 Sam Stowers
4. Civilian Anthony Johnson, LDEO departed in St. Marteen, Netherland Antilles.
5. The following personnel reported TDY in Cabo San Lucas, Mexico:
- a. LCDR Lyn Juckniess, Chaplain
 - b. LTJG Edward Hennig, ELC
 - c. Ken Dobrow, Navy League
 - d. Lee Ebert, Navy League
6. The following TDY personnel departed to return to their unit from Cabo San Lucas, Mexico:
- a. EMCM Donald Witt
 - b. MK3 Sam Stowers
 - c. MK1 Kevin Whalen
 - d. Jeff McGuckin
 - e. ET3 Jonathon Davis
7. MEDEVAC Lee Ebert to San Francisco via helo on November 24 due to medical complications.
8. FS3 Deggans departed on emergency leave on 23 November 2005 via small boat in San Diego, California.
9. The following personnel departed to return to their unit upon HEALY's return to home port:
- a. LCDR Lyn Juckniess, Chaplain
 - b. LTJG Edward Hennig, ELC
 - c. Ken Dobrow, Navy League
 - d. CWO Eric Harrold, NESU
 - e. EM2 Shaun Bastian, NESU
 - f. IT2 Michael Merchant, ESU
 - g. EM3 Natasha McBride, NESU
 - h. ET3 Jonathon Davis, NESU
 - i. MK3 Sam Stowers, NESU
 - j. EM1 Hans Shaffer, NESU
 - k. EM2 Kevin Hernandez, NESU
 - l. AMTC Tim Santmyer, AVDET
 - m. AMT1 Dan Kelly, AVDET

2. Morale

A. Pre-Deployment Preparations & Seattle to Barrow

1. Contributed 144 cans of soda to morale night on the Shakedown Cruise.
2. Major Non-Appropriated Expenditures post AWS '04 and pre AWES '05:
 - a. Beer purchase for AWES '05 ice parties: \$358.12
 - b. Soda purchases (4,896 (+132+ TK?)cans): \$1,745.41
 - c. Bingo purchases: \$1,498.87
 - d. Fishing Gear: \$1,365.19 (- ??)
 - e. Moral Dinners, etc.: \$2,991.40
3. Major Non-Appropriated Contributions post AWS '04 and pre AWES '05:
 - a. MWR Funds: \$2,300.40
 - b. Exchange: \$1,100
 - c. Navy League Donation: \$2,000.00
 - d. Soda purchases: \$657.53
4. 20 May 05: ENS Buser, ENS Niemann, and SKC Keyes conducted a property inventory for morale. Nothing was found missing. The following items were added to the list:
 - a. Table Tennis
 - b. Two Bikes
 - c. Home Theater Projector
 - d. Projector Screen
 - e. Treadmill (Donated)
5. 25 May 05: ENS Buser and ENS Niemann conducted an audit of the morale fund. Discrepancies are recorded in Morale Fund Audit Memo dated 26 May 2005.
6. May 05: LTJG Young departed for her next unit and ENS Niemann relieved as the morale fund custodian.
7. Total Non-Appropriated Funds upon HEALY's departure on AWES '05: \$5,814.69.
8. 2004 Appropriated Funds: \$16,000.
9. Appropriated funds purchases:
 - a. Elliptical
 - b. Mats
 - c. Table tennis
 - d. Medicine Balls for gym

10. 03 June 05: Commenced beard growing contest (hair down and finger nail painting for females). 63 crewmembers are participating, proceeds: \$305.
11. 10 June 05: Donated soda for moral dinner night – 143 cans.
12. Purchased \$300 of prizes from Nome.
13. Bingo Winners:
 - a. 4 June winners: ENS Meadowcroft, CPO Santmyer, SK2 Arakaki, MK2 Benigno.
 - b. 11 June winners: LT King, SK2 Sison, AMTC Pudish, AMT3 Kortis, ETCM Podhora.
14. Moral committee meeting held on 6 June 05. 17 crewmembers in attendance.

B. AWES 05-01

1. Held bingo each Saturday evening.
 - c. 18 June winners: MK3 Nesvold, AMTC Pudish, LT Sacchetti, YNC Kirby, SK2 Arakaki.
 - d. 25 June winners: LTJG Plumley, DCC Smelser, and AMT1 Kelley.
2. Showed Million Dollar Baby on the big screen in the Hanger on June 18.
3. Ice liberty on 17 June.
4. New Elliptical was put together and added to the gym.

C. AWES 05-02

1. Held bingo each Saturday evening.
 - a. 02 July winners: BMCS Sullivan, ENS Piedmont, ENS Selavka, YNC Kirby.
 - b. 09 July winners: Elizabeth Calvert, ENS Selavka, and EMCM Podhora.
 - c. 16 July winners: SN Rodriguez, MK2 Benigno, SN Bilby, AMT1 Charles.
 - d. 23 July winners: Eric Mittelstaedt, SK2 Arakaki, AET2 Bishop, LT Merriman, MK3 Nesvold.
2. Saturday Night movies on the big screen in the Hanger.
 - a. 02 July: Bourne Identity and Bourne Supremacy.
 - b. 04 July: Independence Day
 - c. 09 July: Val Helsing
 - d. 16 July: The Ring 2

3. Ice Liberty
 - a. July – Approximately 85 participants.
 - b. 20 July – Approximately 80 participants.
4. Morale committee meeting held 18 July. 13 crewmembers in attendance.
5. The departing science party donated over \$300 to Healy's morale fund as a collective gift.

D. LTT

NSTR.

E. Dutch Harbor, AK

1. A hardworking offload, but morale was had in abundance. Though not official morale functions, there were chief's and officer dinners at the nicest restaurant in town (Grand Aleutian) on separate days to say goodbye to many our shipmates and hello to many new ones. We raffled off a free night at the posh and luxurious Grand Aleutian Hotel. The winner was BM1 Hines. Also raffled was a free ticket to the sumptuous and delightful wednesday night buffet at the Grand Aleutian, which went to FS3 Elliott. The drawing was held at quarters, with the tickets being publicly drawn by the CO (to ensure integrity of the proceeding) from Chief Andersen's special purple hat.
2. Morale procured hiking and camping permits for the crew from the Ounalashka Corporation. Most all of the hiking around Dutch Harbor is on land owned by the Native Alaska Corporation and therefore permit required. Many of the crew enjoyed hiking the green hills in the cool August weather here. Many members boosted morale by getting together with the local CG MSD for a bonfire on the beach on the 1st.
3. Undoubtedly, however, the highlight of this port call was the opportunity to celebrate Coast Guard Day Aug 4th in Dutch Harbor. We reserved a softball field and had a good turnout, including the MSO members. Morale provided softball equipment and liquid refreshments of various sorts while our FS's et al provided burgers, dogs, chips, and a very nice cake for the occasion. The softball game was organized into two teams: CO's Seals vs. EO's Orcas. The plays of the day: CO stealing a sure double from the EO on a fantastic running catch. In turn, the EO turned a quick double play at first base. OPS turned out to be a formidable catcher and also the ump. DC1 Pentecost took pitching duties for both sides and Chief Kirby, despite hesitating at first, played a few innings and got on base more than once. Master Chief Perron takes the award for the most frustrated player : "I couldn't even get a sip of beer before I had to bat again, field again, or do some other #\$\$%!@ thing!" In the end, The

CO's Seals won the 7-inning thriller by a score of (about) 32-10, depending on who you ask. Alexander Hamilton would have been proud.

4. All in all a tremendously morale-boosting port call-- with no injuries or incidents. Good-bye to morale committee member Cadet 1/c Nora Basile, thanks for all your help and good luck with your last year!

F. AWES 05-03

1. Saturday, Aug 6th. Leaving the port call of Dutch and underway in (slightly rough) seas puts no damper on morale. It should be noted here that we bought some new bingo and other prizes in Dutch Harbor, and many crewmembers wrote their families who forwarded gifts for the morale committee to use as prizes for morale nights. Thanks for your support!!!
2. Saturday night hangar movie: Cancelled due to rough seas which prevented us from rolling out the helo. Saturday night Bingo results: SK2 Arakaki won three rounds! CAPT Tremblay and AMT1 Charles each won one on the two remaining rounds.
3. Sun, Aug 7th. While this is not officially a morale sponsored event, The Morale Chairman would like to note that our ship's doc ENS Carr (also a morale committee member) collects classic movies and plays 2 or 3 for the crew every Sunday when possible, augmenting our showings of current movies. His unique method of announcing the films (over the IMC in the manner of the movie "Mr. Roberts") is becoming a tradition and a morale event in itself. Today was a classic Humphrey Bogart double feature.
4. Today we also held a meeting of polar bears and decided that we are going to have ONE ceremony only for crossing the arctic circle AND the dateline combined. Many on the committee volunteered for assignments and ideas and plans for the placement of the polar bear bath, the whale's belly, wog auction, no-talent night, and beauty contest were formulated and written in mud, which shall soon harden more into concrete as we approach the ceremony date, some three weeks hence.
5. Week of Aug. 7th. Starting this week, HEALY is re-commencing an old tradition that may be of some interest to other vessels with extended periods at sea: beard and long hair chits. For a nominal fee (this time the morale officer has generously reduced the price to an unheard of ONE dollar!) Men may grow beards (with the caveat that they be maintained neatly trimmed) and women may wear their hair down/long. Ladies also have the privilege of coloring fingernails whatever exotic pattern or color their hearts so desire. This is an excellent morale fund-raiser as well as a good morale booster for the crew. Everyone's morale is boosted, that is, with the exception of our XO, who, (we believe) if he could work his will, would discontinue the

practice forthwith and in its entirety and CHARGE all persons who previously grew beards by the same amount they paid for any previous chits and add on double and treble indemnities withal commensurate in exact ratios with the length of aforementioned beards with no less alacrity than the Count of Torquemada exacted his exquisite punishments at the Spanish Inquisition. However, for the time being, we are keeping up the tradition under his watchful (and skeptical) eye. The chits are only good for the time we are out at sea and all beards must be off, hair must be up, and nails back to regs within 24 hours of pulling into any port, and any individual must come within regs if they are flying off the ship to a civilian airport.

6. 13 AUG 05, Saturday. The end of our first week since Dutch Harbor and day 74 into our epic voyage and “push to the pole.” Our Saturday night Bingo found the aviators flying high, really cleaning house. Just to let everyone in on how we do it: usually there are 5 rounds of bingo. We charge \$1 per card and the prizes start with candy bars for the first round, then escalate to the grand prize. Our past grand prize was a color TV, and must be won by “blackout” i.e., all numbers on the winning card must be covered. We start the blackout at 40 calls. If it is not won one week, then the next week the blackout grand prize is awarded at 45 calls, the next week 50 and so on. Our current grand prize is an Xbox set, and next week’s blackout will be 60. If the winner does not get it at 60, then the first person to blackout will get a consolation prize. This weeks winner were: Round 1, candy: EMCM Podhora and MKC Diaz. Round 2, an Xbox game DVD: AMTC Santmyer. Round 3, Texas hold ‘em handheld game: AMTC Santmyer . (Luckily for Chief Santmyer we have no quota on prizes, though we may have to start one) Round 4: A DVD of your choice plus bag of popcorn: AMT1 Charles. Blackout consolation (box of rice krispie treats: AMT1 Kelly. Hopefully Petty Officer Kelly felt consoled. The caller for bingo was the ship’s Doc, Ens Carr. The blackout went at 63 calls, and since the prize goes at 60 next week, stand by for an increase in somebody’s morale.
7. Our Aviators do us the favor of rolling the helo out on deck each Saturday night so that we may use the hangar as a big screen movie theater. Attendance should gradually increase at these functions as we have just gotten new releases mailed to us in Dutch. We put down wrestling mats and break out soda and popcorn for all hands (no beer!) darken the hangar and watch our flick. An improvement is that we have an actual retractable screen this trip on which to project movies. This week’s feature was Sahara, and the XO, in an unusual spate of condescending mercy, allows us to wear civilian clothes in the hangar for watching the movie. With mercy comes justice, however, and the morale committee must secure any untidiness in the hangar, usually helped on this by the movie going public.
8. It should be mentioned that our trip is being tracked on Fred’s Place, an unofficial Coast Guard website. Anyone logging in can send a note of

encouragement to a Healy member. Our YNC takes some of the messages of encouragement and posts them in the POD. As long as we have web access we can relay these to the crew. An excellent morale booster and thanks to Fred's Place for keeping an interest in us. This is a good idea for any other vessel embarking on long or arduous voyages: let Fred's place know and they may be able to feature you on the homepage. Besides your ombudsman, it is a great resource for relaying messages of encouragement to the crew as a whole or to individual crewmembers.

9. Also this week we circulated a thank you note to the last science part for the flat \$340 donation to our morale fund. We have (and continue to enjoy) good relations with the civilian science parties and will mail them the car, once signed, as soon as we can find a post office.
10. Week ending 20 Aug: Fog. Everywhere. Fog and low visibility have put the kaibosh on our flight operations every day but one, nevertheless the gloomy weather is not a match for our high-flying morale activities. Our weekly bingo game resulted in the grand prize being taken! Our winner was one of our Swedish scientist guests, Asa Lovenvald. She also won the native hand-crafted ivory figurine in the fourth round, a double victory! Gratulerar! Other prizes awarded were: Round one (candy bar): AMT1 Charles. round 2 (Casino game): SK2 Arakaki round 3 (a jump drive): CAPT Tremblay, another one of our guests. LT JG Irwin was the bingo caller. Keeping with Healy's tradition of generosity, a guest took the big prize. The excitement then shifted to our 2000 helo hangar Cineplex big-screen theater where the movie Sin City premiered, complete with popcorn & free soda. FYI to other units: We got a festival type popcorn popper, the kind you see in the malls with the glass doors, etc. Our engineers mounted it on the messdeck and makes morale events nicer with an ample supply of popcorn ready-made. Plans are being finalized for our line ceremony, the date is the only question, probably sometime in September.
11. This week we also restocked the soda machine. For the information of other units we keep a soda machine on the messdeck. This is a morale-boosting refreshment provider for those who want a change-of-pace from the usual beverage line. Our advice is that if you get one, get a good full sized one that takes dollar bills and has a nice capacity. Also another source of income for morale.
12. 27 Aug: Tonight's morale helo hangar movie was "the Amiltyville Horror." Our Saturday night bingo was a roundup for SK2 Arakaki. While the first (candy bar) round was won by MK3 Nesvold and the second round (an xbox gam) was taken by LT Sacchetti, the 3rd round (a DVD movie plus popcorn), the 4th round (a handcarved ivory figurine), and the 5th round (a box of nutty bars) all went to SK2 Arakaki. Ens Carr was our caller and a tremendous time was had by all.

13. 01-02 Sep: Friday morning marked the morale high-water mark of our voyage: a line-crossing ceremony! The committee of polar bears (those who have already crossed the arctic circle) decided that we should do both the international date line and arctic circle ceremonies and combine them into a two-day fun-for-all morale event. And fun it was. We may include pictures here in the morale report of different costumes, rites of passage, but that would never do the event justice. So, picture in your minds, about 40 lowly, poor, misguided, slimy pollywogs and bluenoses, who, in their careers have never, at any time, crossed the international date line (going from pollywog to Golden Dragon) OR the arctic circle (transforming a bluenose into an honorable Polar Bear) on a naval or CG vessel.. Oh, what a sorry, undeserving, slimy lot of (so-called) humanity. Friday the second of Sep was the kick-off, when, at 9 a.m., all uninitiated assembled in the helo hangar and were hustled out on the flight deck to greet a glorious (rare) blue sky and 26 degree weather with group exercises, with our ship's doc, Ensign Carr serving as bluenose company commander. Everyone faced aft to run in place , jumping jacks, touch your feet touch your nose, simon says, run in place, THEN, from the helo hangar comes a the bluenose suppression team with a fully charged fire hose on the company formation and WOOSH! The whole lot, civilians, CG, male and female alike, ranging in ages from a 17 year old high school student to over 50 scientists, are flooded with a barely above freezing cascade of water.



A portion of the Arctic Circle initiation ceremonies

G. Tromso, Norway to Dublin, Ireland

1. Held Casino Night
2. Crew had a great time in the casino-decorated messdeck. After many hours of blackjack, craps, and poker, the final auction took place. Prizes included 128, 256, and 512 MB Jump Drives, Ship's Store cards, Alaskan ivory, and a grand prize of an X-Box and game.
3. Played bingo Saturday; prizes included Alaskan ivory, Blockbuster rental cards, candy and popcorn.
4. Held helo hanger movie with popcorn and sodas.

H. Dublin to Seattle

1. Dublin was great with many crewmembers visiting the Guinness brewery and Jameson Irish Whiskey distillery. Many people also traveled to other Irish cities such as Kilkenny and Waterford.
2. The Azores was wonderful with weather from sunny paradise to gale force winds requiring shifting mooring lines. The U.S. Consulate held a dinner/fundraiser for Hurricane Katrina, to which the crew was invited – a good time had by all.
3. St. Maarten held for us a Navy League dinner at an outdoor bar on the water and much snorkeling and diving. The ship sponsored a day of beach volleyball, body surfing, and bouncing on a floating trampoline in the ocean by the nude beaches.
4. Passing through the Panama Canal provided an opportunity for the crew to see something most people don't: the incredible phenomenon of the Panama locks raising the ship from ocean elevation up to that of the lake and back down again on the Pacific side. Family and friends could even watch on the live internet video footage.
5. Cabo San Lucas was a nice short trip, a last taste of the tropics before the ride to home sweet home. Many partook in Jet Skiing and beach-lazing, with most going out together to the local restaurants and watering holes such as Cabo Wabo, where Sammy Hagar made an unexpected appearance.
6. The final bingo of the trip held a special prize that drew a record crowd: a full color, 60 Gig I-pod. Morale raked in a cool \$100 in bingo cards that night. Other prizes included 512 MB jump drives and Oakley shades.

3. Recommendations

Bingo participation dwindled as the trip progressed. The quality of the prizes contributed most to the participation levels. High end electronic prizes such as ipods brought in the largest Bingo crowds. Morale Committee members play a crucial role to the success of morale functions. Designating roles for committee members and establishing a rotation of responsibilities for recurring events such as Bingo Caller and Movie Night setup are important.

