ARCTIC WEST SUMMER 2013

USCGC HEALY (WAGB 20)
11 Jul 2013 – 05 Nov 2013
Cruise Report

U.S. Department of Homeland Security
United States Coast Guard

Commanding Officer
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16155
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MEMORANDUM

From: J. D. Reeves, CAPT
CGC HEALY (WAGB 20)

To: CG PACAREA (CG-35)

Subj: ARCTIC WEST SUMMER 2013 CRUISE REPORT

Ref: (a) Polar Icebreaker Cruise Reports, COMDTINST 16155.2B
(b) Polar Icebreaker Cruise Reports, Tactics Techniques and Procedures (TTP), CGTTP 3-76.1

1. This report is submitted in accordance with references (a) and (b) and covers the period from 19 June 2013 to 05 November 2013.

#

Executive Summary

HEALY conducted four missions to support Arctic research during the Arctic West Summer 2013 (AWS-13) deployment.

The first mission, HLY 13-01, was conducted with researchers from the Chesapeake Bio Lab of the University of Maryland and sponsored by the Bureau of Ocean Energy Management. Researchers used various over-the-side sampling techniques to collect benthic, epibenthic, and pelagic specimens to develop an ecological snapshot of the biologically diverse and productive Hanna Shoal region.

The second mission, HLY 13-02 was conducted with researchers from the Woods Hole Oceanographic Institute (WHOI). Researchers used the Gravity Core, Jumbo Piston Core and Multi-core to collect sediment samples to search for evidence of a massive freshwater flood near the Mackenzie River Basin approximately 13,000 years ago. Such an event would have had profound effects on global climate.

The third mission, PUMA/RDC, was conducted in support of the National Oceanic and Atmospheric Administration (NOAA) and the Coast Guard Research and Development Center (RDC). The weeklong mission tested our capability to respond to a mock oil spill in Arctic ice covered waters, using HEALY as a response platform. Throughout the week, researchers and Coast Guard personnel deployed a variety of equipment to detect, evaluate and remove the mock oil from the water and ice surface.

The fourth mission of the patrol, HLY 13-03, was a continuation of HLY 12-03, conducted with researchers from WHOI and the Scripps Institute of Oceanography. In addition to deploying new subsurface moorings, we recovered, serviced and re-deployed additional hydrographic moorings and conducted CTD casts to study the Alaskan Boundary Current.

We returned to Base Seattle on 05 November, 2013, having sailed 19,650 miles in 117 consecutive days away from home port.

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Chronological Events

11 Jul 13	Departed Seattle, WA from Pier 36
15 Jul 13	Shifted TACON from COMPACAREA to D-17
17 Jul 13	Moored Kodiak, AK at City Pier #2
22 Jul 13	Departed Kodiak, AK
26 Jul 13	Stood into Bering Sea at Unimak Pass
26 Jul 13	Moored Dutch Harbor, AK at UMC Pier
29 Jul 13	Departed Dutch Harbor, AK
30 Jul 13	Crossed 60 Degrees North Latitude
01 Aug 13	Crossed the International Date Line and Arctic Circle Northbound
15 Aug 13	Anchored off coast of Barrow, AK for MOB/DMO
17 Aug 13	Departed Barrow, AK
06 Sep 13	Anchored off coast of Barrow, AK for MOB/DMO
08 Sep 13	Departed Barrow, AK
12 Sep 13	Reached Northernmost Point of AWS-13 (76-11.726N 158-11.544W)
15 Sep 13	Crossed International Date Line and Arctic Circle Southbound
16 Sep 13	Crossed 60 Degrees North Latitude
18 Sep 13	Stood into Gulf of Alaska at Unimak Pass
20 Sep 13	Moored Seward, AK at Alaska Railroad Dock
28 Sep 13	Departed Seward, AK
01 Oct 13	Stood into Bering Sea at Unimak Pass
02 Oct 13	Moored Dutch Harbor, AK at UMC Pier
05 Oct 13	Departed Dutch Harbor, AK
06 Oct 13	Crossed 60 Degrees North Latitude
07 Oct 13	Cross Arctic Circle Northbound
27 Oct 13	Crossed Arctic Circle Southbound
28 Oct 13	Crossed 60 Degrees North Latitude
30 Oct 13	Moored Dutch Harbor, AK at UMC Pier
31 Oct 13	Departed Dutch Harbor, AK
31 Oct 13	Stood into Gulf of Alaska at Unimak Pass
03 Nov 13	Shifted TACON from D17 to COMPACAREA
05 Nov 13	Moored Seattle, WA at Pier 3

I. Deployment Phases

I.A Pre-deployment Preparation

I.A.1 Ship Operations

I.A.1.a Vessel Operations

The underway schedule is provided below in Table 1-1, while a detailed description of the FY13 schedule is provided in Appendix 1. The Operations Order (OPORD) and Deployment Summary (DEPSUM) are contained in Appendix 2.

DATE	*EVENT*
20 Jun – 29 Jun	Shakedown & Ready for Sea
30 Jun – 10 Jul	Onloads and Pre-deployment Stand Down
11 Jul – 21 July	N/B Transit: 6 day transit, 5 days i/p Kodiak
22 Jul – 28 July	W/B Transit: 3 days MH60/65 DLQs, 2 day transit, 2 days i/p Dutch Harbor
29 Jul – 02 Aug	N/B Transit to Hanna Shoal
03 Aug – 14 Aug	HLY 13-01 BOEM
15 Aug – 16 Aug	DMO 13-01/MOB 13-02 at anchor off Barrow, AK
17 Aug – 06 Sep	HLY 13-02 WHOI Jumbo Piston Coring
07 Sep – 08 Sep	DMO 13-02/MOB PUMA/RDC at anchor off Barrow, AK
09 Sep – 20 Sep	PUMA/RDC and Southbound Transit to Seward, AK
21 Sep – 27 Sep	Mid Patrol Break in Seward, AK
28 Sep – 04 Oct	W/B Transit to Dutch Harbor: 4 day transit, 2 days i/p Dutch Harbor
05 Oct – 08 Oct	N/B Transit to Chukchi Sea
09 Oct – 26 Oct	HLY 13-03 North Slope Moorings
27 Oct – 30 Oct	S/B Transit to Dutch Harbor
31 Oct – 05 Nov	S/B Transit to Seattle

Table 1-1. Arctic West Summer 2013 (AWS-13) Schedule

<u>Drydock and Dockside Maintenance at Vigor Shipyards</u>
HEALY entered Drydock 10 at Vigor Shipyards on 28 January 2013 to complete $10M in drydock repairs. We embarked a pilot from Western Towboat, and two tugs maneuvered the cutter from Base Seattle to the shipyard, where we underwent an intense maintenance period, which included repairs to underwater body coating, renewal of a cracked propeller blade and inspections to determine the scope of work for the 2016 drydocking. Undocking was delayed by one week for curing of Inerta 160 on the underwater body. HEALY refloated on 23 April 2013 and remained at VIGOR shipyards during the 2013 Dockside Maintenance Availability, where we completed an additional $5.7M in repairs. With POLAR STAR and both 378' WHECs in port, there was no berthing available for HEALY at Base Seattle during this time. Dockside repairs included topside crane maintenance, tank maintenance and repairing the oceanographic winch cable "level wind" system to correct the cable fowling during CTD recoveries.

<u>Pre-Shakedown Pier side Maintenance</u>
The main seawater (MSW) strainer baskets presented a challenge to undocking, as replacements required a longer lead time than originally anticipated. This fact, combined with the excess time required to repair two of the PIMA valves, resulted in a requirement for underwater installation

and removal of cofferdams around the sea chest, as the strainer baskets and valves had to be replaced after undocking, complicating an evolution that could have been completed more easily while in drydock. Additionally, in early June, workers discovered that pin connections on both the starboard and aft A-Frames were worn well outside of acceptable tolerances. Necessary repairs to these critical systems delayed the Shakedown Cruise by nine days.

Continuing Resolution and Sequestration funding limitations were a major contributing factor to this delay. As funding was not directly or immediately available, the dockside contract was not awarded until mid-April. Had the contract been awarded in February as originally planned, these discrepancies would have been discovered months earlier, incorporated into the production schedule and work completed without impact to the underway schedule.

An improper testing procedure (excessive weight) during the weight testing of the starboard knuckle crane caused the hydraulic rams of the outer jib to buckle. Shakedown was further delayed by a day as a plan for repairs was developed. HEALY sailed for Shakedown on 20 June 2013 with the starboard knuckle crane removed. The crane was re-installed at Base Seattle on 05 - 06 July.

<u>Shakedown & Sea Trial, 20 – 29 June</u>

From 20 - 29 June, HEALY conducted a Shakedown and Sea Trial assessment following the 2013 Dockside Maintenance Availability. The schedules for both operations are provided in Appendix 3. Crewmembers, Base Seattle Naval Eng Dept personnel and contractors performed vender work acceptance trials and validated groomed systems. We also conducted ship-wide emergency drills to refresh the incoming and incumbent crewmembers on damage control processes and organization, small boat training and flight operations with AIRSTA Port Angeles. Midway through the cruise, we called at Canadian Forces Base (CFB) Esquimalt outside of Victoria, British Columbia. The stop provided the crew a chance to unwind after a vigorous week of training and offered a challenging transit and mooring evolution for the navigation team.

<u>Predeployment Preparation, 30 June – 10 July</u>

To prepare for the AWS-13 deployment, we completed science cargo onloads during this period. The crew was given one week of stand down to prepare for the deployment.

I.A.1.b. Cargo Operations

Figure 1-1. The first of three coring vans is loaded onto the fantail in Seattle via the Ness Crane

Seattle Onloads

Prior to departure from Seattle for the field season, several tons of scientific equipment and supplies were loaded aboard HEALY over a three day scheduled onload period. With assistance from the Deck Division, all the scientific gear was quickly loaded and stowed by the Marine Science Division according to mission order. Gear was generally grouped by mission number in Cargo Holds 1, 2, and 3 with oversized pieces stored in the Hangar and on the 04 deck. This system made it easy to access each leg's gear while underway requiring minimal reorganization during mobilization periods. Gear for HLY-13-03 and RDC/PUMA was loaded first into Cargo Hold 1, with the massive TSE winch and drum cart secured on the starboard side of the 04 deck and one large buoy and the PUMA ROV stored in the hangar. Equipment for HLY-13-02 was loaded next and stored in Cargo Hold 1, with core weights mounted on the port and starboard side of the fantail. HLY-13-03 was loaded last and stored in Cargo Holds 2 and 3, the fantail and in aft staging. Pallets were picked from the pier using the starboard 04 crane and lowered directly into Cargo Hold 2 or pallet jacked into the Science Hoist through Starboard Staging. A hired 90 AT Ness Crane with at least a 52' boom radius was needed to load the 13-02 coring equipment and vans. We also used the Ness Crane to load the RDC Vessel of Opportunity Oil Skimming System conex box on the starboard boat deck, forward of the ASB. Due to its location on the deck, the 04 crane could not accomplish this pick.

DATE	*TYPE*	*WEIGHT (lb)*	*VOLUME (ft^3)*
01-03 July	Science Gear	285,750	195,520

Table 1-2. Science gear statistics

I.A.1.c. Boat Operations

Various ship riders came aboard for the first few days of the shakedown cruise to validate repair work done during the drydock and dockside periods (Vigor, STARC, NED Seattle, etc). To transfer these personnel to shore after completion of their obligations we anchored in the Sequim

Bay entrance on 22 June. We used the ASB and CB-L to transfer passengers to the John Wayne Marina in Sequim at the fuel dock (we contacted the Dockmaster at 360-417-3440 prior to operations). For the ASB, the depths in the approach around Travis Spit presented a challenge. With a full load of passengers, the depth sounder showed as little as 1.5 feet beneath the keel during the approach through the channel buoys and into the marina. Recommend continuing to ensure accurate and up-to-date charts are available, and that tides are analyzed prior to conducting small boat operations in this area.

DATE	*TYPE*	*MISSION*	*BOAT*	*TIME*
22 June	Ops	Training / PAX Transfer	224710	4+00
22 June	Ops	Training / PAX Transfer	38251	3+30
28 June	Ops	Training	224710	3+00
28 June	Ops	Training	38251	4+00

Table 1-3. 2013 Shakedown Small Boat Sortie Log

I.A.2. Air Operations

I.A.2.a Operations

During the shakedown cruise, we conducted two days of flight operations and Deck Landing Qualifications with MH-65Ds from AIRSTA Port Angeles. Due to the transfer season and its impact upon our force of qualified flight deck personnel, we embraced the opportunity to train and qualify a new LSO, several tiedown and fire team crewmembers, as well as to complete required aviation drills. The aircrews also garnered valuable experience while conducting landings, VERTREPs and HIFRs with the most unique platform in the Coast Guard.

Figure 1-2. HIFR evolution with CG-6518 in the Eastern Bank during Shakedown

Although the second day was cut short due to inclement weather and fog, a total of 47 landings were completed, with four pilots and one aircrew member earning their Deck Landing or VERTREP qualifications.

I.A.3 Navigation

I.A.3.c Ship's Track

During the shakedown cruise, we spent the majority of the time loitering in the Eastern Bank or at anchor near Sequim Bay while we conducted training and drills. We steamed out into deeper water for a day to complete calibrations on the multibeam sonar and along the traffic lanes in Puget Sound to conduct Mode III navigation drills.

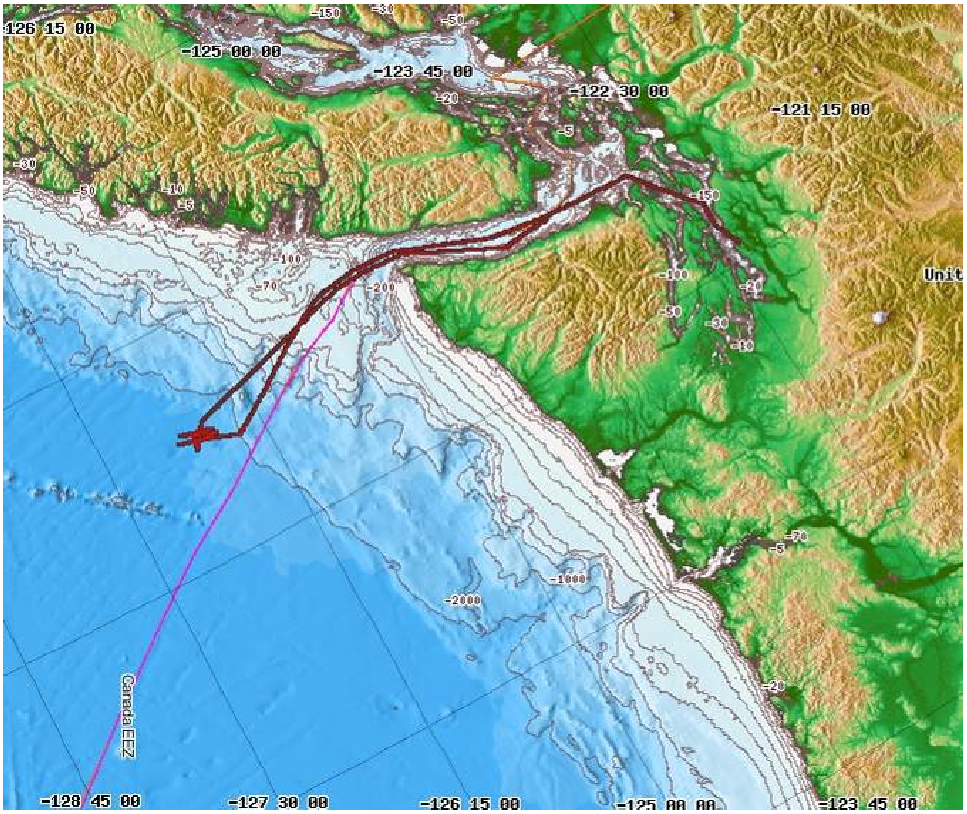


Figure 1-3. Shakedown trackline

I.A.4 Logistics

I.A.4.a Transactions in Foreign Countries

While in Esquimalt, BC, we rented three vehicles from King Brothers.

SUPPLIER	*ITEM*	*COST*
King Brothers	Rental Vehicles	$2763.51

Table 1-4. Services acquired during Victoria, BC port call

I.A.5. Phase Recommendations

Lessons Learned from Science Onloads

From 01 – 03 July, we onloaded science gear for the four science missions. As the deployment date approached, four different projects were executed on the pier and fantail during this time. In addition to the onloads, the ship was offloading waste oil to a truck on the pier, Vigor was completing final work and testing on the aft A-frame and Allied Marine Crane was performing work and testing on the Starboard Knuckle Crane. To ease the strain on our already-depleted crane resources, we contracted a mobile Ness crane to assist with operations.

The Ness crane proved absolutely necessary to handle the array of tasks and loading operations taking place, especially after the Shaw Box (part of the gantry system used to move equipment on the aft working deck) to-blocked, parting the wire rope and rendering it inoperable. With the combination of the Ness crane and chain falls the vans and all the coring equipment were loaded onto the fantail safely and successfully. The Ness Crane was used to spot the equipment as far underneath the flight deck overhang as possible, until the crane block and wire rope were nearly against the flight deck nets. The equipment was placed on a combination of pallets and rollers as the forward end of the equipment was rigged to chain falls, and the aft end to the Ness Crane, and a short pick and push forward could be completed. Repeating this process and pushing on the rollers when possible to slowly work the equipment inward proved to be successful. In all, the coring footprint was larger than anticipated, which required the flat rack (pig weights, pivot stand, etc) to be broken down and stored about the decks. The final layout of the fantail is displayed below in Figure 1-4. The dimensions of the pig weight pallets themselves were also larger than anticipated, preventing them from being placed and secured in the locations outlined in the original deck plan. The pivot stand, when anchored in the location shown and as close to the tow bit as possible, did not impede use of the capstan for trawl recovery.

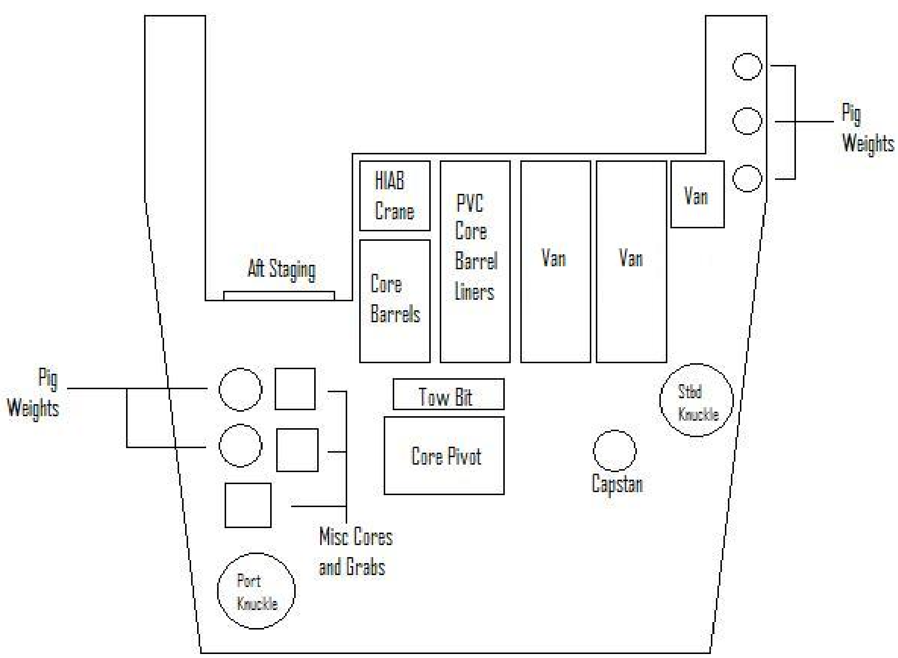


Figure 1-4. Jumbo Piston Core (13-02) Fantail storage layout

Although use of the hangar for storing science gear was discouraged, there were several items that had to be stored there, because their size prevented access through the cargo hatch or to the science hoist. This large gear included subsurface moorings, the PUMA ROV and the mooring anchor weights. Placement of these items on the fantail would hinder safe and efficient operations. We stored all of this equipment on the starboard side of the hangar, as far forward as possible without impeding use of the ladder to the Aviation Office and 04 deck. This placement minimized impact on use of the hangar space and allowed the small boat trailer and CB-L 224710 to be stored on the starboard side during the PUMA/RDC mission (to keep the boat warm when the engine block heater failed).

Temporary storage in the Base Seattle warehouse was kept to a minimum and well-advertised to warehouse personnel by STARC representative Scott Hiller. Additionally, during all early mission planning meetings and dialogue, STARC, OPS and MSTC were all very proactive in voicing the importance of the science parties' compliance with delivery and onload timelines. Constant dialogue on this topic is a must for successful logistics. Onloads were quick and efficient thanks to the science parties' efforts to deliver gear as close as possible to the scheduled onload day. As a direct result of these initiatives, two of the three days completed prior to 1600 hours, a massive improvement from 2012, when all three days extended late into the evening.

Prior to departing for AWS-13, a potential roadblock was discovered with the potential need for a Canadian Ice Pilot while HEALY conducted operations in McClure Strait (Canadian Waters) during AWS-13. However, after a dialogue with Transport Canada Government Office, it was determined that foreign state vessels (e.g. CGC HEALY) conducting marine scientific research in Canadian Arctic waters are not be subject to the full application of Arctic Waters Pollution Prevention Act and regulations. While embarking an Ice Pilot ultimately proved unnecessary, open dialogue and anticipation of potential roadblocks did a great deal in preventing last minute issues. Mr. Dave Seris (D17(dpw)) proved exceptionally helpful in developing this dialogue with Transport Canada and should be considered a primary point of contact for future queries of this nature.

I.B. Northbound Transit to Dutch Harbor, AK

I.B.1. Ship Operations

I.B.1.a. Vessel Operations

HEALY got underway from Seattle on the morning of 11 July, after resolving a minor malfunction in the cycloconverter suite. This delayed departure by two hours. Helicopter Deck Landing Qualifications were conducted prior to departing the Strait of Juan de Fuca with an MH-65D from AIRSTA Port Angeles (see Section I.B.2 – Air Operations).

HEALY moored in Kodiak, AK on 17 July at City Pier #2. Shortly after mooring, we deployed 224710 with Auxiliary Division members embarked to inspect the Oily Water Separator (OWS) clean effluent overboard discharge on the Starboard side. During (OWS) operations on the transit from Seattle it was noted that clean water would discharge overboard. A wooden plug, used to protect the discharge during exterior hull preservation had not been removed after completion of the painting. Auxiliary Division members removed the plug, restoring the system to full functionality.

Figure 1-5. HEALY moored at City Pier #2 in Kodiak

The transit from Kodiak to Dutch Harbor took HEALY and the crew through the Shumagin Islands. The narrow fairway through the islands provided stunning views for the crew to enjoy and gave the OODs an opportunity to conduct restricted water transit training.

The two day stay in Dutch Harbor was spent making final preparations for AWS 13-01, embarking and mobilizing the 13-01 Science Party. The Auxiliary and Deck Divisions completed final repairs to the 224711 CB-L and conducted operational testing. Members of HEALY's Command Cadre toured the Finnish Icebreaker M/V Nordica, which was also moored in Dutch Harbor at the time. The Field Intelligence Report (FIR), submitted to PACAREA following the visit, is included as Appendix 6.

I.B.1.b. Boat Operations

Please See Section 1.B.1.a for the OWS operation. To ferry line handlers to shore in Dutch Harbor, the CB-L moored to a ladder on the wharf just west of the UMC Pier. After we made up all lines, we recovered the CB-L to the Miranda Davit. Also in Dutch Harbor, we completed repairs to 224711 and ran two operational tests, with success.

DATE	*TYPE*	*MISSION*	*BOAT*	*TIME*
15 July	Ops	Training	224710	5+30
15 July	Ops	Training	38251	5+00
18 July	Ops	Investigate OWS Discharge	224710	0+20
26 July	Ops	Line Handlers	224710	0+30
28 July	Ops	OP-Test	224711	0+30
28 July	Ops	OP-Test	224711	0+30
29 July	Ops	Line Handlers	224710	1+05

Table 1-5. Northbound Transit Small Boat Sortie Log

I.B.2. Air Operations

I.B.2.a. Operations

Prior to departing Puget Sound, flight operations were again conducted with CG-6518, an MH65D from AIRSTA Port Angeles. Although the evolution was cut short due to an over torque on the helicopter, two pilots and one flight mechanic earned their re-certifications for cutter flight deck landing. The mishap report is included as Appendix 4. Throughout this evolution, we remained positioned between traffic separation schemes IVO Eastern Bank.

Upon departure from Kodiak, we conducted three days of flight operations with two MH-60Ts, CG-6010 and 6003, from AIRSTA Kodiak. Prior to departure, flight deck personnel visited the AIRSTA for a morning of familiarization with the MH-60T and AIRSTA Kodiak personnel. Since only one member of HEALY's tiedown crew had ever conducted operations with that specific airframe, the aircrew provided valuable training on tiedown locations, firefighting techniques and emergency egress procedures. Also jumping at the training opportunity, two MH-65D aircrews coordinated last-minute plans with HEALY to conduct DLQ operations after the MH-60Ts had completed. In total, eight MH-60T pilots and two MH-65D pilots either earned initial deck landing qualifications or re-certifications. For a more detailed summary, the After Action Report is included as Appendix 5.

Figure 1-6. Tiedown crewmen advance to remove tiedowns from CG-6003 off Kodiak

I.B.2.c. Maintenance

Operations with CG-6518 off of Port Angeles were cut short due to a main gearbox over torque on the helicopter that occurred during a VERTREP evolution. Despite the flight deck still being fouled with the VERTREP load, the LSO and HCO made the decision, with CO concurrence, to land the helicopter immediately. After a safe emergency landing and discussions with the aircrew, flight deck personnel cleared the deck of the VERTREP equipment. After detailed discussions and approval from the AIRSTA, the flight crew was able to take off and return to base, ending the training for the evening.

I.B.3. Navigation

I.B.3.a. Items of Interest

The transit to, and moorings at, Coast Guard Base Kodiak are too shallow for HEALY. City Pier #2 does not have rubber (Yokohama) fenders or camels. After mooring gently alongside wooden skid plates, it was clear that fenders at the interface between the wood and the hull of the ship were necessary to prevent scraping and wear on the paint. While the fenders were able to serve their purpose during the port call, the resulting pressure between the ship and pier was well over design tolerances of the fenders and ended up crushing them considerably, rendering them unusable afterwards.

I.B.3.b. Ship's Track

After leaving Puget Sound, we transited through the Gulf of Alaska to Kodiak, AK for a short port call, after stopping just south of Kodiak Island for a Fish Call on Albatross Banks. Following the call in Kodiak, we steamed west, through the Shumagin Islands and Unimak Pass to Dutch Harbor, AK to MOB the 13-01 science party.

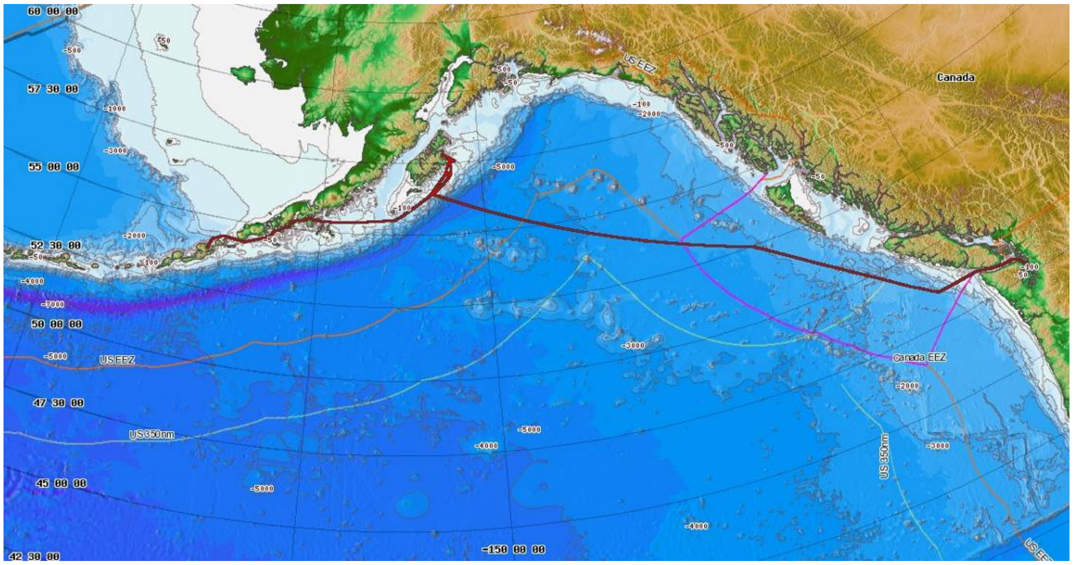


Figure 1-7. Northbound Transit trackline

I.B.4. Phase Recommendations:

Lessons Learned from Northbound Transit

<u>Transit Time</u>

HEALY scheduled a six-day transit to Kodiak, a distance achievable in four days. Doing so allowed for several critical training opportunities. In addition to flight operations, we conducted a full day of rubber docking drills (allowing all break-in OODs and embarked cadets a chance to practice pulling alongside a fender in the water), two-boat operations with the ASB and CB-L, and several practice CTD casts for qualifying deck riggers, deck supervisors and A-frame/winch operators.

Lessons Learned from the Dutch Harbor, AK Port Call

<u>Dutch Harbor Logistics</u>

It is again important to stress how unreliable air travel to remote Alaskan areas can be. Lost luggage delayed departure from Dutch Harbor by five hours. As the majority of the science party members arrived on the only flight on Sunday (the day before), lost luggage could not be delivered until the first flight on the planned departure day, which was delayed due to weather until 1400. Even with the delay, one science party member did not receive her luggage, and had to purchase clothing and other items from Alaska Ship Supply.

I.C. HLY 13-01

I.C.1. Ship Operations

I.C.1.a. Vessel Operations

HLY-13-01 was a 12 day mission that commenced in Dutch Harbor, AK and concluded offshore Barrow, AK. After the transit north through the Bering Sea, we remained in the vicinity of Hanna Shoal in the Chukchi Sea to conduct a variety of science equipment casts to study the complex ecosystem of the region. By the conclusion of the mission, 587 individual science casts were completed (see Section I.C.4 – Science Operations). We concluded science operations early on 14 August and transited to an anchorage offshore Barrow to conduct HLY 13-01 science party demobilization by landing craft.

Figure 1-8. Benthic trawl net is deployed from the fantail

<u>13-01 DMO/13-02 MOB off Barrow, AK with M/V NUNANIQ</u>

Applying lessons learned from the previous year's transfer, crewmembers, science party members and shoreside support personnel undertook a massive planning initiative to ensure a successful evolution. After an initial focus on improving operations with Maritime Helicopters, the science party contacted Bowhead Transport, a Seattle-based company that runs landing craft along the Alaskan coast. Motivation for changing modes of transportation was driven by the lengthy timeline forecasted to complete the science party and science gear transfer.