CHAPTER VII – PUBLIC RELATIONS

1. Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. Six weeks prior to HEALY getting underway, the PAO visited with the conservator at the CG History Museum at ISC Seattle. PAO presented the conservator a copy of the ship's cruise t-shirt design for AWES-05, which he then sent out to be used as the ship's cachet for philatelists' requests. This process worked well and benefits both the ship and the museum; recommend using this same process for future deployments.
2. HEALY's extended in port period during the first five months of 2005 allowed many groups to tour the ship. Large groups were scheduled and arranged for tours through the PAO. Some of the notable groups that toured the ship include:
 - a. Twenty-five students from the Seattle Maritime Academy. This group uses the decommissioned Coast Guard Cutter POINT DIVIDE as a training vessel. The PAO arranged with the Seattle Boat Station to allow parking on their floating pier for the 82 ft POINT DIVIDE on the day of the Seattle Maritime Academy tour.
 - b. A Girl Scout Troop visited on Armed Forces Day, 21 May 05 and a Boy Scout Troop arranged for and received a tour on a separate occasion.
 - c. Approximately 30 members of the Defense Intelligence Agency (DIA) toured the ship as part of a military familiarization course they were enrolled in that included visiting ISC Seattle for a day.
3. The dependents cruise scheduled for the last day of HEALY's shakedown was canceled due to the rescheduling of the shakedown cruise.
4. The HEALY website was revised to include an Artic West East 2005 page. Weekly updates drafted by the XO and illustrated by the PAO were posted on Sundays.

B. AWES 05-01

1. HEALY hosted a Public Affairs Petty Officer from district eight during the two-week coring mission.
 - a. The primary purpose of the assignment of the PA2 was to document the last POPDIV deployment aboard a Coast Guard icebreaker.
 - b. The PA2 was successful in getting HEALY photos published on the multiple web sites including www.uscg.mil and www.fredsplace.org. Photos were also published on the PA2's personal web site

www.nyxcangemi.com. In addition a photo essay was published in the Military.com newsletter with more than 12 million weekly subscribers.

C. AWES 05-02

1. This NOAA sponsored mission had a well coordinated media aspect. NOAA had a shore side public affairs officer named Fred Gorell. On board the mission coordinator, Jeremy Potter developed a plan for hosting media personnel after they arrived on the ship.
2. NOAA hired a video producer by the name of Joe Bruncsak from Blue Land Media to make the entire cruise and document the science. Joe had two objectives: produce an educational video for NOAA to distribute to Junior High classrooms and capture generic footage to be sent to ABC News. Joe also graciously compiled some of his recording and ROV footage into a DVD for use by the HEALY for a cruise video.
3. NOAA employed a Web journalist for the duration of the cruise by the name of Kelley Elliot. Her responsibilities included writing web logs and illustrating them with photographs for NOAA's website:
<http://oceanexplorer.noaa.gov/explorations/05arctic/welcome.html>.
4. The most significant public relations event during this phase was a science station designed specifically for media coverage. The 15th and final science station for AWES 02-05 was located near the edge of the ice pack within helicopter range of Barrow. Upon arrival at the station, HEALY embarked five members of the media.
 - a. ABC News correspondent Bill Blakemore and producer Clayton Sandell reported on a Global Warming story. While on board Bill Blackmore made 3 live radio broadcasts and one live to tape broadcast to ABC World News Tonight. The footage and interviews that ABC gathered on board will likely be used to produce a Nightline broadcast the first week of August. Copies of the broadcast have been requested.
 - b. Richard Harris of National Public Radio conducted numerous interviews and collected sound bites for "All Things Considered" on the Morning Edition. An in depth report on the science aboard HEALY is scheduled to air in late August or early September. NPR has an excellent archive of their shows on line and HEALY expects to obtain a copy of Richard's coverage through the NPR website.
 - c. Rosie Dimano, a columnist for the Toronto Star wrote several columns while on board. Copies of her articles may be obtained within a week of printing on the Toronto Star website.

D. LTT

NSTR.

E. Dutch Harbor, AK

1. HEALY was not open to public tours while moored in Dutch Harbor. Some VIP tours were entertained including guests of the Coast Guard Marine Inspection Detachment in Dutch Harbor. Also the local television station and public radio station came aboard to interview some of the scientists.

F. AWES 05-03

1. As HEALY approached 80N internet connectivity became unreliable. The XO's weekly update was uploaded without pictures at 78N and by 80N was not able to be uploaded from the ship at all. Updates were emailed to Fred's Place and the HEALY Ombudsman. An attempt made by the shore side SK to upload the website was unsuccessful due to a denied webmaster application for the SK from the Coast Guard Webmaster.
2. HEALY released the press release enclosed in appendix x announcing the arrival at the North Pole. After departing the North Pole the Commanding Officer gave phone interviews to two Seattle area radio stations and to the Coast Guard correspondent for the Navy Times.

G. Tromso, Norway to Dublin, Ireland

1. HEALY hosted a reception for the Tromso Polar Museum upon arrival. Ingeve Kristoferson, the lead scientist from Norway, presented a symbolic rock to the museum. See appendix x for copy of Tromso press release.

H. Dublin to Seattle

1. While moored in Dublin, the US Ambassador to Ireland paid an official visit to the HEALY.
2. HEALY's visit to the Azores corresponded with the American Consulate sponsored Hurricane benefit dinner. Fifteen HEALY crew members attended that benefit and accounted for 20% of the total revenue. HEALY also hosted an official visit from a Portuguese Navy Admiral. See appendix x for copy of Azores press release.
3. The US Navy League in St. Marteen sponsored a dinner for approximately half of the HEALY crew during this port call. The dinner was arranged through a personal contact by HEALY's MPA.

4. BM1 Thomas Hines received a Presidential phone call on Thanksgiving as one of two Coast Guard service members selected to receive a phone call from the President.
5. See Appendix F for a copy of the return to homeport press release.

2. Recommendations

The primary public relations recommendation for future cruises is to train and prepare the shore side SK to do the web updates. Bandwidth and connection difficulties while underway presented numerous website challenges that could be avoided by uploading the website from the shore.

CHAPTER VIII – SUPPLY LOGISTICS

1. Summary

A. Pre-deployment Preparations & Seattle to Barrow

1. HEALY Supply Division started re-supplying upon returning to homeport after the Arctic West Summer 2004 deployment. Prior to departing on the trip, 80% of the annual budget had been executed.
2. Fuel and Lube Oil was procured from DESC Manchester Fuel Department, P.O. Box 8. Manchester WA. 98353. 1,333,281 gallons of F-76 fuel was received at \$1.36 per gallon, and 23,686 gallons of 9250 Lube Oil at \$3.96 per gallon. Fuel on load was done both by barge and at Manchester fuel pier. Lube oil was taken both by truck and at fuel pier. In addition, 23,861 gallons of JP5 Aviation fuel was purchased from DESC Manchester at 1.36 per gallon.
3. HEALY got underway for Shakedown Cruise on 02 May 05. Tugs were arranged through Crowley Marine Services (2401 Fourth Ave, Seattle, WA. (206) 443-8100). Pilot service was arranged through Puget Sound Pilots (101 Stewart St., Suite 900, Seattle, WA. (206) 728-6400). Same tug company was used for both our return to home port and mooring evolutions at Manchester Fuel Pier on 13 May 05.
4. HEALY got underway for AWES05 on 01 June 2005 from Seattle, WA without the assistance of a Pilot. Tugs were arranged through Crowley Marine Services. Supply personnel consisted of SKC Karl Keyes, SK2 Chris Sison, and SK2 Rebecca Arakaki. SK1 Jacques Faur manned the HEALY Shore Support Office.
5. On 10 June 2005 HEALY Supply made arrangements to have CASREP parts (dishwasher parts) delivered to Nome AK via Alaskan Airlines. On 11 June 2005 Healy Supply received misc. parts, mail and CASREP parts that were shipped to Barrow AK via Alaska Airlines. On 13 June 2005 Healy Supply received approximately 600lbs of machinery tools, CASREP parts and mail that was shipped to Barrow, AK via Alaskan Airlines. The office of Alaskan Airlines Cargo in Barrow, AK opens at approx 1000 hrs everyday for the exception of Sundays when they are closed. Phone line for the Barrow office is 907-852-8820.

B. AWES 05-01

NSTR.

C. AWES 05-02

NSTR.

D. LTT

CWO Gustavo Tyler arrived for “breaking-in” transition to become the new Supply Officer.

E. Dutch Harbor, AK

4. Arranged for the delivery of 580,078 gallons MDE at \$2.06 per gallon, from Petro Star Fuel, POC: Neal, 907-339-6600.
5. Fuel containment boom was placed around the ship by North Pacific Fuel. (Cost \$1,200.00)
6. Tractor tug was arranged through Dunlap Towing POC: Annie 360-466-3114. (Cost \$4,800.00)
7. Vehicles were rented through B.C. Vehicle Rental 907-581-1589. (Cost \$880.00)
8. Rented a 5 ton flat bed truck and forklift for the on load of ships supplies from Pacific Stevedoring POC: Rick Zimmerman 907-581-8648 (Cost \$225.00)
9. Crane service was arranged through West Construction Company, POC Lori Browand 907-581-5766 for the off load of science material. (Cost \$1,320.00)
10. SK1 Faur arrived to work out details with regards to shore side and shipboard procurement issues. Member departed back to Seattle at the end of the port call.
11. Shipment of supplies were received with no delays using both barge and air cargo. Shipments were made possible through ISC Seattle.
12. All above items with the exception of crane were requested via LOGREQ through Port Services Kodiak
13. CWO2 Gustavo Tyler relieved CWO William Levitch as the Supply Officer. CWO Levitch departed Dutch Harbor to his next assigned unit.

F. AWES 05-03

7. Several CASREP items were shipped to Barrow AK for further transportation by ODEN and delivered to HEALY upon rendezvous.

G. Tromso, Norway

1. Fuel was arranged by MLCPAC (vpl), 499,999 gallons were taken onboard on 5 Oct 05. Contract awarded to Merlin Petroleum Co, Inc. 315 Main Street, Westport, CT 06880 POC: Adrian Little – Contract number HSCG85-05-N-001MGO.
2. Shore Side Services were provided by, MLS-Multinational Logistics Services Limited, 191 Merchants Street, Valletta VLT 10 Malta, which included the following:

a. Vehicle rental w/driver	\$ 5,262.35
b. CHT removal	\$14,945.00
c. Security Services	\$ 3,095.68
d. Husbanding Fees	\$ 1,836.00
e. Line Handlers	\$ 308.64
f. Flat bed truck w/driver	\$ 577.93 (Note 1)
g. Crane service	\$ 3,429.32 (Note 2)
h. Paint float	\$ 4,202.01
i. Pilotage	\$ 7,298.36(Note 3)
j. Port Charges	\$ 1,234.57
k. Portable Water	\$ 722.22
l. Cell phones	\$ 1,296.29
m. Trash removal	\$ 7,344.00
n. Tugs	\$ 5,092.59
Total charges:	\$56,644.96(Note 4)

(Note 1) 6 pallets of mail, assortment of parts and CASREPS were brought to Tromso via C-130 from Elizabeth City. Flat bed truck was used to pick up cargo from airport and bring back to ship

(Note 2) Crane service used mostly to unload 20K lb van and science gear.

(Note 3) Price includes pilots to shift berths on 05 Oct 05 for fueling evolution.
3. Initial email correspondence was with Arne Furulund, but 24/7 services at pier were provided by Roar Gjertsen also@mls.com.mt, telephone 47-906-02-709. Service provided by husbanding agent was fantastic, any problems were quickly solved and always available for any needs that arose. All charges were in Krone and converted to Dollars using Oanda exchange rate. Rate at time of invoice was 6.48 Krone per Dollar. Payment made in cash because of a 3.5% fee assessed when using credit cards.
4. SKC Keyes departed on 01 October 2005 to man the shore detachment and SK1 Faur reported to complete the trip.

H. Dublin Ireland

1. Shore Side Services were provided by MLS Multinational Logistic Services Limited 191 Merchants Street, Valletta VLT 10 Malta, which included the following:

a. Vehicle rental w/driver	\$ 9,908.54
b. CHT Removal	\$27,439.02
c. Husbanding Agent	\$ 1,492.68
d. Line Handlers	\$ 293.90
e. Pilots	\$ 2,304.88
f. Potable Water	\$ 2,242.29
g. Cellular Phones	\$ 1,172.71
h. Trash Removal	\$ 7,646.34
i. Tugs	\$ 4,170.74
j. Waste Oil	\$ 5,853.66
Total Charges:	\$62,524.76

2. Husbanding agents were Leo McParland and Celine Ruello agency@hamiltonshipping.ie, telephone 353-0-855-9011. All services provided as per LOGREQ. Husbanding agents were very amicable and easy to work with. Agents were available 24/7 and stopped by everyday to check on our needs. All services were billed at the Euro rate and then converted to Dollars using Oanda exchange rate. Rate at time of invoice was 0.82 Dollar per Euro. Payment made in cash because of 3.5% fee assessed when using credit cards.
3. SK1 Steven Selph returned to Seattle to provide assistance at the shore side. SK1 Jacques Faur, SK2 Christopher Sison and SK2 Rebecca Arakaki completed the trip.

I. San Miguel Azores.

1. Shore side services were provided by MLS Multinational Logistics Services Limited 191 Merchants Street, Valletta VLT 10 Malta, which included:

a. Vehicle rental w/driver	\$ 4,691.36
b. CHT Removal	\$ 2,668.52
c. Security Services	\$ 814.82
d. Husbanding Fees-	\$ 1,729.79
e. Line handlers	\$ 1,235.37
f. Forklift	\$ 396.36
g. Pilotage	\$ 1,185.80
h. Potable Water	\$ 925.93
i. Cellular Phone	\$ 185.19
j. Trash Removal	\$ 750.81
k. Tugs	\$ 2,246.92
Total Charges:	\$16,830.87

2. Husbanding agent Martin Lezaola was very friendly and available at any time for any immediate needs. Email: pontadelgada@mls.com.mt, telephone: 351-91-613-4521. All services were billed at the Euro rate and then converted to Dollars using Oanda exchange rate. Rate at time of invoice was 0.81 Dollars per Euro. Payment made in case because of 3.5% fee assessed when using credit cards.

J. St. Marteen, Netherlands Antilles

1. Shore side services were provided by St Maarten Tender Services NV and Bobby's Marina, Juancho Yrasquin Blvd Philipsburg, St. Maarten NA. which included the following:

a. Telephone Services	\$ 484.45
b. Pilot and line handlers	\$ 425.00
c. Water	\$ 366.42
d. Vehicle rental w/driver	\$ 2,760.00
e. CHT Services	\$12,762.82
f. Garbage	\$ 1,176.08
g. Husbanding fees	\$ 2,917.21
Total Charges:	\$20,891.98

2. Husbanding agent Inga Jones husbanding@caribserve.net, telephone: 011-599-542-2366. Extremely proactive, both sewage and garbage done via barge, HA always had representative for all evolutions to ensure hook-ups were done correctly. All services were billed in Dollars. Payment made in cash due to fee assessed when using credit cards.

K. Panama Canal Transit

1. Shore side services were provided by Inchcape Shipping Services, P. O. Box 0823-05456, Zone 7, Panama City, Panama, which included the following:

a. Panama Canal Toll	\$38,868.40
b. Tug service	\$ 4,950.00
c. Wire handling	\$ 2,720.00
d. Inspection fee	\$ 110.00
e. New locomotive fee	\$ 1,200.00
f. Security charge	\$ 400.00
g. Automatic ID system	\$ 150.00
h. Tug assistance	\$ 8,095.19(Note 1)
i. Husbanding fee	\$ 500.00
j. Transportation to airport	\$ 350.00(Note 2)
Total Charges:	\$57,343.59

(Note 1): Due to loss of port anchor, HEALY was considered a vessel with a physical or operating deficiency which added the need to have another tug at locks and Gaillard Cut.

(Note 2) Crew member transported to airport – this included water taxi and transportation from Colon to airport.

2. Husbanding agent Fernando Ayala Fernando.Ayala@iss-shipping.com, telephone: 507-279-4114. Never met husbanding agent and really no need to, all transactions done via email. Two additional charges to the total bill are; bank charge for front payment 0.25% and service charge for payment by using credit card of 3.5% of total costs. All services billed in Dollars and paid via credit card.

L. Cabo San Lucas, Mexico

1. Anchoring services were provided by Inchcape Shipping Services Privada de las Garzas No.22 Col. Residencial de las Garzas La Paz Baja California 23000 Mexico 612-125-1313 which included the following:

a. Husbanding agent	\$ 2,200.00
b. CHT Disposal	\$ 5,100.00
c. Cellular Phones	\$ 610.00
d. Vehicle Rental W/driver	\$ 1,800.00
e. Water Taxi	\$14,400.00
f. Landing Platform	\$ 1,200.00
g. Immigration	\$ 300.00
Total Charges	\$25,610.00
2. Husbanding agents Octavio Armas and Hugo Linares oarmas@maritimex.com.mx. Very attentive to details, always there for any evolution. All services provided were at anchorage. All services paid by purchase order.

M. Seattle, WA

HEALY returned to home port 28 Nov 05. Shore side SK's arranged tractor tug services with Crowley Marine Services (2401 Fourth Ave, Seattle, WA. (206) 443-8100). No pilot requested. Customs Agents visit scheduled upon arrival. Special dumpster for international garbage arranged through Waste Management 7201 W Marginal Way, Seattle, WA (206) 762-3000.

N. Recommendations:

When sending items to Barrow, AK, it would be a good idea to check with airport to see about setting our parts/mail set aside until our arrival. New contract with DHL works well with outgoing mail or parts. The contract is not set up to send anything back from a foreign country to the US. It is wise to find out prior to

shipping parts, what the rules and regulations are to each particular country. We shipped a DHL package with incinerator parts to San Miguel Azores, only to have it held up by customs in Lisbon, Portugal. It took two weeks after HEALY had departed for the item to clear, and arrive in Sao Miguel, Azores. And because our DHL account is not set-up to send it back to the US, the part will have to be mailed back using a Govt. credit card, at a much higher expense. Due to hurricane Wilma our two pallets of mail and parts did not make it to either St Maarten or Panama Canal. These are two good places to get mail delivered, with no problems clearing customs.

2. General Mess

A. Pre-deployment Preparations & Seattle to Barrow

1. After a condensed inport, between deployments and prior to getting under way on AWES05 the General Mess was fully prepared for another extended deployment. The total amount of food stores at time of sailing was \$214,319.77.
2. Division Personnel:
FSCS Forsythe – FS2 Agosto – FS2 Serfass – FS3 Elliott – FS3 Deggans – SNFS Wright. No TAD personnel assigned this trip.

B. AWES 05-01

NSTR.

C. AWES 05-02

NSTR.

D. LTT

NSTR.

E. Dutch Harbor, AK

1. The food stores replenishment for this deployment was set up prior to arrival in Dutch Harbor, using STORES Web Defense Supply Center Philadelphia (DSCP) contractor, which is Food Service of America (FSA). POC: is Jody Hodgins, Jody_Hodgins@fsafood.com. The order template was completed prior to departure from Seattle to avoid connectivity issues. In order to meet the required delivery date, the order must be placed no later than one week prior to arrival in Dutch Harbor. Products purchased were mostly produce and some dairy products, for a total dollar amount of \$25,198.36. Shipments are sent to Dutch Harbor from a shipping company out of Tacoma, WA.