The science party began dialogue with Bowhead Transport about 10 days prior to the Barrow transfer. Because availability was initially uncertain, we developed two separate transfer plans, one for each transport medium. A member of the 13-01 science party secured the M/V NUNANIQ, a 145ft shallow draft vessel capable of transporting the entire science party, their equipment and their luggage in a single trip to shore while being relatively unaffected by winds, moderate sea state, or low visibility. Given the adverse effects these elements had on last year's transfer, and the same tight timelines anticipated this year, all parties involved jumped at the opportunity to take advantage of this resource. Although we were able to reserve the NUNANIQ for the morning, another obligation required the vessel to depart following one round trip. Bowhead clearly communicated this to us in advance, as such, our resulting transfer plan was a hybrid between the two separate plans, accounting for personnel and gear that would be transferred via each platform (landing craft in the morning, helicopter in the afternoon).

Deck Division rigged the accommodation ladder, a piece of equipment that had not been used in nearly three years, and ensured all of its parts were present and in proper working order. Although the motor and winch on the 9-inch J-bar davit were inoperable, some clever rigging allowed the accommodation ladder to be efficiently rigged the night before. In the stowed position, the outboard end of the ladder was supported against the hull via block and tackle to the J-bar davit rigged to the spreader bar. To position the ladder for use, a crewmember would traverse the ladder and rig the 04 crane via sling to the spreader bar and transfer the load to the crane. After the crewmember disembarked the ladder, the crane slewed slowly outboard and lowered the ladder into position and continued to support the ladder as personnel disembarked (see Figure 1-9). The process was reversed to stow the ladder after use. Due to the importance of the davit for the operation of this equipment, plans are in place to overhaul the motor and winch during the 2014 Dockside Maintenance Availability.

The morning of the transfer, the NUNANIQ, placing their stern even with HEALY's, rafted alongside our starboard quarter. This location allowed for personnel and cargo movement with only a slight re-location in between each evolution. The landing craft, at only 145 feet, was too short to accomplish both in the same position. As the NUNANIQ already had several standard shipping containers on the aft portion of their main deck, our gear was placed on the forward portion. By placing their stern even with ours, it placed their forward deck relatively even with starboard staging area. This allowed for efficient crane picks with the 04 crane with a clear path to slew the loads from the starboard working deck to their deck without having to lift the pallets to an extreme height to clear the cargo already on their decks. In this position the accommodation ladder (rigged forward from the cutout) could not be positioned in an acceptable position on their deck. A quick shift forward allowed the ladder to be positioned safely on their deck. The process was reversed on the return trip, first unloading available passengers (about half of the 13-02 science party that had arrived the prior day), then their gear and ship's supplies. This pattern of cargo-passengers-passengers-cargo was the most efficient and safe option. The entire operation, from first offload to last onload, took approximately 1.5 hours with a total cost of $45,000 to NSF. Although we actively used the vessel for less than four hours, the bill included one day of standby (14 August) and one half day of use (15 August). Following the morning transfer, the landing craft departed, and we shifted to flight operations as originally planned, further discussed in Section 1.C.2 – Air Operations below.

Figure 1-9. NUNANIQ with 13-01 science party disembarking

Figure 1-10. Science samples are unloaded from the NUNANIQ in Barrow

I.C.1.b. Deck Operations

With supplemental assistance from the MSTs, Deck Division operated the winches/A-frames and filled the deck supervisor and safety observer role during science operations and casts. Initially, the 24-hour operations required two 'duty sections' standing port and starboard eight hour watches. However, after we performed an adequate number of evolutions to qualify additional winch/A-frame operators and deck supervisors, the two sections were split into three, with BOSN and BMC still standing 12-hour deck safety observer watches, and the rest of the Science and Deck Division standing eight hours of watch per day. During this period recently qualified junior officers stepped up to fill the gaps in the bridge watch rotation, covering the JOOD and Bridge Watchstander roles.

Figure 1-11. HEALY deck crew recovers the Double Van Veen Grab

I.C.1.c. Boat Operations

Please see Section 1.C.3.a Ice Operations for the ice sample collection via CB-L.

DATE	*TYPE*	*MISSION*	*BOAT*	*TIME*
10 August	Ops	Ice Sample Collection	224710	1+25
10 August	Ops	Ice Sample Collection	224711	1+30

Table 1-6. HLY 13-01 Small Boat Sortie Log.

I.C.2. Air Operations

I.C.2.a. Operations

Following the morning transfer to the NUNANIQ, Maritime Helicopters conducted 15 sorties to and from the ship over two days, to transfer the remaining 15 science party members and five food pallets from shore. This year, the pilot operated a Bell 407, a larger airframe than previous years, capable of transferring up to five passengers (and luggage), or a maximum of 1,800 pounds of gear, per flight, depending on the fuel state (a full description of load vs fuel state is shown in Table 1-7 below).

FUEL REMAINING	*LOAD CAPACITY (INTERNAL+EXTERNAL)*
2 Hours	1,100 lb
1 Hour	1,450 lb
Less than 1 Hour	1,800 lb

Table 1-7. Bell 407 maximum cargo capacity versus fuel state

After the VERTREP deliveries, upon a suggestion from shoreside support personnel and the pilot, we sent the empty totes back to shore in a three-long "daisy chain" configuration (see Figure 1-12 below). Flight deck crews rigged three nets together, and the pilot skillfully picked the chain from the flight deck. Although only one of these flights could be conducted, this is an extremely efficient technique for transferring empty totes should conditions and weight allow. Foggy conditions in the afternoon forced operations to cease and three empty food totes remained in the hangar as we secured for the day. Early on the morning of 16 August, the helicopter returned to conduct a final passenger exchange. Again, foggy conditions left the three empty totes in the hangar.

Figure 1-12. Maritime Helicopters Bell 407 with food tote 'Daisy Chain'

Fatigue standards were thoroughly discussed leading up to the transfer as a result of an exceptionally long day of flight operations during the 2012 Barrow MOB/DMO. Section 1.B.2

of the Shipboard Helicopter Operations Manual (SHOPS, CIM 3710.2E) states that "The policies, standards, and procedures set forth in the Coast Guard Air Operations Manual COMDTINST M3710.1 (series) and this Manual (SHOPS) are applicable to all Coast Guard ship-helo operations". Table 3-6, Flight Scheduling Standards Per 24-Hour Period of the Air Operations Manual establishes 6 hours as the scheduling limit for Rotary-Wing Single-Pilot operations. Furthermore, a Memorandum of Understanding between the Coast Guard and the Department of the Interior (DOI) Office of Aviation Services (OAS) dated 02 January 2013 states that "Nothing in this agreement or any attachment thereto is intended to conflict with current law, regulations, or directives of DHS, USCG or DOI." Putting these references together seemed to indicate that flight operations would need to be limited to 6 hours max. OAS claimed that the Coast Guard couldn't impose our flight hour restrictions on their pilots. We engaged PAC-37AF and CG-711 to clarify the specific regulations that would govern our operations. We were advised that operations may proceed beyond the six hour limitation at the CO's discretion. Risk mitigating strategies, such as stopping to re-assessing the situation to re-evaluate the Green-Amber-Red (GAR) model would be highly recommended. While the transfer plan did not intend to continue flight hours beyond the 6 hour threshold, in the end, flight hours were significantly less than 6 hours due to the efficiency afforded by the landing craft and larger Bell helicopter. A final verification from CG-094 and the Coast Guard Chief of Aviation Forces, Appendix 8, followed in early September, stating that it isn't the intent of Coast Guard publications to impose flight hour restrictions on other agencies, however ultimately the CO is the final authority with ship-helicopter operations and can secure from FLICON any time operations are deemed unsafe.

I.C.3. Navigation

I.C.3.a. Ice Operations

We encountered dynamic ice conditions during the 13-01 mission. Coverage ranged from open water to nine-tenths coverage of thick first-year ice. While every science station was accessible for operations, the delicate trawling maneuvers occasionally required repositioning and planning to locate a 'clean' run of adequate distance to avoid snagging the trawl net. Manual fine tuning of the X-band radar set to 1.5nm range gave the OOD a clear picture of the surrounding ice fields, and the 2.5nm tolerance for trawling provided enough cushion to safely execute the casts. At a minimum, crewmembers assessed the immediate ice picture prior to each deployment, and fantail deck crews armed themselves with boat hooks to repel any small pieces of ice that threatened science equipment deployed. In the end, one trawl evolution caught a small patch of ice that broke the trawl bar, however, the science team had several spare bars onboard, as this is a common component failure in their system.

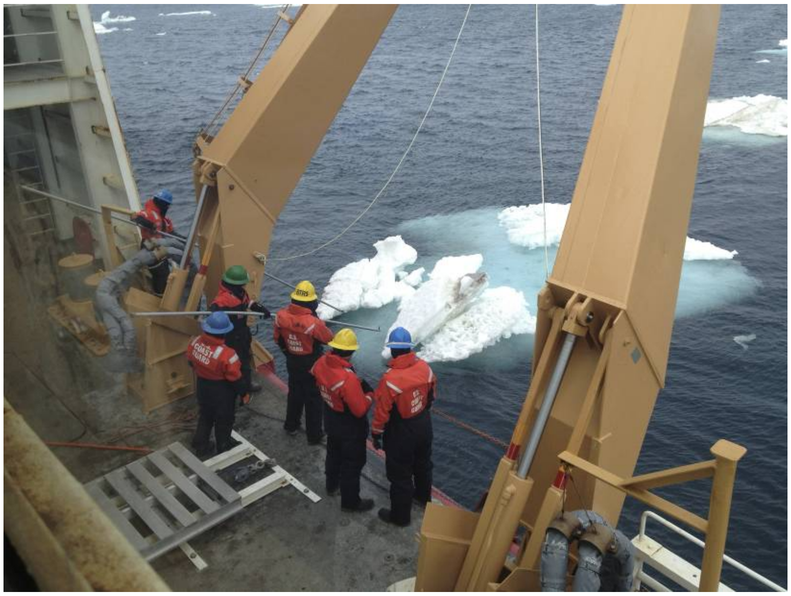


Figure 1-13. Deck crew deploys boat hooks to repel ice near the starboard A-frame

Throughout the first mission, we never required a third main diesel engine for icebreaking. Only once was back and ram icebreaking required, to break apart a large thick first-year floe that would have usually been avoided. Scientists suspected a unique algae bloom on the underside and requested that we break apart the floe and then deploy our CB-Ls to collect samples for analysis. While the science party gathered samples, crewmembers on both boats were constantly employed keeping brash ice clear of the propellers and analyzing ice motion so as to not become trapped in between the floes. The operation, although unfamiliar for the crews, went flawlessly, and for the first time in two years, we were able to exercise both of our small boats simultaneously.

Figure 1-14. Scientists aboard CB-L 224710 gather ice samples for analysis

The ice created a perfect habitat for a multitude of arctic wildlife. Groups of hundreds of walrus became a common sight as we transited areas close to Hanna Shoal and Barrow Canyon, and occasionally polar bears and seals made appearances. HEALY maintained safe distances from wildlife at all times, per directions and standoff distances provided by the wildlife observer onboard and the Marine Protected Species Program for the Gulf of Alaska, Bering Sea/Aleutian Islands, and Arctic Instruction (CGD17INST 16214.2 (series)).

Figure 1-15. First polar bear sighted near Hanna Shoal

Figure 1-16. Pod of walrus sighted near Hanna Shoal

I.C.3.b. Ship's Track

After embarking the 13-01 Science Party, we sailed north from Dutch Harbor, through the Bering Strait to Hanna Shoal, about 90 nautical miles northwest of Barrow. This was the main area of study for this mission. When complete, we steamed to Barrow and anchored offshore to complete the 13-01 DMO and 13-02 MOB.

Figure 1-17. HLY 13-01 trackline

I.C.4. Science

I.C.4.a. Projects

<u>Hanna Shoal Ecosystem Study</u>

The BOEM (Bureau of Ocean Energy Management) Hanna Shoal study was the first science mission of Arctic West Summer 2013 deployment. The mission, led by Dr. Lee Cooper of the University of Maryland, was a multi-disciplinary investigation to examine the biological, chemical and physical properties that define an area of high biological and exploratory energy significance: Hanna Shoal. Ninety nautical miles northwest of Barrow, AK, and within 40 NM of the Shell exploratory drill sites, the shallow depths of Hanna Shoal (40-50m) stand at the confluence of two nutrient-rich currents from the western Arctic and the Bering Sea. Upwelling facilitates high standing stocks of biota, especially near the bottom of the water column and in the marine sediment. The study focused on the Hanna Shoal ecosystem, specifically on the influence of the plankton in the food chain, marine sediment fauna, and inventories of trace metal and organic compounds in the water column and on the seafloor. The physical oceanographic studies also addressed water mass movements, ice conditions and current modeling. The science team consisted of 47 scientists, graduate students, civilians and teachers representing 17 education and research institutions. The data collected by the team during the study will establish an ecological baseline prior to energy exploration efforts in the region.

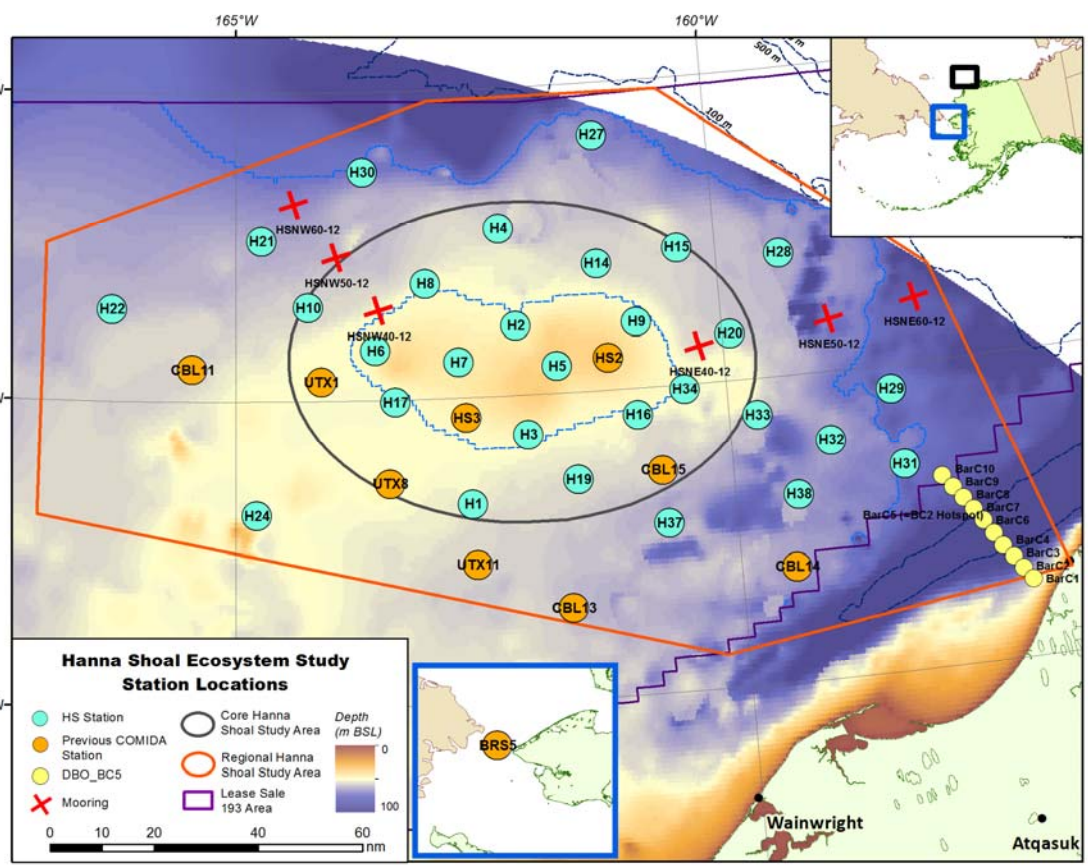


Figure 1-18. Hanna Shoal, Barrow Canyon station map

HEALY departed Dutch Harbor on 29 July and arrived in the vicinity of Hanna Shoal on 02 August to begin science stations in earnest. Between 02 and 14 August, we conducted 587 individual science casts in the vicinity of Hanna Shoal. Throughout the mission, we completed deployments of 108 CTDs, 12 drifter buoys, 1 XBT, 22 benthic camera drifts, 47 hand nets, 1 plankton net, 45 ring nets, 58 bongo nets, 125 Van Veen grabs, 46 double Van Veen grabs, 49 lander cores, 5 gravity cores, 10 HAPS cores, 20 Multi-HAPS cores, 12 box cores and 26 benthic trawls. The equipment deployed at each station varied from a single CTD to the deployment of the entire suite of gear listed above (designated "process station"). HEALY demobilized 13-01 and mobilized 13-02 from an anchorage offshore Barrow, AK, on 15 and 16 August. See Vessel Operations and Air Operations Sections for specific details.

I.C.5. Phase Recommendations

Lessons Learned from Barrow Logistics Transfer

<u>Command and Control Ashore for Barrow Transfer</u>
The lack of effective leadership and coordination ashore adversely affected the 2012 transfer. To mitigate this, we sent the XO and SKC ashore on the landing craft to expedite movement of personnel and cargo, and provide a concrete communications link between HEALY and shore. Additionally, prior confirmation is recommended, but there is no need to send riggers ashore, as support ashore is capable of rigging VERTREP loads for transfer.

<u>Currents off Point Barrow</u>
While anchored offshore Barrow, AK in 2012, HEALY dragged anchor for 100 yards with 5 shots on deck in 29 meters of water to a muddy bottom. In 2013, we anchored closer to shore in approximately 18 meters of water with five shots of chain, to a muddy bottom. Although wind conditions were lighter than last year (steady speeds less than 15 knots, compared to 25 knots), this shallower anchorage may prevent the anchor from dragging in heavier elements.

During the previous year's transfer (25 – 26 August, 2012), currents near Barrow behaved as reported in the Coast Pilot, approximately 2-3 knots to the North around Point Barrow to the East. This swift current, along with the strong winds described above, was the dominant factor that caused the dragging anchor. This year, during the first transfer, prevailing winds had been out of the East at a steady 15 knots for the previous week. These winds had a massive effect on the surface current, and we experienced a southerly (reversed) current at about 0.5 knots down the Barrow coast.

We experienced another anomaly during the second transfer. Winds had again been out of the East for the previous week, albeit at a slower average speed. From shore to approximately 2 nautical miles out, the current was approximately 0.5 – 1 knot to the North, and beyond 2 nautical miles was the same speed to the South. This created a sharp, easily distinguishable transition between the muddy, relatively cold and fresh water coming from the North and the clear, relatively warm and salty water coming up from the South. Recommend analyzing conditions prior to Barrow transfers, to anticipate orientation of the cutter while anchored and their impact upon flight parameters and operations.

Figure 1-19. Barrow shear current 07 Sep 13 (Looking Northeast, approx. 2NM offshore)

<u>Barrow Logistics</u>
The success of the Barrow transfer involved the coordination between many partners and agencies. For reference, the logistics plan used for the Barrow transfers is included in Appendix 7. Roles and responsibilities of shoreside support entities and personnel are described in this document.

Lessons Learned from Science Operations

<u>Science Station Positioning</u>
HEALY encountered a range of wind and water forces while positioned on the numerous science stations during the 13-01 mission. Limits for the casts (set by the Chief Scientist) were 2.5 nautical miles for CTDs and nets and 1000 yards for bottom grabs and cores. Initially, the OOD would set up on station with the wind off of the starboard side of the cutter for the safe deployment of CTDs, hand nets and the benthic camera. However, when wind forces exceeded 10 knots and aligned with surface current (which happened often), the resulting drift created less-than-ideal condition for casts off of the fantail, creating more severe wire tends, thus negatively affecting cast results. Additionally, depending on the rate of drift, the OOD would need to reposition up-element multiple times during the series of position-sensitive bottom grabs and cores, taking up to 30 minutes for each reset.

To mitigate this, the OOD would stem the cutter bow into the prevailing elements, holding position with bare steerageway. This simple form of station-keeping allowed the plethora of bottom grabs and cores to be completed without a reposition, shaving precious hours off of each science station.

The fragile nature of the bottom cores, such as the new “Lander Core” shown below in Figure 1-20, and grabs when exposed to the propeller wash near the surface required the OOD to stop the propellers once the casts were at a depth of less than 15 meters, as reported by the winch operator in Aft-conn. With winds upwards of 20 knots or a substantial current, these few seconds without rudder control could cause the head to fall off beyond the limits necessary for a swift recovery. For these situations with more severe elements, the bow thruster proved an invaluable tool and a tremendous time saving measure. In lighter elements, the OOD could use a single shaft to provide necessary wash to maximize rudder effectiveness while not building a large amount of forward momentum. This tactic proved especially useful during Benthic Trawls, to maintain the ship’s head at the slow speeds desired by the science party.

Figure 1-20. ”Lander” Core

I.D. HLY 13-02

I.D.1. Ship Operations

I.D.1.a. Vessel Operations

HLY 13-02 was a 21 day mission that began and ended with operations from anchor off of Barrow, AK. In all, we completed 56 casts at 15 science stations between Barrow Canyon and Amundsen Gulf. 13-02 demobilized and PUMA/RDC mobilized via helicopter off of Barrow on 07 – 08 September (see Section I.D.2 Air Operations).

We sighted the South Korean Research Icebreaker ARAON conducting a re-supply evolution near Barrow. They were quick to answer the radio on VHF 16. After some radio dialogue, we deployed 224710 and maneuvered the ship close aboard for a photo opportunity. Upon passing close aboard we observed that the ARAON wasn't actually "anchored"; they were maintaining position beam-to the current with their Dynamic Positioning System (DPS). This discovery, along with our recent validation of our DPS (see Section II.B, Electronics) generates a new appreciation for the capabilities different thruster configurations afford vessels. A select few of the photographs were placed on a CD and delivered back to the ARAON later that afternoon via small boat.

Figure 1-21. South Korean R/V ARAON and HEALY off of Barrow, photo taken from CB-L 224710

I.D.1.b. Deck Operations

During the transit north and for the duration of 13-01, we stored the coring equipment on the fantail as shown in Figure 1-4. We remained at anchor for a full day to configure the large and heavy equipment required for coring. The final layout of equipment is detailed in the instruction in Appendix 8.

Preparation of deck fittings during the 2013 Dockside allowed for relatively easy placement of equipment. The only obstacle came when mounting the "Hero Platform" near the forward leg of the Starboard A-frame. Lack of maintenance left the forward mounting fittings unserviceable.

The DC Division welded studs in place of the fittings to secure the “Hero Platform” for the duration of the mission.

The watch structure within the Deck and Science Divisions was adjusted to accommodate the major scientific operations during the work day. Only a few nighttime watchstanders were required to deploy and recover the CHIRP SONAR. This smaller night section included a winch operator, Deck Safety Observer, Deck Supervisor and one deck rigger. A larger footprint was required during the day for the deployment of the Jumbo Piston Core and Gravity Core. At a minimum, this required two Deck Supervisors (one for A-frame, one for starboard knuckle/04 crane), a oceanographic winch operator, a crane operator, a Deck Safety Observer and 2-3 HEALY riggers to augment and assist the WHOI riggers. This watch posture also allowed Deck Division to reintegrate remaining members into the bridge watch and rotate personnel on a weekly basis.

I.D.1.c. Boat Operations

Please see Section 1.D.1.a Vessel Operations for the operations with R/V ARAON.

Between training evolutions, we exercised 224710 to transfer command cadre to shore to meet with Barrow Community leaders and partners who assisted with the logistics transfers. Since no dock was available in Barrow, the CB-L nosed into the beach and passengers disembarked at the bow. Despite what looked like a placid sea state, there was still a shore break significant enough to complicate a CBL beach landing, for which they are also not configured. CBL beach landing is not recommended.

DATE	*TYPE*	*MISSION*	*BOAT*	*TIME*
06 September	Ops	R/V ARAON Photo / Training	224710	3+00
06 September	Ops	PAX Transfer	224710	0+45
06 September	Ops	Training	224710	2+15
06 September	Ops	PAX Transfer	224710	0+30

Table 1-8. HLY 13-02 Small Boat Sortie Log

I.D.2. Air Operations

I.D.2.a. Operations

See section 1.C.2.a. for details of the 13-02 science party mobilization.

We returned to Barrow on 06 September to demobilize 13-02, mobilize PUMA/RDC and onload fresh food and supplies. Bowhead Transport was unable to provide a landing craft, so the entire transfer was executed using the contracted Maritime Helicopter.

The overall plan is included as Appendix 7. The Passenger and Cargo Manifests were updated to reflect the incoming and outgoing science party members and necessary gear. Chief Scientists provided priority order for the passenger flights. The plan was widely circulated and vetted with all parties involved, particularly by Polar Field Services, Umiak, and Department of Interior

Office of Aviation Services (DOI OAS). Close coordination with the service providers is key to any major operation of this type to or from Barrow.

Fog was a factor during the second day, but we completed the transfer of 81personnel and over 10,000lb of luggage and cargo in 1.5 days of flight operations. The first day included 17 round trips for the helicopter over the course of 7 flight hours. The second day included 5 round trips and just under 2 flight hours. Flight deck crews took advantage of the increased load capacity of the Bell 407 to create food tote daisy chains (empty food totes going ashore were occasionally filled with outgoing luggage). Incoming luggage, mail and food stores were transferred via external load. During the VERTREPs, the pilot dropped off a load on the downwind side of the flight deck, then hovered to the upwind side to pick up a return load pre-staged on the flight deck. This was major time saving tactic, eliminating round trips for the return of empty totes, and helped ensure gear ended at the right end even if conditions cut the flight evolutions short.

Figure 1-22. VERTREP

I.D.3. Navigation

I.D.3.a. Ship's Track

After departing Barrow, AK, we steamed due north to the first coring site, then further east along the North Slope of Alaska, as far east as the Amundsen Gulf, just south of Banks Island to conduct coring operations. Following completion of the mission, we again sailed back to Barrow for the DMO of the 13-02 science party and MOB of the PUMA/RDC party.

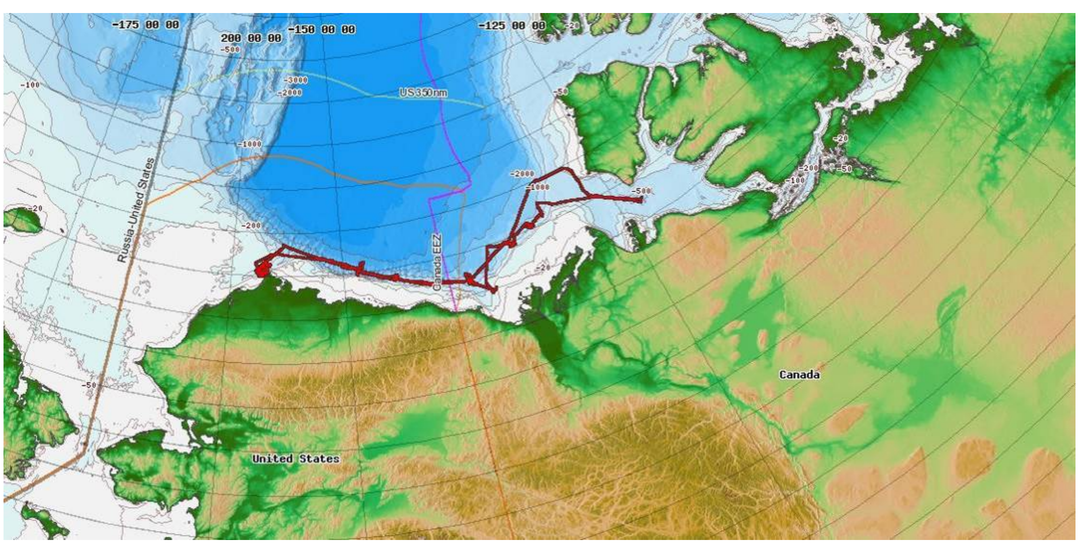


Figure 1-23. HLY 13-02 trackline

I.D.3.b. Ice Operations

Throughout the mission we experienced ice coverage and conditions ranging from open water to 9/10 coverage of thick first year ice. Only seldom did we encounter ridges that were thick enough to require back-and-ram icebreaking. In heavier ice conditions when a certain speed of advance was required, a second MDE was brought online to provide the added power and torque. OODs often shifted control to Aloft-Conn to facilitate transits through heavier ice. The searchlights proved to be effective in illuminating the surrounding area during the few hours of darkness.

The Canadian Ice Service (CIS) cued us into an interesting feature apparent in RADARSAT imagery that was believed to be an ice shelf. We investigated the feature and identified the floe as a Multi-Year Hummock Flow (MYHF). Colleagues from CIS report that floes of this nature can have keels up to 20 meters. A researcher from the University of Washington requested to have a drifter buoy placed on the floe. The port knuckle crane was used to lower the drifter onto the MYHF. To accomplish this, we rigged two of the pear rings of a flight deck cargo net to the block on the crane, and the other two to a quick release (also rigged to the block) and placed the buoy inside. The port knuckle crane was boomed and jibbed outward to the furthest point possible to gently and safely release the buoy onto the ice floe. Once the buoy was on the floe, the net was slowly lifted clear.

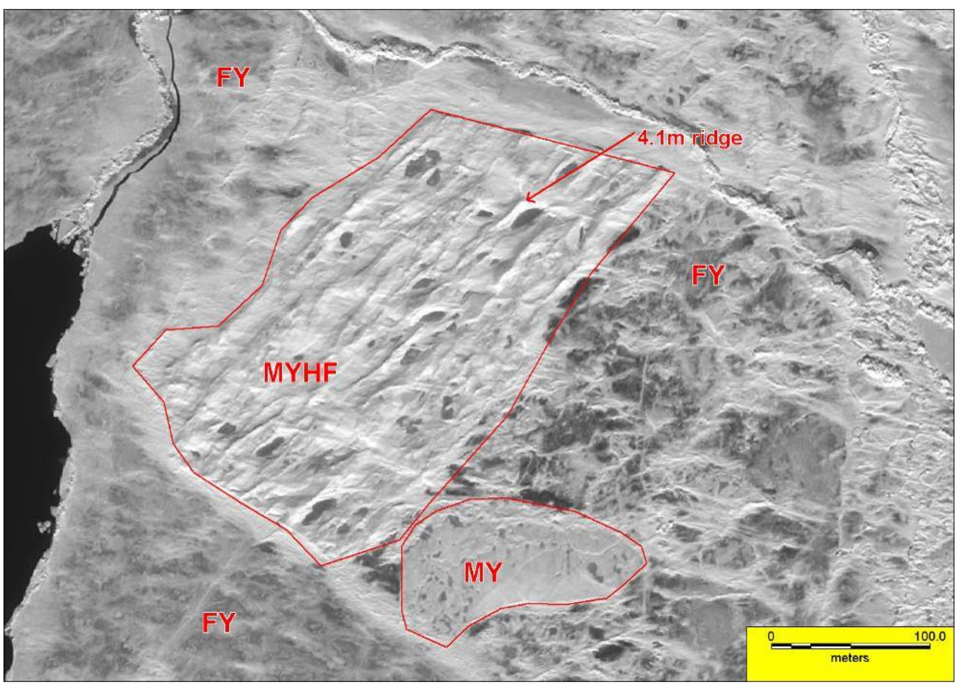


Figure 1-24. MYHF (image courtesy of Canadian Ice Service)

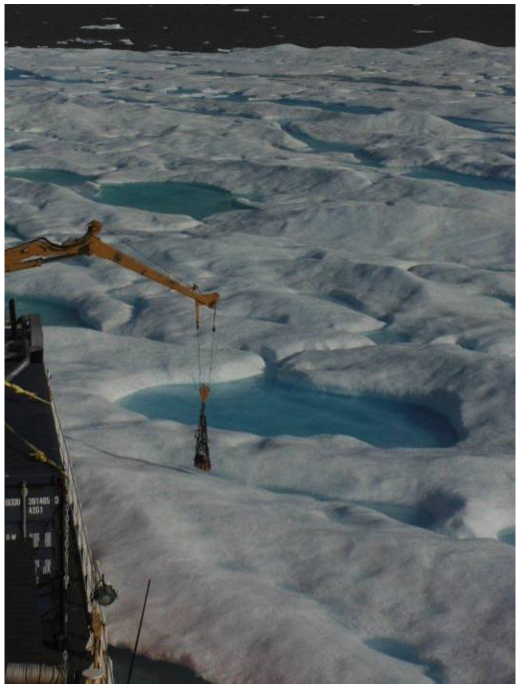


Figure 1-25. Drifter Buoy deployed on MYHF

I.D.4 Science

I.D.4.a. Projects

<u>WHOI Jumbo Piston Coring</u>

This mission was led by Dr. Lloyd Keigwin of the Woods Hole Oceanographic Institute. The goal was to collect evidence of a hypothesized massive freshwater flood approximately 13,000 years ago in the area surrounding the Mackenzie River. The massive change in salinity is suspected of having a rapid and drastic influence on Arctic currents and, subsequently, global climate. All in all, we transited 3059 miles and conducted 15 gravity cores, 14 jumbo piston cores, 17 multi-cores (resulting in a combined 275 meters of sediment cores), 14 "naked" CTDs (sensor without rosette), 4 XBTs, 3 drifter buoys, and one drifter buoy deployed on ice.

Several years had passed since HEALY last executed a coring focused mission. As a result there was little corporate knowledge. An instructional video developed by Oregon State University (OSU) coring team did not provide granular details necessary for storing, manipulating and deploying the gear, but was useful for understanding the big picture. Having Chris Moser (Lead Coring Technician from OSU) and three Woods Hole Oceanographic Institution (WHOI) riggers onboard assisted tremendously. Appendix 9 contains the lessons learned over the course of the mission and covers the setup, staging and deployment process for the Gravity and Jumbo Piston Cores.

Throughout the night, the co-chief scientist provided survey areas to investigate and locate ideal coring locations for the next day. Recent work by STARC improved the data quality of Knudsen sub-bottom profiler such that it served as the primary tool for surveying. However, on occasion, a CHIRP SONAR was deployed to collect more detailed profiles. Areas with desirable sedimentary properties at depths between 60 and 1600 meters were identified consistently.

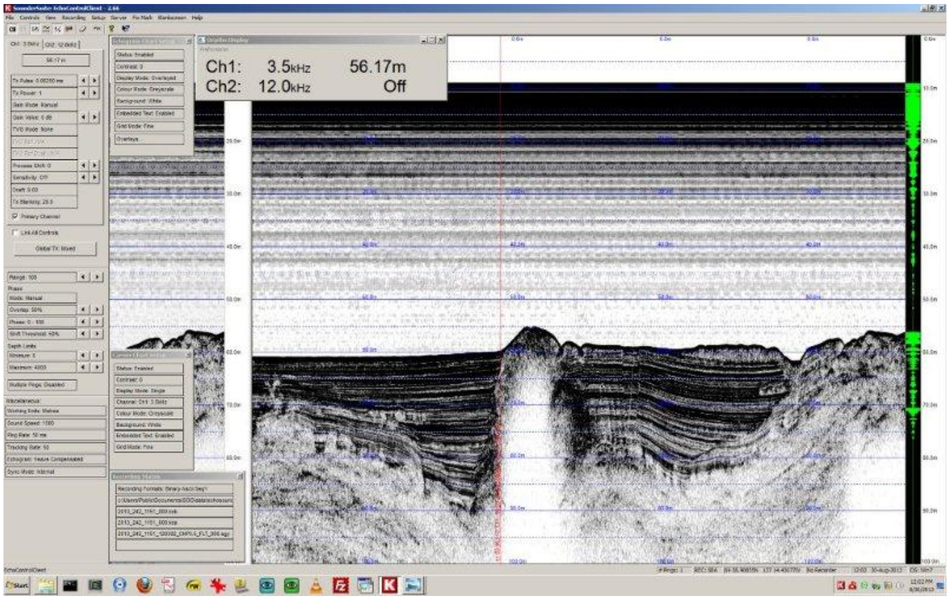


Figure 1-26. Sediment profile showing a "Pingo-like feature"

Once the target was identified, the OOD set up on station, stemming the elements to station-keep. OODs generally satisfied the desired 20 meter tolerance. Intermittent bow thruster casualties increased the challenge of maintaining position (see Section III, Engineering).

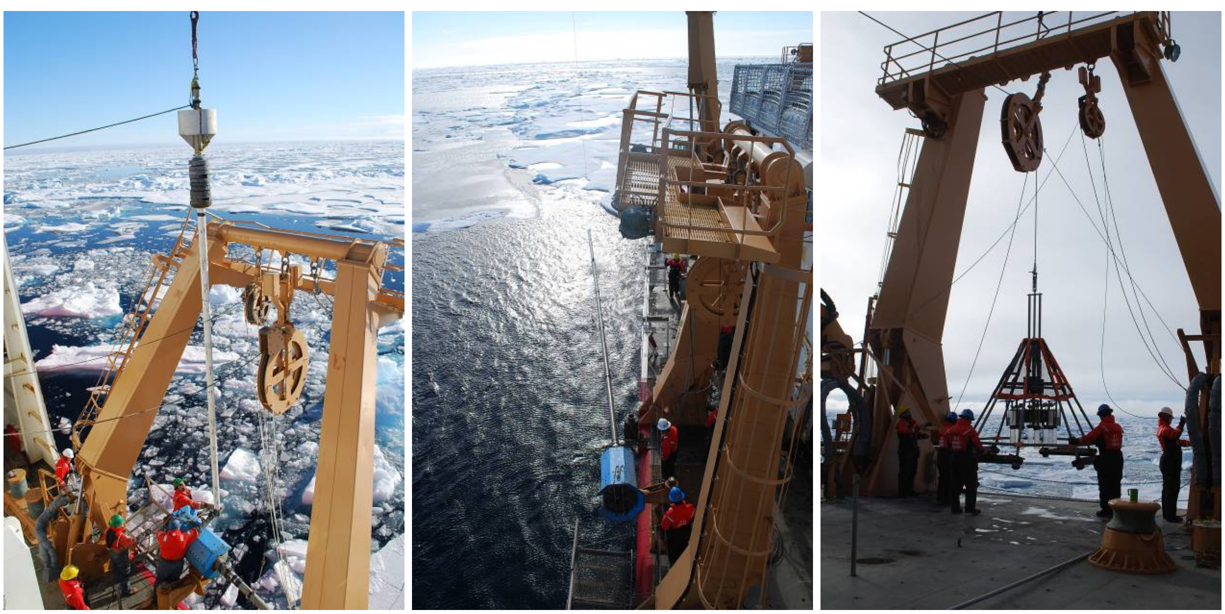


Figure 1-27. Gravity Core, Jumbo Piston Core, Multicore (from left to right)

The jumbo piston core was configured to collect as much as 70 feet of sediment, but was mostly rigged for 50-60 feet cores. Sediment penetration to these depths is necessary to collect samples in the 13,000-16,000 year age range targeted by the science team. Deck and Science Divisions assisted the Science party members with the setup and staging of the equipment then led the deployment and recovery of the gear. The Lead Coring Technician provided guidance and advice on winch lowering and recovery rates as well as other fine details.

We conducted a coring sequence of the hydrolaccoliths north of Canada. Hydrolaccoliths, or "pingo-like features", are formed when gasses are released from the permafrost in the seabed. As the gas escapes, it pushes its way up through the sediments and mud to form a mound on the seafloor. Soundings displayed on the charts along the North Slope of Alaska and Western Canada, where these features exist, are somewhat unreliable. The features can result in as much as a 70% reduction from charted depth. We surveyed the area with extreme caution; overlapping our previous multibeam tracklines ensured the hull transited over confirmed soundings. For additional safety we maintained a slow speed while mapping these areas.

I.D.5. Phase Recommendations

Lessons Learned from Barrow Logistics Transfer

Bowhead Transport
Contact should be made with Bowhead Transport early in the mission planning process. They were hesitant to commit to the transfers due to their unpredictable schedule. Recommend the science community continue to develop a relationship with Bowhead Transport and request their support services early in the planning phase each deployment season.

Grey Water Concerns
When a science party checks out of their respective berthing areas they are given the option to launder their linens themselves or make a nominal donation to our morale account for the crew to do the cleaning. The piecewise completion of several individual laundry loads for linen cleaning generated a large volume of grey water in a short amount of time while anchored off Barrow. Further compounding the waste water management situation, we embarked a 51-person science party for the PUMA/RDC mission. After 48 hours with laundry secured for the last 12 hours waste water tank levels climbed to near capacity. Recommend developing a system where the linens can be laundered in a more efficient manner when conducting a major logistics stop from anchor.

AIRSTA Kodiak Logistics Flights
The fresh food order was planned for a C130 logistics flight from Kodiak to Barrow on Friday, 06 September. The food order to DECA in Kodiak was scheduled with no room for error. A higher priority mission required the logistics flight be rescheduled for 05 September. The food ordered through DECA would not arrive in time for the flight so food had to be re-ordered through commercial source in Kodiak (Safeway). Their stock on hand satisfied nearly the entire order and was arranged for delivery to the AIRSTA in time for the flight. Had a similar situation occurred earlier in the year, the food would have spoiled before it could be delivered to the ship because there was no freezer/refrigerator space available in Barrow. The cooler temperatures at this time of year allowed the food to remain on the tarmac near the North Slope SAR hangar without much food spoiling. This is the primary reason that Barrow food deliveries are scheduled with little room for delay. Once the food arrives in Barrow and is unloaded from the C-130, we effectively lose control of the stores until transport to the ship is available, and the food is at the mercy of the weather until delivery to the ship. Additionally, arrangements must

be made to return the food totes to Kodiak after the transfer is complete.   Requests for C-130 logistics support are made to (907) 487-5887 or email to D17-PF-AirStaKodiakSkeds@uscg.mil and should be made well in advance.

Lessons Learned from Science Operations

DPS

Our Dynamic Positioning System (DPS) had not been used operationally for several years and was believed to be inoperable. During AWS12 a comprehensive groom was completed on the system to verify the components and connections were properly configured.

We ran various tests on the system in mild elements to verify proper operation. During the 13-02 mission, OODs often had difficulty interpreting the unpredictable and subtle elements that prevailed across the particular science stations, especially in the six to eight foot seas, 30 knots of wind, and generally inconsistent surface currents, which often did not align with the wind. Such difficulty made station-keeping for the delicate coring operations quite challenging. In the closing days of 13-02, we used the DPS in the extreme elements. With appropriate heading selection, the system kept the cutter within 3 meters of the given position with ease. This performance dispelled any remaining rumors about its capabilities. The OOD would approach the coring site similarly as before, anticipating elements to stem and an appropriate heading. With fine tuning on scene, and an approximate heading determined, the OOD would shift to Joystick Auto Heading to assess the system's ability to hold the cutter on station. Evidence of the system struggling, such as excessive bow thruster to one side, or translational motion perpendicular to the cutter's head, prompted a re-evaluation of the situation. After selecting the proper heading, the OOD would position either the starboard or aft A-frame on the coring location and enter full DP mode. Care was utilized when gear was near to the surface, such that it could be affected by the ship's propellers. In these situations, transitioning to Joystick Auto Heading mode allowed the OOD to control the engine orders, while DPS maintained heading with the bow thruster. Recovery to original station for subsequent casts proved quick and easy using this tactic.

Erroneous Drifter Buoy Deployment

During AWS 13-01 and 13-02, we accidently floated three drifter buoys that were intended to be deployed during AWS 13-03. The buoys were not labeled and were assumed to be associated with the first mission. This error reinforces the importance of proper labeling of all gear.

I.E. PUMA/RDC

I.E.1. Ship Operations

I.E.1.a Vessel Operations

The PUMA/RDC mission was a seven day mission conducted in support of NOAA and the USCG Research and Development Center (RDC) and various civilian and international partners, including NOAA and the University of Alaska – Fairbanks. Operationally, the objective was to test and evaluate different response technology capability for a mock oil spill in the remote Arctic region's ice-covered waters. The technologies utilized throughout the week included a Vessel of Opportunity Brush Oil Skimming System (VOBSS), PUMA Small Unmanned Air System (sUAS), unmanned underwater vehicle (UUV) and small Remote Operated Vehicle (ROV). Upon weighing anchor from Barrow, we transited due north to find favorable ice coverage for the scenario. As the mission progressed, we continued further north to expose the equipment to the various ice thickness and coverage levels that may be expected, should such a maritime disaster occur. The northern-most point of our 2013 deployment occurred on 12 September, in position 76-11.726N 158-11.544W.

Please see the Arctic Shield 2013 After Action Report included in Appendix 11 for an integrated assessment of the operation.

Following completion of the mission, we transited south to Seward, AK for our Mid-Patrol Break. Due to the threatening weather caused by the remnants of a Pacific typhoon earlier in the week, we made faster-than-planned speed towards the Gulf of Alaska, anticipating heavier winds and seas that would likely limit our speed of advance in the Bering Sea and Gulf of Alaska. However, weather conditions proved milder than anticipated; we for four hours before entering the Unimak Pass to conduct rubber docking drills and additional PUMA/sUAS operations. We then made our way through Shelikof Strait to Seward, using Kodiak Island to shield us from heavier winds and seas to the south, ultimately mooring one day early, on 20 September.

I.E.1.b. Deck Operations

HEALY Deck Division operated cranes and A-Frames in support of the deployment of different technologies over the side and off of the fantail. Shortly after beginning operations, we found it difficult for the OOD to effectively communicate with and keep track of the different deck stations and the status of their equipment. To mitigate this and facilitate the accurate and timely flow of information between the various deck locations and bridge, we assigned a Deck Supervisor to each technology to manage communications with the bridge for the duration of the mission. This method standardized the flow of information and greatly improved situational awareness on the bridge. A list of the technologies and their respective deployment locations is below in Table 1-9.

TECHNOLOGY	LOCATION	DEPLOYMENT AND RECOVERY
NOAA sUAS	05 Deck	Port or Stbd (into wind) – recovery by ASB or CB-L
UAF sUAS	Flight Deck	Port or Stbd (into wind) – recovery by ASB or CB-L
ROV	Fantail (by hand)	Starboard Side – recovery by hand
UUV	Aft A-Frame	3/8 wire – recovery assisted by ASB
VOBSS	Stbd Working Deck	Stbd Knuckle Crane – hose harnessed by A-Frame

Table 1-9. PUMA/RDC deck deployment locations


Figure 1-28. HEALY Deck Division deploys the VOBSS (left) and UUV (right)

I.E.1.c. Boat Operations

For ASB and CB-L ice operations, please see Section 1.E.3.b – Ice Operations.

DATE	TYPE	MISSION	BOAT	TIME
09 September	Ops	sUAS Recovery	224710	0+15
09 September	Ops	sUAS Recovery	224710	0+10
09 September	Ops	sUAS Recovery	224710	0+25
09 September	Ops	sUAS Recovery	224710	0+35
09 September	Log	Transfer to Flight Deck	224710	0+15
10 September	Ops	sUAS Recovery	38251	0+15
10 September	Ops	sUAS Recovery	38251	1+30
10 September	Ops	sUAS/UUV Recovery	38251	2+10
11 September	Ops	sUAS Recovery	38251	0+35
11 September	Ops	sUAS Recovery	38251	2+45
11 September	Ops	sUAS/UUV Recovery	38251	1+30
12 September	Ops	sUAS Recovery	38251	0+15
12 September	Ops	sUAS Recovery	38251	0+15
12 September	Ops	sUAS Recovery	38251	0+15
15 September	Log	Transfer to Davit	224710	0+10
17 September	Ops	sUAS Recovery	224710	0+15
17 September	Ops	sUAS Recovery	224710	0+20

Table 1-10. PUMA/RDC Small Boat Sortie Log

I.E.1.d. Dive Operations

SFLC provided for contracted divers in Seward to examine the propellers, rudders and Inerta 160 in the vicinity of the impressed current system anodes. The propellers and rudders were found to be clear (the transducer wire had apparently come free during transit) and the Inerta 160 was in good condition, even after extensive time in the ice during the first three missions.

DATE	*LOCATION*	*MISSION*	*# DIVERS*	*TIME*
24 September	Seward, AK	Inspected propeller and hull	1	4+15

Table 1-11. PUMA/RDC Dive Sortie Log (in Seward, AK)

I.E.2. Air Operations

I.E.2.a. Operations

For the logistics transfer offshore Barrow for the 13-02 DMO and PUMA/RDC MOB, see Section 1.D.2.

For PUMA sUAS operations, see Section 1.E.4.a. The Due Regard Memorandum is included as Appendix 10. Operating with Due Regard affords the sUAS operators additional flexibility when planning and executing flight operations. Without this authorization additional external coordination and clearance is required for each sortie.

I.E.3. Navigation

I.E.3.a. Ship's Track

After embarking the PUMA/RDC party off of Barrow, we headed due north to find favorable ice conditions for their oil spill scenarios. Throughout the mission, we transited further and further north. Upon completion of operations, we sailed south, east through Unimak Pass along the southern edge of the Aleutian Islands and through Shelikof Strait, eventually mooring in Seward, AK for the Mid-patrol Break.

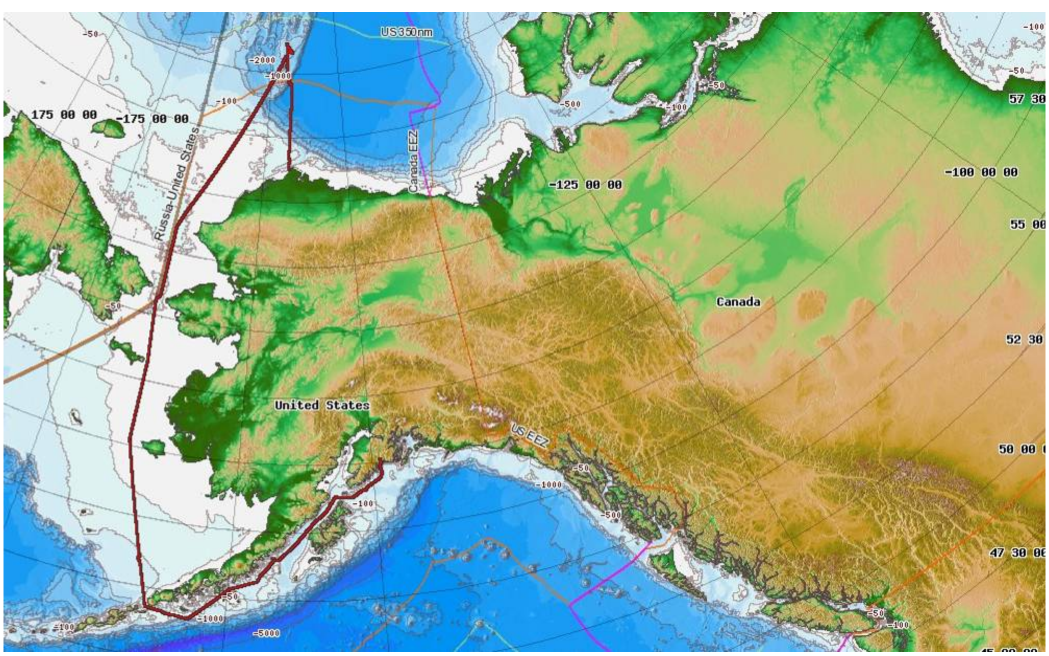


Figure 1-29. PUMA/RDC trackline

I.E.3.b. Ice Operations

Throughout the mission we saw coverage ranging from open water to 9/10s coverage of thick first-year ice. We were not authorized to recover the sUAS directly to the flight deck, so a moderately sized open lead was a requirement to deploy the ASB or CB-L for recovery during each science station. An ice floe large enough to lay the ship up against for VOBSS deployment and underside exploration by the UUV rounded out the requirements of the "ideal" science station. We managed to locate an acceptable spot each day for operations.

Figure 1-30. (Left – photo taken by sUAS) HEALY deploys the skimmer to clear mock oil from near an ice floe (Right) The ROV searches for mock oil near the ice edge

Occasionally, the sUAS would land on very thin floes of grey ice or in brash ice along the open lead. In these extremely light conditions, cutting tight circles with the CB-L or ASB to send wake into the floe, breaking it up and pushing it away, allowed access to the sUAS. Two unexpected crash landings of the sUAS provided opportunity to test the capabilities of the ASB in ice conditions. One unintentional landing was believed to be caused by icing on the wings and required HEALY to carefully break a pathway to the sUAS, approximately 1 nautical mile away for the ASB to follow. While the ASB stood off in the lead, we slowly casted around and transited toward the downed aircraft. The ASB followed closely behind. We continued past the aircraft, passing within about 10 yards of its resting spot. Once HEALY was clear and had used rudders and propeller thrust clear a path to the airframe, the ASB traversed through the remaining short distance for retrieval. The other premature landing occurred on a small sheet of grey ice and required the ASB to traverse about 50 yards through the inch-thick ice for recovery. The ASB crew initially attempted the familiar tactic of circling at full power in close proximity to the ice to send wake to disrupt the floe. However, the resulting wake only broke the ice about 20 yards in so the ASB completed the rest of the recovery with a direct traverse. While progress was slow, the ASB was able to safely recover the aircraft and back out of the ice.

Figure 1-31. The sUAS is recovered from brash ice by the ASB

The science team deployed several transponders over the side to communicate with the UUV while submerged. While attempting to maintain station near an unstable ice floe, a transducer became fouled in the port propeller. The location of the deployed transducers wasn't well communicated to the bridge leading up to the incident. Additional caution, oversight and communications were ensured during future UUV deployments. The ROV was deployed to examine the propeller where the propeller and shaft, which were found to be fouled with the wire rope. Unable to remove the wire, we continued operations and contracted divers to assess the status of the fouled wire. Upon inspection pier side, the props were clear.

Transits through ice during hours of darkness afforded the opportunity to evaluate the performance of our new LED ice lights, mounted on either side of the forward jackstaff. To compare these new lights to the traditional floodlights we used previously, we mounted a different one on each side. The LED lights were found to perform much better, providing more clarity and lighting up a larger area. The added intensity allowed the lights to be pointed farther forward, rather than downward. This performance, as well as their minimal size and weight when compared to the traditional floodlights, makes them a preferred solution from a performance standpoint. For the remainder of the patrol, we used two LED lights on the forecastle, augmented by the searchlights when necessary, for night transits through the ice.

Over the course of the mission we found a large floe of first year ice thick enough to conduct on-ice operations with the sUAS, and provide a morning of ice liberty for the crew and science party.

Figure 1-32. The sUAS is deployed from the ice and recovered by HEALY ice rescuers during ice liberty

I.E.4 Science

I.E.4.a. Projects

The PUMA/RDC mission, in support of Operation Arctic Shield, combined Coast Guard assets with those of NOAA and other civilian organizations and international partners. These entities evaluated the several technologies described above in section 1.E.1.a for response to an oil spill in remote ice-covered waters.

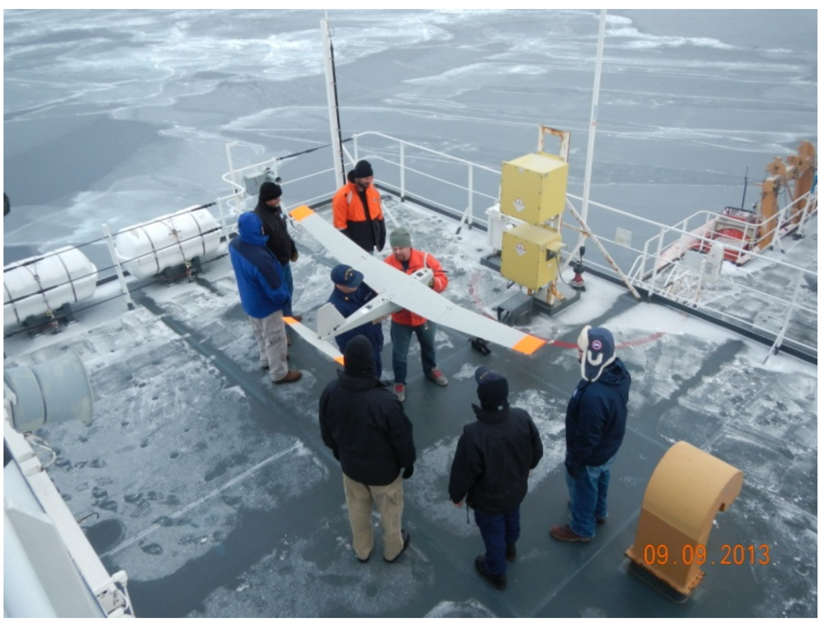


Figure 1-33. NOAA prepares to launch the sUAS from the 05 Deck

The operation's objective was to assess each technology's capabilities and limitations in the harsh arctic environment, and highlight the various integration points necessary for the equipment and technology teams to work together aboard a vessel of opportunity to detect, assess and clean up an oil spill.

I.E.5. Phase Recommendations

Lessons learned from Science Operations (in addition to those described in the AS13 AAR)

Value of ROV Onboard
After the port propeller shaft was fouled with the UUV transponder, the ROV provided a valuable tool to assess the situation. Had the equipment and operator not been onboard, the first-hand awareness into the extent of damage would have remained a mystery. While this incident was far from catastrophic, the value having this technology readily available cannot be overstated.

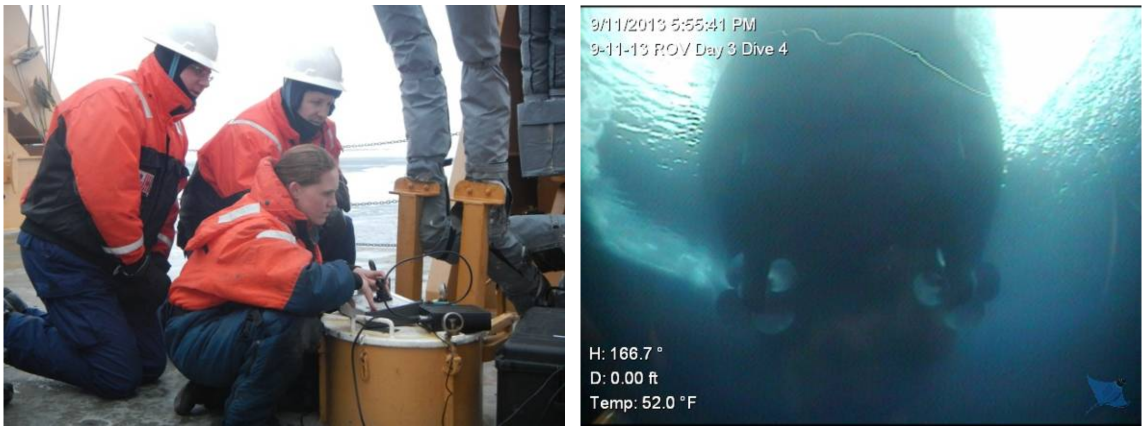


Figure 1-34. ROV Pilot operates the ROV as CO/XO look on

Lessons learned from Mid Patrol Break in Seward

Dumpsters
After being underway for 57 straight days, we accumulated a large volume of trash and cardboard. Upon arrival to Seward, only one 40-foot dumpster was available. This capability only handled about a third of the trash. This postponed offloads and housekeeping until the following morning. Recommend confirming trash capacity before arriving to a port after long stints underway, or negotiating a same-day turnaround for contractors to empty the containers and return them to the pier.

Food Pallet Size
We onloaded 20 pallets of food stores in Seward. The vendor stacked several of the pallets too high for our flying forks to handle. Recommend a maximum pallet height of five feet to maximize efficiency.

I.F. HLY 13-03

I.F.1. Vessel Operations

I.F.1.a. Ship Operations

Following the mid-patrol break in Seward, AK, we transited to Dutch Harbor to MOB the 13-03 science mission and embark the science party. A quick stop at Holgate Glacier provided a unique viewing experience for the crew. HLY 13-03 was a familiar mission that continued our efforts from HLY 12-03, beginning and ending in Dutch Harbor, AK. Throughout the mission we remained primarily in the Chukchi and Beaufort Seas, but travelled as far East as Franklin Bay in Amundsen Gulf and conducted deployments and recoveries of subsurface moorings, benthic bottom profiling, CTD casts and the occasional Van Veen Grab.

Figure 1-35. Holgate Glacier

We planned on conducting a morning of helicopter operations with AIRSTA Kodiak on 30 September to accomplish currency and qualification objectives, as well as to embark Ms. Fran Ulmer, the President-appointed Chair of the United States Arctic Research Commission, for a familiarization visit on the way to Dutch Harbor. With strong winds and heavy seas forecasted, we anchored in the charted anchorage #1 near Kodiak, to minimize fetch, in 47 meters of water to a rocky bottom with six shots of chain on deck, but the anchorage did not afford the necessary shelter from the 40 knot winds and heavy seas. The weather forecast remained ominous and would clearly prevent the planned flight operations. While still at anchor, we experimented with the bow thruster, propellers and rudder to attempt to maneuver into parameters for VERTREP operations. We were able to keep the 40 knot wind greater than 30 degrees off of the bow for about two minutes at a time, not long enough to comfortably conduct flight operations. Due to the magnitude of the elements, we dragged anchor for approximately 50 yards and only maintained further position with propulsion assist. Ultimately, we weighed anchor the same afternoon and continued to Dutch Harbor, where we moored at 1300 on 02 October. We were able to contact Ms. Ulmer before her departure from Anchorage and prevent unnecessary travel.

Upon completion of the mission, we transited southbound toward Dutch Harbor to DMO the 13-03 science party and onload fresh food stores for the six-day steam to Seattle. The schedule originally called for a two days inport. A decision made to shorten our stay to a quick overnight, which advanced our return to Seattle by two days. Doing so remained in keeping with regulations given on Icefloe.net; our 1300 planned departure time on 31 October gave the scientists until 1200 to check out and disembark. The majority of the party departed the early morning of the 31st. Other factors considered in our departure included the timing of service wide exams (07November) and a fair weather window between two low pressure systems moving across the North Pacific.