Shipping schedule available through www.horizon-lines.com . Follow on purchases were placed through Highliner Food Services. POC: was Jeff Hancock hfs@arctic.net in the amount of \$4,135.34. While in Dutch Harbor a few last minute substitutions were purchased from the local supermarket Eagle Market and the Alaskan ship handling supply store. These purchases were made via Govt. credit card for a total of \$2,578.83.

2. Division personnel:
Permanent Duty – FSCS Forsythe – FS2 Serfass – FS3 Elliott – FS3 Deggans – SNFS Wright
FS1 Zitting reported on 26 June 05 and FS2 Agosto departed

F. AWES 05-03

NSTR.

G. Tromso, Norway

1. The food stores replenishment for this deployment was set up prior to arrival using Defense Supply Center Philadelphia Europe (DSCPE) via email. POC: was Linda.Harris@dla.mil. The order template was completed utilizing a MILSTRIP Requisition form and sent 30 days prior to arrival to Tromso Norway. This order was shipped from a military source through Germany. We spent \$40,730.15 worth of produce, frozen meats, dairy products and dry stores non perishables. The produce was in a very acceptable state upon delivery. All non perishables and frozen meats are from US producers. Frozen fish, frozen vegetables and some non-perishable items were procured through husbanding agent. Items purchased through agent because they are not available through DSCPE. Total amount for order \$9,011.88 paid in cash.
2. Division personnel:
Permanent duty personnel for remainder of trip – FSCS Forsythe – FS1 Zitting – FS2 Serfass – FS3 Elliott – FS3 Deggans – SNFS Wright

H. Dublin to Seattle

The food stores replenishment for this deployment was set up prior to arrival through the St Maarten NA husbanding agent. POC: Inga Jones - email husbanding@caribservice.net. Total charges for this order, were \$2,303.62 which consisted of produce and soda fountain syrup. All products were shipped from US. The produce was of a good quality, in a very acceptable state upon delivery.

I. Recommendations

Produce received through DSCP contract was in a deteriorated state upon arrival in Dutch Harbor, AK, possibly because it is shipped via barge. For further visits recommend purchasing through alternate vendor listed above (Highliner) using the Government credit card.

3. Ship's Exchange

A. Pre-Deployment Preparations & Seattle to Barrow

1. Preparations for AWES '05 actually began during HEALY's previous deployments. Recommendations from last trip (AWS 2004), as well as lessons learned with respect to re-supply while deployed were incorporated into the planning stages for AWES '05.
2. The exchange purchased new items to conform to changing crew habits. New items purchased were HEALY pint glasses, shot glasses, HEALY water bottles, HEALY crest patch, and ice cream. Ice cream was made available through the purchase of an ice cream vending machine.
3. Due to an electronic malfunction, HEALY Exchange acquired a new cash register during the inport period to replace the one that the exchange has had since 1999. The new register has the capability to store over 1000 items, is equipped with a bar code scanner, and can better regulate inventory.
4. All major exchange on-loads were scheduled to arrive on two different periods – prior to shakedown and prior to AWES 2005. Final major purchase breakdown is as follows:
 - a. Northstar Sportswear (Ballcaps/Shirts/Coffee Cups): \$14,028
 - b. Tully's Coffee Corporation (Coffee/Syrups/Cups/Lids): \$4,024
 - c. Fairn & Swanson (Tobacco): \$5,078
 - d. H&H Studios (Ship's Plaques): \$1,578
 - e. Sysco Food Corporation (UHT Milk): \$2,459
 - f. Admiral Exchange: (Zippo Lighters): \$912
 - g. Uniform Distribution Center (Uniform Articles): \$148
 - h. Misc Vendors: \$2,200Total Purchases: \$30,427
5. During the shakedown cruise, the exchange totaled \$3,579.51 in sales. 24% of the sales were coffee related, 18% tobacco related, and 27% T-shirt and sweatshirt related. With many departing and reporting personnel, the sales for paintings, plaques, and ball caps increased.
6. The exchange purchased an ice cream freezer and ice cream to sell as an additional item. The freezer cost \$628 and \$571 of ice cream was purchased for the initial stocking.

7. During the Seattle to Barrow transit the exchange totaled approximately \$4,000 in sales. 14% of the sales were coffee related, 40% tobacco related, and 42% clothing related. The remainder of sales were candy and souvenirs.

B. AWES 05-01

During the first science phase the exchange totaled approximately \$5,600 in sales. 14% of the sales were coffee related, 32% tobacco related, and 38% clothing related. The remainder of sales were candy and souvenirs.

C. AWES 05-02

During the second science phase the exchange totaled approximately \$7,100 in sales. 24% of the sales were coffee related, 19% tobacco related, and 38% clothing related. The remainder of sales were candy and souvenirs.

D. LTT

During LTT the exchange totaled approximately \$1,900 in total sales. 12% of the sales were coffee related, 19% tobacco related, and 32% clothing related. The remainder of sales were candy and souvenirs.

E. Dutch Harbor, AK

1. The exchange purchased \$2,565 worth of supplies in Dutch Harbor. Goods bought included snacks, candy, cold drinks, hot cups, toiletries, disposable cameras, Alaska Souvenirs, and cigarettes.
2. Alaska Ship Supply, located about a quarter mile north of the Coast Guard pier, was the best source for bulk food items and cigarettes. We received a Coast Guard discount on general supplies and Sea Store price on cigarettes.
3. The Eagle/Safeway grocery store, located adjacent to the Grand Aleutian Hotel, was used for additional supplies that could not be found Alaska Ship Supply.
4. The exchange traded \$1,000 of large bills for small denominations at the Key Bank, located adjacent to the Grand Aleutian Hotel.

F. AWES 05-03

1. The ice cream freezer was made operational by the DC's and EM's and the exchange began selling ice cream.
2. During the third science phase the exchanged totaled approximately \$13,800 in sales. 22% of the sales were coffee related, 28% of the sales were tobacco

related and 40% were clothing related. The remainder of the sales were candy and souvenirs.

G. Tromso, Norway

The cost of goods in Tromso is extremely expensive compared to other ports. Grocery stores are abundant. The exchange purchased some snacks and candy but all unnecessary purchases were avoided due to the high costs.

H. Dublin to Seattle

1. The exchange did not make any purchases in Dublin.
2. The exchange purchased juice in the Azores.
3. The exchange purchased juice in St. Maarten.
4. The exchange purchased juice and candy in Cabo San Lucas.

2. Recommendations

1. Be sure to purchase enough items for the ship's store to last the duration of the patrol. For example, crew t-shirts and ball caps were sold out at least one month before returning to homeport. One way to remedy this situation is to look at what the purchase size was for the previous patrol and adjust the figures accordingly.
2. Inventory the items in the ship's store and update bar codes for items on a regular basis (bi-monthly) as this will reduce the amount of work needed to be done for quarterly reports and for annual audits.

CHAPTER IX – MEDICAL

1. Summary

A. Pre-Deployment Preparations, & Seattle to Barrow.

1. HSC Andersen is the permanent HS assigned. All PCS HEALY members received required medical and dental appointments from ISC Seattle. Ships crew started on Hep A/B AB immunization series as required, currently at 17%. Semi-annual weigh ins completed. 10,000 dollars worth of pharmaceuticals ordered and received through the ISC Seattle Pharmacy. All drugs received were entered into inventory. Durable medical goods ordered and received through ISC Seattle Medical Clinic, all entered into Inventory. Preventive Maintenance completed on all medical equipment Oct 2005. All oxygen equipment was hydrostatically tested. New Medical Cabinets ordered for supply room.
2. One crewmember left on shore for medical treatment. Began Inventory and restocking all medications and medical supplies, as were able. Collected medical history screening forms from science members.
3. 01Jun05–04June05- ENS Carr was the TAD Physician Assistant onboard. Underway to Barrow. Departed Seattle at 97% for medical and dental readiness. Sailed with all crewmembers but one. Crew in good spirits, ready to assume responsibilities of the mission. Proceeded to Barrow, AK to embark scientists via helicopter. Twelve patients evaluated. One active duty member placed sick in quarters for three days. Inspections complete. No significant discrepancies.



HSC Andersen and ENS Carr PA-C enjoying some ice liberty

4. 05Jun05-11Jun05- Fourteen patients were treated with various medical conditions. One placed sick in quarters for one day. No significant ailments. Inspections complete without discrepancies. PML's Inventoried, expired items were replaced.

B. AWES 05-01

1. 12Jun05-18Jun05 - Twelve patients treated with various medical conditions. Twenty four science party members embarked June 13, all medical forms received and reviewed, no concerns noted. Inspections complete. No significant discrepancies. Provided first aid training for burns, smoke inhalation, and transporting a patient with the rescue litter to the stretcher bearers.
2. 19Jun05-25Jun05- Thirteen patients treated with various medical conditions. One scientist reported to sickbay complaining of chest pain, member was evaluated and treated. Consulted with the Flight Surgeon. All tests were negative; SNM is scheduled to depart June 26, 2005 and advised to follow up with family doctor. Inspections complete. No significant discrepancies. New medical cabinets installed in sickbay supply room. Inventory started in BDS 2, and sickbay. No training provided this week.



ENS Carr administering treatment

C. AWES 05-02

1. 26Jun05-02Jul05– Ten patients treated with various medical conditions. One member requires a dental appointment in Dutch to replace a crown. Requested information for available Dentist in Dutch Harbor from MLCPAC. Twenty four science party members departed. Thirty five science party members embarked June 27 to begin AWES05/02, all medical forms received and reviewed, no concerns noted. Inspections complete no significant discrepancies. Provided first aid training for a compound fracture of the tibia to the stretcher bearers. Stretcher Bearers practiced transporting SEYMOUR (medical training mannequin) up ladders on the rescue litter. Provided general military training to all hands, subj. First aid treatment for GTMO wounds. Quarterly controlled drug inventory completed, no discrepancies noted.
2. 03Jul05-09Jul05- Ten patients treated with various medical conditions. Inspections complete no significant discrepancies. Provided training for basic first aid, splinting, and treatment for shock to the stretcher bearers. Provided general military training to all hands, subj. Basic First Aid.
3. 10Jul05-16Jul05- Seventeen patients treated with various medical conditions. One member sent home on emergency leave. While in, Seattle member was evaluated by ISC Medical and diagnosed with severe depression. Member will remain at ISC Seattle; a medical board will be prepared. Preparations to ADASIGN member to Seattle have begun. Inspections complete no significant discrepancies.
4. 17Jul05-23Jul05- Seven patients treated with various medical conditions. Inspections complete. No significant discrepancies. Inventoried BDS 1 on the mess deck, all gun bags, and Poison Antidote locker, expired meds replaced and spreadsheet updated. Provided training to the stretcher bearers on proper use of the AED with CPR and how to administer Oxygen to a patient suffering from smoke inhalation.

D. LTT

24Jul05-30Jul05– Thirty five science party members departed 26July05 marking the end of AWES05/02. LTT members embarked to begin training. Inspections complete. No significant discrepancies. 14 drills planned and imposed. Overall the stretcher Bearers and crew did great with the medical drills. Suggestions from LTT were to install more thermometers throughout the ship and maintain training files for the stretcher bearers in sickbay.

E. Dutch Harbor, AK

31Jul05-06Aug05– Moored in Dutch Harbor. Forty eight science party members embarked Aug 1 to begin AWES03/05, all medical forms received and reviewed, no concerns noted. HSC Connors from BOWTWELL requested ENS Carr to evaluate three members of his crew, all found FFD. Eight patients evaluated on HEALY, two referred to Anchorage for dental issues. Members received care with the assistance of HS1 Ramon Martinez, CG Liaison in Anchorage and returned to the ship Aug 5th. No training held this week. Inspections complete. No significant discrepancies.



Moored in Dutch Harbor, AK

F. AWES 05-03

1. 07Aug03-13Aug05 – Departed Dutch Harbor 07Aug. AWES 03/05 begins. Eleven patients treated with various medical conditions. ET2 Regele returned to the ship as a nationally certified EMT! No training held this week. Inventoried Sickbay consumables, removed expired items. Inspections complete. No significant discrepancies.
2. 14Aug05-20Aug05 –Nine patients treated with various medical conditions. Inspections complete. No significant discrepancies. Drill held on Aug 19, ENS Buser suffered from smoke inhalation and burns. Stretcher bearers and crew did a great job. Training-1st session of CPR provided to all hands. Corresponding with ISC Seattle medical clinic to have the Influenza vaccine shipped to San Diego and delivered to the ship prior to return to home port. Hep A/B vaccine administered to members due onboard. Currently at 61%.

3. 21Aug05-27Aug05– Ten patients treated with various medical conditions. Inspections complete. No significant discrepancies. Inventoried BDS2, Sickbay supplies. A few items need to be ordered due to expiration. Stand alone drill held on the morning of Aug 26. ET2 Regele's right hand amputated by a WTD. Initial responders met training objectives. DCTT drill held in the afternoon, victim was DC3 Wilson who suffered from exposure to toxic gas. Stretcher Bearers and initial responders met training objective. Reviewed the administration of oxygen to a patient in need with the stretcher bearers. 2nd session of CPR instruction provided to all hands.
4. 28Aug-03Sep05 – Nine patients treated with various medical conditions. Inspections completed. No significant discrepancies. No medical drills held this week. Held training for stretcher bearers, reviewed the 8 GTMO wounds, and critical items for training objectives.
5. 04Sep05-10Sep05- Five patients treated with various medical conditions, all FFD. Inspections completed. No significant discrepancies. Sep 9 stand alone drill held; FS1 Zitting suffered a sucking chest wound. First responders needed some assistance with the treatment. Training held on site. After speaking to some members on board it is evident that crews' spirits are dwindling, they are tired and easily irritated. We are all looking forward to the North Pole and Tromso.
6. 11Sep05-17Sep05- Five patients treated with various medical conditions, all FFD. Inspections completed. No significant discrepancies. Sep 16, all hands training held; Subj was the HCP program and heat stress. DCTT drill held same day, SNBM Buford sustained a compound right tibia fracture. First responders and stretcher bearers did great. Practiced transporting the medical dummy (Seymour) up the ladders, best transport thus far. Crew thoroughly enjoyed the North Pole. Time shift of 10 hours definitely took its toll on members. Medical would suggest that we never do that again! It took the crew at least a good seven days to adapt.



HEALY Crew at the North Pole September 12, 2005

7. 18Sep05-24Sep05- Nine patients treated with various medical conditions, one member FFLD with back pain, all others FFD. Inspections completed. No significant discrepancies. Sep 23rd, provided all hands training on Sexually transmitted diseases. DCTT drill held, BM3 Duque suffered a compound fracture of his right arm. First responders needed some on site training with the treatment. Stretcher bearers completed the treatment, and practiced transporting the medical dummy (Seymour) forward and down the ladders. We need more practice transporting patients down ladders.
8. 25Sep05-01Oct05- Eighteen patients treated with various medical conditions, one member still FFLD with ongoing back pain. Eleven patients suffering from seasickness and placed SIQ for 24hours. We are going through some very heavy seas. No Medical drill or training this week. Inspections completed. No significant discrepancies.

G. Tromso, Norway

02Oct05-08Oct05- Forty eight science party members departed between 02Oct and 04Oct, marking the end of AWES03/05. The crew is relieved and ready for some R&R! Arrived in Tromso, Norway on Oct 1, water tests satisfactory. Departed Norway Oct 5, provided sea sick medications to members as needed. Nine patients treated with various medical conditions. Two members placed SIQ for 24 hours for a viral syndrome, probably picked up in Tromso, Norway. No medical drill or training provided this week. Inspections complete; no significant discrepancies.

H. Dublin to Seattle

1. 09Oct05-15Oct05- Five patients treated with various medical conditions. One member still FFLD due to back pain. We are making arrangements to send member back to Seattle TAD for further evaluation. We have provided all that care we are capable of. Arrived in Dublin, Ireland on 10Oct, Water tests satisfactory. Inspections complete; no significant discrepancies.
2. 16Oct05-22Oct05- Five patients treated with various medical conditions. Many members are being treated for cold symptoms. That is expected as we visit port calls. One member sent back to Seattle, TAD to NESU for further treatment and evaluation of back pain. Inspections complete. No significant discrepancies. Completed Hep AB immunizations for all that were due, now 75% complete. All semi annual weigh-ins completed and entered into People Soft including the TAD members on board. Narcotic Controlled drug inventory completed 19Oct05, no discrepancies noted. BDS1, Poison antidote locker, and Gun bags all inspected and inventoried. Busy week. Medical Drill 21Oct MSTC Snider suffered from chest pain progressing into cardiac arrest, members practiced providing CPR on Annie. Job well done by the MST's, and MSTC acting capabilities made it believable to all involved!
3. 23Oct05-29Oct05-Sixteen patients treated with various medical conditions. Arrived in Azores, Portugal on 22Oct, Water tests satisfactory. Inspections complete; no significant discrepancies. The ship is not dealing very well with the heat. Heat Stress (considered a foreign term on this winter ship) was monitored throughout the engineering spaces. Maximum stay times ranged from one hour to two hours and fifteen minutes. Many members are still acclimating to the hot weather.
4. 30Oct05-05Nov05- Eight patients treated with various medical conditions. Medical Drill 1Nov, EM2 Haugk suffered from smoke inhalation. The stretcher bearers and first responders did well. ENS Carr provided Triage and blood borne pathogen training. Arrived in St. Marteen Nov 4. Tested the water from the pier on Nov 5, no trace of chlorine present. Colilert test performed with negative results. Inspections complete; no significant discrepancies. Working on getting appointments set up in Seattle. Administered more HepAB immunizations, currently at 82%. Administered PPD's, and Tetanus Diphtheria immunizations, currently at %100.
5. 06Nov05-12Nov05- Departed St. Marteen 06Nov05. Nine patients treated with various medical conditions. Inspections complete; no significant discrepancies. Heat Stress conducted in AMR #7, #4, #1 upper and lower, and Engine rooms one and two. Maximum stay time determined and AEO and EO notified.

6. 13Nov05-19Nov05- Anchored in Cabo San Lucas, Mexico Nov 18. All hands advised to drink only bottled water. Four patients treated with various medical conditions. Inspections complete; no significant discrepancies.
7. 20Nov05-28Nov05- Departed Cabo San Lucas, Mexico Nov 21. Reviewed medical forms for dependents cruise, no concerns noted. Crew had a great time and is ready to go home! Happy Thanksgiving. On 24 Nov05, Navy League member med-evaced due to swollen tongue. Great job by all! Thirteen patients treated with various medical conditions. Inspections complete; no significant discrepancies.