Due to the bow thruster being in Charlie status for the remainder of the trip, we contracted a second tug, the 1000HP Saratoga, to assist us in Dutch Harbor. The tug was set up by the Dunlap Towing Company upon our request for additional resources.

I.F.1.b. Deck Operations

HEALY Deck Division operated cranes and A-frames in support of scientific operations with supplemental assistance from the Science Division and two WHOI riggers. The 13-03 mission again required 24-hour operations and usually involved mooring deployments and recoveries during daylight hours and CTD casts throughout the night. Similar to previous missions, we split the Deck and Marine Science Divisions into three eight-hour watch sections; two minimal night crews to conduct CTD casts and a larger day footprint to staff the deck and a small boat for mooring deployments and recoveries.

We used the short logistics stop in Dutch Harbor between the Mid-patrol Break and the 13-03 mission to stage gear and mooring materials on the fantail in preparation for the mission. Unlike previous years, we waited for the science party to embark before transferring and staging equipment from the cargo holds. Science Division members, positioned in the cargo holds and on the fantail, communicated with the newly-arrived scientists and provided the necessary details to Deck Division members. Although we waited until the last day possible to set up for the mission, this practice prevented erroneous break-outs and placements that would later need to be corrected.

Figure 1-36. Deck crew deploys the CT1 "Tripod" Mooring

I.F.1.c. Boat Operations

We used CB-L 224711 for a MEDEVAC to Nome, AK on 07 October (see also Section VI.A Medical - Significant Cases). As we approached, the Nome Harbor Master contacted us on VHF Channel 16/12 to inquire if we were going to conduct small boat operations, and upon our confirmation, instructed us to use the west floating dock for the transfer. The OOD maneuvered HEALY slightly up-element from the harbor entrance and stopped all way about 1000 yards south of shoal water. Launching from this spot allowed the small boat to transit down-element (a smoother ride) inbound. As they conducted the transfer, HEALY drifted down-element from the harbor, again providing these favorable conditions for the return trip.

DATE	*TYPE*	*MISSION*	*BOAT*	*TIME*
28 Sep	Ops	Line Handlers	224710	1+50
03 Oct	Ops	Currency Trng	224711	1+10
05 Oct	Ops	Line Handlers	224711	1+30
07 Oct	Ops	MEDEVAC to Nome	224711	0+30
13 Oct	Ops	Mooring Recovery	224710	0+45
13 Oct	Ops	Mooring Recovery	224710	1+05
16-Oct	Ops	Mooring Recovery	224711	1+40
20-Oct	Ops	Mooring Recovery	224711	1+30
30-Oct	Ops	Line Handlers	224711	0+50

Table 1-12. HLY 13-03 Small Boat Sortie Log

I.F.2. Air Operations

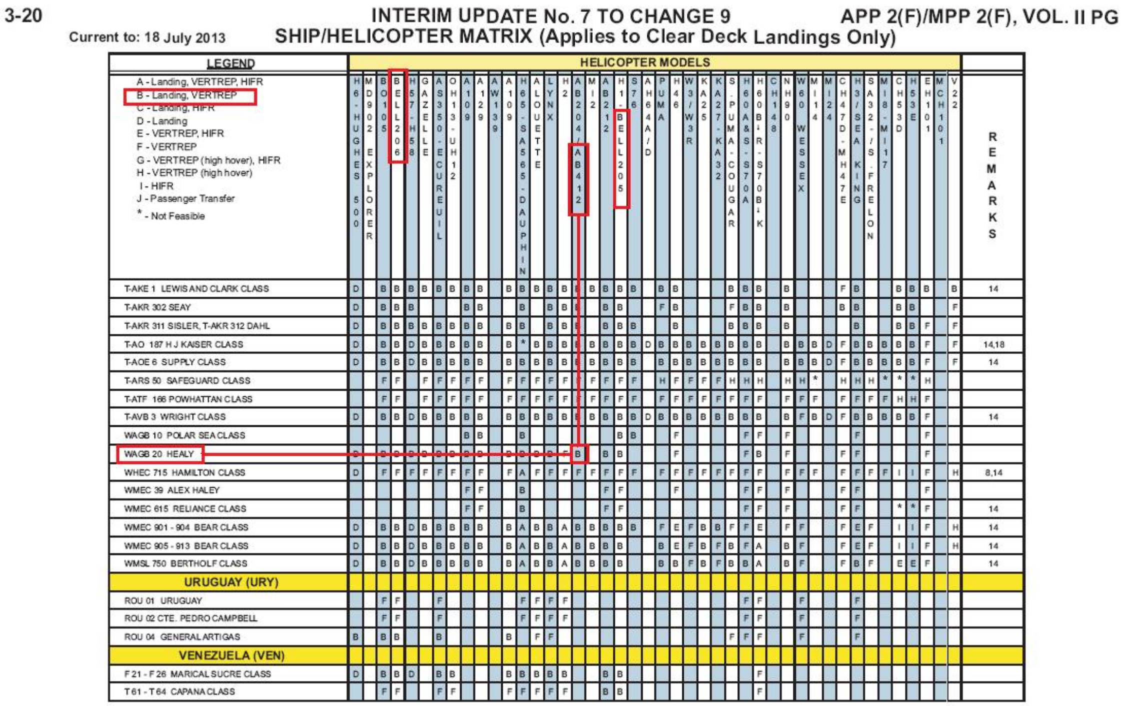
I.F.2.a. Operations

In addition to embarking Ms. Ulmer off of Kodiak, we also planned to complete a number of crewmember qualifications and satisfy night currency requirements for our Landing Signal Officers in preparation for our upcoming Aviation Standardization visit in April 2014. Fortunately, CGC WAESCHE's deployed helicopter was staged in Dutch Harbor during our departure on 05 October. We paused briefly to conduct twilight and night operations with CG-6503. In all, we completed a crew familiarization, 3 hot refuels, 2 HIFRs and 17 touch-and-go's in just under four hours, resulting in 5 initial qualifications, 2 re-qualifications and 3 re-certifications between our flight deck personnel and the aircrew.

Figure 1-37. CG-6503 on final approach off of Dutch Harbor at twilight

Early in the mission, the Chief Scientist expressed a desire to craft and deploy an additional mooring from reusable pieces of the moorings that we planned to recover along the way. However, the new mooring would require special batteries that we did not have onboard. Umiaq provided the necessary logistics and instructions to ship the parts to Barrow. We coordinated our arrival about 5 miles West of Barrow airport, and North Slope Borough Search and Rescue (NSB SAR) pilots delivered the items free of charge. Valuable partnerships in Barrow are essential to the completion of our science missions.

While consulting the Helicopter Operations from Ship's other than Aircraft Carriers (HOSTAC) Manual, APP 2(F), the helicopter was listed under model AB-412, not B-412 or Bell-412 as expected. A quick internet search confirmed that this helicopter model is also manufactured by Bell's Italian counterpart, Augusta, hence the AB-412 designation. It should be noted for future operations that, barring any policy change, we are able to conduct landing and VERTREP operations with NSB SAR's Bell 412. Interpretation of the HOSTAC and clearance to operate with the NSB SAR helo was confirmed with PAC(37-AF). No additional message traffic or requests are required in situations like this.



3-20 INTERIM UPDATE No. 7 TO CHANGE 9 APP 2(F)/MPP 2(F), VOL. II PG

Current to: 18 July 2013

SHIP/HELICOPTER MATRIX (Applies to Clear Deck Landings Only)

LEGEND

A - Landing, VERTREP, HIFR
B - Landing, VERTREP
C - Landing, HIFR
D - Landing
E - VERTREP, HIFR
F - VERTREP
G - VERTREP (high hover), HIFR
H - VERTREP (high hover)
I - HIFR
J - Passenger Transfer
* - Not Feasible

HELICOPTER MODELS

REMARKS

T-AKE 1 LEWIS AND CLARK CLASS — 14
T-AKR 302 SEAY
T-AKR 311 SISLER, T-AKR 312 DAHL
T-AO 187 H J KAISER CLASS — 14,18
T-AOE 6 SUPPLY CLASS — 14
T-ARS 50 SAFEGUARD CLASS
T-ATF 166 POWHATTAN CLASS
T-AVB 3 WRIGHT CLASS — 14
WAGB 10 POLAR SEA CLASS
WAGB 20 HEALY
WHEC 715 HAMILTON CLASS — 8,14
WMEC 39 ALEX HALEY
WMEC 615 RELIANCE CLASS — 14
WMEC 901 - 904 BEAR CLASS — 14
WMEC 905 - 913 BEAR CLASS — 14
WMSL 750 BERTHOLF CLASS — 14

URUGUAY (URY)

ROU 01 URUGUAY
ROU 02 CTE. PEDRO CAMPBELL
ROU 04 GENERAL ARTIGAS

VENEZUELA (VEN)

F 21 - F 26 MARICAL SUCRE CLASS
T 61 - T 64 CAPANA CLASS

Figure 1-38. HOSTAC Matrix showing compatibility with NSB SAR Bell 412

I.F.3. Navigation

I.F.3.a. Ship's Track

After stopping in Dutch to MOB the 13-03 science party, we transited north to our first mooring site in the Chukchi Sea, with a short detour to Nome for a MEDEVAC (see Section VI.A). We conducted CTD stations and mooring deployments and recoveries throughout the Chukchi and Beaufort Seas, as far east as the Amundsen Gulf (see Figure 1-40). Following completion of the mission, we transited back to Dutch Harbor to DMO the 13-03 science party.

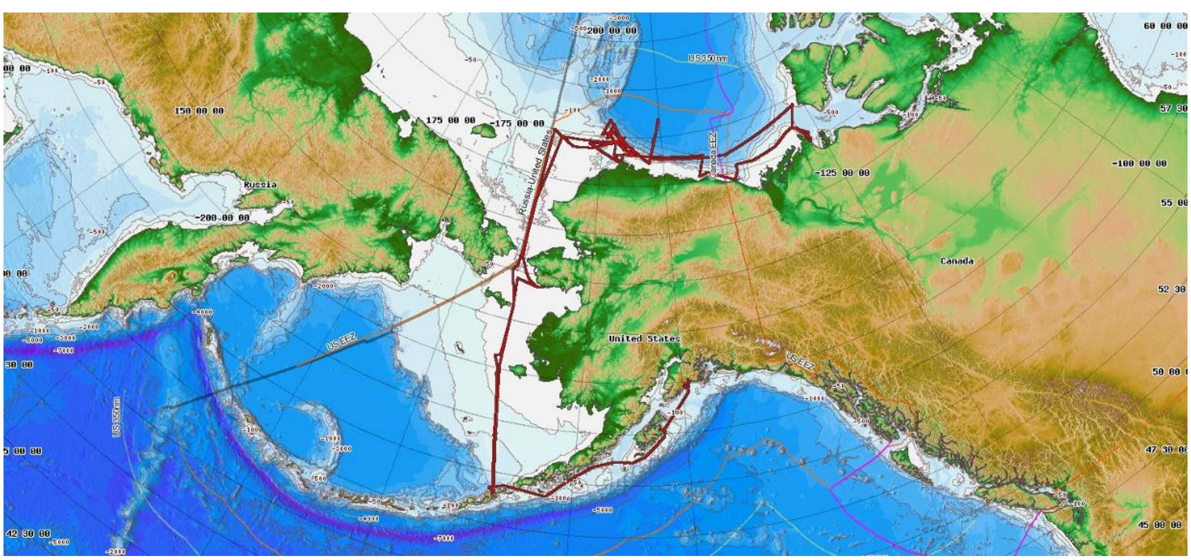


Figure 1-39. HLY 13-03 trackline

I.F.3.b. Ice Operations

We saw very little sea ice during the 13-03 mission, mostly made up of pancake ice and first year ice in the Beaufort Sea and Chukchi Sea. Several CTD casts were made in ice coverage ranging from six tenths to eight tenths. We used traditional approach strategies (power slide, two-toed sloth) as necessary to clear ice from the starboard A-frame and provide open water for cast deployment. Deck crews manned ice poles to push away any threatening pieces that approached the CTD wire.

I.F.4 Science

I.F.4.a. Projects

The third science mission of AWS-13 was the familiar North Slope Moorings mission. Led by Dr. Robert (Bob) Pickart of the Woods Hole Oceanographic Institute, this mission focused on the retrieval and deployment of subsurface moorings that measure the physical properties of the Western Arctic Boundary Current. Left in the Arctic year-round, the moorings require annual servicing to recover data and enable continued operation. Secondary objectives included conductivity/ temperature/depth (CTD) stations, methane data collection from sensors installed on the jackstaff, and Van Veen Grabs and hand nets, to support continued research from University of Alaska – Fairbanks students from AWS 13-01. Data collected during this mission will represent the annual assessment of the Western Arctic Boundary current. Mooring locations and CTD lines are shown below in Figure 1-40.

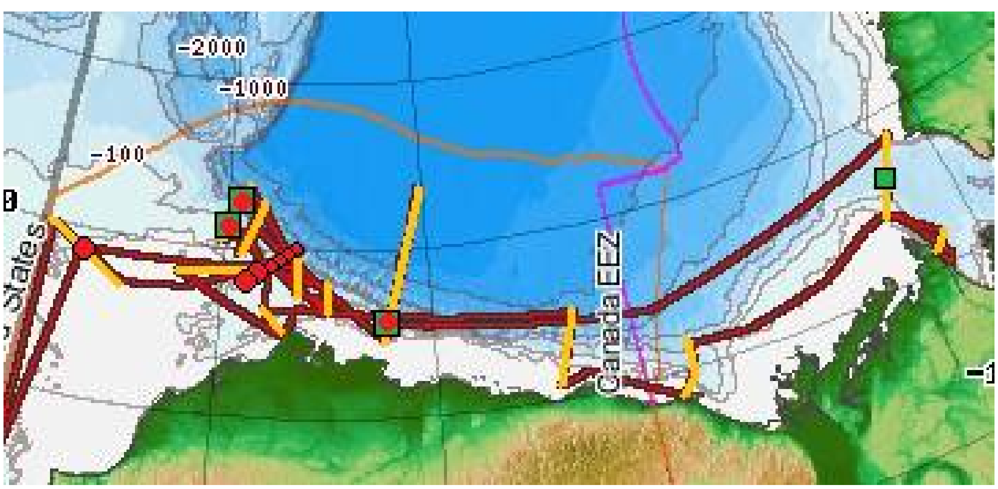


Figure 1-40. Mooring deployments (Red), recoveries (Green) and CTD lines (Yellow)

Throughout the mission, we deployed 10 moorings, including three that we recovered, overhauled and re-deployed. The deployments and recoveries are itemized below in Tables 1-13 and 1-14, respectively. One of these moorings, lovingly dubbed the “Franken-mooring”, or FM1, by the crew, was a last-minute addition, assembled from spare parts recovered throughout the mission and the batteries delivered off of Barrow by NSB SAR (see Section 1.F.2 – Air Operations). To supplement data obtained by the sub-surface moorings, we conducted 186 CTD casts along the North Slope and Barrow Canyon. Additionally, we deployed 25 Van Veen Grabs, 4 hand nets, 36 XBTs and 13 XCTDs.

Figure 1-41. Flight deck personnel transfer mooring batteries from NSB SAR Bell 412

DATE	*MOORING*	*POSITION*	*WATER DEPTH / HEIGHT OCCUPIED*
09-Oct	CT1	72-12.821 N 156-57.687 W	48m / Occasional Surfacing
12-Oct	CS2	72-18.018 N 157-43.522 W	102m / 66m
12-Oct	CS3	72-20.175 N 157-26.893 W	162m / 127m
12-Oct	CS4	72-23.104 N 157-08.762 W	251m / 216m
12-Oct	CS5	72-25.820 N 156-50.370 W	358m / 323m
15-Oct	CS1	72-15.374 N 158-04.265 W	68m / Occasional Surfacing
15-Oct	HARP D	72-36.911 N 158-42.133 W	99m / 28m
15-Oct	HARP C2	72-48.010 N 158-24.760 W	322m / 28m
18-Oct	BS3	71-23.638 N 152-02.921 W	146m / 110m
25-Oct	FM1	72-15.808 N 158-02.463 W	67m / 57m

Table 1-13. 13-03 Sub-surface Mooring Deployments

DATE	*MOORING*	*POSITION*	*NOTES*
13-Oct	HARP C2	72-48.01 N 158-24.76 W	Re-deployed on 15-Oct
13-Oct	HARP D	72-36.91 N 158-42.15 W	Re-deployed on 15-Oct
16-Oct	BS3	71-23.650 N 152-02.888 W	Re-deployed on 18-Oct
20-Oct	AG1	71-20.59 N 128-01.74 W	

Table 1-14. 13-03 Sub-surface Mooring recoveries

During the transit south to Dutch Harbor, the Chief Scientist passed along a request from the Alaska Ocean Observing System to retrieve a Wave Rider Buoy west of King Island in the Bering Sea. However, upon approaching the buoy, with conditions out of acceptable operating parameters, approaching darkness, schedule constraints, and complications with retrieval (the buoy had no acoustic release system and would have to be manually lifted, chain and anchor, from the seabed), the decision was made to bypass the operation and continue toward Dutch Harbor. We photographed the buoy as we passed by, shown below in Figure 1-42.

Figure 1-42. Wave Rider Buoy

I.G. Southbound Transit to Seattle

I.G.1. Vessel Operations

I.G.1.a. Ship Operations

We departed Dutch Harbor and followed a standard great circle trackline through Unimak Pass to the Strait of Juan de Fuca, southbound through Puget Sound to Seattle. We originally anticipated bad weather that would slow our progress through the North Pacific Ocean, however we stayed well east of the low pressure system, and as a result of our better-than-anticipated speed of advance, we moored in Seattle one day early, at approximately 1400 on 05 November, 2013.

During the transit to Seattle, we conducted a full power trial test of our two main motors and the three operational main diesel engines with assistance of three embarked General Electric (GE) contractors. The purpose of the test was to validate the test procedures, protocols and prototype software to analyze and correct the official U.S. Coast Guard maintenance procedure card. The test identified several safety matters and errors in the procedure. We also conducted a repeatable main motor load generation protocol to used hit the target loads on the main motor. After the corrections are made to the official maintenance procedure card, future full power trial tests will be performed exclusively by ship's force.

I.G.1.c. Boat Operations

While still moored in Dutch Harbor on 31 October, CB-L 224711 got underway for a short training evolution and to provide line handlers for our departure.

DATE	*TYPE*	*MISSION*	*BOAT*	*TIME*
31 Oct	Ops	Line Handlers	224711	1+00

Table 1-15. Southbound Transit Small Boat Sortie Log

I.G.3. Navigation

I.G.3.a. Ship's Track

We followed a standard great circle route from Dutch Harbor, through Unimak Pass to the Strait of Juan De Fuca.

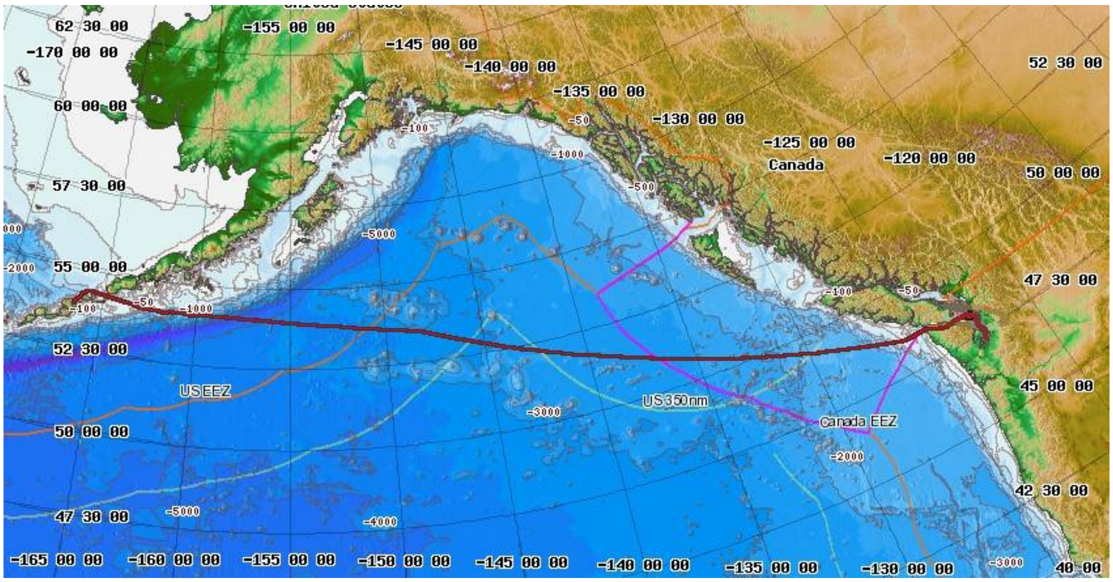


Figure 1-43. Southbound transit trackline

II. Communications and Electronics

II.A. Communications

Ku-Band Internet

In response to a memo requesting a sustainable high latitude communications solution TISCOM and CG-6 effected the removal of INMARSAT and installed Ku-band during the 2013 inport. During our shakedown cruise connectivity was exceptionally slow and unreliable despite remaining near the entrance to the Strait of Juan de Fuca. We were forced to revert to Fleet Broadband (FBB) connectivity while TISCOM and the Communications Division investigated the poor performance. A programming and installation error was discovered to be the cause. Corrections were made prior to departing for AWS-13 and performance while pier side drastically improved.

Figure 2-1 below shows coverage areas for the various Fleet Broadband Satellites. Figure 2-2 shows the coverage areas for the E172A Ku-band satellite.

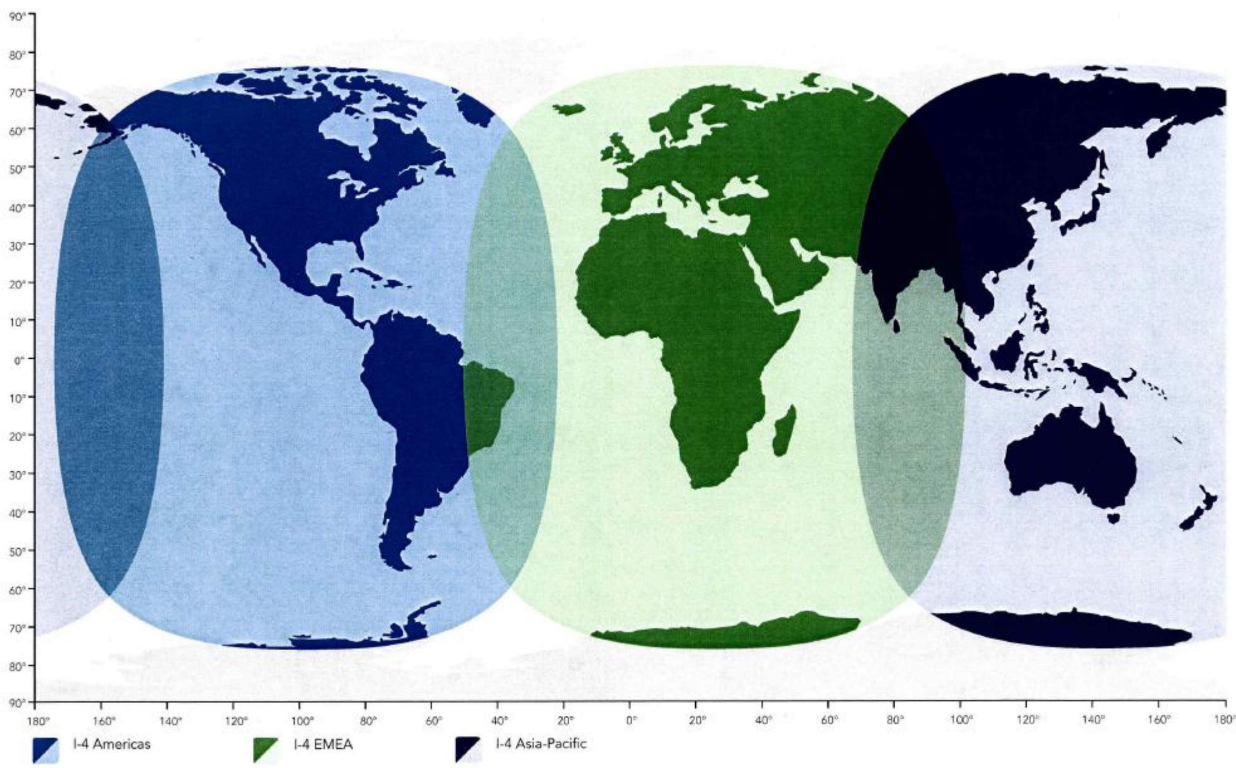


Figure 2-1. INMARSAT B FBB Satellite Coverage

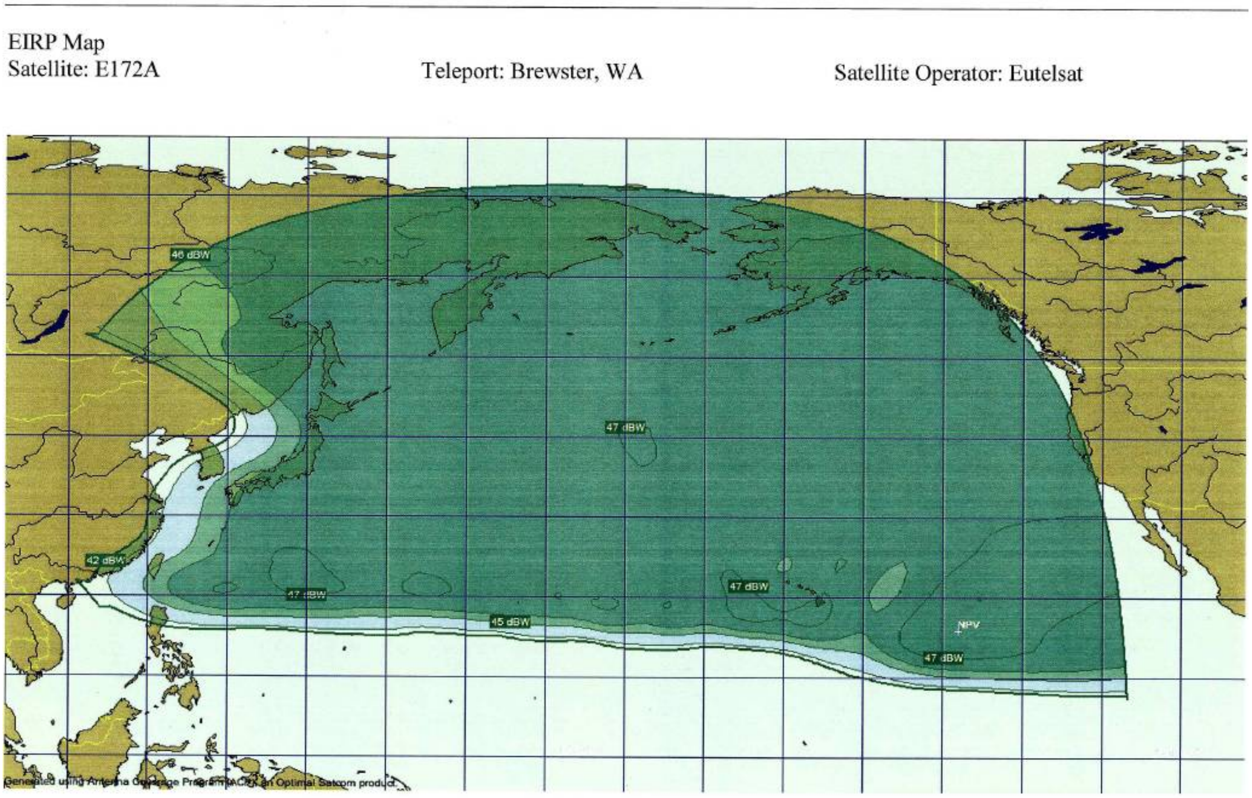


Figure 2-2. INMARSAT Ku-Band E-172A North Pacific Beam Coverage

We found the Ku-band system to be effective for the majority of the deployment, and only lost coverage for small portions of the 13-02 and 13-03 missions when operating East near Amundsen Gulf. Although Figure 2-2 suggests that the North Pacific Ku-Band beam barely reaches Alaska's North Slope, the actual coverage we experienced is depicted below (Figure 2-3). This figure suggests that the footprint extends further north and much further west than INMARSAT anticipates. Once Ku-band dropped offline, FBB provided reliable connectivity in the vicinity of Amundsen Gulf.

We maintained Ku-band connectivity at our furthest north position for the deployment (76-11.726N 158-11.544W). The antenna elevation to the E172A satellite was at 3 degrees suggesting connectivity was possible even further north. Ku-band speed is significantly faster than FBB. Performance was such that we remained on Ku-band while inport Dutch Harbor rather than using the pier supplied T1 line. Using Google, the average ping connection time for Ku-band was 600-900ms, compared to FBB at 1700-3600ms.