2. Recommendations

- A. Closely monitor all members' dental status and ensure all follow up dental appointments have been kept and needed dental work is completed prior to departing Seattle. Too many members had to be flown off the ship for dental work that should have been completed prior to departing, mostly due to the members' failure to follow up with dental.
- B. The dependants cruise medical worksheet needs to be modified to include more information. May consider using the same medical questionnaire that is used for scientists. This will assist the medical department with deciding whether dependants are fit to ride the ship.
- C. All in all it was a great trip. We had all the supplies we needed, and great support from ISC Seattle Medical, and CG Liaison in Anchorage, AK.

CHAPTER X - DIVING

1. Summary

A. Pre-Deployment Preparations & Seattle to Barrow

1. During the 2005 inport, the dive locker was restocked with items that had been expended or lost, such as fins, weights, dry suit cuffs and neck seals, and gloves. The compressor was air tested and the gauges calibrated. SCUBA tanks (20) were given Visual Inspections in accordance with tank maintenance procedures. Tank hydrostatic tests are current until 2009. All APEK regulators and EXO masks were given proper PMS. Three sets of EXO comms were procured to replace badly rusted units. Vidmars and a new cabinet were installed to better organize tools and equipment.

2. Three divers transferred from HEALY. One current HEALY member successfully completed dive school during the inport. Due to the number of dives requested by the HLY05-02 science party, one diver who was due to rotate was



LCVP Crew and dive team

retained through this mission, and the dive officer from POLAR SEA joined HEALY as a TAD member. This gave the team five members, with two leaving after HLY05-02. The AWES'05 dive team consisted of: LTJG Jessica Noel (Dive Officer), ENS Keidi Niemann, ENS Ariel Piedmont (POLAR SEA), MKCS Mick Huff, and BM2 Phil Dawalt.

3. During the transit from Seattle to Barrow, ENS Piedmont and LTJG Noel provided extensive training on the Emergency Evacuation Hyperbaric Stretcher for the divers, medical personnel and aviation detachment. The training covered symptoms of decompression illness and how to treat it in a chamber, the proper use of the chamber, and how to install the chamber in the helicopter for transport. This training was a great refresher for those who had used the chamber before and a significant learning event as none in attendance had actually put one into a helicopter. The set-up and helo installation was practiced twice, once empty and once with a volunteer diver.

B. AWES 05-01

1. This bottom coring and sub-bottom profiling mission did not require any dive operations. The team spent the time cleaning and organizing the locker in preparation for the next science mission. Each diver ensured they had all of their personal gear ready for diving. As a group, the divers prepared harnesses, buoyancy compensators, tanks, and the surface supplied diving (SSD) equipment for upcoming dive operations.



Emergency Evacuation Training for divers, aviators, and medical personnel

2. The dive team did pre-dive maintenance on the EXO full face masks, including communications checks, to ensure they were ready for diving. The landing craft, HEALY-3, was given a “ship check” to determine layout of dive gear and if any discrepancies needed attention. A plug had to be designed to connect the SSD comms and air console to a 12V power receptacle in the HEALY-3 cabin. At the end of this two-week mission, the dive gear was ready, the SSD equipment and tanks were staged in HEALY-3, and the dive locker was ready to accommodate the science divers for the next phase.

C. AWES 05-02

1. The second mission of AWES'05 was in support of the NOAA Ocean Exploration program. To accomplish the objectives of the under-ice and pelagic biota studies, the science party included three science divers and requested assistance from HEALY's



Science divers conducted video transects of the ice bottom

dive team. The science divers were required to adhere to the CG policy outlined in the CG Diving Policies and Procedures Manual, COMDTINST M3150.1B (Ch 5.E.6). The divers' certifications were provided to the Dive Officer prior to the mission. Also IAW this instruction, the CG divers would not operate in buddy pairs with the science divers and would not supervise their dives.

2. HEALY provided the science divers with six single SCUBA tanks, dive weights, and space in the locker for drying, maintenance and stowage of their gear. The dive team ensured all tanks were charged (filled with compressed air) each day. The science divers were performing SCUBA dives, while the CG divers conducted surface supplied dives. For both teams, divers were tended via tending line, buddy line, and/or umbilical.



Science SCUBA divers on an ice floe

3. The first diving day, both teams did practice dives to get familiar with the type of sampling that needed to be accomplished, including video surveys, ice bottom transects, and organism collections. The science team focused on the ice bottom by taking video and identifying, counting and collecting amphipods. The HEALY divers were put to work collecting ctenophores (comb jellies) from the water column.

4. The science divers dove almost daily and typically from the ice. They loaded their gear on HEALY's sleds, deployed via the "man basket" and pulled the sleds to the dive site. HEALY provided boxed lunches. Only on two occasions did the science divers deploy on HEALY-3 with the CG team, and even then they would set-up their dive site on the ice. This worked out well because the divers were not in each other's way in the water and the crowding on the boat was kept to a minimum.



CG Diver collecting Comb Jelly Fish

5. HEALY's dive team utilized HEALY-3 as the dive boat due to the large amount of gear associated with SSD. This involved the boat crew consisting

of a coxswain, crewman/bear watch, and engineer, and often included one or two break-ins. One scientist accompanied the team to organize the sampling. One or two additional CG personnel were brought along as dive tenders; when



Samples of the two species of Comb Jelly Fish collected

boat engineer would tend. The five dive team members made up the side as dive supervisor, two divers, console operator, and standby diver. The dive side was set up with two SSD rigs with EXO mask and emergency gas supply (EGS) bottles, one extra full set-up, and the standby SCUBA rig (set of double tanks with separate first stage regulators). The bin containing the five sets of double tanks and SSD console was removed after each dive in order charge the tanks and protect the console.

6. The team dove at 12 of 14 stations, with each evolution (from boat deployment to recovery) lasting approximately four hours. Boxed lunches and coffee were a necessity. The dives were primarily limited by diver temperature as most of our collections were at 40-50 feet; table limits were the secondary limiter. Two divers would launch and a mesh bag containing plastic jars was lowered to the approximate depth where the ctenophores were expected. At 30 and 40 feet, they would stop to look for the jellies. When they



Coast Guard Divers suspended by umbilical air supply and tending line

were located, the divers would take a jar and go to work. Collecting the ctenophores proved to be an often-frustrating task. Some species had long tentacles that they would mostly retract when disturbed, making it relatively

easy to gently scoop them into a jar. Others were very delicate and would get distorted and pushed away by the water movement around the jar. Those were easier to collect with a double-ended jar that had twist-tops on both ends. Both types had to be collected carefully.

7. At each dive site, two to four divers would be deployed depending on the number of ctenophores in the area and the divers' bottom time. Five sets of double tanks provided more than enough air for four divers to have 30-60 minute dives. The standby diver was always a clean diver. It took a few dives for each member to figure out their individual comfort level of thermal layers and glove liners. The biggest recurring problem was leaking gloves, indicating the need for research and attainment of appropriate gloves.
8. The HEALY dive team had one case of mild hypothermia triggered by leaking gloves. The diver was removed from the water and placed in the heated cabin of HEALY-3 in dry clothing, a blanket and Arctic coat. There was also one uncontrolled ascent as a diver moved between depths to collect samples but did not adjust dry suit air. After a few minutes of questioning and examining, the diver returned to depth and work. Given the frigid, ice-covered environment, the dives went smoothly and without major complications. The scientists were happy with their samples and the divers were happy with their dives.
9. During the 12 diving days, each diver obtained four to seven dives with bottom times between 20 and 70 minutes at depths of 30 to 100 feet. Total combined bottom time for all five divers was nearly 22 hours and over 140 samples were collected.



**Samples of Comb Jelly
Fish collected by divers**

10. Dive Log

Date	Station	Diver	TBT (min)	Depth (ft)	Schedule
28-Jun-05	2	Niemann	:22	30'	30':30
		Piedmont	:22	30'	30':30
29-Jun-05	3	Piedmont	:58	75'	80':60
		Dawalt	:34	55'	60':40
3-Jul-05	4	Noel	:56	54'	60':60
		Dawalt	:22	32'	35':25
		Niemann	:27	44'	50':30
5-Jul-05	5	Niemann	:15	50'	50':15
		Piedmont	:43	50'	50':50
		Dawalt	:23	40'	40':25
7-Jul-05	6	Noel	:28	50'	50':30
		Niemann	:38	50'	50':40
		Dawalt	:60	45'	50':60
		Piedmont	:30	60'	60':30
9-Jul-05	7	Huff	:25	75'	80':25
		Noel	:31	80'	80':35
11-Jul-05	8	Noel	:26	81'	90':30
		Piedmont	:30	88'	90':30
14-Jul-05	9	Niemann	:34	80'	80':40
		Dawalt	:34	80'	80':40
		Piedmont	:16	100'	100':20
16-Jul-05	11	Noel	:38	43'	50':40
		Huff	:38	61'	70':40
		Niemann	:46	55'	40':50
		Dawalt	:46	40'	60':50
20-Jul-05	13	Noel	:44	60'	60':50
		Dawalt	:38	80'	70':35
		Piedmont	:30	70'	80':40
		Huff	:37	52'	60':40
23-Jul-05	15	Dawalt	:69	55'	60':70*
		Noel	:46	42'	50':50
		Huff	:31	48'	50':40
24-Jul-05	15	Niemann	:60	50'	50':70
		Piedmont	:60	56'	60':60
		Dawalt	:21	55'	60':25

* Diver completed a 7 minute decompression stop at 10 feet.

D. LTT

1. After the HLY05-02 science party debarked at Barrow, AK, the dive team again cleaned and organized the locker. All of the heavily used gear was rinsed and dried thoroughly before stowing. The locker and equipment was again ready for use.
2. Plans for restructuring and renovating the locker were initiated. These changes include removing the miscellaneous UPS, moving the compressor to an approved location just outside of the locker but in the hanger, and converting the head into a drying room for wet gear. Shelves will also be installed in the locker and drying room and some of the lockers will be removed. Most of this will occur during the next inport but some of the prep work can be done while still underway.

E. Dutch Harbor, AK

NSTR.

F. HLY05-03

1. There were eight members on HEALY (including two TAD) who are very interested in the CG dive program. The Dive Officer talked with them about what it takes to get into and successfully complete dive school and what to expect as a CG diver. The prospective candidates started a dive school prep workout and were given a baseline test to determine areas of improvement for push-ups, sit-ups and pull-ups. The Dive O will continue to conduct these progress tests each month for the duration of the deployment.
2. Upon Dive Officer's request, the EM division investigated the UPS in the locker. They found that it had been installed to support a science van on the port 02 deck but was not correctly configured. There was a matching UPS on the starboard side of the hangar that was also investigated. The concern with it being in the dive locker was that wet gear was frequently hung from the overhead near the UPS. It has been removed.

G. Tromso, Norway

NSTR.

H. Dublin to Seattle

1. Progress tests for candidates.
2. Training for current divers.

2. Recommendations

- A. Determine boxed lunch needs prior to deployment to allow the FS division to stock and plan accordingly.
- B. Research better dry gloves.
- C. Better dry suit familiarization prior to deployments with dive ops.



HEALY's 2005 Dive Team (Left to Right): BM2 Dawalt, ENS Piedmont, ENS Niemann, LTJG Noel, MKCS Huff

Appendix A

Chronology of Major Events

W 01 1007T Jun: Underway from Homeport, Seattle, WA
W 01 1501T Jun: Embarked CG helo 6567 vicinity Eastern Bank, Puget Sound
Su 05 0913U Jun: Embarked CG helo 6529 vicinity Kodiak Island, AK
W 08 1639U Jun: Crossed 60° - 00'N, 168° - 07'W Northbound
F 10 0711U Jun: Crossed Arctic Circle, 66° - 33'N, 168° - 12'W Northbound
M 13 1000U Jun: Embark HLY 05-01 via helo vicinity Barrow, AK
M 13 1800U Jun: Entered ice 71° - 35'N, 156° - 55'W
Sa 25 2133U Jun: Exited ice 71° - 41'N, 157° - 01'W
Su 26 0900U Jun: Disembark HLY 05-01 via helo vicinity Barrow, AK
M 27 0900U Jun: Embark HLY 05-02 via helo vicinity Barrow, AK
M 27 2014U Jun: Entered ice 71° - 39'N, 156° - 25'W
Tu 26 0247U Jul: Exited ice 72° - 12'N, 156° - 51'W
Tu 26 0900U Jul: Disembark HLY 05-02 via helo and LCVP vicinity Barrow, AK
Th 28 0321U Jul: Crossed Arctic Circle, 66° - 33'N, 168° - 13'W Southbound
F 29 1313U Jul: Crossed 60° - 00'N, 168° - 27'W Southbound
Su 31 1025U Jul: Moored Dutch Harbor, Alaska after 60 day underway for 5 day portcall
M 01 0900U Aug: Offload HLY 05-02 gear, take on fuel, stores, supplies in Dutch Harbor, AK
Th 04 0900U Aug: Embark HLY 05-03 in Dutch Harbor, AK
F 05 1000U Aug: Underway from Dutch Harbor, AK
Sa 06 1413U Aug: Crossed 60° - 00'N, 168° - 19'W Northbound
M 08 0125U Aug: Crossed Arctic Circle, 66° - 33'N, 168° - 31'W Northbound
Tu 09 1313U Aug: Entered ice 73° - 51'N, 162° - 51'W
Th 01 0247U Sep: Rendezvous with Swedish Ice Breaker ODEN, 84° - 11'N, 150° - 51'W
M 12 0758U Sep: Reached North Pole
M 12 1610U Sep: Departed North Pole
Tu 13 0200U Sep: Advanced clocks 10 hours to Noon, 121200 (- 2 B) Norwegian D.S.T.
F 23 0955B Sep: Exited ice 82° - 32'N, 045° - 16'E (Re-entered for science further west)
Sa 24 1313B Sep: Departed company with Swedish Ice Breaker ODEN, 81° - 48'N, 027° - 56'E
Tu 27 0915B Sep: Exited ice 80° - 09'N, 006° - 13'E
Th 29 1430B Sep: Flew off helos 6529 and 6567 for fixed wing airborne shipment stateside
F 30 1009B Sep: Moored Tromso, Norway after 56 day underway for 5 day portcall
Sa 01 1100B Oct: Disembark HLY 05-03, offload gear, take on fuel, stores, supplies
W 05 0814 B Oct: Underway from Tromso, Norway
Th 06 2312A Oct: Crossed Arctic Circle, 66° - 33'N, 007° - 44'E Southbound
Sa 08 0637A Oct: Crossed Prime Meridian, 62° - 13'N, 000° - 00'
Sa 08 2058A Oct: Crossed 60° - 00'N, 003° - 49'W Southbound
M 10 1503A Oct: Moored Dublin, Ireland for 7 day portcall
M 17 1121A Oct: Underway from Dublin, Ireland
Sa 22 0834Z Oct: Moored Ponta Delgada, Sao Miguel, Azores, Portugal for 4 day portcall
W 26 1415Z Oct: Underway from Ponta Delgada, Sao Miguel, Azores, Portugal
Th 03 1947Q Nov: Moored St. Maarten, Netherland Antilles for 3 day portcall
Su 06 1839Q Nov: Underway from St. Maarten, Netherland Antilles
Th 10 1938R Nov: Commence Panama Canal transit Atlantic to Pacific
F 11 0427R Nov: Conclude Panama Canal transit
F 18 1013T Nov: Anchored Cabo San Lucas, Mexico for 3 day portcall
M 21 1356T Nov: Underway from anchorage Cabo San Lucas, Mexico
M 28 0913U Nov: Moored Homeport Seattle, Washington

Appendix B

1200 POSITIONS

USCGC HEALY (WAGB 20)

ARCTIC WEST / EAST SUMMER 2005 TRACK HISTORY

DATE/TIME	1200 POSITION	DAILY NM	CUMULATIVE
011000T JUN 2005	DEPART SEATTLE, WA	0.0	0.0
011200T JUN 2005	47-50.0N 122-27.0W	19.0	19.0
021200T JUN 2005	49-30.0N 129-08.0W	294.0	313.0
031200T JUN 2005	51-45.2N 136-34.3W	322.0	635.0
041200U JUN 2005	54-06.6N 144-44.7W	329.0	964.0
051200U JUN 2005	56-25.7N 153-12.0W	323.0	1287.0
061200U JUN 2005	55-12.7N 156-03.3W	249.0	1536.0
071200U JUN 2005	54-19.3N 164-39.8W	325.0	1861.0
081200U JUN 2005	58-48.8N 167-28.8W	294.0	2155.0
091200U JUN 2005	63-51.4N 166-37.1W	313.0	2468.0
101200U JUN 2005	67-03.6N 167-59.7W	257.0	2725.0
111200U JUN 2005	70-47.5N 161-23.9W	298.0	3023.0
121200U JUN 2005	71-12.1N 158-41.7W	146.0	3169.0
131200U JUN 2005	71-16.5N 157-05.6W	92.0	3261.0
141200U JUN 2005	72-15.8N 156-48.9W	89.0	3350.0
151200U JUN 2005	72-25.9N 157-03.3W	26.0	3376.0
161200U JUN 2005	72-29.4N 157-15.7W	5.0	3381.0
171200U JUN 2005	72-31.7N 157-33.2W	6.0	3387.0
181200U JUN 2005	72-34.2N 157-54.6W	7.0	3394.0
191200U JUN 2005	72-53.4N 158-32.03	50.0	3444.0
201200U JUN 2005	72-54.0N 158-26.1W	19.0	3463.0
211200U JUN 2005	72-51.4N 158-24.3W	35.0	3498.0
221200U JUN 2005	72-41.8N 157-25.6W	44.0	3542.0
231200U JUN 2005	72-31.0N 156-56.9W	30.0	3572.0
241200U JUN 2005	72-17.9N 156-36.2W	26.0	3598.0
251200U JUN 2005	71-37.6N 156-51.5W	63.0	3661.0
261200U JUN 2005	71-21.1N 156-49.1W	97.0	3758.0
271200U JUN 2005	71-21.6N 156-49.4W	92.0	3850.0
281200U JUN 2005	72-18.9N 155-46.3W	75.0	3925.0
291200U JUN 2005	72-23.5N 155-17.0W	24.0	3949.0
301200U JUN 2005	72-21.5N 155-24.5W	3.0	3952.0
011200U JUL 2005	72-20.6N 155-18.3W	9.0	3961.0
021200U JUL 2005	72-34.6N 155-14.8W	25.0	3986.0

031200U JUL 2005	72-32.3N 155-32.6W	6.0	3992.0
041200U JUL 2005	73-13.0N 153-54.1W	61.0	4053.0
051200U JUL 2005	73-25.3N 153-25.1W	19.0	4072.0
061200U JUL 2005	73-32.2N 153-18.5W	24.0	4096.0
071200U JUL 2005	73-53.8N 153-36.9W	38.0	4134.0
081200U JUL 2005	74-07.1N 153-33.1W	15.0	4149.0
091200U JUL 2005	74-21.3N 151-38.1W	43.0	4192.0
101200U JUL 2005	74-26.2N 151-51.3W	8.0	4200.0
111200U JUL 2005	74-34.7N 152-03.5W	22.0	4222.0
121200U JUL 2005	74-33.7N 152-11.7W	9.0	4231.0
131200U JUL 2005	75-10.9N 155-56.7W	86.0	4317.0
141200U JUL 2005	75-12.5N 155-52.2W	5.0	4322.0
151200U JUL 2005	75-43.8N 158-32.0W	60.0	4382.0
161200U JUL 2005	76-01.9N 160-37.4W	42.0	4424.0
171200U JUL 2005	76-00.0N 160-35.4W	10.0	4434.0
181200U JUL 2005	76-26.4N 163-27.7W	59.0	4493.0
191200U JUL 2005	76-02.4N 162-47.5W	34.0	4527.0
201200U JUL 2005	75-17.5N 161-19.0W	61.0	4588.0
211200U JUL 2005	74-59.5N 161-06.8W	20.0	4608.0
221200U JUL 2005	74-10.5N 159-34.9W	62.0	4670.0
231200U JUL 2005	73-01.3N 156-54.5W	92.0	4762.0
241200U JUL 2005	73-03.4N 157-05.2W	4.0	4766.0
251200U JUL 2005	72-50.6N 157-01.7W	23.0	4789.0
261200U JUL 2005	71-19.0N 156-53.5W	102.0	4891.0
271200U JUL 2005	69-25.1N 166-41.9W	239.0	5130.0
281200U JUL 2005	65-04.8N 168-49.5W	294.0	5185.0
291200U JUL 2005	60-01.9N 168-26.7W	329.0	5459.0
301200U JUL 2005	56-36.5N 167-14.6W	219.0	5678.0
311200U JUL 2005	DUTCH HARBOR, ALASKA	204.0	5882.0
011200U AUG 2005	DUTCH HARBOR, ALASKA	0.0	5882.0
021200U AUG 2005	DUTCH HARBOR, ALASKA	0.0	5882.0
031200U AUG 2005	DUTCH HARBOR, ALASKA	0.0	5882.0
041200U AUG 2005	DUTCH HARBOR, ALASKA	0.0	5882.0
051200U AUG 2005	DUTCH HARBOR, ALASKA	18.0	5900.0
061200U AUG 2005	59-31.7N 168-10.1W	329.0	6229.0
071200U AUG 2005	64-26.6N 165-45.6W	325.0	6554.0
081200U AUG 2005	69-03.4N 168-32.5W	322.0	6876.0
091200U AUG 2005	73-49.7N 162-10.3W	318.0	7194.0
101200U AUG 2005	74-40.9N 159-29.2W	83.0	7277.0
111200U AUG 2005	76-03.7N 157-53.5W	91.0	7368.0
121200U AUG 2005	77-14.8N 157-02.2W	77.0	7445.0
131200U AUG 2005	77-20.8N 152-49.6W	66.0	7511.0

141200U	AUG	2005	78-11.6N	153-33.1W	83.0	7594.0
151200U	AUG	2005	78-06.2N	159-27.8W	80.0	7674.0
161200U	AUG	2005	78-16.3N	164-25.6W	76.0	7750.0
171200U	AUG	2005	78-17.2N	171-31.4W	89.0	7839.0
181200U	AUG	2005	78-00.2N	176-53.9W	89.0	7928.0
191200U	AUG	2005	78-26.3N	178-25.8W	67.0	7995.0
201200U	AUG	2005	79-36.9N	172-22.2W	103.0	8098.0
211200U	AUG	2005	79-56.3N	170-18.8W	44.0	8142.0
221200U	AUG	2005	80-52.4N	176-16.3W	95.0	8237.0
231200U	AUG	2005	81-48.2N	177-54.0W	71.0	8308.0
241200U	AUG	2005	83-09.2N	179-49.8W	89.0	8397.0
251200U	AUG	2005	83-07.8N	174-39.9W	79.0	8476.0
261200U	AUG	2005	83-17.8N	171-53.9W	47.0	8523.0
271200U	AUG	2005	84-01.2N	170-01.9W	65.0	8588.0
281200U	AUG	2005	84-17.7N	160-08.3W	72.0	8660.0
291200U	AUG	2005	84-17.1N	149-07.1W	81.0	8741.0
301200U	AUG	2005	83-55.8N	143-09.7W	62.0	8803.0
311200U	AUG	2005	84-10.1N	150-59.0W	59.0	8862.0
011200U	SEP	2005	84-27.5N	152-36.1W	48.0	8910.0
021200U	SEP	2005	85-31.8N	155-49.2W	94.0	9004.0
031200U	SEP	2005	86-00.9N	172-13.5W	102.0	9106.0
041200U	SEP	2005	86-32.6N	174-17.4E	151.0	9257.0
051200U	SEP	2005	86-36.8N	156-48.0E	103.0	9360.0
061200U	SEP	2005	87-38.0N	156-16.9E	129.0	9489.0
071200U	SEP	2005	87-42.1N	153-09.1E	58.0	9547.0
081200U	SEP	2005	88-28.8N	150-28.0E	95.0	9642.0
091200U	SEP	2005	88-23.3N	148-31.9E	67.0	9709.0
101200U	SEP	2005	88-48.7N	164-03.3E	70.0	9779.0
111200U	SEP	2005	89-19.7N	171-59.1W	89.0	9868.0
120900U	SEP	2005	90-00.0N	NORTH POLE	0.0	9868.0
121200U	SEP	2005	89-58.9N	103-45.9W	89.0	9957.0
131200B	SEP	2005	89-40.8N	089-25.4E	28.0	9985.0
141200B	SEP	2005	89-09.9N	072-42.0E	98.0	10083.0
151200B	SEP	2005	88-17.8N	060-38.4E	85.0	10168.0
161200B	SEP	2005	87-42.2N	058-17.0E	51.0	10219.0
171200B	SEP	2005	87-17.6N	057-13.8E	51.0	10270.0
181200B	SEP	2005	86-46.3N	056-34.3E	62.0	10332.0
191200B	SEP	2005	86-24.3N	050-40.4E	57.0	10389.0
201200B	SEP	2005	85-47.9N	049-00.1E	60.0	10449.0
211200B	SEP	2005	85-17.3N	045-24.8E	69.0	10518.0
221200B	SEP	2005	84-30.6N	042-49.8E	81.0	10599.0
231200B	SEP	2005	82-20.4N	040-45.5E	169.0	10768.0

241200B SEP 2005	81-24.4N 022-15.8E	194.0	10962.0
251200B SEP 2005	81-18.6N 015-55.5E	126.0	11088.0
261200B SEP 2005	80-28.3N 007-42.0E	120.0	11208.0
271200B SEP 2005	79-07.4N 004-57.5E	137.0	11345.0
281200B SEP 2005	73-20.0N 014-40.1E	375.0	11720.0
291200B SEP 2005	70-49.8N 019-42.1E	324.0	12044.0
301200B SEP 2005	TROMSO, NORWAY	198.0	12242.0
011200B OCT 2005	TROMSO, NORWAY	0.0	12242.0
021200B OCT 2005	TROMSO, NORWAY	0.0	12242.0
031200B OCT 2005	TROMSO, NORWAY	0.0	12242.0
041200B OCT 2005	TROMSO, NORWAY	1.0	12243.0
051200A OCT 2005	70-19.2N 020-31.1E	56.0	12299.0
061200A OCT 2005	68-10.2N 012-05.7E	275.0	12574.0
071200A OCT 2005	64-47.6N 003-44.5E	286.0	12860.0
081200A OCT 2005	61-44.5N 001-24.9W	231.0	13091.0
091200A OCT 2005	57-24.4N 006-57.2W	312.0	13403.0
101200A OCT 2005	53-37.0N 005-47.9W	284.0	13687.0
111200A OCT 2005	DUBLIN, IRELAND	27.0	13714.0
121200A OCT 2005	DUBLIN, IRELAND	0.0	13714.0
131200A OCT 2005	DUBLIN, IRELAND	0.0	13714.0
141200A OCT 2005	DUBLIN, IRELAND	0.0	13714.0
151200A OCT 2005	DUBLIN, IRELAND	0.0	13714.0
161200A OCT 2005	DUBLIN, IRELAND	0.0	13714.0
171200Z OCT 2005	53-18.8N 006-04.8W	8.0	13722.0
181200Z OCT 2005	49-31.2N 010-45.9W	334.0	14056.0
191200Z OCT 2005	46-00.2N 015-51.8W	295.0	14351.0
201200Z OCT 2005	42-26.2N 020-10.1W	287.0	14638.0
211200Z OCT 2005	39-43.8N 023-00.9W	287.0	14925.0
221200Z OCT 2005	SAN MIGUEL, AZORES	191.0	15116.0
231200Z OCT 2005	SAN MIGUEL, AZORES	0.0	15116.0
241200Z OCT 2005	SAN MIGUEL, AZORES	0.0	15116.0
251200Z OCT 2005	SAN MIGUEL, AZORES	0.0	15116.0
261200Z OCT 2005	SAN MIGUEL, AZORES	0.0	15116.0
271200Z OCT 2005	36-41.9N 029-15.7W	208.0	15324.0
281200Z OCT 2005	36-16.9N 035-04.4W	320.0	15644.0
291200Z OCT 2005	31-39.7N 040-53.1W	333.0	15977.0
301200Z OCT 2005	28-44.0N 046-27.8W	339.0	16316.0
311200O OCT 2005	26-00.9N 050-57.7W	292.0	16608.0
011200Q NOV 2005	22-46.7N 055-51.1W	333.0	16941.0
021200Q NOV 2005	19-40.7N 060-08.2W	303.0	17244.0
031200Q NOV 2005	18-00.2N 063-03.7W	218.0	17462.0
041200Q NOV 2005	ST. MARTIN, NETHERLANDS	4.0	17466.0

051200Q NOV 2005	ST. MARTIN, NETHERLANDS	0.0	17466.0
061200Q NOV 2005	ST. MARTIN, NETHERLANDS	0.0	17466.0
071200R NOV 2005	16-08.0N 066-57.2W	251.0	17717.0
081200R NOV 2005	13-39.4N 072-03.4W	339.0	18056.0
091200R NOV 2005	11-04.6N 077-18.8W	346.0	18402.0
101200R NOV 2005	09-22.8N 079-54.7W	205.0	18607.0
101800R NOV 2005	PANAMA CANAL	0.0	18607.0
111200R NOV 2005	07-05.1N 080-01.8W	166.0	18773.0
121200T NOV 2005	08-37.4N 085-24.9W	351.0	19124.0
131200T NOV 2005	10-45.0N 089-51.7W	294.0	19418.0
141200T NOV 2005	13-10.5N 094-58.3W	338.0	19756.0
151200T NOV 2005	14-52.5N 098-34.9W	235.0	19991.0
161200T NOV 2005	16-47.7N 102-42.0W	264.0	20255.0
171200T NOV 2005	19-49.1N 106-59.4W	310.0	20565.0
181200T NOV 2005	CABO SAN LUCAS, MEXICO	247.0	20812.0
191200T NOV 2005	CABO SAN LUCAS, MEXICO	0.0	20812.0
201200T NOV 2005	CABO SAN LUCAS, MEXICO	0.0	20812.0
211200T NOV 2005	CABO SAN LUCAS, MEXICO	0.0	20812.0
221200T NOV 2005		300.0	21112.0
231200T NOV 2005		300.0	21412.0
241200T NOV 2005		300.0	21712.0
251200T NOV 2005		300.0	22012.0
261200T NOV 2005		300.0	22312.0
271200T NOV 2005		300.0	22612.0
281200T NOV 2005		300.0	22912.0
	SEATTLE, WASHINGTON	TOTAL	23000.0

Appendix C

EMBARKED PERSONNEL AWES 2005

A. OFFICER PERSONNEL ABOARD	ARRIVE	DEPART	ARRIVE	DEPART
CAPT DANIEL OLIVER	01 Jun 05			
CDR JEFFREY JACKSON	01 Jun 05			
LCDR JAMES DALITSCH	01 Jun 05			
LCDR JOHN REEVES	01 Jun 05			
LT LAURA KING	21 Jun 05			
LTJG JESSICA NOEL	01 Jun 05			
LTJG JASON PLUMLEY	13 Jun 05	1 Aug 05		
LTJG TAGGART IRWIN	01 Jun 05			
ENS KEIDI NIEMANN	01 Jun 05			
ENS JOHN BUSER	01 Jun 05			
ENS ERIN BIEMILLER	26 Jun 05			
ENS MICHAEL CARR	01 Jun 05	21 Nov 05		
ENS NATHANIEL SELVAKA	26 Jun 05			
CWO2 WILLIAM LEVITCH	26 Jun 05	01 Aug 05		
CWO2 JEFFREY PARKER	01 Jun 05	21 Nov 05		
CWO2 JAMES BRIDE	01 Jun 05	22 Jun 05		
CWO2 GUSTAVO TYLER	25 Jul 05			
CWO2 TIMOTHY TULLY	02 Aug 05			
B OFFICER PERSONNEL TDY	ARRIVE	DEPART	ARRIVE	DEPART
CDR DAVID VAUGHN	13 Jun 05	26 Jun 05		
CDR LYN JUCKNISS	21 Nov 05	28 Nov 05		
LT ANDREA SACCHETTI	01 Jun 05	28 Jun 05	03 Aug 05	05 Oct 05
LT DAVID MERRIMAN	01 Jun 05	13 Oct 05		
LTJG MELISSA HENTGES	01 Jun 05	24 Jul 05		
LTJG ED HENNING	21 Nov 05	28 Nov 05		
ENS BRIAN K. MEADOWCROFT	01 Jun 05	13 Jun 05		
ENS ARIEL PIEDMONT	01 Jun 05	02 Aug 05		
1/C NORA BASILE	01 Jun 05	04 Aug 05		
LT KENNETH ELLER	06 Jun 05	03 Oct 05		
LT MATTHEW WELLER	06 Jun 05	26 Jun 05		
LT WINSTON WOOD	06 Jun 05	26 Jun 05		
LT BRIAN ERICKSON	26 Jun 05	15 Oct 05		
LT WENDY HART	25 Jul 05	01 Aug 05		
CWO JOHN COX	26 Jul 05	31 Aug 05		
CWO4 ERIC HARROLD	06 Nov 05	28 Nov 05		
A. C. ENLISTED PERSONNEL ABOARD				
ETCM PETER J. PERRON	01 Jun 05			
EMCM CURTIS A. PODHORA	01 Jun 05			
BMCS TIMOTHY R. SULLIVAN	01 Jun 05			
FSCS SHAWN M. FORSYTHE	01 Jun 05			
MKCS MICHAEL HUFF	01 Jun 05	03 Aug 05		

MKCS JOSEPH BISSON	01 Aug 05		
BMC WAYNE L. KIDD	01 Jun 05		
DCC PETER A. SCHAFFNER	01 Jun 05	01 Aug 05	
DCC PHILLIP S. SMELSER	01 Jun 05	10 Nov 05	
EMC FRANK R. DONZE	01 Jun 05		
ETC JOEL B. RODDA	01 Jun 05	21 Nov 05	
HSC DENISE F. ANDERSEN	01 Jun 05		
MKC JOSEPH A. DIAZ	01 Jun 05	02 Oct 05	
MSTC DONALD L. SNIDER	01 Jun 05	21 Nov 05	
OSC LEWIS D. WINNINGHAM	01 Jun 05		
SKC KARL G. KEYES	01 Jun 05	01 Oct 05	
YNC MARIA KIRBY	01 Jun 05		
BM1 THOMAS H. HINES	01 Jun 05		
DC1 JAMES R. PENTECOST	01 Jun 05	21 Nov 05	
EM1 JOSEPH A. FRATTO	01 Jun 05	26 Jun 05	
EM1 BRAD JOPLING	26 Jun 05		
EM1 KENNETH WORRELL	01 Aug 05		
ET1 SHANE HYDE	13 Jun 05	06 Nov 05	
FS1 ARRENE ZITTING	26 Jun 05		
IT1 MARK D. BIGSBY	01 Jun 05		
MK1 KEVIN A. GASKINS	01 Jun 05		
MK1 GARRET P. ROGERS	01 Jun 05		
MK1 DIANE WALLINGFORD	31 Jul 05		
MST1 DANIEL H. GAONA	01 Jun 05		
MST1 ERIC P. ROCKLAGE	01 Jun 05		
MST1 ROB A. OLMSTEAD	01 Jun 05		
OS1 ELIZABETH L. NEILL	01 Jun 05		
SK1 STEPHAN SELPH	26 Jun 05	14 Oct 05	
SK1 JACQUES FAUR	03 Oct 05		
BM2 PHILLIP R. DAWALT	01 Jun 05		
BM2 JOHN C. LOBHERR	01 Jun 05		
EM2 NOAH C. HAUGK	01 Jun 05		
ET2 SAUL N. KOSYDAR	01 Jun 05		
ET2 LEROY F. LEPP0	01 Jun 05		
ET2 MATTHEW R. REGELE	01 Jun 05	26 Jun 05	02 Aug 05
FS2 VANESSA A. AGOSTO	01 Jun 05	26 Jun 05	
FS2 KRISTINA M. SERFASS	01 Jun 05		
MK2 ANDREW P. BENIGNO	01 Jun 05	12 Oct 05	
MK2 ROBERT J. MYERS	01 Jun 05		
MK2 JON F. LOFTIS	01 Jun 05		
MK2 MATT E. STEELE	01 Jun 05		
MST2 JOSHUA T. ROBINSON	01 Jun 05		
SK2 REBECCA K. ARAKAKI	01 Jun 05		
SK2 CHRISTOPHER G. SISON	01 Jun 05	21 Nov 05	
BM3 STEVEN DUQUE	01 Jun 05		
BM3 ADAM GUNTER	26 Jun 05	21 Nov 05	
BM3 SAMUEL E. TRAVER	01 Jun 05		