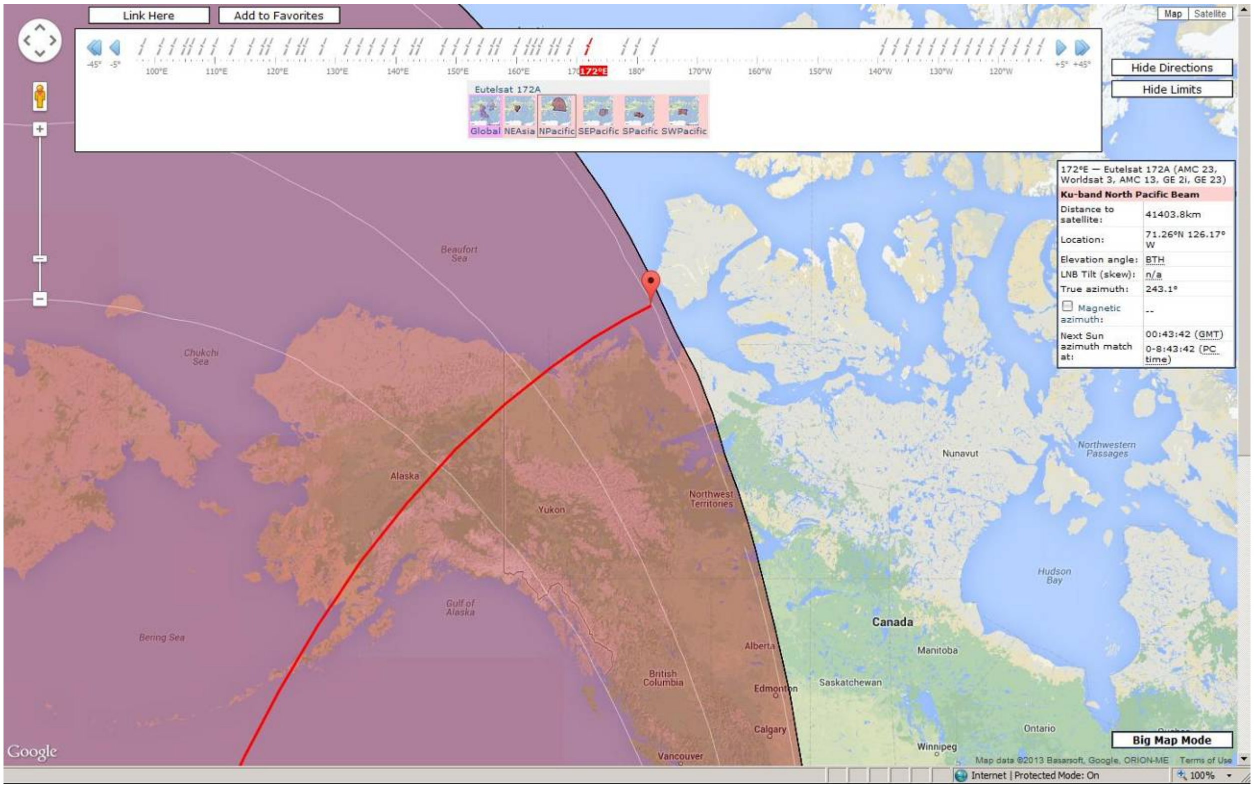


Figure 2-3. INMARSAT Ku-Band E-172A North Pacific Beam ACTUAL Experienced Coverage

II.B. Electronics

DPS System Validation

Early in the deployment a satisfactory Dynamic Positioning System function check was conducted in mild weather conditions. In order to successfully use the system, the limitations of the system must be well understood. Joystick Manual Head (JSMH) and Joystick Auto Head (JSAH) modes are used to position the ship close to the desired position in an orientation that allows the bow thruster, rudders and screws the ability to maintain position before shifting to Dynamic Positioning (DP) mode. The course manual from the DPS operator course provides general guidance in how to manipulate the various modes.

During the 13-02 mission, scientists desired station keeping within 20 meters of the desired coring location. We opted to operationally test DPS in moderate wind (20-40 kts) and seas (6-10’) during coring operations. DPS performed flawlessly and held station within 3 meters for several hours (up to 8) once the proper heading into the elements was determined.

III. Engineering

Bow Thruster

While conducting coring operations the port tiller arm unthreaded between the port hydraulic ram distal end and the clevis assembly. This caused the port bow thruster door to slam shut when it was mechanically released from the hydraulic ram. The slamming shut of the port bow thruster door caused a pressure spike through the starboard tube, as this was the only remaining outflow for the water. The sudden increase in forces through the starboard tube caused a surge in the mechanical forces on the starboard mechanical operator arm, and the resultant forces ripped the starboard ram from the bulkhead mounts.

Prior to beginning work in the Bow Thruster Void, engineers installed temporary chain falls to make the system “safe for maintenance”, so that they could repair the clevis arms while the valve was mechanically separated from the hydraulics. The concern was that the valve would rotate under the flow of seawater across the hull, rotate and tiller arm and potentially pinch or otherwise injure the engineers during their repairs. The chain falls held, and the engineers chased the threads on the port clevis assembly, reconnected the port door operator assembly, and then reattached the starboard hydraulic ram to the bulkhead with new mounting hardware. The chain falls were removed and an operational test conducted with satisfactory results.

Throughout the remainder of its operational time, the clevis arms continued to vibrate free from the threaded end of the hydraulic ram due to a design problem that provides insufficient friction to lock the components together. Under the normal rigor of bow thruster operations, the threaded rod slowly worked itself out of the clevis arm towards mechanical separation. Employing liquid thread locker on the clevis arms slowed the loosening but did not stop the thread disengagement. However, the liquid thread locker extended the loosening events from 3 to 5-days to 2 to 3-weeks between repair events.

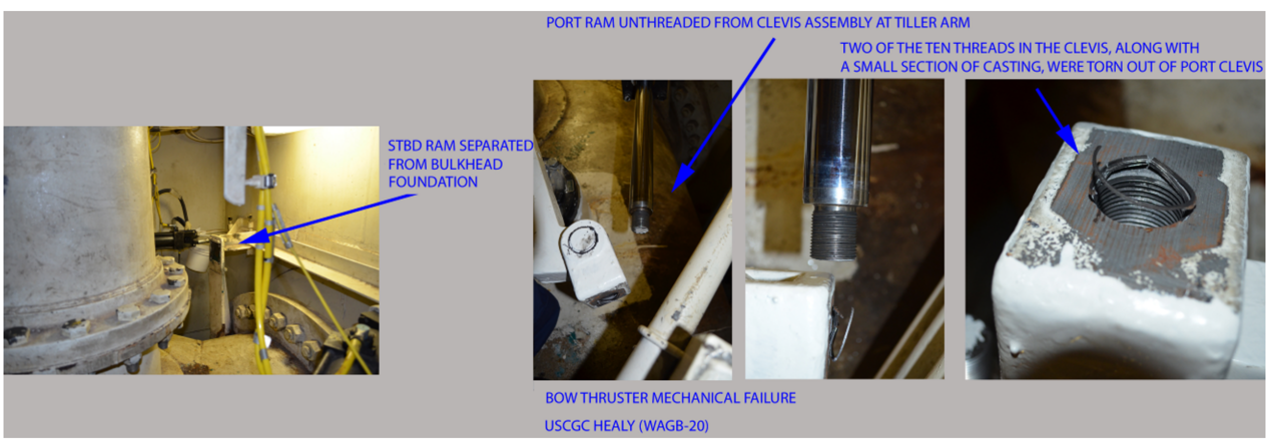


Figure 3-1. Bow Thruster Casualty

We placed the bow thruster into Charlie status mid-way through the 13-03 mission for the remainder of the patrol. This was due to a failure of the linear position system on the starboard ram. The linear potentiometer became mechanically deranged and was not reporting valid positions, which confused the control and monitoring circuit. When this circuit was unable to resolve the position or the ram did not achieve the ordered position within the allowable timeframe, the bow thruster faulted and shut down. Because the linear potentiometer is located within the hydraulic ram, we neither had the parts nor the technical literature to perform the repairs while underway.

Propeller Shaft Fouling

The port propeller shaft was fouled when an unreported hydrophone was deployed from the port side of the fantail. The hydrophone was sucked into the port propeller and fouled the area between the propeller hub and the aft stern tube bearing with double braid nylon line and a wire rope reinforced electrical cable. Remotely operated vehicle and surface launched underwater camera systems provided the means to assess the entanglement. Dive inspections in Seward (See Section I.E.1.d) found that shaft had cleared itself and the only permanent damage was to the shaft zinc retainer bar in one quadrant. The zinc retainer bars remained intact, however, and follow-up inspections and repairs will take place during our next inport maintenance period.

Seabay

While backing and ramming in ice the seabay failed to replenish and emptied out completely, essentially starving all of the cooling systems for water. The root cause appeared to be from ice tightly packing against the side shell of the hull and blocking the seabay intakes. This was a very unusual occurrence and the data suggests the event was exacerbated by being in science retention, which protocol requires us to close the starboard sea chest intakes to minimize the thermal effects on the water column.

Shortly after restoring the seabay to full operation, we experienced a rapid increase in seabay temperatures. Looking at the ice conditions, high pack pressure and ice breaking flat up against the hull, it appeared that the seabay overboards were obstructed. The seabay overboard lines are located about 3-feet below the water line in the ice belt. If obstructed, the seabay is unable to eject the heated water and replenish with cooler seawater.

MDE #1/MDE#3

During the 13-03 mission, a seal between the engine block and the cylinder liner failed on the #1 MDE, which permitted the jacket water system to leak into the intake air plenum chamber. The leak was detected by a watchstander, who noted jacket water leaking from the "A" bank air plenum chamber “tattle tail”. This particular failure requires the removal of the cylinder head, piston and connecting rod, and the cylinder liner to effect repairs. Unable to perform this large scale corrective action underway, we placed the engine into Charlie status for the remainder of the patrol.

Around that same time, the #3 MDE suffered a failure of the electronics that control the jacket water cooling system, resulting in intermittent overheating events on the #3 MDE. With the #1 MDE in permanent Charlie status for the remainder of the patrol, we cannibalized the required parts to enact repairs to the #3 MDE, restoring it to full operation. Subsequently, we completed the patrol with #2, #3 and #4 MDEs in Alpha status.

IV. Administration

IV.A. Personnel

<u>SPO performance</u>

The Seattle Service Personnel Office (SPO) was very helpful throughout the deployment and maintained an efficiency rating above 99%. The primary method of communication was email and secondary was via telephone. It is important to factor in time differences that arise when operations extend into the fall as the work day of the SPO and the ship's office will be on different schedules. Extra time should be factored in for SPO turnaround in these situations. In the future, it is recommended that new Administrative Division personnel visit the SPO while inport to establish a working relationship and rapport prior to deployments.

<u>Proactive</u>

Continue to act early and often to consolidate travel plans in and out of port/logistics calls. Sometimes there will be fair lead-time (DA Orders, Advance notice of incoming/outgoing personnel), while others will be short notice.

Anticipation of periods of internet connectivity is also important. All administrative work requiring internet connectivity should be executed during these times, to the greatest extent possible. The new Ku-band system performed well during the AWS-13 deployment, with only a few brief blackout periods, with FBB functioning well during transits IVO the Amundsen Gulf. However, AWS-13 missions did not take us past 76-12N, and it is still unclear as to how the system will perform beyond this benchmark, so anticipation of reduced connectivity remains imperative when we transit further north. Connection issues also arouse this patrol with CAC card and email account problems. Admin personnel should confirm with the IT staff prior to sailing that all account issues have been fixed as many issues cannot be fixed will the ship is underway.

Commercial fishing companies book large volumes of advance airline tickets to Dutch Harbor in anticipation of ferrying crews to and from Anchorage. Often times, a certain number of these seats go unused. In the past, we were provided a number to contact Alaska Airlines ((800) 747-0101) to get access to these unused seats for emergency and last-minute logistics flights in and out of Dutch Harbor. Previous administrative personnel had reported ample success with this service. However, this year, we attempted to secure a ticket for a crewmember arriving from Cape May in early August about a week in advance. We were told that all seats were taken on every flight into Dutch during our two-day port call, and the crewmember had to wait two weeks until the first Barrow transfer to report aboard and remained TDY at Base Seattle in the interim. While this service can be helpful, it should not be relied upon for success, and administrative personnel should continue to emphasize the importance early flight reservations to and from these remote locations.

General

It is important to have contingency plans in place to account for possible delays at stopovers, especially for Barrow transfers. Personnel arriving should plan on arriving at least one day early, and personnel departing should plan on spending the night locally and departing via commercial air the next day. All scheduling must be flexible. Weather, especially in areas such as Barrow, can be very unpredictable. Moreover, this year, a hotel fire at the Top of the World Hotel two days before the transfer crippled Barrow's already scarce lodging resources and required a major logistical push to coordinate last-minute room and board for incoming and departing science parties.

Incoming and outgoing personnel need to be coordinated with the YNC at Base Seattle ADMIN. Outgoing personnel can be assigned TDY at Base if necessary to take care of HHGs or when checking out of housing. Base Seattle can create amendments to orders if necessary for incoming personnel, but if there is enough lead time they should be done onboard HEALY and a copy scanned/emailed to Base. Flight arrangements can be made by Base ADMIN for incoming personnel, and should be charged to the TONO, as there can be a significant delay in travel claim processing which could cause a delay in the payment of the member's travel card.

The accuracy of any outgoing travel claims is also crucial. Members reporting aboard should ensure that they have travel orders that are either original or 'certified to be a true copy.' This is required for inclusion in PCS travel claims. When members report aboard while the ship is underway, they do not have access to original orders, as they are kept at the SPO.

IV.B. Morale

Fish Call

We paused briefly over Albatross Banks for a Fish Call during our northbound transit to Kodiak. Many crewmembers caught halibut and pacific cod. Avid fishermen and the galley staff assisted in filleting and freezing the catch.

Figure 4-1. Albatross Banks fishing call

Morale Meals

Various divisions or organizations prepared the Saturday evening morale meal for the crew. The wardroom kicked off the tradition this year by hosting a Hawaiian-themed Luau. Following close aboard was the Chief's Mess, who prepared a delicious "breakfast for dinner" the next weekend, featuring homemade donuts, cinnamon pancakes and an omelet bar. Other morale meals included burger nights by both the Main Propulsion Division and Deck Division, and various pizza and wing nights by the embarked science parties and First Class Petty Officers.

Figure 4-2. The Chief's Mess (left) and Wardroom (right) host morale meals

Ice Liberty

Ice conditions proved favorable for ice liberty twice through the patrol. Once during the 13-02 mission and once during the PUMA/RDC mission, we found thick enough floes to take a few hours to enjoy some time on the ice. Under the watchful eye of dedicated ice rescuemen, deck personnel and bear watches, crewmembers and science party members enjoyed the opportunity to disembark the ship for a few hours of fun.

Figure 4-3. Ice liberty during AWS 13-02

Recurring Morale Events

The morale committee hosted several recurring and one-time events throughout the patrol. Every Saturday night, crewmembers and science party members enjoyed a movie in the hangar, complete with popcorn and other assorted snacks. Other activities preceded the movie on select Saturday evenings, including Bingo, Board Games, Sumo wrestling, Video Games and Cha-cha lessons in support of Hispanic Heritage Month. Additionally, every Sunday evening Team Trivia competitions where held; prizes included gift cards to various retail stores and credit to the HEALY Java Hut.

As is tradition, during the Southbound transit to Seattle, most evenings featured a morale event. On 26 October, the Saturday before Halloween, the morale committee hosted a Halloween Party in the hangar, complete with a costume contest and a showing of "Young Frankenstein." The event was well-attended and many crewmembers and scientists put together a costume to wear.

Additional activities included a Casino Day, put on by the Chief's Mess, followed by a night of Sumo wrestling and movie in the hangar.

Figure 4-4. Halloween Party featuring a Van Veen Grab, Steamboat Willie, and Gru and Minions from "Despicable Me"

Polar Bear Line Crossing Ceremony

We conducted the 2013 Line Crossing Ceremony during the transit to Seward, AK following completion of the PUMA/RDC mission. The Polar Bears put an extraordinary amount of planning into the event to make it memorable for each crew member and scientist that participated. Planning began several weeks out and involved brainstorming meetings attended by all Polar Bears and presided over by the Engineer Officer. Each event had a volunteer committee to plan, organize, decorate, and execute their event.

The Line Crossing Ceremony was a 48 hour affair that began with the arrival of Davey Jones and his team of swashbuckling henchmen to officially welcome all Polywogs and challenge their arrival into his Arctic Realm. The Polywogs were split into teams for the duration of the week to prove they were worthy to join the ranks of the Polar Bears. Some of the planned events were a scavenger hunt, a skit night, morning workout session with the Polar Bears and, as a conclusion, an obstacle course including an ice bath, whale's belly, and a meeting with King Neptune himself.

The ceremony was a completely optional event. Strict rules govern against hazing in the Coast Guard and these rules were fully adhered to in the execution of this event. The vision of ceremony was camaraderie through shared experience. It was an opportunity to bring people together and get them working as a team.

The 2013 Line Crossing Ceremony was a huge success for all involved. New Coast Guard and Science Party Polar Bears were welcomed into the realm of the Arctic. All those who participated in the event were rewarded with a Realm of the Arctic Circle Certificate and a Realm of the Golden Dragon International Date Line Certificate.

Figure 4-5. New Polar Bears receive their red hats at Quarters

V. Supply

V.A. Transactions in Foreign Countries

The only foreign transactions during shakedown and the deployment were rental vehicles in Esquimalt, British Columbia. Please see Section I.A.5.a.

V.B. General Mess

Food stores, mail and GSK typically require one week of transit time via barge from Seattle to Dutch Harbor. Last call for GSK and personal mail is typically set to this timeframe. The Dutch Harbor Post Office and freight forwarders are generally very accommodating and will hold these items until HEALY pulls into port. Fresh food orders are a bit more challenging; orders need to be placed with Prime Vendor in Seattle approximately two weeks prior to calling in Dutch Harbor. This gives Prime Vendor ample time to receive the order and set the stores up for transfer on the barge. The challenge comes from balancing dynamic patrol schedules and barge movements to ensure items are delivered as close to our arrival date as possible.

A list of tugs used during AWS-13 is provided below in Table 5-1. During our approach to Seward for the Mid-patrol Break, we encountered 30+ knot winds. Concerned about the abilities of our propulsion plant to fight such elements and the narrow berth at the Railroad Dock, we contacted LE CHEVAL ROUGE (that we used in Kodiak), who happened to be in Seward at the time. They were quick to answer the call on VHF 16 and willingly accepted our request for assistance to supplement the 1,300HP JUNIOR that we had originally reserved. JUNIOR made off forward and LE CHEVAL ROUGE aft, and we moored safely shortly thereafter.

PORT	COMPANY	TUG	HP	PROP	CONTACT INFO
Kodiak	Amak Towing	LE CHEVAL ROUGE	3,400	Conventional	(907) 225-8847 Lonnie Adams
Dutch Harbor	Dunlap Towing	JAMES DUNLAP	4,800	Z-Drive	(360) 466-3114 Joe Stuart
Dutch Harbor	Dunlap Towing	SARATOGA	1,000	Conventional	(360) 466-3114 Joe Stuart
Seward	Cook Inlet & Barge	JUNIOR	1,300	Conventional	(907) 277-7611 Heather Shank
Seattle	Western Towboat	WESTRAC I/II	2,500	Z-Drive	(206) 789-9000 Bob Shrewsberry

Table 5-1. Tugs

VI. Medical

VI.A. Significant Cases

During our Kodiak port call in late July, Base Kodiak provided routine services to ship's crew by assisting with four dental exams and drawing six HIV labs that we were unable to schedule prior to the deployment. This assisted the ship's Medical Division in maintaining crew readiness.

While in Seward for the Mid-patrol break, two crewmembers were seen at local ER. Both were admitted and released same day for non-emergent issues. Also during the port call, one crewmember sought an evaluation at Joint Base Elmendorf for a non-urgent cardiology workup required for a selection panel. The CG Liaison on base provided necessary assistance with appointment scheduling and the procedure was completed without issue. The Liaison Office phone number is (907) 580-2870, and, at current time, the Liaison Officer is HS2 Eric Davenport.

During the northbound transit to the 13-03 mission, one crewmember suffered a broken toe during a weightlifting accident. JRCC assisted with coordination of travel arrangements back to Seattle, and we performed a small boat MEDEVAC to Nome, AK.

No major medical injuries occurred underway to science staff.

VII. Public Relations

While in Seward for the Mid-patrol Break, several crewmembers spent a morning at Seward Elementary School assisting with a major landscaping project, for which they lacked the workforce to complete prior to the winter snowfall. Our LDAC Chair began dialogue with a Kindergarten Teacher at the school about one month prior to the port call to ascertain their needs and ways that we could assist. In total, 12 crewmembers spent five hours at the school. We dug trenches along several of the sidewalks to later fill in with wood chips, widening portions of a gravel trail and installing edging, and raking and clearing an area for fireweed to be planted in the spring. The school was very appreciative of our efforts, and the students presented us with a banner, which we displayed on the mess deck.

While in Seward, we put out a press release advertising tours on Thursday and Friday afternoons. Although the inport duty sections put substantial preparation into the tours, only 22 people came aboard. This was likely due in part to tours held during weekdays and the short notice of the press release (less than one week prior to the tour dates). We saw no evidence of the release making it into the local newspapers.

We were contacted by the Unalaska School District and the Unalaska Volunteer Fire Dept prior to pulling into Dutch Harbor on 30 October. Each requested a tour of HEALY. Unfortunately, short notice with the school prevented permission slips from being sent home with the students in time, and they were unable to attend. However, we gave a tour to a very appreciative group of Volunteer Fire Department members and their families following the mooring evolution and standard inport logistical activities. Additionally, the command hosted the Honorable Mayor Shirley Marquardt and several members of the City Council for a HEALY familiarization tour.

Please see Appendix 12 for AWS-13 press releases and blog entries.

VIII. AWS-13 Personnel Embarked

VIII.A. Permanent Party

OFFICER PERSONNEL ABOARD		*REMARKS*
CAPT	REEVES, JOHN D.	
CDR	STANCLIK, GREGORY	
LCDR	CASS, JACOB L.	
LCDR	LOWRY, THOMAS S.	
LT	DUFRESNE, CHRISTOPHER P.	LCDR 01 SEP 13
LT	KEPLINGER, SWEETCHARITY M.	
LTJG	BOCK, SCOTT W.	
LTJG	SCHWARTZ, ERIC A.	PCS DEPART 17 JUL 13
LTJG	VALDEZ, KRISTOPHER M.	
ENS	FOLLMER, REBECCA F.	
ENS	JONES, DANIEL M.	
ENS	MAHONEY, CAROLYN S.	
ENS	SANKEY, IAN D.	
ENS	WOWTSCHUK, BOHDON M.	
ENS	ZACCANO, TAHNEE E.	
F&S3	MELLINGER, EARL C.	
BOSN3	RIVERA, JUAN J.	
ENG2	SCROGGINS, DEVIN	
ENLISTED PERSONNEL ABOARD		*REMARKS*
BMCM	SULLIVAN, TIMOTHY R.	
EMCM	FREUNDSCHUH, DAVID J.	
ETCS	LIVINGSTON, JERRY H.	TDY AWAY 15 AUG 13 – 07 SEP 13
FSCS	BANKER, DOUGLAS J.	
MKCS	PLASCENCIA, YANCY A.	
BMC	SHRUM, TROY L.	TDY AWAY 26 SEP 13 – 06 NOV 13
DCC	LUDWICK, MICHEAL D.	
MKC	RILEY, SHANNON D.	
MSTC	AQUINO, KAREN A.	
OSC	MARSH, DAVID R.	
SKC	GATEWOOD, GEOFFREY E.	TDY AWAY 07 SEP 13 – 24 SEP 13
YNC	CLEVERDON, JOHN H.	
BM1	COOK, KENNETH D.	
BM2	BICHSEL, BLAINE M.	
BM2	KAY, JEREMY R.	
BM2	LEKICH, KEVIN F.	
BM2	SPEICHER, JERRY E.	
BM3	GANGL, BRIAN R.	
BM3	GOMES, DANIEL J.	
BM3	RUPP, MATHEW D.	
BM3	VOLKERSON, JONATHAN D.	
DC1	OROZCO, NICOLAS A.	
DC2	ANDREOLI, DAVID J.	
DC3	STEVENSON, CHRISTOPHER J.	PCS REPORT 22 SEP 13
EM1	CARRINGTON, SETH E.	

EM1	CLARK, PHILIP S.	
EM2	BROWN, MICHAEL T.	
EM2	ROBERTS, RYAN D.	
EM2	O'NEAL, OTIS L.	
EM3	ENNIS, RYAN L.	TDY AWAY 10 OCT 13 – 06 NOV 13
ET1	SHIELDS, CULLEN G.	
ET2	ARCHER, DANIEL R.	
ET2	KNOWLTON, JUSTIN H.	ET1 01 OCT 13
ET3	DELACH, DONALD J.	
FS1	MULFORD, ALBERT M.	
FS2	ARNDT, GARY T.	
FS3	DUNKIN, KASEY C.	
FS3	MCCALLUM, MICHAEL C.	
FS3	PULOTU, SIONE T.	
HS1	HUNTER, ERIN A.	
IT1	BIRD, COLIN A.	
IT1	ORELLANA, GERARDO A.	
MK1	GRAHAM, MICHAEL D.	
MK1	PORTER, MARTIN H.	
MK1	SPELLMAN, MEGAN J.	
MK1	WADA, MICHAEL J.	
MK2	BISHOP, KENNETH W.	
MK2	MARTIN, ROBERT E.	TDY AWAY 11 JUL 13 – 22 SEP 13
MK2	SIPLE, ZACHARY A.	
MK3	FORD, CHRISTOPHER W.	
MK3	MCCARTHY, MARY E.	
MK3	STEVENS, DANIELLE R.	
MST1	DEMAREST, STEVEN R.	
MST2	SHORT, SAMMY E.	
SK1	JACKSON, JOHN D.	TDY AWAY 16 AUG 13 – 07 SEP 13
SK2	GABLE, CHAD A.	
SK3	BOOTH, MATTHEW C.	
FNMK	BUSHONG, KIRSTEN C.	MK3 01 AUG 13, PCS DPT 21 SEP 13
FN	LINDEN, ALEXANDRIA A.	PCS DEPART 27 JUL 13
FN	MANCINI, MARISSA L.	PCS REPORT 07 SEP 13
FN	TORRES, JESSE M.	
FA	KOEHLER, NIKOLAS	
SN	CASON, ALEXANDER S.	
SN	ELLIS, GIANNA R.	
SN	EVANS, LISA N.	PCS REPORT 22 SEP 13
SN	HERD, MICHELLE U.	
SN	JEFFERSON, COREY L.	PCS REPORT 24 SEP 13
SN	LOPEZ, AARON J.	
SN	MOLINARI, REBECCA L.	PCS REPORT 24 SEP 13
SN	PINEIRO, LAUREN E.	PCS REPORT 22 SEP 13
SN	WALLING, ANDREW L.	PCS REPORT 15 AUG 13
SN	WELDING, BRENDA T.	PCS DEPART 15 AUG 13
SA	MARTINEZ-DIAZ, GORDON A.	SN 01 AUG 13
SA	MOSZYNSKI, ELISE M.	SN 17 SEP 13

Table 8-1. Permanent Party Embarked

VIII.B. Temporary Assigned Duty (TAD) Personnel (Not part of Science Parties)

ENLISTED PERSONNEL TDY		REMARKS
ETCS	SIMON, MICHAEL J.	TDY 15 AUG 13 – 07 SEP 13
MK1	JONES, JOASH E.	TDY 11 JUL 13 – 28 SEP 13
IT1	QUIJANO, GEDEON P.	TDY 15 AUG 13 – 22 SEP 13
IT1	WHITTY, ALEX J.	TDY 22 SEP 13 – 30 OCT 13

Table 8-2. TDY Embarked

VIII.C. Very Important Persons (VIPs) and Visitors

VISITORS	REMARKS
WITT, DON	15 AUG 13 – 28 SEP 13; GE
REED, CLIVE	29 JUL 13 – 15 AUG 13; 03 OCT 13 – 30 Oct 13; GE
MUNIZ, DAVID	31 OCT 13 – 05 NOV 13; GE
SHARMA, OM	31 OCT 13 – 05 NOV 13; GE
CHRISTENSEN, JIM	31 OCT 13 – 05 NOV 13; GE
ESSIG, BLAKE	07 SEP 13 – 21 SEP 13; KTUU Anchorage
LUTAN, ALBERT	07 SEP 13 – 21 SEP 13; KTUU Anchorage

Table 8-3. VIPs and Visitors Embarked

VIII.D. Science Parties

HLY 13-01

LAST NAME	FIRST NAME	INSTITUTION	POSITION	DATE ON	DATE OFF
Alatalo	Philip	WHOI	Technician	28-Jul-13	15-Aug-13
Ashjian	Carin	WHOI	Scientist	28-Jul-13	15-Aug-13
Blackwood	Carolyn	CM Blackwood Photography	Photographer	28-Jul-13	15-Aug-13
Bonsell	Christina	University of Texas – Austin	Grad Student	28-Jul-13	15-Aug-13
Bucolo	Philip	University of Texas – Austin	Post-Doc	28-Jul-13	15-Aug-13
Cooper	Lee	University of Maryland	Chief Scientist	28-Jul-13	15-Aug-13
Crowley	Heather	BOEM	Funding Agency Rep	28-Jul-13	15-Aug-13
Dunton	Ken	University of Texas – Austin	Scientist	28-Jul-13	15-Aug-13
Elliott, LT	Stephen	University of Washington	Grad Student	28-Jul-13	15-Aug-13
Fang	Ying-Chih	University of Alaska – Fairbanks	Grad Student	28-Jul-13	15-Aug-13
Fox	Austin	Florida Institute of Technology	Grad Student	28-Jul-13	15-Aug-13
Gemery	Laura	USGS	Technician	28-Jul-13	15-Aug-13
Goethel	Christina	Smith College	Grad Student	28-Jul-13	15-Aug-13
Gonsior	Michael	University of Maryland	Scientist	28-Jul-13	15-Aug-13
Graham	Donny	ESU Seattle	ESU Support	11-Jul-13	15-Aug-13
Grebmeier	Jackie	University of Maryland	Co-Chief Scientist	28-Jul-13	15-Aug-13
Hardison	Amber	University of Texas – Austin	Scientist	28-Jul-13	15-Aug-13
Hardwick	Jeff	ESU Seattle	ESU Support	28-Jul-13	15-Aug-13
Johnson	Christian	University of Maryland	Technician	28-Jul-13	15-Aug-13
Kelly	Holly	Knox County Schools	Teacher	28-Jul-13	15-Aug-13
Kelly	Jim	University of Alaska – Fairbanks	Grad Student	28-Jul-13	15-Aug-13

Kirievskaya	Dubrava	Russian State Hydrometeorological University	Grad Student	28-Jul-13	15-Aug-13
Konar	Brenda	University of Alaska – Fairbanks	Scientist	28-Jul-13	15-Aug-13
Lewis	Piper	Earlham College	Grad Student	28-Jul-13	15-Aug-13
Martin	Toby	Oregon State University – STARC	Technician	28-Jul-13	15-Aug-13
McEachen	Heather	University of Alaska – Fairbanks	Grad Student	28-Jul-13	15-Aug-13
McTigue	Nathan	University of Texas – Austin	Post-Doc	28-Jul-13	15-Aug-13
Mikan	Molly	Old Dominion University	Grad Student	28-Jul-13	15-Aug-13
Moore	Sue	NOAA	Scientist	28-Jul-13	15-Aug-13
Paver	Chris	University of Maryland	Grad Student	28-Jul-13	15-Aug-13
Powell	Kim	University of Alaska – Fairbanks	Grad Student	28-Jul-13	15-Aug-13
Ravelo	Alex	University of Alaska – Fairbanks	Grad Student	28-Jul-13	15-Aug-13
Reedy	Marty	US Fish and Wildlife Service	Observer	28-Jul-13	07-Sep-13
Salter	Ian	Old Dominion University	Scientist	28-Jul-13	15-Aug-13
Schollmeier	Tanja	University of Alaska – Fairbanks	Grad Student	28-Jul-13	15-Aug-13
Schonberg	Susan	University of Texas – Austin	Scientist	28-Jul-13	15-Aug-13
Skloss	Andrea	Port Aransas Independent School District	Teacher	28-Jul-13	15-Aug-13
Taylor	Karen	Old Dominion University	Technician	28-Jul-13	15-Aug-13
Thombley	Robert	Scripps/STARC	Support	28-Jul-13	15-Aug-13
Trefry	John	Florida Institute of Technology	Scientist	28-Jul-13	15-Aug-13
Trocine	Robert	Florida Institute of Technology	Scientist	28-Jul-13	15-Aug-13
Wang	Hangzhou	WHOI	Grad Student	28-Jul-13	15-Aug-13
Weingartner	Tom	University of Alaska – Fairbanks	Scientist	28-Jul-13	15-Aug-13
Wright	Charlie	US Fish and Wildlife Service	Scientist	28-Jul-13	15-Aug-13
Yan	Yuchao	Florida Institute of Technology	Grad Student	28-Jul-13	15-Aug-13
Young	Jordann	University of Texas – Austin	Grad Student	28-Jul-13	15-Aug-13
Zhang	Mengjie	University of Maryland	Grad Student	28-Jul-13	15-Aug-13

Table 8.4. Science Personnel Embarked, HLY 13-01

HLY 13-02

LAST NAME	*FIRST NAME*	*INSTITUTION*	*POSITION*	*DATE ON*	*DATE OFF*
Blas	Danny	Scripps Institute	Teacher	15-Aug-13	07-Sep-13
Cameron	Gordon	Bedford Institute	Scientist	15-Aug-13	07-Sep-13
Coletti	Anthony	University of Massachusetts	Grad Student	15-Aug-13	07-Sep-13
Cronin	Thomas	USGS	Scientist	15-Aug-13	07-Sep-13
Driscoll	Neal	Scripps Institute	Co-Chief Scientist	15-Aug-13	07-Sep-13
Guo	Alan	WHOI	Scientist	15-Aug-13	07-Sep-13
Hagg	Ron	Oregon State University – STARC	Support	15-Aug-13	07-Sep-13
Hill	Jenna	Coastal Carolina University	Grad Student	15-Aug-13	07-Sep-13
Ingalsbe	Tara	Florida Gulf Coast University	Grad Student	15-Aug-13	07-Sep-13
Jeglinski	Marti	WHOI	Scientist	15-Aug-13	07-Sep-13
Kataria	Akash	Scripps Institute	Grad Student	15-Aug-13	07-Sep-13
Kaye	Sarah	ESU Seattle	Technical Support	15-Aug-13	22-Sep-13
Keigwin	Lloyd	WHOI	Chief Scientist	15-Aug-13	07-Sep-13
Klotsko	Shannon	Scripps Institute	Grad Student	15-Aug-13	07-Sep-13
Maio	Chris	University of Massachusetts - Boston	Rigger	15-Aug-13	07-Sep-13
Maloney	Jillian	Scripps Institute	Grad Student	15-Aug-13	07-Sep-13
Marcuson	Rachel	Scripps Institute	Grad Student	15-Aug-13	07-Sep-13
Martin	Thomas	Scripps Institute	Grad Student	15-Aug-13	07-Sep-13

McCarthy	Mike	WHOI	Rigger	15-Aug-13	07-Sep-13
Moser	Chris	Oregon State University – STARC	Coring Technician	15-Aug-13	07-Sep-13
O'Gorman	Dave	Oregon State University – STARC	Technician	15-Aug-13	07-Sep-13
Pelto	Ben	University of Massachusetts	Grad Student	15-Aug-13	07-Sep-13
Reedy	Marty	US Fish and Wildlife Service	Observer	28-Jul-13	07-Sep-13
Reilly	Brendan	Oregon State University	Grad Student	15-Aug-13	07-Sep-13
Roberts	Mackenzie	Scripps Institute	Undergrad Student	15-Aug-13	07-Sep-13
Sutherland	Woody	Oregon State University – STARC	Technician	15-Aug-13	07-Sep-13
Wei	Emily	Scripps Institute	Grad Student	15-Aug-13	07-Sep-13
Zhao	Ning	WHOI	Grad Student	15-Aug-13	07-Sep-13

Table 8.5. Science Personnel Embarked, HLY 13-02

PUMA/RDC

RANK	*LAST NAME*	*FIRST NAME*	*INSTITUTION*	*POSITION*	*DATE ON*	*DATE OFF*
CDR	Adams	Jeremy	NOAA	CG Liaison	07-Sep-13	21-Sep-13
CIV	Aquino	Andre	USCG RDC	Observer/Recorder	07-Sep-13	21-Sep-13
CIV	Axxelson	Bruno	Sweden	Observer	07-Sep-13	21-Sep-13
MK2	Barnett	Michael	USCG Atlantic Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
MK2	Booher	Mathew	USCG Gulf Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
CIV	Carey	Jay	USCG RDC	ROV Technician	07-Sep-13	21-Sep-13
CIV	Christopher	Jeff	USCG RDC	Observer/Recorder	07-Sep-13	21-Sep-13
MST2	Clark	Heather	USCG Gulf Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
CIV	Cook	Mike	UAF	CIMES sUAS	07-Sep-13	21-Sep-13
LTJG	Coonan	Crystal	USCG D17	Observer/Recorder	07-Sep-13	21-Sep-13
LT	Courturier	Katherine	USN	NSMRL	07-Sep-13	21-Sep-13
CIV	Crickard	Mike	USCG National Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
PA3	Devuyst	Grant	USCG D17	D17 PA	07-Sep-13	21-Sep-13
ENS	Doremus	Kevin	NOAA	sUAS Pilot	07-Sep-13	21-Sep-13
LCDR	Erickson	Anthony	USCG HQ (CG-926)	Observer/Recorder	07-Sep-13	21-Sep-13
LT	Fike	Brent	USCG RDC	Safety Officer	07-Sep-13	21-Sep-13
CDR	Finta	James	USCG PACAREA	Observer/Recorder	07-Sep-13	21-Sep-13
MK1	Gable	Ian	USCG Pacific Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
CIV	Gemelas	Theophilis	DHS	DHS Contact	07-Sep-13	21-Sep-13
CIV	Hansen	Rich	USCG RDC	Chief Scientist	07-Sep-13	21-Sep-13
CIV	Hansen	Kurt	USCG RDC	UUV/Skimmer SME	07-Sep-13	21-Sep-13
LCDR	Hickey	Tom	USCG RDC	Comms SME	07-Sep-13	21-Sep-13
LT	Higbie	Keely	USCG RDC	Observer/Recorder	07-Sep-13	21-Sep-13
CIV	Hiller	Scott	Oregon State University - STARC	Technician	07-Sep-13	21-Sep-13
CIV	Jacobs	Todd	NOAA	UAS Advisor	07-Sep-13	21-Sep-13
BOSN3	Jolly	Michael	USCG Pacific Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
CIV	Kallander	Rachel	Law Student	Observer	07-Sep-13	21-Sep-13
CIV	Kunz	Clay	WHOI	UUV Technician	07-Sep-13	21-Sep-13
CIV	Leitner	Peter	NOAA	Scientist	07-Sep-13	21-Sep-13
BM1	Maida	James	USCG National Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
CIV	Maksym	Edward	WHOI	UUV Technician	07-Sep-13	21-Sep-13
CIV	Niccolai	Andrew	USCG RDC	UAS SME	07-Sep-13	21-Sep-13
ET1	Reinhart	Juanita	USCG MSST San Francisco	ROV Pilot	07-Sep-13	21-Sep-13
CIV	Rogers	Mark	NOAA	UAS Co-Pilot	07-Sep-13	21-Sep-13

CIV	Schulman	Zachary	USCG HQ	Guest	07-Sep-13	21-Sep-13
CIV	Severinghause	Richard	USN	NSMRL	07-Sep-13	21-Sep-13
CIV	Singh	Hanumant	WHOI	UUV Technician	07-Sep-13	21-Sep-13
CIV	Smith	Trent	USAF SOC	CIMES sUAS	07-Sep-13	21-Sep-13
CIV	Story	Jason	USCG RDC	ROV Technician	07-Sep-13	21-Sep-13
CIV	Tripp	Scot	USCG RDC	Test Director	07-Sep-13	21-Sep-13
CIV	Walker	Gregory	UAF	CIMES sUAS	07-Sep-13	21-Sep-13
CAPT	Wechsler	Steven	USN	NSMRL	07-Sep-13	21-Sep-13
MK1	West	Austin	USCG Pacific Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
CIV	Whitaker	Robert	Environment Canada	Observer	07-Sep-13	21-Sep-13
MST1	Winston	Jeremiah	USCG Pacific Strike Team	Skimmer Technican	07-Sep-13	21-Sep-13
CIV	Winters-Staszak	Zachary	NOAA	ERMA	07-Sep-13	21-Sep-13
CIV	Zipple	Seth	APL University Washington	UUV Technician	07-Sep-13	21-Sep-13

Table 8.6. Science Personnel Embarked, PUMA/RDC

HLY 13-03

LAST NAME	*FIRST NAME*	*INSTITUTION*	*POSITION*	*DATE ON*	*DATE OFF*
Bahr	Frank	WHOI	Mooring Tech	04-Oct-13	30-Oct-13
Casso	Michael	USGS	Methane Analyst	04-Oct-13	30-Oct-13
Ershova	Elizaveta	WHOI	Water Chemistry	04-Oct-13	30-Oct-13
Frisch	Lauren	University of Alaska – Fairbanks	Intern	04-Oct-13	30-Oct-13
Hiller	Scott	UCSD - STARC	Technician	04-Oct-13	30-Oct-13
Juranek	Laurie	Oregon State University	Water Chemistry	04-Oct-13	30-Oct-13
Kemp	John	WHOI	Mooring Tech	04-Oct-13	30-Oct-13
Kennedy	Maddie	WHOI	CTD Watch	04-Oct-13	30-Oct-13
Koonaloak	Claudia	UMIAQ	Observer	04-Oct-13	30-Oct-13
Martin	Toby	Oregon State University – STARC	Technician	24-Sep-13	30-Oct-13
Moore	Eric	USGS	Physical Scientist	04-Oct-13	30-Oct-13
Nobre	Carolina	WHOI	CTD Data Taker	04-Oct-13	30-Oct-13
Pickart	Bob	WHOI	Chief Scientist	04-Oct-13	30-Oct-13
Pisareva	Maria	WHOI	CTD Watch	04-Oct-13	30-Oct-13
Quintero	Alex	Oregon State University - STARC	Technician	04-Oct-13	30-Oct-13
Reisdorph	Stacey	University of Alaska – Fairbanks	Water Chemistry	04-Oct-13	30-Oct-13
Schollmeier	Tanja	University of Alaska – Fairbanks	Grad Student	04-Oct-13	30-Oct-13
Stenseth	Adam	ESU Seattle	Technician	22-Sep-13	05-Nov-13
Stockwell	Dean	University of Alaska – Fairbanks	Water Chemistry	04-Oct-13	30-Oct-13
Stoudt	Chase	University of Alaska – Fairbanks	Graduate Student	04-Oct-13	30-Oct-13
Thayer	Bruce	Scripps Institute	Research Associate	04-Oct-13	30-Oct-13
Wang	Hangzhou	WHOI	Post-doc	04-Oct-13	30-Oct-13

Table 8.7. Science Personnel Embarked, HLY 13-03

Appendix 1: CGC HEALY Deployment Schedule AWS-13

FOR OFFICIAL USE ONLY (FOUO) DOCUMENT – AVAILABLE UPON REQUEST

Appendix 2: OPORD, DEPSUM (UNCLAS/FOUO)

A. Operations Order

FOUO DOCUMENT – AVAILABLE UPON REQUEST

FOUO DOCUMENT – AVAILABLE UPON REQUEST

B. Deployment Summary

FOUO DOCUMENT – AVAILABLE UPON REQUEST

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FOUO DOCUMENT – AVAILABLE UPON REQUEST

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Appendix 3: Shakedown & Ready-For-Sea Schedule (20 – 29 June 2013)

Thursday, 20 June – Depart VIGOR Shipyard, Seattle
0645 – Liberty Expires
0800 – NSTT Drill Brief
NAV-A: Preps for Getting Underway
1000 – Underway
1000 – Begin engine break-ins (16hrs) ASAP once u/w
1100 – Lunch
1200 – Navigation Drills (NSTT)
NAV-X: Piloting by ECINS
1600 – MOB – Boat/Day (NSTT)
SEA-04D: Man Overboard Boat Recovery (Day)
SEA-05: Abandon Ship
1700 – Dinner
1800 – Flight Deck Fire Party Training

Friday, 21 June - Underway
0100 – Begin EM122 Multibeam Calibration (ADCP testing concurrently)
0700 – Breakfast
0800 – DC College
1100 – Lunch
1200 – ETT Brief
1230 – Restricted BECCEs
1230 – Begin Winch & CTD Testing
1400 – CTD Cast to 2000m
1700 – Dinner
TBD – Upon completion of Multibeam & Winch testing, proceed inbound to Eastern Bank
1800 – Flight Deck Fire Party Training

Saturday, 22 June – Underway
0700 – Breakfast
0900 – DCTT Brief
1000 – Fire Drill
DC-11: Fire Extinguishing and Smoke Clearance
1100 – Lunch
1130 – NSTT Brief
1200 – Anchor IVO Sequim Bay, WA
NAV-02D: Precision Anchorage (Day)
SEA-01D: Precision Anchorage (Day)
1300 – Commence Small Boat Training and PAX Transfer to Shore
1300 – DC College
1700 – Dinner
2100 – Small Boat Training (Day into Night)

<u>Sunday, 23 June – Underway</u>

0700 – Breakfast
0800 – NSTT Brief
0900 – Weigh Anchor, Begin Rubber Docking Drills
1000 – MTT Brief
1100 – Lunch
1200 – <u>Medical Drill</u>
MED-11: Mass Casualty
MED-02: Personnel Casualty Transfer
MED-06: Sucking Chest Wound
1300 – ITT Brief
1400 – <u>ITT Drill</u>
MED-04: Amputation Wound
MED-07: Facial Wound
ENG-01: Steering Casualty
ENG-37: Flooding in a Machinery Space
NAV-06: Loss of Steering Control
DC-13U: Isolating and Patching Damaged Piping (UW)
DC14U: Machinery Space Flooding (UW)
1400 – Transit to Puget Sound
2000 – NSTT Brief
2100 – <u>Night NSTT Drill</u>
NAV-01N: Harbor Piloting – Paper Plot (Night)
2200 – Transit to Eastern Bank

<u>Monday, 24 June – Underway</u>

0700 – Breakfast
0800 – NSTT Brief
0900 – <u>NSTT Drill</u>
SEA-04D: Man Overboard Shipboard Recovery (Day)
1100 – Lunch
1200 – DCTT Brief
1300 – <u>DCTT Drill</u>
DC-13U: Isolating and Patching Damaged Piping (UW)
DC14U: Machinery Space Flooding (UW)
ENG-37: Flooding in a Machinery Space
ENG-40: Conduct Propulsion Plant Evolutions
1700 – Dinner
1745 – ATT Brief/Flight Brief
1800 – Set FLICON 1
AV-01: Helicopter Launch and Recovery
AV-02: Helicopter Crash Firefighting
AV-05: Vertical Replenishment (VERTREP)
AV-06: Helicopter Hot Refuel Evolution
2300 – Secure from Flight Quarters

<u>Tuesday, 25 June – Moor CFB Esquimalt</u>
0700 – Breakfast
0800 – ETT Brief
0830 – <u>BECCEs</u>
ENG-03: Loss of MPCMS
ENG-07: Hot Bearing in Main Reduction Gear or Line Shaft Bearing
ENG-08: Loss of Lube Oil Px in Reduction Gear or Line Shaft Bearing
1100 – Lunch
1300 – Set Special Sea Detail
1400 – Moor CFB Esquimalt
1700 – Dinner

<u>Wednesday, 26 June – I/P Esquimalt</u>
0700 – Breakfast
1100 – Lunch
1700 – Dinner

<u>Thursday, 27 June – Underway</u>
0700 – Breakfast
0800 – Set Special Sea Detail
0900 – Underway Enroute Eastern Bank
1100 – Lunch
1200 – DCTT Brief
1300 – <u>DCTT Drill</u>
DC-17U: Toxic Gas Drill (U/W)
1700 – Dinner
1745 – Flight Brief
1800 – Set FLICON 1
2100 – Secure from Flight Quarters

<u>Friday, 28 June – Underway</u>
0700 – Breakfast
1100 – Lunch
1200 – DCTT Brief
1300 – <u>DCTT Drill</u>
DC-06U: Main Propulsion Space Fire
1200 – DCTT Brief
1700 – Dinner
1800 – Anchor IVO Sequim Bay, WA
1900 – ASB Qualification Training
2300 – Secure from Boat Training

<u>Saturday, 29 June – Moor Seattle</u>
0700 – Breakfast
0800 – Weigh Anchor, enroute Seattle
0900 – NSTT Brief
1000 – <u>NSTT Drills</u>
NAV-03: Low Visibility Piloting (Paper Plot)
NAV-01D: Harbor Piloting – Paper Plot (Day)
1100 – Moor Seattle Pier 36
1700 – Dinner

Appendix 4: MISHAP Report AIRSTA Port Angeles

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FOUO DOCUMENT – AVAILABLE UPON REQUEST

FOUO DOCUMENT – AVAILABLE UPON REQUEST

Arctic Shield 2013

22-24 JUL 2013

Deck Landing Qualifications (DLQ's) After Action Report (AAR)

USCGC HEALY

Appendix 5: After Action Report Kodiak DLQs

Overview

Exercise Name: Deck Landing Qualifications (DLQ's) in support of Operation Arctic Shield.
Exercise Date: 22-24 July 2013
Sponsors: D17(dx); James Robinson
Type of Exercise: DLQ's
Funding Source: USCG

Focus: Support Arctic Shield through qualifying and re-certifying Air Station Kodiak pilots and aviation mechanics for shipboard helicopter operations.

Definition

A deck landing qualification (DLQ) is one of a series of evolutions, consisting of landings, fueling, shutdown and start up, required for helicopter pilots to attain and maintain qualifications for shipboard helicopter operations.

Situation

Vessel traffic in the Arctic is becoming more common and the Coast Guard is adapting to this new frontier of operation. A part of this transformation is ensuring all available assets are interoperable and qualified to conduct operations to the maximum extent possible. In this case, CGC HEALY is one of the few Coast Guard vessels capable of maintaining a sustained presence in the Arctic regardless of ice coverage. As such, HEALY is a potential platform that can extend the endurance of MH-60 or MH-65 helicopters operating in the Arctic domain.

Objectives

1. Conduct DLQ's with MH-60 helicopters.

2. Familiarize the CGC HEALY crew with MH-60 helicopters.

3. Conduct DLQ's with MH-65 helicopters.

Participating Organizations

CGC HEALY

CG AIRSTA Kodiak

Planning Team

LCDR Jake Cass
Operations Officer
CGC HEALY
206-217-6300

CDR Mark Vislay
Operations Officer
Air Station Kodiak
907-487-5706

LT Anthony DeWinter
Operations Scheduling Officer
Air Station Kodiak
907-487-5887

LT Michael Ross
MH-65 Standardization Officer
Air Station Kodiak
907-487-5118

Outcomes

1. Initial planning correspondence between the participating units discussed the overall mission objectives and basic tactics for the evolution.

2. On 22 July, HEALY flight deck personnel (HCO, LSO, tiedowns, fueling team, and fire team) visited the air station for aircraft familiarization.

3. On 22 July, HEALY conducted 04 landings with primary tie downs and 28 touch and go's (a mix of port to starboard and starboard to port approaches) with the MH-60.

4. On 22 July, a HIFR was planned, but upon inspection of HEALY's HIFR rig, a leak was discovered that could not be repaired. The HIFR rig was inoperable for the remainder of the evolution.

5. On 23 July, HEALY conducted 5 landings with primary tiedowns, 32 touch and go's (a mix of port to starboard and starboard to port approaches), 2 engine rotor shutdowns and start-ups, and 1 hot refuel with the MH-60. The MH-60 also took groups of 2 passengers from the HEALY's crew onboard during the touch and go's for familiarization.

6. The MH-60 delivered 2 loads of mission critical cargo to HEALY that did not arrive while inport.

7. During flight operations on 23 July, an MH-65 was also on scene during the evolutions to film the MH-60 DLQs.

8. On 24 July, HEALY conducted 3 landings with primary tie-downs, 5 touch and go's from port to starboard, 1 engine rotor shutdown and start up, and 1 hot refuel with the MH-60. The MH-60 also embarked 2 more of HEALY's crew during the DLQs.

9. Later on the afternoon of 24 July, HEALY conducted flight operations with 2 MH-65's for a total of 3 landings with primary tie-downs and 25 touch and go's from starboard to port.

Lessons Learned

1. Pre-mission coordination and meetings between the two units ensured the mission objectives were clearly defined. The dialogue and face to face meetings were key to the success of the mission.

2. Arranging for a helicopter familiarization for the tiedowns, LSO's, HCO's, fire team, and fueling team was essential. AIRSTA Kodiak hosted HEALY's crew and walked through lay out and features of the aircraft. The pilots and mechanics also split the crew into groups according to their assigned billets and discussed job specific technicalities of the aircraft and

emergency procedures. This proved extremely helpful in preparing the shipboard personnel for the evolution and highlighted aircraft features different from the MH-65. Specific differences included locations for the primary tie downs, where and how to fuel, pilot rescue procedures and the location of special areas of concern such as the avionics, batteries and pyro.

3. Open communication between the members of the planning team was vital for the successful completion of flight operations. The pilots studied the scripts of the different evolutions to ensure proper communication and understanding of the ship (oblique landings vice pedal turn). Any changes to the plan were requested early and discussed with all partied before the execution of those changes.

4. MH-60s must land starboard to port on the oblique during fueling operations. This allows better access to the fuel manifold and improves LSO and HCO visibility of the fueling team.

5. Maintaining flexibility significantly improved the flow of the flight operations. A solid plan was updated daily detailing the planned events for the days. When the plan needed to be adjusted, all parties talked through the changes and continued progress. These communications while in flight were crucial to the success of the mission.

Conclusion

1. The flight operations allowed for 3 initial qualifications, 3 requalification, and 2 recurrencies for the MH-60 pilots for a total of 8 pilots day qualified for shipboard helicopter operations.

2. The flight operations also allowed for 1 initial qualification, 1 requalification, and recurrencies for the MH-65 pilots. In addition, the flight mechanics onboard gained invaluable experience and increased proficiency.

Recommended Future Actions

1. CGC HEALY shall continue training with Air Station Kodiak during future transits.

Appendix 6: F.I.R. from Visit to M/V NORDICA – Dutch Harbor, AK

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FOUO DOCUMENT – AVAILABLE UPON REQUEST

Barrow Logistics Plan
15-16 August 2013

Scope:

1. This document covers the demobilization (DMO) of the 13-01 Science Party and mobilization (MOB) of the 13-02 Science Party from anchor off of Barrow, AK for 15 – 16 August, 2013.
2. In addition to transferring science parties, HEALY will onload food stores and ship's supply items, as well as transfer several crewmembers between the ship and shore.
3. This document outlines the framework for the evolution; it does not detail the contents or personnel assigned to each mode of transportation or each specific transfer therein.
4. Planned transfers to be executed:
   a. Offgoing science party members, gear and luggage will be transferred from HEALY to the beach near the Bowhead facility north of Barrow.
   b. Oncoming science party members who arrive early enough to catch the landing craft return trip to HEALY (at or about 1000), may be transferred from the Bowhead facility north of Barrow to HEALY via landing craft.
   c. Remaining oncoming science party members, gear and supplies will be embarked via helicopter.

Contents:

I. Landing Craft Plan
II. Helicopter Plan
III. Barrow Points of Contact (POCs)

I. LANDING CRAFT PLAN

1. **Mission.**

a. **Overview.**

i. Disembark and DMO 13-01 Science Party (Lee Cooper).
ii. Embark and MOB available members of the 13-02 Science Party (Lloyd Keigwin).
iii. Transfer ship's crew and other support personnel as stated in passenger (PAX) manifest.
iv. Onload/offload required science cargo, eleven pallets of perishable food stores (if possible) and mission-essential ship's gear as listed in the cargo manifest.

b. **Scope.**

i. HEALY will transfer passengers and science equipment between the ship and shore. Transfer of the offgoing (13-01) science party, their gear and ship's crew will be accomplished using the M/V NUNANIQ, a landing craft operated by Bowhead Transport.
ii. Once ashore, 13-01 science party members and gear will be unloaded. Ship's perishable food stores and supplies and any available members of the 13-02 science party will embark landing craft.

c. **Risk Management.** Use of Operational Risk Management, established procedures and safety equipment, coupled with effective communications will be the primary factors to accomplish this task. If any safety concerns temporarily delay operations, such as fog, insufficient lee from prevailing wind and seas, or loss of communications, the situation will be addressed as necessary. Once corrected, the evolution may proceed.

2. **Schedule.**

a. **Dates.** 15 August, 2013

b. **Timeline (see Enclosure (1)).**

i. 0800 15 August – Landing craft alongside, commence loading of cargo and personnel
ii. 1000 15 August – Landing craft ashore, offload 13-01 and onload cargo/misc 13-02
iii. 1100 15 August – Landing craft alongside, commence loading of cargo and personnel
iv. 1200 15 August – Landing craft away

3. **Responsible Parties.**

a. HEALY Crewmembers onboard will reference Enclosure (5) for position assignments and specific instructions.

b. HEALY Crewmembers ashore will reference Enclosure (6) for position assignments and specific instructions.

c. Outgoing science party (13-01) will reference Enclosure (3) for specific instructions.

d. Incoming science party (13-02) will reference Enclosure (4) for specific instructions.

Enclosures: (1) Event Timeline
(2) PAX/Cargo Manifest
(3) Instructions for Outgoing Science Party and Passengers
(4) Instructions for Incoming Science Party and Passengers
(5) Instructions for HEALY crewmembers aboard
(6) Instructions for HEALY crewmembers ashore

Enclosure (1): Projected Notional Event Timeline

Table 1: Schedule of Events		
Time	**Ashore Evolution**	**HEALY Evolution**
14 August 2013		
TBD	---	Barrow Evolution Brief
TBD	---	Anchor Brief
TBD	---	Set Nav & Anchor Detail
TBD	---	Anchor IVO Barrow, AK
TBD	---	Rig Accommodation Ladder/Fenders
15 August 2013		
0600 – 0730	---	PAX Checkout (Science Conf Lounge)
0630 – 0800	---	Breakfast - Galley
0730	---	Accommodation Ladder/Landing Craft Safety Brief for all outbound personnel
0750	---	Verify fenders rigged – deck ready to receive landing craft alongside
0800	---	Landing craft alongside -Transfer luggage and cargo via knuckle crane -Following cargo, transfer personnel via accommodation ladder
0930	---	Landing craft away, inbound beach
1000	Landing craft ashore - Offload 13-01 Science Party and Gear - Onload HEALY food stores, ship's supplies, PPE and any personnel from 13-02 ready to embark Landing craft underway	---
1100	---	Landing craft alongside -Transfer personnel via accommodation ladder - Following personnel transfer, load food stores, PPE and ship's supplies via knuckle crane
1200	---	Landing craft away, secure from boat transfer
TBD	---	Deck Force secure accommodation ladder

Enclosure (2): PAX/Cargo Manifest

Departures from HEALY:	56 Passengers Total				
13-01 Science Party:	48				
Name	Weight (PAX + Luggage)	Cargo Weight	Passenger-Specific Cargo Description/Dimensions	Total Weight	General Comments (travel/timeline requirements, etc)
Dunton	--	--	Carry-On Only	--	ERA 3376 (1025 Aug 15)
Grebmeier	--	--	1 Ice Chest	--	Alaska 50 (1822 Aug 15)
Blackwood	--	--	1 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Goethel	--	--	1 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Gemery	--	--	Carry-On Only	--	Alaska 50 (1822 Aug 15)
Jackson	--	--	Carry-On Only	--	Alaska 50 (1822 Aug 15)
Kelly	--	--	1 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Zhang	--	--	Carry-On Only	--	Alaska 50 (1822 Aug 15)
McEachen	--	--	1 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Johnson	--	--	1 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Paver	--	--	Unknown	--	Alaska 50 (1822 Aug 15)
Salter	--	--	1 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Taylor	--	--	1 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Cooper	--	--	1 Ice Chest	--	Alaska 50 (1822 Aug 15)
Harvey	--	--	4 Ice Chests	--	Alaska 50 (1822 Aug 15)
Bonsell	--	--	Carry-On Only	--	Alaska 50 (1822 Aug 15)
Bucolo	--	--	2 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Hardison	--	--	2 Ice Chests	--	Alaska 50 (1822 Aug 15)
McTigue	--	--	2 Ice Chests	--	Alaska 50 (1822 Aug 15)
Skloss	--	--	1 Pers Luggage + 1 Ice Chest	--	Alaska 50 (1822 Aug 15)
Young	--	--	2 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Schonberg	--	--	2 Ice Chests	--	Alaska 50 (1822 Aug 15)
Kirievskaya	--	--	2 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Konar	--	--	3 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Powell	--	--	3 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Ravelo	--	--	3 Personal Luggage	--	Alaska 50 (1822 Aug 15)
Shoellmeier	--	--	Unknown	--	Alaska 50 (1822 Aug 15)
Trefry	--	--	1 Personal Luggage + Air Cargo	--	Alaska 52 (1103 Aug 16)
Trocine	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)
Fox	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)
Yan	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)
Lewis	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)
Gonsior	--	--	~120LB Luggage	--	Alaska 52 (1103 Aug 16)
Moore	--	--	Unknown	--	Alaska 52 (1103 Aug 16)
Wright	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)
Crowley	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)
Mikan	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)
Weingartner	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)
Fang	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 16)

Selby	--	--	1 Personal Luggage	--	Alaska 51 (1940 Aug 17)
Wang	--	--	2 Personal Luggage	--	Alaska 52 (1103 Aug 18)
Elliott	--	--	1 Personal Luggage	--	Alaska 52 (1103 Aug 17)
Alatalo	--	--	1 Personal Luggage	--	Unknown
Ashjian	--	--	2 Personal Luggage	--	Unknown

HEALY Crew: 7					
Name	Weight (PAX + Luggage)	Cargo Weight	Passenger-Specific Cargo Description/Dimensions	Total Weig ht	General Comments (travel/timeline requirements, etc)
ETCS Livingston	--	--		--	Departs Alaska 50 (1822 Aug 16) – Depart Landing Craft
SN Welding	--	--		--	Departs Alaska 50 (1822 Aug 16) – Depart Landing Craft
1/C Scrudato	--	--		--	Departs Alaska 50 (1822 Aug 15) – Depart Landing Craft
1/C Rank	--	--		--	Departs Alaska 50 (1822 Aug 15) – Depart Landing Craft
SK1 Jackson	--	--		--	Departs Alaska 52 (1103 Aug 17) – Depart Landing Craft
SKC Gatewood	--	--		--	Round Trip (Depart Landing Craft, Arrive Helicopter)
CDR Stanclik	--	--		--	Round Trip (Depart Landing Craft, Arrive Helicopter)

Others: 4						
Name	Weight (PAX + Luggage)	Cargo Weight	Passenger-Specific Cargo Description/Dimensions	Total Weight	Helo Flight #	General Comments (travel/timeline requirements, etc)
Clive Reed	--	--		--		Departure – Depart Landing Craft
Sarah Kaye	--	--		--		Arrival - Turnover Req'd – (Arrive Landing Craft)
Gedeon Quijano	--	--		--		Late Arrival - Turnover Req'd - (Arrive Helicopter) – IF AVAILABLE
Don Witt	--	--		--		Arrival – IF AVAILABLE

Departing Food Stores/Equipment/ Cargo (excluding personal luggage and cargo tied to specific individuals)				
Cargo Type	Approx. Weight	Approx. Dimensions	Transport	Description/Comments
Samples	700	Pallet	Landing Craft	John Trefry - For Air Cargo

Arrivals to HEALY:	28 Passengers Maximum					
13-02 Science Party:	28					
Name	Weight (PAX + Luggage)	Cargo Weight	Passenger-Specific Cargo Description/Dimensions	Total Weight	Helo Flight #	General Comments (Arriving Flight Time/ travel/timeline requirements, etc)
Moser						13 Aug (1855) – IF AVAILABLE
Griner						13 Aug (1855) – IF AVAILABLE
O'Gorman						14 Aug (1735) - Turnover Req'd – (Landing Craft or Early Flight 15th) – IF AVAILABLE
Sutherland						14 Aug (1013) - Turnover Req'd – (Landing Craft or Early Flight 15th) – IF AVAILABLE
McCarthy						14 Aug (1013) – IF AVAILABLE
Maio						13 Aug (1735) – IF AVAILABLE
Jeglinksi		40	2 x 3 ft box (low height)			14 Aug (1013) – IF AVAILABLE
Keigwin						14 Aug (1013) – IF AVAILABLE
Zhao						14 Aug (1013) – IF AVAILABLE
Guo						14 Aug (1013) – IF AVAILABLE
Pelto						14 Aug (1735) – IF AVAILABLE
Roberts						14 Aug (1735) – IF AVAILABLE
Marcuson						14 Aug (1735) – IF AVAILABLE
Akash						14 Aug (1735) – IF AVAILABLE
Cronin						15 Aug (1013) – HELO
Reilly						15 Aug (1013) – HELO
Cameron						15 Aug (1013) – HELO
Hill						15 Aug (1013) – HELO
Ingalsbe						15 Aug (1013) – HELO
Blas						15 Aug (1013) – HELO
Walters						15 Aug (1013) – HELO
Coletti						15 Aug (1013) – HELO
Wei						15 Aug (1013) – HELO
Maloney						15 Aug (1013) – HELO
Martin						15 Aug (1013) – HELO
Klotsko						15 Aug (1013) – HELO
Rock						Community Observer – HELO
Driscoll						16 Aug (1013) – HELO
Reedy	NA	NA	NA	NA	NA	Already Aboard

Arriving Food Stores/Equipment/ Cargo (excluding personal luggage and cargo tied to specific individuals)				
Cargo Type	Approx. Weight	Approx. Dimensions	Helo Flight #	Description/Comments
Ship's Supplies	278	Pallet		Misc GSK / Personal Mail*
Ship's Supplies	310	Pallet		Misc GSK / Personal Mail*
Food Stores	783	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	458	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	280	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	550	4x3.5x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	444	4x3.5x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	708	4x3.5x5		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	602	4x3.5x5		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	619	4x3.5x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	718	4x3.5x5		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	608	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]
Food Stores	588	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 15[h]

Enclosure (3): Instructions for Outgoing Science Party and Passengers

1. **<u>Room Checkout.</u>** The Chief Scientist will provide room checkout sheets by 14 August. Room checkout will be from 0600– 0730. Once you have checked out, remain out of your rooms and heads. Heads are available in the hangar, main lab, bridge and athwartships passageway aft of the mess deck.