BM3 MEREDITH L. HITCHCOCK	01 Jun 05	26 Jun 05
ET3 STEVEN DAEM	02 Aug 05	
FS3 LINZI S. DEGGANS	01 Jun 05	23 Nov 05
FS3 EVAN T. ELLIOTT	01 Jun 05	
MK3 TOMASZ M. DAWLIDOWICZ	01 Jun 05	03 Aug 05
MK3 RICHARD D. ERICKSON	01 Jun 05	
MK3 FERNANDO GONZALEZ	01 Jun 05	
MK3 MALINDA A. NESVOLD	01 Jun 05	
MST3 CHAD W. KLINESTEKER	01 Jun 05	
FNEM NATHAN FINLEY	01 Aug 05	
SNFS TAMEKIA K. WRIGHT	01 Jun 05	
FN PAUL A. BLAS	01 Jun 05	
FN ASHLEY M. SMITH	01 Jun 05	
FN DIKE J. JEFFREY	01 Jun 05	02 Oct 05
FN ERIC WHITLOCK	26 Jun 05	
SNBM AIMEE BUFORD	01 Aug 05	
SN JONATHAN T. BILBY	01 Jun 05	
SN PETER BOGGELN	01 Jun 05	
SN KENNETH H. MCWILLIAMS	01 Jun 05	02 Oct 05
SN CHRISTOPHER PHILLIPS	01 Jun 05	03 Jul 05
SN MICHAL PILAT	01 Jun 05	
SN MANUEL PONCE	01 Jun 05	
SN VINCENT R. RODRIGUEZ	01 Jun 05	
SN AMANDA D. WINGROVE	01 Jun 05	26 Jun 05
SN BRITTANY RASSMUSSEN	26 Jun 05	
SN ROBERT KENNEY	30 Sep 05	
SA JOSEPH ABEL	30 Sep 05	

D. ENLISTED PERSONNEL TDY

	ARRIVE	DEPART	ARRIVE	DEPART
EMCM DONALD WITT	26 Oct 05	18 Nov 05		
ETCM JOSEPH PASSALACQUA	21 Nov 05	28 Nov 05		
AMTC TIM SANTMYER	01 Jun 05	28 Nov 05		
ETC JAMES FLYNN	01 Jun 05	13 Jun 05	30 Sep 05	09 Nov 05
AMT1 JOHNNY CHARLES	01 Jun 05	16 Oct 05		
AG1 GENE SWOPE	01 Jun 05	30 Sep 05		
DC1 ANTHONY BONANNO	21 Nov 05	28 Nov 05		
MK1 KEVIN WHALEN	01 Jun 05	13 Jun 05		
MST1 EL MCFADDEN	01 Jun 05	13 Jun 05		
AET2 LOUIS BISHOP	01 Jun 05	16 Oct 05		
EM2 SHAUN BASTIAN	01 Jun 05	03 Aug 05	05 Nov 05	
IT2 CHAD BURROUGHS	01 Jun 05	03 Aug 05		
DC3 CORY HUNTER	01 Jun 05	28 Nov 05		
MST3 TRAVIS CORBETT	01 Jun 05	03 Aug 05		
AMTC THOMAS PUDISH	06 Jun 05	26 Jun 05		
AMT1 DANIEL KELLY	06 Jun 05	28 Nov 05		
AMT3 JEFFREY KORTIS	06 Jun 05	26 Jun 05		
MKC JOHN BROGAN	13 Jun 05	26 Jun 05		
MK2 BRIAN BARRETT	13 Jun 05	26 Jun 05		

MK2 NATHANIEL CHRISTIAN	13 Jun 05	26 Jun 05
PA2 NYXOLYNO CANGEMI	13 Jun 05	26 Jun 05
DCC JOHN BOBBITT	26 Jul 05	31 Jul 05
HMC RONALD HUSMAN	26 Jul 05	31 Jul 05
MKC MICHAEL SANDWITH	26 Jul 05	31 Jul 05
DC1 JUSTIN BRYMER	26 Jul 05	31 Jul 05
DC3 COURTNEY WILSON	03 Aug 05	28 Nov 05
SN ROBERT MELVIN	03 Aug 05	28 Nov 05
EM1 HANS SHAFFER	22 Oct 05	28 Nov 05
EM2 KELVIN HERNANDEZ	22 Oct 05	28 Nov 05
MK1 KEVIN WHALEN	05 Nov 05	18 Nov 05
ET2 JARED BISHOP	05 Nov 05	18 Nov 05
IT2 MICHAEL MERCHANT	05 Nov 05	28 Nov 05
EM3 NATASHA MCBRIDE	05 Nov 05	28 Nov 05
MK3 SAM STOWERS	05 Nov 05	18 Nov 05
ET3 JONATHON DAVIS	05 Nov 05	18 Nov 05

E. CIVILIANS	ARRIVE	DEPART	ARRIVE	DEPART
JOE BALUKIN	01 Jun 05	13 Jun 05	17 Oct 05	21 Oct 05
DALE CHAYES	01 Jun 05	13 Jun 05	26 Jun 05	01 Aug 05
KEVIN FALL	01 Jun 05	13 Jun 05		
MICHEAL JONES	01 Jun 05	13 Jun 05		
JEFF MCGUCKIN	01 Jun 05	13 Jun 05	06 Nov 05	18 Nov 05
RICHARD PERRY	01 Jun 05	13 Jun 05	17 Oct 05	21 Oct 05
STEVE PHILLIPS	01 Jun 05	26 Jun 05	17 Oct 05	21 Oct 05
STEVE ROBERTS	01 Jun 05	26 Jun 05	05 Aug 05	10 Oct 05
VAL SCHMIDT (LDEO)	01 Jun 05	26 Jun 05		
BOB ANDERSON (SCIENTIST)	13 Jun 05	26 Jun 05		
DAVE FORCCUCI	13 Jun 05	26 Jun 05		
GLENN BERGER (SCIENTIST)	13 Jun 05	26 Jun 05		
JENS BISCHOF (SCIENTIST)	13 Jun 05	26 Jun 05		
STEFANIE A. BRACHFELD (SCIENTIST)	13 Jun 05	26 Jun 05		
GREG CUTTER (SCIENTIST)	13 Jun 05	26 Jun 05		
DENNIS DARBY (CHIEF SCIENTIST)	13 Jun 05	26 Jun 05	05 Aug 05	30 Sep 05
MARGO EDWARDS (SCIENTIST)	13 Jun 05	26 Jun 05		
PAUL JOHNSON (SCIENTIST)	13 Jun 05	26 Jun 05		
PETE KALK (SCIENTIST)	13 Jun 05	26 Jun 05		
STEVEN MARSHALL (SCIENTIST)	13 Jun 05	26 Jun 05		
BRIAN MEEKS (SCIENTIST)	13 Jun 05	26 Jun 05		
JOSEPH ORTIZ (SCIENTIST)	13 Jun 05	26 Jun 05		
LEONID POLYAK (SCIENTIST)	13 Jun 05	26 Jun 05		
MARK ROGNSTAD (SCIENTIST)	13 Jun 05	26 Jun 05		
RAY SAVICKE (ESU)	13 Jun 05			
GUILLAUME ST-ONGE (SCIENTIST)	13 Jun 05	26 Jun 05		
CHRISTINE THERRIAULT (SCIENTIST)	13 Jun 05	26 Jun 05		

STEVEN TOTTORI (SCIENTIST)	13 Jun 05	26 Jun 05		
LOUIS WHITCOMB (SCIENTIST)	13 Jun 05	26 Jun 05		
LYANNE YURCO (SCIENTIST)	13 Jun 05	26 Jun 05		
JERRY CABA	26 Jun 05	26 Jul 05		
JOE CABA	26 Jun 05	26 Jul 05		
EBEN FRANKS	26 Jun 05	01 Aug 05		
ROLF GRADINGER	26 Jun 05	26 Jul 05		
ANTHONY JOHNSON	26 Jun 05	01 Aug 05	22 Oct 05	9 Nov 05
SEUNG-SEP KIM	26 Jun 05	26 Jul 05		
ERIC MITTELSTAEDT	26 Jun 05	1 Aug 05		
CHRIS NICHOLSON	26 Jun 05	03 Jul 05		
MIKE NICHOLSON	26 Jun 05	31 Jul 05		
JEREMY POTTER	26 Jun 05	26 Jul 05		
SARAH THORNTON	26 Jun 05	26 Jul 05		
JACK ADAMS	26 Jun 05	09 Jul 05		
RICHARD ARENA	26 Jun 05	26 Jul 05		
BODIL BLUHM	26 Jun 05	26 Jul 05		
JOE BRUNCSAK	26 Jun 05	26 Jul 05		
NATHAN BUCK	26 Jun 05	24 Jul 05		
MINGHONG CAI	26 Jun 05	26 Jul 05		
ELIZABETH CALVERT	26 Jun 05	26 Jul 05		
KELLEY ELLIOT	26 Jun 05	26 Jul 05		
SERGEJ GAGAEV	26 Jun 05	26 Jul 05		
SHAWN HARPER	26 Jun 05	01 Aug 05		
BRENDA HOLLADAY	26 Jun 05	26 Jul 05		
RUSS HOPCROFT	26 Jun 05	01 Aug 05		
TERRY WHITLEDGE	26 Jun 05	26 Jul 05		
KATRIN IKEN	26 Jun 05	26 Jul 05		
KSENIA KOSOBOKOVA	26 Jun 05	01 Aug 05		
IAN MACDONALD	26 Jun 05	26 Jul 05		
SUE MOORE	26 Jun 05	24 Jul 05		
METTE NIELSON	26 Jun 05	26 Jul 05		
JENNY PURCELL	26 Jun 05	26 Jul 05		
KEVIN RASKOFF	26 Jun 05	26 Jul 05		
DEAN STOCKWELL	26 Jun 05	26 Jul 05		
QUIN ZHANG	26 Jun 05	26 Jul 05		
STEVEN RUTZ	26 Jun 05	26 Jul 05		
MARSH YOUNGBLUTH	26 Jun 05	31 Jul 05		
CLAYTON SANDELL	24 Jul 05	26 Jul 05		
JESSE AUSUBEL	24 Jul 05	26 Jul 05		
WILLIAM BLAKEMORE	24 Jul 05	26 Jul 05		
ROSIE DIMANNO	24 Jul 05	26 Jul 05		
FRED GORELL	24 Jul 05	26 Jul 05		
RICHARD HARRIS	24 Jul 05	26 Jul 05		
RON O'DOR	24 Jul 05	26 Jul 05		
WALTER RISSMEYER	24 Jul 05	26 Jul 05		
OP SHARMA	24 Jul 05	31 Jul 05		
ÅSA LÖVENVALD	05 Aug 05	24 Sep 05		

ALEJANDRO JESUS SAYEGH RODRIGUEZ	05 Aug 05	30 Sep 05		
ÅSA WALLIN	05 Aug 05	24 Sep 05		
BERNARD COAKLEY	05 Aug 05	30 Sep 05		
BETH HALEY	05 Aug 05	30 Sep 05		
BJÖRN ERIKSSON	05 Aug 05	30 Sep 05		
BRUCE ELDER	05 Aug 05	30 Sep 05		
CAPTAIN GERMAIN TREMBLAY	05 Aug 05	30 Sep 05		
DALE HUBBARD	05 Aug 05	30 Sep 05		
DAVID HASSILEV (ESU)	05 Aug 05	30 Sep 05	06 Nov 05	28 Nov 05
DAYTON DOVE	05 Aug 05	30 Sep 05		
DON PEROVICH	05 Aug 05	30 Sep 05		
DOUG WHITE	05 Aug 05	30 Sep 05		
EMMA SELLEN	05 Aug 05	30 Sep 05		
ERIK GRINDHEIM	05 Aug 05	30 Sep 05		
EVA GRÖNLUND	05 Aug 05	24 Sep 05		
FREDRIK LUDVIGSEN	05 Aug 05	30 Sep 05		
GARRY BRASS	05 Aug 05	30 Sep 05		
GLENN BERGER	05 Aug 05	30 Sep 05		
HANS BERGE	05 Aug 05	30 Sep 05		
HEDDA BREIEN	05 Aug 05	30 Sep 05		
HIROKATSU UNO	05 Aug 05	30 Sep 05		
HOWIE GOLDSTEIN	05 Aug 05	30 Sep 05		
JEREMY HARBECK	05 Aug 05	30 Sep 05		
JIMMY JONES OLEMAUN	05 Aug 05	30 Sep 05		
JOHN HOPPER	05 Aug 05	30 Sep 05		
JOHN RAND	05 Aug 05	30 Sep 05		
KARINA MONSEN	05 Aug 05	30 Sep 05		
KAZU TATEYAMA	05 Aug 05	30 Sep 05		
LEONID POLYAK	05 Aug 05	30 Sep 05		
MARTIN JAKOBSSON	05 Aug 05	24 Sep 05		
NINA IVANOVA	05 Aug 05	30 Sep 05		
PAUL HENKART	05 Aug 05	30 Sep 05		
PAULA ZIMMERMAN	05 Aug 05	30 Sep 05		
REIDAR LÖVLIE	05 Aug 05	24 Sep 05		
RUBEN FRITZON	05 Aug 05	24 Sep 05		
SANDRINE SOLIGNAC	05 Aug 05	30 Sep 05		
TAKASHI KIKUCHI	05 Aug 05	30 Sep 05		
TOM GRENFELL	05 Aug 05	30 Sep 05		
TORE ARTHUN	05 Aug 05	30 Sep 05		
UTE KADEN	05 Aug 05	30 Sep 05		
VIBEKE BRUVOLL	05 Aug 05	30 Sep 05		
WALTER LUIS REYNOSO-PERALTA	05 Aug 05	30 Sep 05		
WILL HANDLEY	05 Aug 05	30 Sep 05		
YNGVE KRISTOFFERSEN	05 Aug 05	30 Sep 05		
CLIVE BONNET	04 Oct 05	10 Oct 05		
DALE CHAYES	04 Oct 05	10 Oct 05		
LEIGHANNE ERICKSON	04 Oct 05	10 Oct 05		
BILL GREGG	04 Oct 05	10 Oct 05		
PHYLLIS GREGG	04 Oct 05	10 Oct 05		
LORRAINE SMELSER	04 Oct 05	10 Oct 05		
AMY MACFARLANE	04 Oct 05	10 Oct 05		

GRAEME MACFARLANE	04 Oct 05	10 Oct 05
JANET MACFARLANE	04 Oct 05	10 Oct 05
JESSICA SISON	04 Oct 05	10 Oct 05
JOHN LOBHERR	06 Nov 05	18 Nov 05
ANDREW SMITH	21 Nov 05	28 Nov 05
CARLE BIEMILLER	21 Nov 05	28 Nov 05
JOSEPH MEYERS	21 Nov 05	28 Nov 05
KEN DOBROW	21 Nov 05	28 Nov 05
KYLE ANDERSEN	21 Nov 05	28 Nov 05
LEE EBERT	21 Nov 05	24 Nov 05
LINDA DAWALT	21 Nov 05	28 Nov 05
LISETTE LAPORTE	21 Nov 05	28 Nov 05
MIKE BULTEMA	21 Nov 05	28 Nov 05
PATRICIA BIEMILLER	21 Nov 05	28 Nov 05
PATRICIA GUIMOND	21 Nov 05	28 Nov 05
ROB DAWALT	21 Nov 05	28 Nov 05

Appendix D

Fuel Consumption

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
1-Jun	2	92.89%	5,331	1,134,073	0	55,597
2-Jun	2	91.74%	14,013	1,120,060	0	55,597
3-Jun	2	89.97%	21,575	1,098,485	136	55,461
4-Jun	2	88.17%	21,976	1,076,509	0	55,461
5-Jun	2	86.78%	17,054	1,059,455	0	55,461
6-Jun	2	85.44%	16,347	1,043,108	0	55,461
7-Jun	2	85.08%	4,313	1,038,795	0	55,461
8-Jun	2	83.25%	22,370	1,016,425	0	55,461
9-Jun	2	81.39%	22,715	993,710	90	55,371
10-Jun	2	80.46%	11,313	982,397	0	55,371
11-Jun	2	79.78%	8,352	974,045	129	55,242
12-Jun	1	79.15%	7,745	966,300	0	55,242
13-Jun	1	78.50%	7,881	958,419	424	54,818
14-Jun	1	77.15%	16,491	941,928	178	54,640
15-Jun	1	76.55%	7,297	934,631	0	54,640
16-Jun	1	75.92%	7,729	926,902	154	54,486
17-Jun	3	74.94%	11,989	914,913	0	54,486
18-Jun	2	74.29%	7,842	907,071	134	54,352
19-Jun	2	72.61%	20,545	886,526	0	54,352
20-Jun	1	71.81%	9,805	876,721	0	54,352
21-Jun	2	71.02%	9,668	867,053	0	54,352
22-Jun	2	70.07%	11,509	855,544	145	54,207
23-Jun	2	69.41%	8,158	847,386	0	54,207
24-Jun	2	68.46%	11,585	835,801	73	54,134
25-Jun	2	67.26%	14,638	821,163	0	54,134
26-Jun	2	66.84%	5,056	816,107	301	53,833
27-Jun	1	66.29%	6,768	809,339	604	53,229
28-Jun	2	65.37%	11,262	798,077	34	53,195
29-Jun	2	65.86%	7,511	804,133	0	53,653
30-Jun	2	65.46%	4,927	799,206	0	53,653
1-Jul	2	65.00%	5,601	793,605	0	53,653
2-Jul	1	64.40%	7,360	786,245	118	53,535
3-Jul	1	64.05%	4,308	781,937	0	53,535
4-Jul	2	63.22%	10,036	771,901	0	53,535

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
5-Jul	1	62.78%	5,358	766,543	0	53,535
6-Jul	1	62.54%	2,935	763,608	109	53,426
7-Jul	1	62.13%	5,021	758,587	179	53,247
8-Jul	2	61.58%	6,718	751,869	0	53,247
9-Jul	1	61.09%	5,965	745,904	168	53,079
10-Jul	1	60.75%	4,184	741,720	0	53,079
11-Jul	1	60.35%	4,843	736,877	69	53,010
12-Jul	1	59.94%	5,062	731,815	0	53,010
13-Jul	2	59.26%	8,321	723,494	0	53,010
14-Jul	1	58.82%	5,337	718,157	181	52,829
15-Jul	2	57.57%	10,212	702,864	0	52,595
16-Jul	1	57.04%	6,405	696,459	0	52,595
17-Jul	1	56.56%	5,908	690,551	34	52,561
18-Jul	2	55.78%	9,482	681,069	0	52,561
19-Jul	1	55.28%	6,158	674,911	72	52,489
20-Jul	1	55.08%	2,420	672,491	245	52,244
21-Jul	2	54.26%	10,063	662,428	0	52,244
22-Jul	2	53.59%	8,170	654,258	0	52,244
23-Jul	1	53.17%	5,087	649,171	330	51,914
24-Jul	2	52.57%	7,295	641,876	0	51,914
25-Jul	1	52.18%	4,789	637,087	91	51,823
26-Jul	2	51.49%	8,460	628,627	198	51,625
27-Jul	2	50.60%	10,834	617,793	0	51,625
28-Jul	2	49.27%	16,204	601,589	0	51,625
29-Jul	2	47.89%	16,840	584,749	0	51,625
30-Jul	2	47.17%	8,824	575,925	0	51,625
31-Jul	2	46.36%	9,892	566,033	0	51,625
1-Aug	0	94.68%	0	1,156,001	0	51,625
2-Aug	0	94.68%	0	1,156,001	0	51,625
3-Aug	0	94.68%	0	1,156,001	0	51,625
4-Aug	0	94.68%	0	1,156,001	0	51,625
5-Aug	2	93.28%	17,089	1,138,912	0	51,843
6-Aug	2	92.71%	6,960	1,131,952	0	51,843
7-Aug	2	90.90%	22,131	1,109,821	280	51,563
8-Aug	2	89.64%	15,365	1,094,456	0	51,563
9-Aug	2	88.44%	14,631	1,079,825	0	51,563
10-Aug	1	87.99%	5,535	1,074,290	147	51,416
11-Aug	2	87.58%	4,995	1,069,295	0	51,416

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
12-Aug	2	86.76%	9,999	1,059,296	27	51,389
13-Aug	2	86.09%	8,197	1,051,099	0	51,389
14-Aug	2	85.47%	7,557	1,043,542	32	51,357
15-Aug	2	84.71%	9,354	1,034,188	49	51,308
16-Aug	2	84.18%	6,365	1,027,823	0	51,308
17-Aug	2	83.37%	9,888	1,017,935	0	51,308
18-Aug	2	82.85%	6,375	1,011,560	85	51,223
19-Aug	2	82.68%	2,124	1,009,436	99	51,124
20-Aug	2	82.18%	6,111	1,003,325	0	51,124
21-Aug	2	81.49%	8,358	994,967	0	51,124
22-Aug	2	81.11%	4,623	990,344	105	51,019
23-Aug	2	80.20%	11,118	979,226	90	50,929
24-Aug	2	79.02%	14,473	964,753	0	50,929
25-Aug	2	78.21%	9,861	954,892	182	50,747
26-Aug	2	77.31%	11,007	943,885	0	50,747
27-Aug	3	76.09%	14,896	928,989	0	50,747
28-Aug	3	75.07%	12,422	916,567	0	50,747
29-Aug	3	73.01%	15,851	891,399	0	51,067
30-Aug	3	71.91%	13,479	877,920	104	50,963
31-Aug	2	71.16%	9,082	868,838	90	50,873
1-Sep	2	70.60%	6,923	861,915	0	50,873
2-Sep	2	70.07%	6,372	855,543	0	50,873
3-Sep	2	69.44%	7,699	847,844	0	50,873
4-Sep	2	68.63%	9,984	837,860	0	50,873
5-Sep	2	67.91%	8,771	829,089	0	50,873
6-Sep	3	66.99%	11,162	817,927	54	50,819
7-Sep	2	66.18%	9,932	807,995	0	50,819
8-Sep	2	65.47%	8,687	799,308	139	50,680
9-Sep	2	64.99%	5,845	793,463	0	50,680
10-Sep	2	64.42%	7,003	786,460	0	50,680
11-Sep	3	63.40%	12,435	774,025	0	50,680
12-Sep	3	62.48%	11,179	762,846	203	50,477
13-Sep	3	61.17%	15,962	746,884	49	50,428
14-Sep	Advanced clocks	61.17%	0	0	0	0
15-Sep	3	60.04%	13,803	733,081	27	50,401
16-Sep	3	59.14%	11,024	722,057	0	50,401
17-Sep	3	58.00%	13,896	708,161	0	50,401
18-Sep	3	56.77%	15,073	693,088	0	50,401

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
19-Sep	3	55.12%	20,116	672,972	0	50,401
20-Sep	3	53.63%	18,177	654,795	74	50,327
21-Sep	3	52.03%	19,610	635,185	0	50,327
22-Sep	3	50.07%	23,870	611,315	0	50,327
23-Sep	2	49.01%	12,896	598,419	0	50,327
24-Sep	2	47.84%	14,295	584,124	0	50,327
25-Sep	3	46.40%	17,588	566,536	84	50,243
26-Sep	2	45.50%	11,018	555,518	0	50,243
27-Sep	3	44.17%	16,203	539,315	81	50,162
28-Sep	3	42.26%	23,416	515,899	0	50,162
29-Sep	2	40.83%	15,541	498,450	119	50,416
30-Sep	2	40.16%	8,105	490,345	0	50,416
1-Oct	0	40.16%	0	490,345	0	50,416
2-Oct	0	40.16%	0	490,345	0	50,416
3-Oct	0	40.16%	0	490,345	0	50,416
4-Oct	0	80.13%	12,000	978,345	0	50,416
5-Oct	0	79.65%	5,943	972,402	0	50,416
6-Oct	2	78.02%	19,901	952,501	0	50,416
7-Oct	2	76.78%	15,112	937,389	0	50,416
8-Oct	2	75.21%	19,151	918,238	0	50,416
9-Oct	2	74.02%	14,503	903,735	0	50,416
10-Oct	0	72.85%	14,258	889,477	0	50,416
11-Oct	0	72.85%	0	889,477	0	50,416
12-Oct	0	72.85%	0	889,477	0	50,416
13-Oct	0	72.85%	0	889,477	0	50,416
14-Oct	0	72.85%	0	889,477	0	50,416
15-Oct	0	72.85%	0	889,477	0	50,416
16-Oct	0	72.53%	3,895	885,582	0	50,416
17-Oct	2	71.30%	15,040	870,542	0	50,416
18-Oct	2	69.88%	17,363	853,179	0	50,416
19-Oct	2	68.95%	11,352	841,827	0	50,416
20-Oct	2	67.92%	12,577	829,250	0	50,416
21-Oct	2	66.73%	14,581	814,669	0	50,416
22-Oct	0	66.31%	5,075	809,594	0	50,416
23-Oct	0	66.31%	0	809,594	0	50,416
24-Oct	0	66.31%	0	809,594	0	50,416
25-Oct	0	66.31%	0	809,594	0	50,416
26-Oct	2	65.38%	11,316	798,278	0	50,416

Date	# of Engines	Percent Remaining	Daily Consumption	Fuel Remaining at Midnight	Daily JP-5 Consumption	JP-5 Remaining
27-Oct	2	64.46%	11,245	787,033	0	50,416
28-Oct	2	63.05%	17,257	769,776	0	50,416
29-Oct	2	61.73%	16,081	753,695	0	50,416
30-Oct	2	60.49%	15,138	738,557	0	50,416
31-Oct	1	59.28%	13,246	723,733	0	49,993
1-Nov	2	58.36%	11,165	712,568	0	49,993
2-Nov	2	57.18%	14,501	698,067	0	49,993
3-Nov	1	56.62%	6,761	691,306	0	49,993
4-Nov	0	56.62%	0	691,306	0	49,993
5-Nov	0	56.62%	0	691,306	0	49,993
6-Nov	0	55.97%	7,930	683,376	0	49,993
7-Nov	2	55.11%	10,511	672,865	0	49,993
8-Nov	2	53.84%	15,481	657,384	0	49,993
9-Nov	2	52.02%	22,258	635,126	0	49,993
10-Nov	2	51.57%	5,448	629,678	0	49,993
11-Nov	2	50.59%	11,959	617,719	0	49,993
12-Nov	2	49.60%	12,148	605,571	0	49,993
13-Nov	2	48.18%	17,333	588,238	0	49,993
14-Nov	2	46.95%	14,980	573,258	0	49,993
15-Nov	1	46.24%	8,740	564,518	0	49,993
16-Nov	2	45.33%	11,035	553,483	0	49,993
17-Nov	2	43.94%	17,016	536,467	0	49,993
18-Nov	1	43.61%	3,982	532,485	0	49,993
19-Nov	1	43.29%	3,982	528,503	0	49,993
20-Nov	1	42.96%	3,982	524,521	0	49,993
21-Nov	2	42.79%	2,073	522,448	0	49,993
22-Nov	2	41.49%	15,899	506,549	0	49,993
23-Nov	2	39.74%	21,307	485,242	0	49,993
24-Nov	2	38.41%	16,310	468,932	0	49,993
25-Nov	2	36.98%	17,427	451,505	44	49,949
26-Nov	2	35.82%	14,136	437,369	0	49,949
27-Nov	2	32.43%	12,578	395,986	0	49,241
28-Nov	2	31.92%	6,294	389,692	0	49,241

Appendix E

DEPLOYMENT SUMMARY MESSAGE REPORT

R 28 ___ Z NOV 05
FM USCGC HEALY
TO COMPACAREA COGARD ALAMEDA CA//PP/PPW/PR/PRE/PX/PT/PI/CC//
INFO COMDT COGARD WASHINGTON DC//G-OPN/G-OCU/G-A/G-SEN/G-DPM//
NSF POLAR WASHINGTON DC//JJJ//
COMLANTAREA COGARD PORTSMOUTH VA//AR/AP/AX/AT/AI/CC//
COMCOGARD MLC PAC ALAMEDA CA//V/VR/T/K/MDL//
CCGDTHIRTEEN SEATTLE WA//DR/DP/CC//
CCGDSEVENTEEN JUNEAU AK//DR/DP/CC//
COGARD INTSUPRTCOM SEATTLE WA
COGARD NESU SEATTLE WA
COGARD ESU SEATTLE WA
COGARD INTSUPRTCOM KODIAK AK
COGARD AIRSTA KODIAK AK//ALPAT//
COGARD COMMSTA KODIAK AK
COGARD MSD UNALASKA AK
COGARD ENGLGCEN BALTIMORE MD//015//
COGARD ATC MOBILE AL
COGARD TISCOM ALEXANDRIA VA
COGARD CAMSPAC PT REYES CA
COGARD CAMSLANT CHESAPEAKE VA
NAVICECEN SUITLAND MD//30//
MIFCPAC ALAMEDA CA
NAVLANTMETOCCEN NORFOLK VA
NAVPACMETOCCEN PEARL HARBOR HI
NAVPACMETOCCEN SAN DIEGO CA//N3//
NAVPACMETOCFAC WHIDBEY ISLAND WA
USCGC POLAR SEA
USCGC POLAR STAR
USCGC MELLON
USCGC MIDGETT
USCGC MUNRO
USCGC BOUTWELL
USCGC ALEX HALEY
USCGC STORIS
USCGC ACUSHNET
USCGC CUTTYHUNK
USCGC SEA LION
BT
UNCLAS //N16240//

SUBJ: ARCTIC WEST-EAST SUMMER 2005 (AWES-05) DEPLOYMENT SUMMARY

1. DEPLOYMENT STATISTICS (PORTCALLS LISTED PARA 5):
 - A. 01 JUN U/W FROM HOMEPORT SEATTLE
 - B. 13 JUN ENTERED ICE
 - C. 26 JUL EXITED ICE
 - D. 09 AUG ENTERED ICE
 - E. 01 SEP RENDEZVOUS W/SWEDISH ICEBREAKER ODEN
 - F. 12 SEP REACHED NORTH POLE
 - G. 24 SEP DEPARTED COMPANY W/SWEDISH ICEBREAKER ODEN
 - H. 27 SEP EXITED ICE
 - I. 10 NOV TRANSITED PANAMA CANAL ATLANTIC TO PACIFIC
 - J. 28 NOV ARRIVED HOMEPORT SEATTLE
 - K. PURPOSE: 3 MULTIPLE SCIENCE MISSIONS FOR ARCTIC RESEARCH:
 - HLY05-01: 14 DAY NSF CORING
(13 JUN - 26 JUN)
 - HLY05-02: 30 DAY NOAA OCEAN EXPLORATION
(27 JUN - 26 JUL)
 - HLY05-03: 57 DAY NSF TRANS-ARCTIC CORING AND GEO-PHYSICAL
(05 AUG - 30 SEP)
 - L. DAYS AFHP: 180 (FY05: 122 / FY06: 58)
(TOTAL DAYS AFHP FY05: 173)
(TOTAL DAYS AFHP FY06 FORECAST: 224)
 - M. DAYS IN TRANSIT: 52
 - N. DAYS IN SUPPORT OF SCIENCE: 101 UNDERWAY, 5 INPORT
 - O. LIBERTY PORT CALL DAYS: 22
2. HELICOPTER OPERATIONS (SEE ALSO CO COMMENTS PARA 9.B.):

HH-65B TAIL NUMBERS 6529 AND 6567

 - A. HLY05-01: SORTIES: 21
FLIGHT HOURS: 29.1
PERSONNEL TRANSPORTED: 37
CARGO TRANSPORTED: 3800 LBS
 - B. HLY05-02: SORTIES: 18
FLIGHT HOURS: 32.9
PERSONNEL TRANSPORTED: 46
CARGO TRANSPORTED: 3000 LBS
 - C. HLY05-03: SORTIES: 25
FLIGHT HOURS: 30.0
PERSONNEL TRANSPORTED: 18
CARGO TRANSPORTED: 3900 LBS
 - D. TOTAL AWES-05 (NUMBERS INCL DATA EXTERNAL TO DIRECT SCIENCE SUPPORT SUCH AS ARRIVALS, DEPARTURES, USCG LOGISTICS OR DLQs):
SORTIES: 89
FLIGHT HOURS: 120.4
PERSONNEL TRANSPORTED: 101
CARGO TRANSPORTED: 10,700 LBS
 - E. MISSIONS: LOGISTICS, SCIENCE SUPPORT, ICE RECONNAISSANCE.
 - F. AIRCRAFT AVAILABILITY: 99.53%
3. MAJOR CASUALTIES:
 - A. CASREPS 05018, 05045, 05046: MDE HEAT EXCHANGERS.
 - B. CASREP 05021: STBD ANCHOR WINDLASS.
 - C. CASREP 05033: DISHWASHER.
 - D. CASREP 05027: TACAN.

E. CASREPS 05026, 05037, 05038, 05053: PUMPS (CFW, STRNG, MSW).

F. CASREP 05025: STEAM PREHEATER AND REHEATER COILS.

G. CASREPS 05042, 05043, 05051, 05055, 05057: CYCLOS.

H. CASREPS 05035, 05062: CTES COMPUTER AND SERVER.

I. CASREPS 05030, 05031, 05052, 05061, 05068: MDE

CASUALTIES.

J. CASREP 05034: AFT WARPING CAPSTAN.

K. CASREP 05036: BOW THRUSTER.

L. CASREP 05047, 05048: CRANES.

M. CASREP 05050: INCINERATOR.

N. CASREP 05056: OWS.

O. CASREPS 05059, 05060: STORM DAMAGE TO ANCHOR AND BOW CRANE.

P. CASREPS 05054, 05064, 05065: SHAFTING.

Q. CASREP 05039: BOILER CONDENSATE SYSTEM.

R. CASREP 05040, 05041: FOPS AND LOPS.

S. CASREP 05063: HEALY 1 (RHI).

T. 34 MSW, ASW AND FIREMAIN PIPING LEAKS.

4. COMMUNICATIONS:

A. OVERALL, COMMS WERE EXCELLENT THROUGHOUT THE DEPLOYMENT. INMARSAT CONNECTIVITY WAS LOST DURING THE TRANSIT OVER THE NORTH POLE FROM 80N, WEST LONGITUDE TO 80N, EAST LONGITUDE. IMPLEMENTED SWIII HIGH LATITUDE EMAIL SOLUTION. IRIDIUM REACHBACK UNIT CONFIGURED FOR EMAIL CONNECTIVITY ONLY. WAS ABLE TO MAINTAIN EMAIL CONNECTIVITY WITH BOTH SCIENCE AND COAST GUARD LOADS.

B. HFDX COMMS WERE GOOD THROUGHOUT DEPLOYMENT. HEALY RECEIVED GREAT SUPPORT FROM COMMSTA KODIAK AND CAMSPAC POINT REYES.

C. IRIDIUM COMMS THROUGH REACHBACK WERE CONSISTENTLY EXCELLENT. PROVIDED THE SCIENCE PARTIES A PRIMARY MEANS FOR DATA AND EMAIL TRANSFER AT ALL LATITUDES. IRIDIUM PHONE THROUGH MXU2000 AND SINGLE CHANNEL UNIT WAS THE PRIMARY VOICE COMMUNICATIONS CIRCUIT WITH MINI-M SERVING AS SECONDARY. IRIDIUM FUNCTIONED WELL FOR BOTH VOX AND E-MAIL AT OUR HIGHEST LATITUDES.

D. HEALY IS IN DISCUSSIONS REGARDING HIGH LATITUDE CONNECTION TO CGDN. IRIDIUM IS CAPABLE OF BEING USED FOR THIS SERVICE BOTH FOR HEALY AND OTHER NON-INMARSAT COAST GUARD ASSETS AND IT IS RECOMMENDED AS A SOLUTION FOR CONNECTIVITY WHEN CUTTERS WILL BE OUT OF INMARSAT-B SATELLITE FOOTPRINTS. RECOMMEND PURSUING IRIDIUM SOLUTIONS IN OVERCOMING ALL COAST GUARD DATA NETWORK CONNECTIVITY BARRIERS.

5. PORT CALLS: THE USUAL STELLAR SUPPORT OF MLCPCPAC//MDL// AND INDIVIDUAL USDAO OFFICES ENSURED ALL REQUESTED SERVICES WERE ARRANGED AND RENDERED.

PORT:	DATES:	PURPOSE:
A. DUTCH HARBOR, AK	31 JUL - 05 AUG	LOGISTICS/LIBERTY
B. TROMSO, NORWAY	30 SEP - 05 OCT	LOGISTICS/LIBERTY
C. DUBLIN, IRELAND	10 OCT - 17 OCT	LIBERTY
D. SAN MIGUEL, AZORES	22 OCT - 26 OCT	LIBERTY
E. SAINT MARTIN (NETH)	03 NOV - 06 NOV	LIBERTY
F. CABO SAN LUCAS, MX	18 NOV - 21 NOV	LIBERTY

6. NOTEWORTHY EVENTS:

A. SCIENCE:

1. HLY 05-01 (13-26 JUN) AND 05-03 (05 AUG-30 SEP) NSF FUNDED MISSIONS FOCUSED ON CORING AND COLLECTING GEO-PHYSICAL TRANSECT DATA VIA SEISMIC STREAMER WHICH WAS TOWED WHILE BREAKING MANAGEABLE ICE. 470 METERS OF CORE WAS OBTAINED AND

480 NM OF SUB-BOTTOM MAPPING WAS COMPLETED. SAMPLES AND DATA WERE COLLECTED FROM THE CANADIAN BASIN, NORTHWIND RIDGE, CHUKCHI PLATEAU, MENDELEEV RIDGE, ALPHA RIDGE, LOMONOSOV RIDGE, GAKKEL RIDGE AND YERMAK PLATEAU. MUCH OF THE SUB-BOTTOM PROFILING REVEALED FOR THE FIRST TIME THE NATURE OF THE SEA FLOOR WHICH WAS PREVIOUSLY ONLY SPECULATED. THE CHUKCHI BORDERLAND SURVEY REVEALED MORE EXTENSIVE AND DEEPER GLACIAL EROSION THAN EXPECTED.