2. **<u>Large Gear/Samples/</u>Luggage.** Ensure large gear other than luggage is staged and palletized in starboard staging or the main lab **no later than (NLT) the evening of 14 August** and frozen samples readily available and clearly marked. This will maximize efficiency when transferring gear to the landing craft. Once you have completed checkout, stage your luggage in starboard staging. HEALY deck crews will load these items into the landing craft via the 04 crane.

3. **<u>After Checkout</u>.** Once you have completed checkout and staged your luggage, feel free to move about the ship while we load your heavy gear and luggage into the landing craft.

4. **<u>Loading Procedures</u>.** Once HEALY deck crews have completed transferring outgoing cargo, you will disembark via an accommodation ladder. It can be very steep, so watch your step! Crewmembers will be standing by to render assistance as necessary. Stand clear of all gear and rigging until all personnel are onboard. All personnel will ride on the deck.

6. **<u>Procedures Ashore</u>.** Once ashore, follow instructions from the landing craft crewmembers to disembark and retrieve your gear. Hand off your mustang suits to SKC Gatewood or SK1 Jackson. These will be returned to the HEALY before the landing craft departs the area.

Enclosure (4): Instructions for Incoming Science Party and Passengers

1. **Muster and Staging Area.** Muster at the landing site, the Bowhead facility north of Barrow (about halfway between downtown and Point Barrow) NLT 0945. This will ensure an expedient transport of you and your gear.

2. **Gear and Luggage.** Once the landing craft arrives, Bowhead crewmembers and HEALY crewmembers SKC Gatewood and SK1 Jackson will assist you in boarding the landing craft with your gear. Mustang suits are required for the transit to the ship.

3. **Arrival to HEALY.** Once the landing craft rafts alongside HEALY, the accommodation ladder will be rigged and HEALY personnel will instruct you to embark. Leave your personal luggage onboard the landing craft; it will be rigged into a cargo net and hoisted to the flight deck by HEALY personnel. Once onboard, ENS Follmer or ENS Mahoney will escort you to the Science Conference Lounge (SCL). In order to ease congestion in the SCL, after you've received your room assignment, your luggage will be staged in the athwartships passageway on the 02 deck for pickup.

4. **Check-In.** In the SCL, you will receive information regarding your stateroom and emergency assignment from our Passenger Coordinator, ENS Zaccano. You will be issued a pager, and a welcome aboard packet.

Enclosure (5): Instructions for HEALY Personnel

Table 2: Key HEALY Personnel for Landing Craft Evolution		
Role	**Personnel**	**Responsibilities**
Passenger Coordinators (Sci Conf Lounge)	ENS Zaccano ENS Follmer ENS Mahoney	• Room Checkout • Process outgoing PAX in SCL. • Greet incoming PAX at cutout and escort to SCL. • Room Check-in in SCL
Roving Passenger Support	ENS Jones ENS Sankey	• Coordinate movement of PAX and luggage between SCL and cutout outbound and cutout to athwartships passageway inbound • Identify available workforce if/when needed to assist with cargo/gear movement
Stores/Supply Movement Coordinators	SK2 Gable SK3 Booth FS1 Mulford	• Coordinate movement and processing of incoming ship's stores and food stores
Science Gear Movement Coordinators	MSTC Aquino MST1 Demarest MST2 Short	• Coordinate movement of science gear on and off the ship
Deck Force	As assigned by BOSN/BMC	• Rig Accommodation Ladder • Make preparations and receive landing craft alongside. Man crane and deck to load/unload landing craft
Deck Supervisor – Crane Operations	As assigned by BOSN/BMC	• Direct Crane Operations during onload and offload • Direct Crane Operations to rig accommodation ladder
Deck Safety Observer – Crane Operations	BOSN3 Rivera BMC Shrum	• Deck Safety
Crane Operator - Loading/Unloading	As assigned by BOSN/BMC	• Crane Operator
Riggers	As assigned by BOSN/BMC	• Rig gear for onload/offload

Enclosure (6): Instructions for HEALY Crewmembers Ashore

Table 3: Key Personnel Ashore	
Personnel	**Role**
Cannon Mix	• In charge of all onshore coordination
SKC Gatewood SK1 Jackson – Departing from Barrow for Seattle	• HEALY Shoreside Support • Maintain positive control of all HEALY rigging supplies and PPE. Ensure these items are cycled directly from the off going to the next oncoming group. • Coordinate accountability and loading of food stores/GSK to landing craft or helicopter
CDR Stanclik (HEALY XO)	• HEALY 'Command Ashore' • Primary duty is to assist Cannon Mix and provide communications support to ship (primary VHF 83A, secondary cell phone)
ETCS Simon SN Walling	• Primary duty is to assist Anna Schemper with transport of ship's supplies and food stores • Assist elsewhere as required

II. HELICOPTER PLAN

1. **Mission**.

   a. **Overview**.

      i. Embark and MOB remaining 13-02 Science Party (Lloyd Keigwin).
      ii. Transfer ship's crew and other support personnel as stated in passenger (PAX) manifest.
      iii. Onload/offload required science cargo.
      iv. Onload eleven pallets of perishable food stores and mission-essential ship's gear as listed in the cargo manifest, if these items cannot be transferred via landing craft.

   b. **Scope**.

      i. HEALY will transfer passengers and science equipment/cargo between the airport and the ship using a commercial helicopter, a Bell 407 from Maritime Helicopters. Conservative estimates call for approximately 10 transfers for the entirety of the evolution. The proposed timeline and manifest are based upon 6 hours of flying time per 12 hour operational day.
      ii. A series of PAX loads will be followed by a series of cargo loads to allow PAX to proceed with travel arrangements. This plan will outline the framework for the evolution, but will not attempt to detail the contents or personnel on each flight.
      iii. The helicopter will shut down on HEALY to conduct static refuel as needed. Fuel will be provided for operational use, and 'clear and bright' test results will be provided directly to the pilot before and immediately following all fueling evolutions, as per Standard Operating Procedure (SOP).

   c. **Risk Management**. Use of Operational Risk Management, established procedures and safety equipment, coupled with effective communications will be the primary factors to accomplish this task. If any safety concerns temporarily delay operations, such as fog, flight parameters, or fouled flight deck, etc, the situation will be addressed as necessary. Once corrected, the evolution may proceed.

2. **Schedule**.

   a. **Dates**. 15 – 16 August, 2013

   b. **Notional Timeline (see Enclosure (1))**.

      i. 1400 15 August – Land helicopter and commence flight deck personnel familiarization and safety brief.
      ii. Transfer will follow using priorities prescribed in the PAX and Cargo Manifest.
      iii. Loading sequence will be formulated in accordance with anticipated helicopter fuel state. Helicopter can transport up to six (6) PAX per flight, luggage and size permitting. For reference, the relevant data is listed below. Helicopter will begin operations with 2 hours of fuel.

         (1) 2 hours fuel remaining – Max Load 1,100lb

(2) 1 hour of fuel remaining – Max Load 1,450lb
(3) Less than 1 hour of fuel remaining – Max Load 1,800lb (VERTREP/sling)

3. **Responsible Parties.**

a. HEALY Crewmembers onboard will reference Enclosure (5) for position assignments and specific instructions.

b. HEALY Crewmembers ashore will reference Enclosure (6) for position assignments and specific instructions.

c. Incoming science party (13-02) will reference Enclosure (4) for specific instructions.

d. Enclosure (6) provides handling details for the fresh food ordered for delivery to Barrow by C-130.

Enclosures: (1) Projected Event Timeline
(2) PAX/Cargo Manifest
(3) Instructions for Outgoing Science Party and Passengers
(4) Instructions for Incoming Science Party and Passengers
(5) Instructions for HEALY crewmembers
(6) Instructions for HEALY crewmembers ashore
(7) Food Stores / GSK

Enclosure (1): Projected Notional Event Timeline

Table 1: Schedule of Events		
Time	**Ashore Evolution**	**HEALY Evolution**
15 August 2013		
1300	Safety Brief at Barrow Airport for incoming PAX	Flight Brief
1330	Helicopter T/O from Barrow for Crew FAM	Set FLICON 1
1400		Helicopter on deck, shutdown for familiarization and safety brief
Commence Transfer – Entering Assumption of 10 Roundtrips		
TBD (~1500)	Series of PAX loads followed by a series of cargo loads IAW PAX and Cargo Manifest. Incoming gear marked with yellow zip tie/tape.	Series of PAX loads followed by a series of cargo loads IAW PAX and Cargo Manifest. Outgoing gear marked with red zip tie/tape.
TBD		Secure from flight operations after 6 hour flight time.
16 August 2013		
TBD		Set FLICON 1/3
Commence Transfer		
TBD	Transfer remaining supplies and personnel (as required)	Receive remaining gear and personnel
TBD	RTB	Secure from flight operations.
TBD		Weigh Anchor

Enclosure (2): PAX and Cargo Manifest

Arrivals to HEALY:	35 Passengers Total (incl 2 Round Trips)					
13-02 Science Party:	28					
Name	Weight (PAX + Luggage)	Cargo Weight	Passenger-Specific Cargo Description/Dimensions	Total Weight	Helo Flight #	General Comments (Arriving Flight Time/ travel/timeline requirements, etc)
Moser						13 Aug (1855) – IF NOT ON LANDING CRAFT
Griner						13 Aug (1855) – IF NOT ON LANDING CRAFT
O'Gorman						14 Aug (1735) - Turnover Req'd – (Landing Craft or Early Flight 15th) – IF NOT ON LANDING CRAFT
Sutherland						14 Aug (1013) - Turnover Req'd – (Landing Craft or Early Flight 15th) – IF NOT ON LANDING CRAFT
McCarthy						14 Aug (1013) – IF NOT ON LANDING CRAFT
Maio						13 Aug (1735) – IF NOT ON LANDING CRAFT
Jeglinksi		40	2 x 3 ft box (low height)			14 Aug (1013) – IF NOT ON LANDING CRAFT
Keigwin						14 Aug (1013) – IF NOT ON LANDING CRAFT
Zhao						14 Aug (1013) – IF NOT ON LANDING CRAFT
Guo						14 Aug (1013) – IF NOT ON LANDING CRAFT
Pelto						14 Aug (1735) – IF NOT ON LANDING CRAFT
Roberts						14 Aug (1735) – IF NOT ON LANDING CRAFT
Marcuson						14 Aug (1735) – IF NOT ON LANDING CRAFT
Akash						14 Aug (1735) – IF NOT ON LANDING CRAFT
Cronin						15 Aug (1013)
Reilly						15 Aug (1013)
Cameron						15 Aug (1013)
Hill						15 Aug (1013)
Ingalsbe						15 Aug (1013)
Blas						15 Aug (1013)
Walters						15 Aug (1013)
Coletti						15 Aug (1013)
Wei						15 Aug (1013)
Maloney						15 Aug (1013)
Martin						15 Aug (1013)
Klotsko						15 Aug (1013)
Rock						Community Observer
Driscoll						16 Aug (1013)
Reedy	NA	NA	NA	NA	NA	Already Aboard

Arriving Food Stores/Equipment/ Cargo (excluding personal luggage and cargo tied to specific individuals) *If not transferred by landing craft				
Cargo Type	Approx. Weight	Approx. Dimensions	Helo Flight #	Description/Comments
Ship's Supplies	278	Pallet		Misc GSK / Personal Mail*
Ship's Supplies	310	Pallet		Misc GSK / Personal Mail*
Food Stores	783	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	458	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	280	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	550	4x3.5x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	444	4x3.5x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	708	4x3.5x5		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	602	4x3.5x5		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	619	4x3.5x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	718	4x3.5x5		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	608	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*
Food Stores	588	3x3x3		Arr 14 Aug Approx 1200 via C-130 - UMIAQ will store – transfer to ship on 16th*

Cargo:

Food Stores

Science Equipment

Ship's Equipment

Ship's Supplies

Departures from HEALY:	7 (incl 2 Round Trips)					
13-01 Science Party:	5					
Name	Weight (PAX + Luggage)	Cargo Weight	Passenger-Specific Cargo Description/Dimensions	Total Weight	Helo Flight #	General Comments (travel/timeline requirements, etc)
Thombley			2 Personal Luggage			Alaska 52 (1103 Aug 16) - Turnover Req'd -(Late Flight 15th)
Hardwick			1 Personal Luggage			Alaska 52 (1103 Aug 16) - Turnover Req'd -(Late Flight 15th)
Graham			1 Personal Luggage			TRANSFERRED BY BOAT
Martin			Unknown			TRANSFERRED BY BOAT
Selby			1 Personal Luggage			Alaska 51 (1940 Aug 17) – Last Flight 16 Aug

HEALY Crew: 2 Arriving, 2 Round Trip						
Name	Weight (PAX + Luggage)	Cargo Weight	Passenger-Specific Cargo Description/Dimensions	Total Weight	Helo Flight #	General Comments (travel/timeline requirements, etc)
ETCS Simon						Arrives 13 August – (Late Flight 15th)
SN Walling						Arrives 13 August – (Late Flight 15th)
SKC Gatewood						Round Trip (RON, Late Flight 16th)
CDR Stanclik						Round Trip (Late Flight 15th)

Others: 1 Departing, 3 Arriving						
Name	Weight (PAX + Luggage)	Cargo Weight	Passenger-Specific Cargo Description/Dimensions	Total Weight	Helo Flight #	General Comments (travel/timeline requirements, etc)
Clive Reed						Departure
Sarah Kaye						Arrival - Turnover Req'd – (Landing Craft or Early Flight 15th) – IF NOT ON LANDING CRAFT
Gedeon Quijano						Arrival – Turnover Req'd - (Early Flight 15th)
Don Witt						Arrival – IF NOT ON LANDING CRAFT

Cargo:

Personal Luggage or Equipment

Enclosure (3): Instructions for Outgoing Science Party and Passengers

1. **<u>Room Checkout.</u>** Room checkout will be conducted in tandem with the rest of the departing personnel. If you plan to leave after the 15^{th}, please coordinate your room checkout with ENS Zaccano (pager #645).

2. **<u>Helicopter Familiarization and Safety Briefing</u>.** Shortly after arrival of the helicopter, all departing passengers must muster on the flight deck for a safety briefing with the helicopter pilot. Time TBD.

3. **<u>Luggage and Materials</u>.** Once helicopter operations commence, muster in the hangar with your luggage. Larger cargo will be 'checked' and transferred via a later flight. Smaller luggage will be designated as 'carry-on' and will remain with you. Ensure the weight is properly annotated on all luggage/cargo. Stage your 'checked' luggage and gear in the hangar on the port side and return to the Science Conference Lounge. A HEALY crewmember will notify you to stage in the hangar for your flight.

4. **<u>Hangar Procedures</u>.** HEALY will disembark all necessary flights of passengers, followed by any more flights necessary for gear/luggage.

5. **<u>Flight Deck Procedures</u>.** When your flight is called, you will be escorted to the port side weather deck outside the hangar (with your carry-on). Follow instructions given by crewmembers in a yellow jersey and cranial. Once you are directed to proceed to the helicopter, move quickly with your head down and board.

6. **<u>Procedures Ashore</u>.** Remove your helmet and mustang suit, and give it to an oncoming passenger. If no oncoming passengers are present, give your clothing and helmet to SKC Gatewood or SK1 Jackson. Follow instructions given by CDR Stanclik, SKC Gatewood, SK1 Jackson or Cannon Mix for departure. Your checked luggage and gear should arrive within the next few flights.

Enclosure (4): Instructions for Incoming Science Party and Passengers

1. **Muster and Staging Area.** Muster with the Chief Scientist NLT 1245 at the North Slope Borough Search and Rescue Hangar located on the East end of the tarmac at Barrow Airport. The hangar will be open for your use from 0800-1800. There will be a helicopter safety brief at 1300.

2. **Gear and Luggage.** You and your gear will be weighed and labeled. HEALY crewmembers SKC Gatewood and SK1 Jackson will be ashore to stage gear and luggage and provide you with mustang suits and flight helmets. Your bags will be labeled 'carry-on' or 'checked', similar to commercial flights. Pack accordingly, in the unfortunate case that your larger luggage does not arrive aboard HEALY the same day.

3. **Arrival to HEALY.** On HEALY, do not leave the helicopter until a person wearing a yellow jersey and helmet opens the door. This person will direct you forward on the flight deck and to the left, or port side, of the hangar. It is very important that, prior to exiting the helicopter, you ensure that any lose items are securely stowed in your pockets or backpack, so that when you exit the helicopter you have both hands free and there are no loose items that might be blown away by the rotors. Your luggage will be placed in the 02 deck athwartships passageway (just forward of the hangar/flight deck).

4. **Hangar Procedures.** You will be greeted and assisted with taking off your helmet and anti-exposure coveralls – ensure you remove all your personal belongings (like cameras and glasses) from its pockets. Give your coveralls and helmet to BM1 Cook or BM2 Speicher for use by the rest of your party. A passenger coordinator will check your name against the boarding list and escort you to the Science Conference Lounge, where you will receive information regarding your stateroom and emergency assignment, a pager, and a welcome aboard packet. During flight operations, no one is allowed on the outside, weather decks, aft of the forward bulkhead of the hangar and fantail areas. No hats worn outside during flight operations. 'Checked' luggage will arrive in a flight shortly after. It will be placed in the 02 athwartships passageway.

Enclosure (5): Instructions for HEALY Crewmembers

Table 2: Key HEALY Personnel		
Role	**Personnel**	**Responsibilities**
Passenger Coordinators (Hangar and Sci Conf Lounge)	ENS Zaccano ENS Follmer ENS Mahoney MSTC Aquino	• Room Checkout • Weigh Outgoing PAX/Luggage in hangar. Label and tag with red zip ties. • Greet incoming PAX in the hangar and escort to SCL • Room Check-in in SCL
Roving Passenger Support	BOSN3 Rivera ENS Jones	• Coordinate movement of PAX and luggage between SCL and Hangar • Identify available workforce if/when needed to assist with cargo/gear movement
Passenger PPE Coordinators	BM1 Cook BM2 Speicher	• Gather mustang suits and helmets from arriving PAX and distribute to departing PAX as necessary
Stores/Supply Movement Coordinators	SK2 Gable SK3 Booth MST1 Demarest	• Coordinate movement and processing of incoming science gear, ship's stores and food stores
HCO	LTJG Valdez BMCM Sullivan OSC Marsh	• Direct Helicopter Operations
LSO	IT1 Bird LTJG Bock BM1 Cook (B/i) ENS Mahoney (B/i)	• One LSO on flight deck directing helicopter operations • Remaining LSO(s) staged in hangar to facilitate movement of outgoing PAX and luggage to port side staging area. • Ensure return of all Maritime Helo's Rigging Equipment
Tiedown Crew/Fuel Team/Fire Team/Proxymen (Including B/Is)	Per WQSB	• Under instruction of LSO, assist with cargo/luggage staging and movement
Personnel without Flight Quarters Billets	Per WQSB	• Remain on call and respond to 1MC pipes to assist as necessary with gear/stores/clearing flight deck.

Enclosure (6): Instructions for HEALY Crewmembers Ashore

Table 3: Key Personnel Ashore	
Personnel	**Role**
Cannon Mix	• In charge of all onshore coordination • In charge of ensuring proper weighing and tagging of incoming gear onshore (yellow tags)
SKC Gatewood SK1 Jackson – Departing from Barrow for Seattle	• HEALY Shoreside Support • Maintain positive control of all HEALY rigging supplies and PPE. Ensure these items are cycled directly from the off going to the next oncoming group. • Ensure rigging equipment does not remain on one side of the evolution. Coordinate with helicopter to return HEALY rigging equipment to ship for continued use throughout the transfer. • Ensure all Maritime Helicopter rigging equipment gets returned. • RON Barrow. Coordinate food shipment on 16 Aug as required. • Ensure all HEALY PPE (Mustangs, etc) gets returned
CDR Stanclik (HEALY XO)	• HEALY 'Command Ashore' • Primary duty is to assist Cannon Mix and provide communications support to ship (primary VHF 83A, secondary cell phone)
ETCS Simon SN Walling	• Primary duty is to assist Anna Schemper with transport of GSK and food stores • Assist elsewhere as required

Enclosure (7): Food Stores / GSK

Food:

<u>Primary Option:</u>

Eleven (6) pallets of fresh food stores will be delivered to Barrow by USCG C-130 on 14 August. Pilot for C130 is LT Jeanine Menze (907) 487-5586. NSB Shipping has agreed to meet C-130 on 14 August and transport food to AC cold storage free of charge. NSB has also agreed to transport food back to tarmac when desired on 15/16 Aug. Request Jeanine provide **updated ETA of C-130 to Anna Schemper in the event of changes**. Expected ETA of C-130 is approximately 1200 on 14 August.

<u>Secondary Option:</u>

NSB SAR has agreed to store food if cold storage becomes unavailable. POC: Jim Contreras

GSK:

HEALY has two pallets shipped via Northern Air Cargo (bill number 2184 7696). POC: Sandra Jensen. Request Anna Schemper receives and stores until arrival.

III. Barrow Points of Contact

Organization	Role	Points of Contact		
		Name	Phone	Email
CGC HEALY	• Overall Coordination, Execution and Safety of Event	LCDR Jake Cass (OPS) LTJG Kris Valdez (AOPS) LTJG Scott Bock (Logistics Planner) ENS Rebecca Follmer (Marine Sci Off) ENS Tahnee Zaccano (PAX Coord)	OPS Cell: 206-390-3066 Comms Plan During Evolution: Primary: VHF 83A (157.175) Secondary: VHF 21A (157.05) Tertiary: VHF 10 (156.8)	Jacob.L.Cass@uscg.mil Tahnee.E.Zaccano@uscg.mil
CGC HEALY Personnel Ashore	• Shoreside Support	CDR Gregory Stanclik (XO) SKC Geoff Gatewood SK1 John Jackson	XO Cell: 206-390-4176 SKC Cell: 425-495-2346 SK1 Cell: 253-486-3753	Gregory.Stanclik@uscg.mil Geoffrey.E.Gatewood@uscg.mil John.D.Jackson@uscg.mil
UMIAQ	• Staging Area at NSBSAR Hangar • Scale for PAX and luggage ashore • Vehicle for PAX transfer • Interim storage for Food Stores	Karl Newyear Dominique Fox	907-229-2915 NA	Karl.Newyear@uicumiaq.com Dominique.Fox@uicumiaq.com
Polar Services	• Surge lodging accommodations	Josh Bacon Anna Schemper	907-687-8118 907-978-1110	josh@polarfield.com anna@polarfield.com
Dept of the Interior IOS	• Coordinate Helicopter Contract • Shoreside Coordination • Pilot Inspector • Provide flight helmets	Andrew Barry Cannon Mix (shoreside support) Gil Howell (pilot inspector)	NA 208-258-4869/VHF 'shoreside' NA	andrew_barry@ios.doi.gov cannon_mix@ios.doi.gov gilbert_howell@ios.doi.gov
Maritime Helicopters	• Provide pilot / helicopter • Supply rigging (properly marked to distinguish from HEALY equipment)	John Jacobs	907-235-7771 / 907-250-2510 Comms Plan During Evolution: Primary: VHF 83A (157.175) Secondary: VHF 21A (157.05) Tertiary: VHF 10 (156.8)	info@maritimehelicopters.com
UMCES	• Chief Scientist (13-01)	Lee Cooper	410-326-7359	cooper@umces.edu
WHOI	• Chief Scientist (13-02)	Lloyd Keigwin	508-564-2010	lkeigwin@whoi.edu
STARC	• Technical/Equipment Support	Scott Hiller	NA	shiller@uscd.edu
NSF	• NSF Observer	Erica Key	504-273-3562	ekey@nsf.gov
A/C Store Barrow	• Food Storage	Tom	907-852-6711	NA
C-130	• Transport Food from Kodiak	LT Jeanine Menze LT Mike Angeli	907-487-5586 (LT Menze) 954-558-3962 (cell) 907-487-5887 (LT Angeli) 907-487-5889 (Kodiak OOD)	Jeanine.M.Menze@uscg.mil
Northern Air Cargo	• Ship 2 Pallets	Sandra Jensen	206-443-6260 / 206-919-2330	sandraj@alaskanaircargo.com
Bowhead Transport	• Provide landing craft	Scott Peterson Travis Carducchi Jim Dwight Capt Steven Glassman – M/V NUNANIQ	206-250-2987 907-855-1534 206-972-0965 011-870-773-232-493 (satellite) 907-444-3879	Scott.peterson@bowhead.com info@bowhead.com

Appendix 8: Contracted Civilian Flight Hour Determination

-----Original Message-----
From: Reeves, John CAPT
Sent: Wednesday, August 07, 2013 7:46 PM
To: Fiedler, David S CAPT; Khandpur, Rajiv
Cc: Havlik, Beverly A CAPT; Martino, Christopher A CAPT; McDevitt, Thomas W CDR
Subject: HEA Logistics Flight Time Limits

Good Afternoon Icebreaker Policy/Ops Leadership,

All is going well here on AWS13, the science party is very happy and getting what they need, but I do have a current issue that needs to be addressed at higher levels. Unfortunately not a new topic: Flight Time Limits.

BLUF: NSF is now pressing again to apply looser DOI/FAA flight time limits for the logistics support of AWS-13 science phase changes, which are in conflict with USCG SHOPS regulations, and tenor of emails is increasing to put at risk the current USCG-NSF working relationship.

DISCUSSION: Our staffs (Toby, Doug, Mike, Jake) have been working valiantly together to execute the mutual agreement from the last AICC Meeting that in the future we will be following the flight time calculations and limits of the Ship-Helo Operations manual explicitly. It was appearing to go fine until the flight support contractor reported that they only had 1 pilot available for the upcoming transfer in Barrow, 15-16Aug, resulting in significant schedule risk. After some email discussions, Ms. Crain at NSF has provided some pretty strong language on the issue (we suspect being fed from a DOI rep, Mr Tunstull, a retired CG aviator) indicating that they intend to fly longer if needed. Below is her email stating " ...reserve the right to fly to the FAA/DOI limits if the situation warrants. "

Attached are emails outlining the issue from both sides in detail, pulling from various sources, with DOI advocating for DOI/FAA limits and 711 defining the CG INST limits. I believe it really boils down to two sentences in the MOU, one in the SHOPS, and reiterated in MOU Addendum 2 signed 9MAY2013:

> MOU para 5.a.5) [NSF agrees to] Provide or support aviation services as mutually agreed upon.
> MOU para 11, CONFLICTS - Nothing in this Agreement is intended to conflict with current law or regulation or the directives of the Department of Homeland Security (USCG)... .
> COMDTINST M3710.2E para 1.E.4.d(5) Where procedures differ between services, the procedures of the vessel's parent service shall take precedence.
> MOU Add'm 2 para 11.b) USCG shall not conduct transfers (by either watercraft or by air) in violation of applicable law, policy and safety standards, even at the risk of incurring delays or requiring personnel remain onboard for transits. USCG icebreaker command shall inform science parties as soon as possible if transfers cannot be accomplished.

Following our standards does not violate theirs (though leaving some capacity unused), but following their standards does violate ours. Put another way, while we are not in any way requiring that they violate their standards, we are restricting operations more than they would like. The standards are Maximum Limits, not Requirements that they must fly to meet. I have avoided going into great detail in the various nuances but, if you would like, we can provide specific comment on each of their bulleted reference citations.