2. HLY 05-02 (27 JUN - 26 JUL) NOAA FUNDED OCEAN EXPLORATION WAS BIOLOGICALLY FOCUSED AND SUB-CATEGORIZED INTO MARINE MAMMAL, ON ICE, UNDER ICE, PELAGIC (MID-WATER) AND BENTHIC (BOTTOM). EXTENSIVE PELAGIC AND BENTHIC EXPLORATION WAS CONDUCTED VIA REMOTE OPERATED VEHICLE (ROV) EQUIPPED WITH LIGHTING AND SAMPLING CAPABILITIES. THE ROV WAS OPERABLE TO DEPTHS OF 2850 METERS AND LOGGED 140 HOURS IN THE WATER. COAST GUARD DIVERS LOGGED 50 HOURS UNDERWATER AND ICE TO COLLECT SAMPLES AND VIDEO. OUR TWO A-FRAMES HOISTED 130 OVER-THE-SIDE GEAR SUBMERSIONS. THIS PHASE DISCOVERED SEVERAL NEW SPECIES OF JELLYFISH AND BENTHIC ANIMALS AND DESCRIBED EXTENSIONS OF HABITAT BY SPECIES NOT PREVIOUSLY OBSERVED IN THE ARCTIC.

B. BESET (14-18 JUN): HEALY WAS STUCK IN THE ICE FOR 93 HOURS BETWEEN 14-18 JUNE APPROXIMATELY 70NM NNW OF BARROW, AK. WHILE VENTURING INTO INCREASINGLY TOUGHER MULTI-YEAR ICE CONDITIONS EARLY IN THE SEASON, WE WERE NIPPED BY A LARGE FLOE THAT COLLAPSED ON OUR TRACK, A TERM COMMONLY NOW REFERRED TO AS BEING "BRIDED." EASTERLY WINDS CAUSED THE ICE TO EXERT PRESSURE ON THE STARBOARD BEAM OF OUR NORTHERLY HEADING WHICH ULTIMATELY LED TO A 4 DEGREE PORT HEEL. TWO OR THREE TIMES PER DAY, WE WOULD POWER UP THE PLANT TO FULL ON 3 ENGINES FOR 20 MINUTES AHEAD AND ASTERN. THE AFT RUNNING AHEAD PROP WASH CAUSED NOTABLE DECAY ON THE ICE ASTERN. 4 FIRE HOSES DRAWING FROM THE 45F DEGREE SEABAY WERE ALSO RIGGED AND TRAINED ON A PARTICULARLY TROUBLESOME 2-CAR-GARAGE-SIZED PIECE OF ICE WHICH HAD BECOME LODGED AT AN ANGLE UNDER THE PORT QUARTER. THIS PIECE ULTIMATELY APPLIED SUCH FORCE ON THE RUDDER AS TO BURN OUT THE STEERING PUMP MOTOR WHICH WAS TRYING TO RESET ITSELF TO AMIDSHIPS. THE STEERING PUMP MOTORS WERE SECURED TO HELP MITIGATE THIS OCCURRENCE. THE COMBINATION OF PROP WASH, 45F DEGREE HIGH VELOCITY FIRE HOSES, MELT TIME AND ABATING WINDS EVENTUALLY ALLOWED US TO BREAK FREE.

C. NORTH POLE (12 SEP): FEW SURFACE VESSELS HAVE REACHED THE NORTH POLE. THIS WAS ONLY THE SECOND TIME IN HISTORY THAT THIS WAS DONE FROM THE WEST, THE PREVIOUS BEING USCGC POLAR SEA AND CCGS LOUIS S. ST-LAURENT IN 1994. THIS IS NOT A TRIP THAT SHOULD BE MADE ALONE. HEALY JOINED FORCES AS PLANNED WITH THE SWEDISH ICEBREAKER ODEN FROM 01-24 SEP. THE TWO'S ICEBREAKING CAPABILITIES COMPLIMENTED EACH OTHER AND IT IS LIKELY THAT NEITHER COULD HAVE MADE IT ALONE. (SEE ALSO CO COMMENTS PARA 9.D.)

7. FUEL EXPENDED:

A. PROPULSION:	1,806,686 GALLONS
B. AVIATION (JP5):	6,316 GALLONS
C. TOTAL:	1,813,002 GALLONS

8. MILES CRUISED: 22,913 NM

9. COMMANDING OFFICERS COMMENTS:

A. LDEO CONTRACT: THE NSF FUNDED SCIENCE SUPPORT CONTRACT THRU COLUMBIA UNIVERSITY'S LAMONT-DOHERTY EARTH OBSERVATORY ENSURES HEALY'S SUCCESS IN ARCTIC RESEARCH SCIENCE SUPPORT. WE WOULD BE ONLY A FRACTION AS EFFECTIVE WITHOUT THE ESTABLISHED CORPORATE KNOWLEDGE WHICH HAS BEEN DEVELOPED OVER HEALY'S 6 YEARS IN SERVICE. THE EXISTENCE OF THIS CONTINUOUS SUPPORT IS AS IMPORTANT AS OUR STANDING RELATIONSHIPS WITH NESU, ESU, ALSTOM OR SPERRY.

B. AVIATION SUPPORT: THE CONCLUSION OF THIS DEPLOYMENT MARKS THE DISESTABLISHMENT OF THE COAST GUARD'S POLAR OPERATIONS DIVISION (POPDIV) FOR AVIATION SUPPORT TO THE ICEBREAKERS. HEALY WAS GRACED WITH SUPERIOR AVIATORS EAGER TO FLY AND OUTSTANDING FLIGHT MECHANICS WHO MAINTAINED THE 99.53% AIRCRAFT AVAILABILITY. THE BRAVO MODEL HH-65s WE DEPLOYED WITH WERE LIMITED IN FLIGHT OPPORTUNITIES DUE TO REDUCED VISIBILITY (NEAR CHRONIC IN THE SUMMER ARCTIC) AND WIND PARAMETERS WHILE HOVE TO.

C. ENGINEERING: AS WITH LAST YEAR, SIGNIFICANT ENGINEERING EVENTS PRIMARILY REVOLVED AROUND MDG, STEAM HEATER, SALT WATER PIPING LEAKS, AND CYCLOCONVERTER ISSUES. OVERALL, OUTSTANDING EFFORT BY THE CREW AND SIGNIFICANT SUPPORT FROM THE SHORESIDE MAINTENANCE COMMUNITY ENSURED HEALY WAS ABLE TO SUCCESSFULLY MEET ALL MISSION AND SCHEDULE REQUIREMENTS.

1. MDG: EARLY IN THE DEPLOYMENT, NESU SEATTLE PROVIDED A TEAM OF TECHNICIANS TO REPLACE THE CYLINDER LINER O-RINGS ON NR3 MDG TO ENSURE IT WAS RELIABLE FOR THE TRANS-ARCTIC SCIENCE LEG.

2. STEAM HEATERS: FAILURES WERE AGAIN A PROBLEM, HOWEVER THE UPCOMING AVAILABILITY IS COMPLETING MAJOR LOUVER AND CONDENSATE PIPING WORK WHICH SHOULD IMPROVE THE SYSTEM'S CAPABILITY TO HANDLE COLD WEATHER.

3. SALTWATER PIPING: A SOLUTION FOR THE CAUSE OF THE SALTWATER PIPING EROSION IS BEING PROTOTYPED ON THE AUXILIARY SALTWATER THIS INPORT, BUT THE MSW AND ASW PIPING DAMAGE IS DONE AND HEALY CAN EXPECT CONTINUED WATER LEAKS UNTIL THE ERODED SECTIONS ARE ALL REPLACED.

4. CYCLOCONVERTERS: NOTWITHSTANDING THE EXCELLENT TROUBLESHOOTING BY THE EM SHOP, THE CYCLOCONVERTERS CONTINUE TO REQUIRE SIGNIFICANT SUPPORT FROM THE IPP CONTRACTOR THROUGHOUT THE DEPLOYMENT TO MAINTAIN FULL CAPABILITY.

D. SWEDISH ICEBREAKER ODEN: EARLY PLANNING FOR AWES-05 AVAILED THE OPPORTUNITY TO RENDEZVOUS AND WORK WITH THE ODEN DURING THE TRANS-ARCTIC PHASE OF THIS DEPLOYMENT. JOINT OBJECTIVES WERE DEVELOPED FOR SCIENCE, NAVIGATION AND LOGISTICS. HEALY AND ODEN HAVE DIFFERENT ICEBREAKING CAPABILITIES WHICH COMPLIMENTED EACH OTHER NICELY. ODEN'S MANEUVERABILITY IN THE ICE FAR EXCEEDS HEALY'S, WHILE OUR BACKING AND RAMMING CAPABILITY IN HEAVY ICE WAS MUCH BETTER. OF PARTICULAR NOTE, WE BENEFITED FROM THE COMMERCIALY CONTRACTED SERVICES OF AN ICE RECONNAISSANCE HELICOPTER EMBARKED IN ODEN WHICH TACTICALLY PLOTTED THE LAST SEVERAL HUNDRED MILES TO THE NORTH POLE FOLLOWED BY THE WAY SOUTH AND OUT.

E. U.S. NAVAL ICE CENTER ICE IMAGERY: THE HIGH RESOLUTION SATELLITE ICE IMAGERY PROVIDED BY NIC WAS OF SIGNIFICANT STRATEGIC VALUE. THESE IMAGES, COMBINED WITH ROUTINE TACTICAL

HELO ICE RECONNAISSANCE FLIGHTS BY ODEN'S HELO, HELPED PLAN THE WAY AHEAD.

F. NORTHSLOPE BOROUGH SAR, BARROW, ALASKA: THE GRATIS SERVICES OF THE NORTHSLOPE BOROUGH SAR HELO (BELL 412 UH-1N HUEY) WERE USED ON THREE SEPARATE OCCASIONS TO THE GREAT BENEFIT OF HLY05-02, THE NOAA FUNDED OCEAN EXPLORATION. DURING THE INITIAL ONLOAD OF THE MISSION 5NM OFFSHORE BARROW, NORTHSLOPE'S HUEY MANAGED 6 HEAVY LIFTS OF SCIENCE GEAR (MOSTLY ASSOCIATED WITH THE ROV) WHICH GREATLY EXCEEDED THE CAPACITY OF AN HH-65. NORTHSLOPE'S HUEY WAS ALSO CALLED UPON TWICE FOR ROUNDTrips WHILE HEALY WAS 200NM FROM BARROW. ONE ROUNDTrip WAS TO DELIVER A CRITICAL REPLACEMENT PART FOR THE ROV WHICH SAVED 40% OF THE SCIENCE OBJECTIVES FOR THE NOAA LEG AND THE OTHER, TO PICK UP A MEMBER OF THE SCIENCE PARTY WHO HAD LEARNED OF THE UNEXPECTED DEATH OF HIS FATHER.

G. BASC - BARROW ARCTIC SCIENCE CONSORTIUM: THE ARCTIC SCIENCE SUPPORT INFRASTRUCTURE IN BARROW PROVIDED BY BASC IS ABSOLUTELY NECESSARY TO ASSIST IN SCIENCE PARTY ARRIVALS AND DEPARTURES AND LIAISON / GOOD RELATIONS WITH LOCAL TRIBAL INTERESTS (WHALING) AND COMMERCIAL ENTITIES SUCH AS NORTHSLOPE BOROUGH SAR.

H. THIS CONCLUDES ANOTHER HIGHLY SUCCESSFUL POLAR DEPLOYMENT BY A CG ICEBREAKER. THE LONG HISTORY OF CG PERSONNEL AND CUTTERS SUPPORTING SCIENCE IN THE POLAR REGIONS CONTINUES AT A LEVEL THAT WOULD MAKE OUR NAMESAKE PROUD, CONTINUING THAT FINE TRADITION OF POLAR EXCELLENCE CAPT MIKE HEALY FOUNDED.

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Appendix F

PRESS RELEASES

U. S. DEPARTMENT OF HOMELAND SECURITY

U. S. Coast Guard

FOR IMMEDIATE RELEASE

September 12, 2005

Contact: ENS Jonathan J. Buser

jbuser@healycrew.polarscience.net

(808) 434-4897 Ext. 0 after tone

ARCTIC OCEAN – The United States Coast Guard Cutter HEALY, the nations largest icebreaker, commanded by Captain Daniel K. Oliver, arrived at the geographic North Pole today. HEALY reached position 90-00° North Latitude at 1600 Greenwich Mean Time after traveling more than 10,000 track miles from her homeport of Seattle, WA.

This accomplishment marks the third occasion that a US surface ship has reached the North Pole and the second time for the HEALY. The crew of 94 has been deployed in the Arctic region since June 1 conducting scientific missions in conjunction with the National Science Foundation and the National Oceanographic Atmospheric Administration. The North Pole expedition began on August 5 in Dutch Harbor, AK. On September 1 HEALY rendezvoused with the Swedish Ice Breaker ODEN. The two ships worked together to navigate leads of open water and cracks through the ice to reach the North Pole. Along the way HEALY's 47 embarked scientists from 9 countries conducted seismic surveys of the sea floor, took salinity and temperature samples of the water column, sea ice samples, and sediment cores in depths reaching 2,800 meters. Information gathered from this expedition will help us to understand global climate change and provide valuable insight into the formation of the Arctic basin.

More information about this and previous deployments can be found by visiting www.uscg.mil/pacarea/healy.

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U. S. DEPARTMENT OF HOMELAND SECURITY

U. S. Coast Guard

FOR IMMEDIATE RELEASE

September 30, 2005

Contact: ENS Jonathan J. Buser

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(808) 434-4897 Ext. 0 after tone

TROMSO, NORWAY – The United States Coast Guard Cutter HEALY, the nations largest icebreaker, commanded by Captain Daniel K. Oliver, arrived in Tromso, Norway today. The arrival marks the completion of the first geophysical transect of the Arctic sea floor by a surface ship, and only the second ever trans-arctic expedition by surface ships.

The expedition began for HEALY on August 5 in Dutch Harbor, Alaska. On September 1, HEALY rendezvoused with the Swedish Ice Breaker ODEN. The two ships worked together to navigate leads of open water and cracks through the ice to reach the North Pole. Along the way HEALY's 47 embarked scientists from 9 countries conducted seismic surveys of the sea floor, took salinity and temperature samples of the water column, sea ice samples, and sediment cores in depths reaching 2,800 meters. HEALY and ODEN continued to work together until reaching the eastern edge of the Polar Ice cap on September 22, 2005.

Trans-arctic seismic data was first collected from 1961-1965 by the University of Wisconsin. During this period Arctic Research Laboratory Ice Station number 2 (ARLIS-2) was maintained on a slab of glacier ice as it drifted from the coast of northern Alaska to the coast of northern Iceland. HEALY's 2005 geophysical program was carried out by scientists from the University of Bergen, University of Alaska, and Texas A&M University. During the 57-day trans-arctic voyage more than 2,200 km of data were collected bringing the Arctic seismic database total to 6,600 km. In recognition of this historical Arctic crossing the Captain, crew, and scientists of HEALY presented to the Polar Museum in Tromso a rock collected from ARLIS-2.

More information about this and previous deployments can be found by visiting www.uscg.mil/pacarea/healy.

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U. S. DEPARTMENT OF HOMELAND SECURITY

U. S. Coast Guard

FOR IMMEDIATE RELEASE

October 22, 2005

Contact: ENS Jonathan J. Buser
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(808) 434-4897 Ext. 0 after tone

PONTA DELGADA, AZORES – The United States Coast Guard Cutter HEALY, the nations largest icebreaker, commanded by Captain Daniel K. Oliver and with a crew of 85, arrived in Ponta Delgada, Azores today. HEALY is transiting back to her homeport of Seattle, Washington after a four-month scientific deployment in the Arctic Ocean. HEALY was designed in cooperation with the National Science Foundation as an arctic research vessel to be operated by the US Coast Guard. During the Arctic deployment of 2005 HEALY achieved several milestones including a visit to the geographic North Pole and the second ever trans-arctic expedition by surface ships.

The North Pole expedition began on August 5 in Dutch Harbor, Alaska. On September 1 HEALY rendezvoused with the Swedish icebreaker ODEN. The two ships worked together to navigate leads of open water and cracks through the ice to reach the North Pole. Along the way HEALY's 47 embarked scientists from 9 countries conducted seismic surveys of the sea floor, took salinity and temperature samples of the water column, sea ice samples, and sediment cores in depths reaching 2,800 meters. Information gathered from this expedition will help us to understand global climate change and provide valuable insight into the formation of the Arctic basin. HEALY and ODEN continued to work together until reaching the eastern edge of the Polar Ice cap on September 22, 2005.

More information about this and previous deployments can be found by visiting www.uscg.mil/pacarea/healy.

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U. S. DEPARTMENT OF HOMELAND SECURITY

U. S. Coast Guard

FOR IMMEDIATE RELEASE

November 28, 2005

Contact: ENS Jonathan J. Buser
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SEATTLE, WA – The United States Coast Guard Cutter HEALY, the nations largest icebreaker, commanded by Captain Daniel K. Oliver and with a crew of 85, returned to home port today completing her 2005 North American circumnavigation. HEALY left Seattle 180 days ago on June 1st for a scientific deployment in the Arctic Ocean. HEALY was designed in cooperation with the National Science Foundation as an arctic research vessel to be operated by the US Coast Guard.

During the Arctic deployment of 2005, HEALY achieved several milestones including the third visit to the geographic North Pole by a US surface ship and the second ever trans-arctic expedition by surface ships. Additionally, HEALY hosted the Ocean Exploration branch of the National Oceanic and Atmospheric Administration (NOAA) for an intensive one-month survey of marine life under the polar ice cap. HEALY scientists and crewmembers used surface supplied divers and remotely operated vehicles to complete this survey which included the discovery of multiple new species of marine life.

The North Pole expedition began on August 5 in Dutch Harbor, Alaska. On September 1 HEALY rendezvoused with the Swedish icebreaker ODEN. The two ships worked together to navigate leads of open water and cracks through the ice to reach the North Pole. Along the way HEALY's 47 embarked scientists from 9 countries conducted seismic surveys of the sea floor, took salinity and temperature samples of the water column, sea ice samples, and sediment cores in depths reaching 2,800 meters. HEALY and ODEN continued to work together until reaching the eastern edge of the Polar Ice cap on September 22. Information gathered from these expeditions will help us to understand global climate change and provide valuable insight into the formation of the Arctic basin.

Upon return to Seattle, HEALY will have sailed over 22,000 miles circumnavigating North America; 4,800 of these miles were ice covered. HEALY visited five foreign ports in addition to transiting the Panama Canal. HEALY will undergo routine maintenance in preparation for her next scientific deployment beginning in late spring 2006. More information about USCGC HEALY can be found by visiting www.uscg.mil/pacarea/healy.

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