We on the ship, PAC, 711, and HQ are united on the front that the CG standard applies, and that is what I will execute in a week and a half, unless otherwise directed. I bring this up to you because, although the situation appeared to be handling itself, right now I am very concerned for potential impact on our already fragile NSF-CG relationship. They are bringing up terms like "legal rights", which I do not believe even apply, but from my perspective we need a higher level guidance statement on the applicability of COMDINTST M3710.2E. I think it is clear, but that needs to be reconfirmed at the program level, maybe a definitive hierarchy of regulations within the MOU/CONDTINST/FAA/DOI framework could be helpful.

As noted, our next scheduled flight ops evolution which this would apply is 15-16Aug. Thank you in advance, and if I can provide any additional information to assist, please let me know.
v/r
John

J. D. Reeves, Capt, USCG
Commanding Officer
USCGC HEALY (WAGB 20)

-----Original Message-----
From: McDevitt, Thomas W CDR
Sent: Thursday, August 15, 2013 12:00 PM
To: Reeves, John CAPT
Cc: Martino, Christopher A CAPT; Havlik, Beverly A CAPT; Fiedler, David S CAPT; Khandpur, Rajiv
Subject: RE: HEA Logistics Flight Time Limits

Good Morning CAPT Reeves,

Sir, as acting CG-711 - I wanted to provide my input related to flight time discussion:

The decision to continue flight operations at anytime, and most definitely when approaching the CG's rotary-wing/single pilot limit of six hours, should be determined primarily by the on-scene judgment of the CO, the pilot, and your Operations Officer. With the final determination of course made by you Sir. I understand and fully appreciate your concern about the safety of extended single-pilot ship-helo operations with the HEALY. I was fortunate enough to be an AVDET pilot on two South trips and have experience with the unique challenges associated with the mission. I would also concur that as flight hours increase, so does the risk factor - and that the safety of the personnel and the operations has to continue to be closely monitored. Although everyone involved with flight operations has responsibility for the safe execution of the mission, I am confident that all parties involved fully comprehend & support your unique authority (3710.2E 1.D.) and responsibility (3710.2E 1.E.) for the safety and control of flight operations with CG and OGA aircraft. I believe that the decision to suspend flight operations due to safety concerns for any/all personnel involved would be fully supported, regardless of whether the tallied flight hours were below or above six hours.

However, in my personal opinion Sir - the Coast Guard is unable to require DOI certified pilots/aircrews to comply with USCG Aircrew Flight Scheduling Standards. The current MOU between DOI and USCG states (RESPONSIBILITIES: para. 4.c.) "each individual employee of the DOI and USCG shall comply with flight and duty restrictions set forth by their respective agencies." I see COMDTINST M3710.1G Aircrew Flight Crew Scheduling Standards as policy vice procedure. I am confident that all parties involved agree that the DOI pilots must follow CG procedures for ship-helo operations on our ships; however, requiring them to adopt our scheduling/rest standards is in my opinion, a bridge too far. The risk of applying our aircrew scheduling standards to OGA's (DOI) due to the fact that those standards are located in COMDTINST M3710.1G, and the flight operations are conducted aboard a CG ship, is that we would then have to apply all of our ship-helo associated pilot/crew standards & requirements (designation, proficiency, standardization, etc.) found in our manual on OGA pilots. In my opinion, that is not practical nor desirable.

My staff will consult with CG Legal for their input on the subject. However, recommend that your decision to continue or halt flight operations be made primarily from a safety perspective Sir. I would also concur that any flight operations that extend the aircrew's flight time beyond 6.0 hours, while operating from the cutter flight deck, should be carefully considered. I recommend that if it appears that the logistic flights might exceed 6 hours, a face to face risk assessment between you, the pilot, and your Operations Officer occur, so that you can make the final determination regarding continuing flight operations.

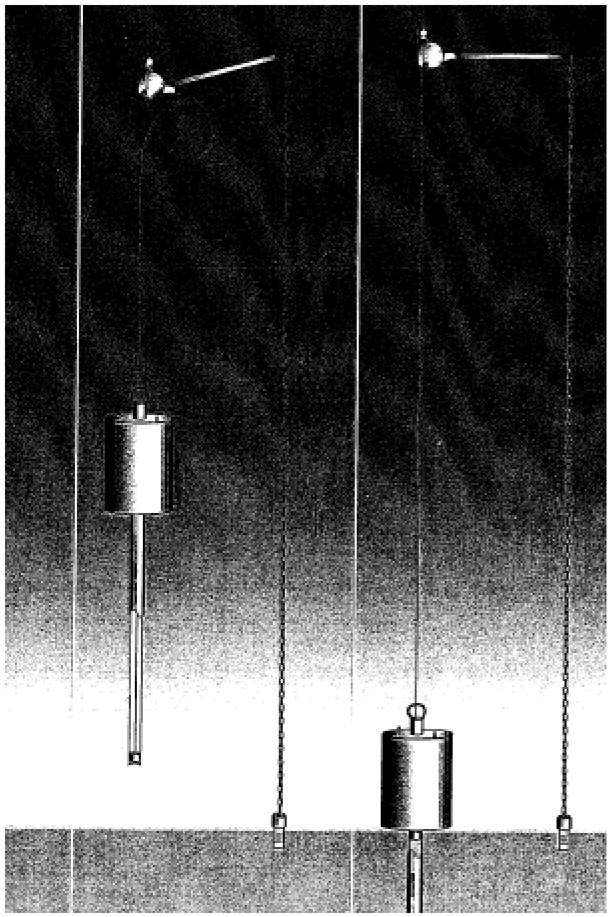
Standing by to discuss any concerns/questions as necessary Sir. Thank you -

V/r,

Tom

CDR Tom McDevitt, USCG
Office of Aviation Forces
COMDT (CG-711)
(202) 372-2202 (desk)
(202) 658-8862 (cell)

GRAVITY CORE
&
JUMBO PISTON CORE



STARBOARD WORKING DECK SETUP, DEPLOYMENT AND RECOVERY INSTRUCTION

CGC HEALY (WAGB 20)
DECK & MARINE SCIENCE DIVISIONS

A. Executive Summary

Onboard HEALY, researchers employ these two systems to analyze sediment layers deep within the seabed. Similar to rings inside of a tree trunk, even a few meters of sediment layers can paint a complete geological picture of an area dating back thousands of years. By studying this sediment, scientists can learn about ocean circulation, climate, the formation of ore deposits, the movement of oceanic plates, salinity of water, and the stability of the seafloor for oil drilling and exploration.

The gravity core is a simple system, composed mainly of a weight collar (carrying a certain load depending on the properties of the seabed) and a PVC core tube with a 'Madonna Bra' core collector at the base. It is a simple, robust and relatively reliable system with few moving parts, however it can be heavy and generally cannot collect as much sediment as a jumbo piston corer. It penetrates the seabed and brings sediment layers up inside the PVC core tube. Onboard HEALY, it is typically deployed and recovered using the 3/8" wire from the starboard A-frame.

Gravity cores only work to certain lengths, however. To collect deeper sediment samples, the scientists employ the jumbo piston core. Onboard HEALY, the longest cores are generally 60-70 feet, however cores up to 90 feet have been successfully collected. The difference lies in the piston inside the core tube. When the core makes contact with the seabed, the apparatus acts like a syringe, sucking sediment into the tube and holding it for the transit back up. Unlike the gravity core however, this system is bulkier, more awkward and time-consuming to deploy. There are more moving parts with regard to both deck equipment and the core itself. The jumbo piston core is composed of the main core barrel, the weight collar and a trigger core. The trigger core, upon making contact with the seabed (well before the piston core barrel), trips a connection and allows the piston core to freefall at terminal velocity to the seafloor, collecting as much sediment as possible. The jumbo piston core is typically deployed and recovered using the 9/16" wire, also from the starboard A-frame.

B. Safety Precautions

The deployment of both of these systems is a complex and hazardous evolution. All crewmembers and science party members involved shall conduct a full brief with a GAR Risk Assessment prior to conducting each evolution. Everyone on deck shall don proper PPE for the prevailing conditions, usually consisting of steel-toed boots, anti-exposure coveralls (Mustangs) and hardhat. Especially in heavy elements, all crewmembers and science party members are responsible for looking out for pinch points and slip/trip hazards. When handling equipment over the side, there is always the possibility of a man overboard. Pre-planned responses to these incidents will be properly briefed beforehand. Proper ORM and adherence to standard deck safety procedures are powerful tools in mitigating these hazards.

C. GRAVITY CORE

1. Preparatory

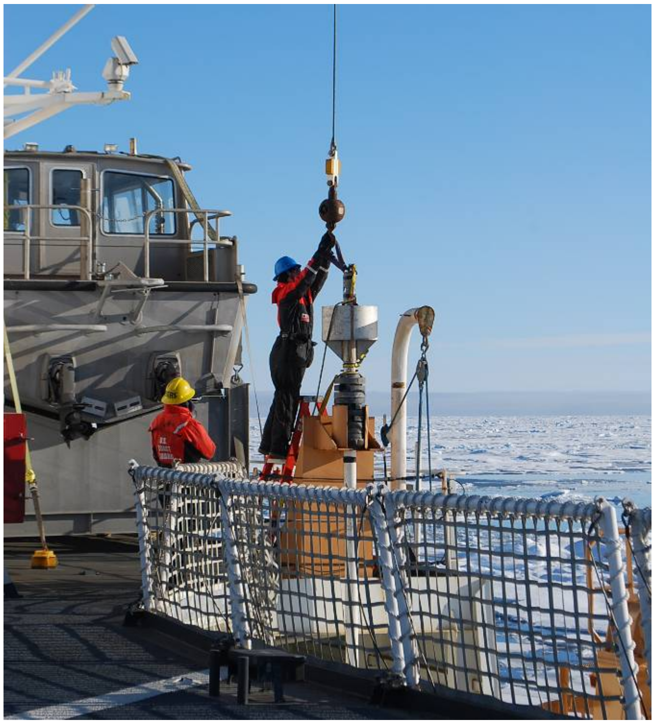
i. Conduct an evolution brief. Ensure all involved personnel are in attendance. Explain the steps of the deployment and conduct a walkthrough of the launch location.

ii. During this time, the OOD will maneuver the cutter bow into the elements and begin to station-keep.

2. Setup

i. For storage, the gravity core is cradled on the 02 deck as shown and is secured by two ratchet straps, one at the top and one at the base (to the railing).

ii. Spot the starboard 04 crane (auxiliary block) over the gravity core. Sling in a basket configuration or as best determined by the Deck Supervisor. Confirm with the Science Coring Technician the exact weight of the core. However, empty, the gravity core (20 feet of pipe) typically weighs approximately 700lb, and when full of sediment, weighs approximately 1,200lb.



iii. Rig a tagline to the base of the core (in heavier elements, an additional tagline at the top collar may also be required).

iv. Boom out on the starboard A-frame to the yellow markings on the followers (this is a good starting point, adjust as required). Ensure the taglines for the blocks are rigged out of the way to allow access for the crane.

v. Verify with the bridge that cutter is maintaining station and permission has been granted by the CO to deploy.

3. Deployment

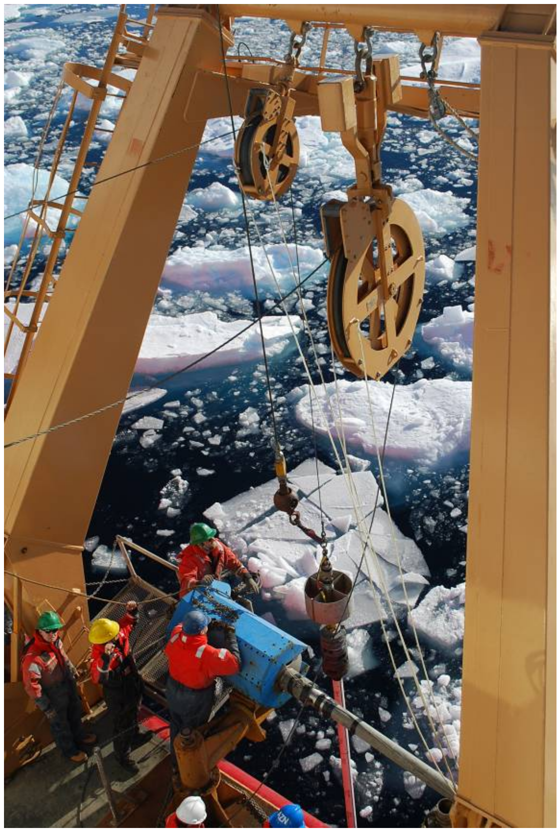
Note: Deployment pictures show equipment used for Jumbo Piston Core around the starboard A-frame. The two types of cores generally co-exist in our science missions, as was the case for the documented evolutions. However, while present in the pictures, this is not always the case. The procedure is written assuming this equipment is not in place.

i. The 3/8" wire block shall have been mounted on the forward-most location on the starboard A-frame. Using the 04 crane, spot the core underneath the block and maneuver into position inside of the starboard A-Frame.

ii. Notify the bridge when the bottom tip of the core barrel enters the water.

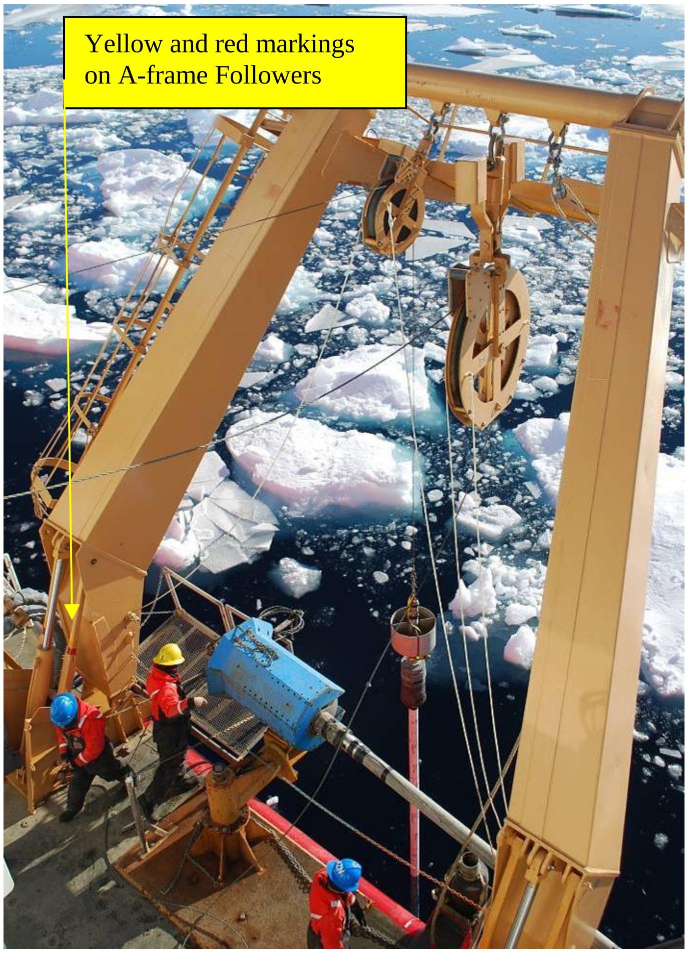
iii. Remove the lower tagline and help guide the core into position.[1] Lower until the weight collar is approximately chest-level above the deck, and the lifting shackles are easily accessible.

iv. Connect the 3/8″ wire and transfer the load from the crane.[1] Unhook the sling and crane block and maneuver out of the way.[1] It is recommended to leave the crane spotted over the flight deck. It will be needed for recovery.

v. Remove the top tagline from the core.[1]

vi. Boom out the A-frame to the red markings on the followers (again, a good starting point, adjust as required). The gravity core is now ready to be deployed.



Note: Parameters in steps vii – xiii may be modified as required. ALWAYS verify with the Science Coring Technician before proceeding.

Note: Provide wire tending reports to bridge every 5 minutes, or at a frequency required by conditions.

vii. Slowly payout wire on the winch, eventually increasing to 60 meters per minute (MPM).

viii. Bring winch slowly to a stop when approximately 100m from the sea floor. Pause for approximately 1 minute. This allows the core to stop swinging, rotating etc and “settle out”, ensuring it penetrates straight into the seabed.

ix. After 1 minute, continue paying out to the sea floor at 100MPM. When the core hits the seafloor, tension will drop dramatically. Once this happens, pay out an additional 20m of wire, slowing down to 10MPM before bringing the joystick to the stop position.

x. Report the bottom depth to the bridge for logging.

xi. Take in wire at 20MPM. Tension will spike, then drop dramatically as the core is removed from the seabed.

xii. Once tension drops, take in 20 meters more of wire, then pause momentarily. Ensure tension doesn't rise dramatically, as this would indicate the core is rotating and swinging. Pause for a brief moment to let the core "settle out".

4. Recovery

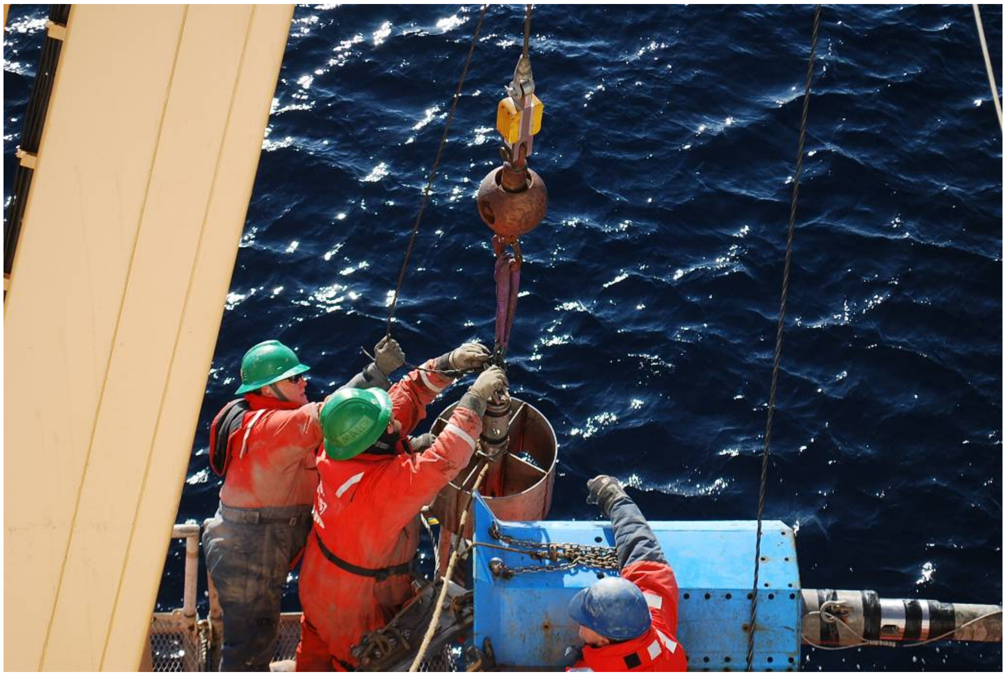
i. Take in wire at 60MPM until 15 meters from the surface. Pause for a "Safety Stop". Notify bridge that the core is coming above 15 meters, and ensure deck is manned and prepared for recovery, the area is clear of ice, etc.

ii. Take in wire slowly. Contact the bridge, lower lifelines and place a crewmember on the Hero Platform.[1]

iii. Once the weight collar is out of the water in a manageable position, boom in on the A-frame to the yellow markings on the followers or until the lifting points on the core are easily accessible from the Hero Platform.

iv. Spot the starboard 04 crane over the core. You may need to move the forward tagline on the 3/8" block to allow access.

v. Transfer the load to the crane using the same sling configuration as before.[1] Unhook the 3/8″ wire and stow.[1] Install the upper tagline (if required by conditions).[1]



vi. With the 04 crane, maneuver the core up and clear of the A-frame. Assist in guiding the core upward and attach the lower tagline, and cap the end once the core exits the water (this ensures no loss of sediment).[1] Disembark the Hero Platform and replace lifelines.[1]

vii. Notify bridge when core is out of the water.

viii. Seat the core in the cradle, keeping hands and fingers out of pinch points or the holes in the weight stack. Remove the sling and stow the 04 crane, unless required for more operations. Replace both ratchet straps on the core. Stow the A-frame.

ix. Notify the bridge when gravity core is secured on deck.

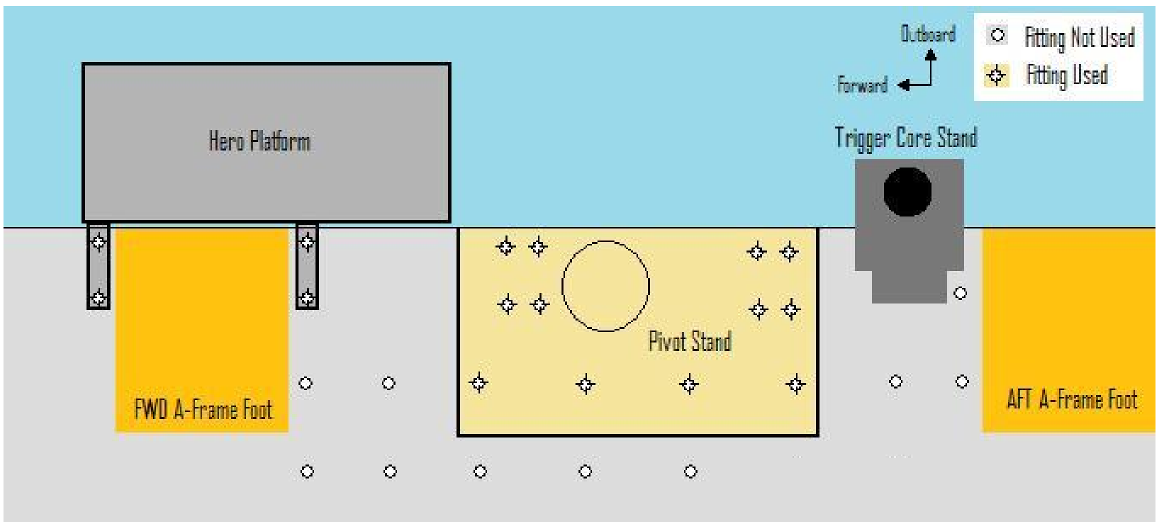
5. Scientists will let the core settle for a period of time and then use the 5” J-Bar davit, mounted next to the core stand, to lower the samples to the starboard working deck.[1]

D. JUMBO PISTON CORE

1. Deck Equipment Configuration.

i. Place the equipment, including the Hero Platform, Pivot Stand, Pig Weights, HIAB Crane and Core Barrel Storage Rack on the starboard working deck (in the configuration shown) prior to beginning the coring mission.

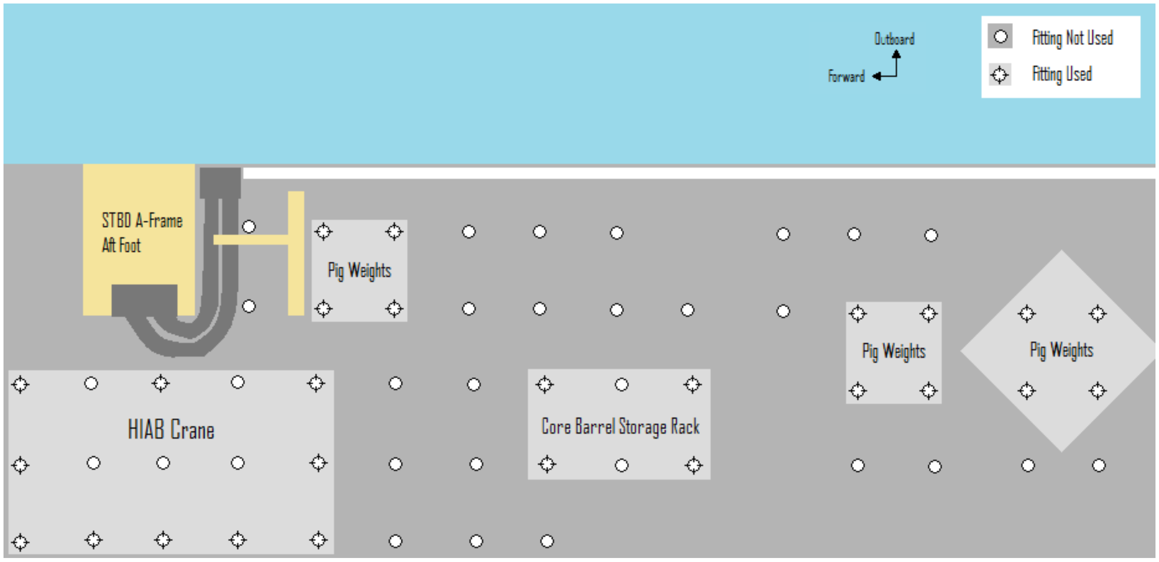
(1) The Hero Platform and Pivot Stand are placed inside the footprint of the Starboard A-frame as shown.

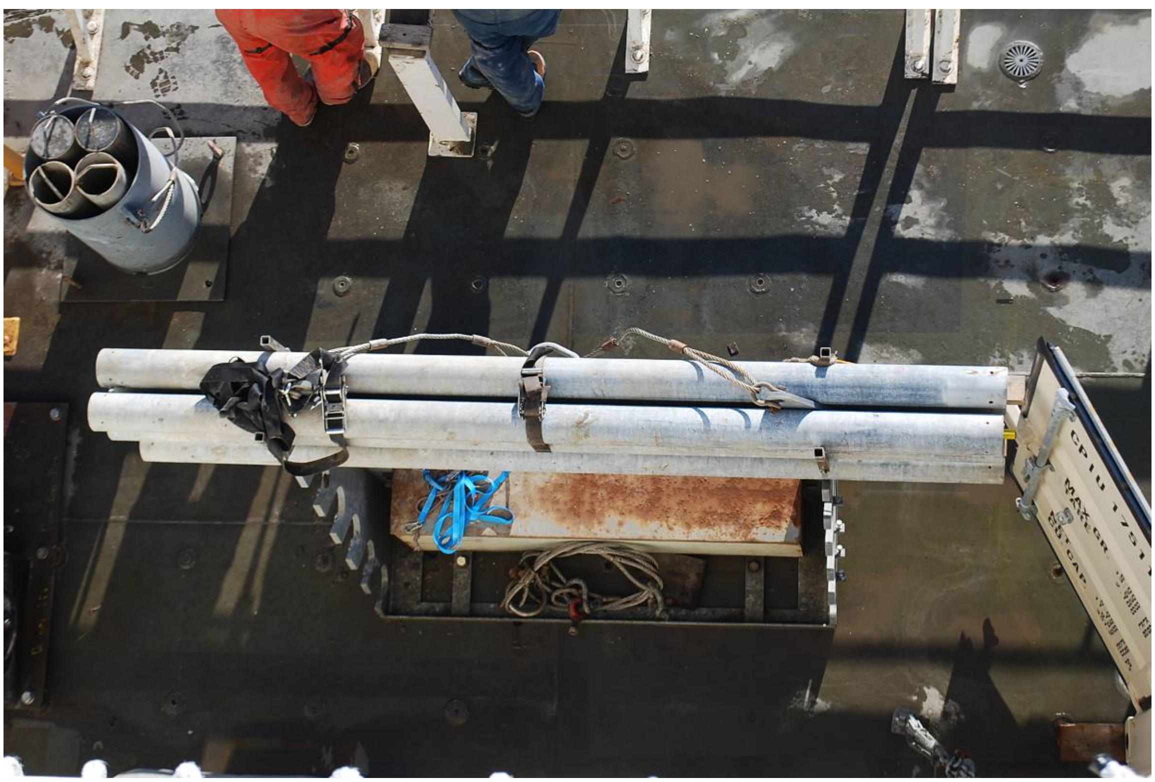


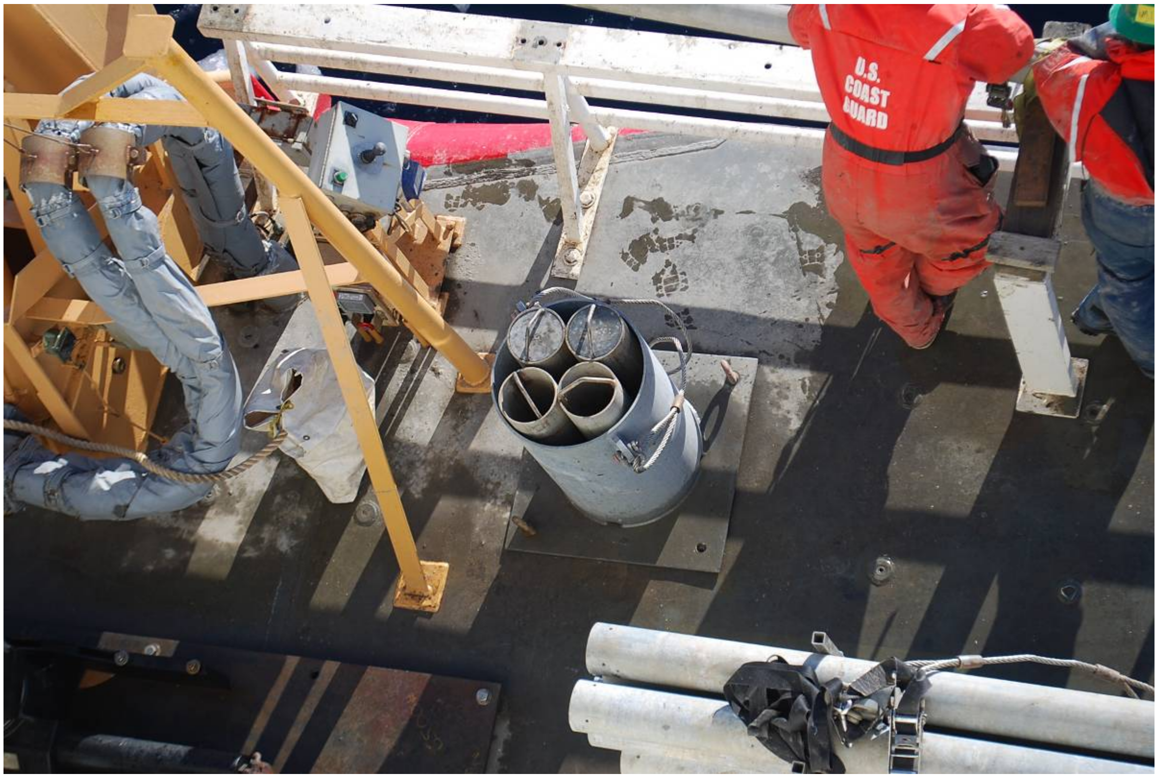
(2) The HIAB Crane, Core Barrel Rack and Pig Weights are placed around the starboard working deck as shown.

Note: The pig weights do not require all four fittings. Previously, weights were spotted the same, but only secured with two fittings.

(3) 9/16" wire reeved to starboard A-frame.

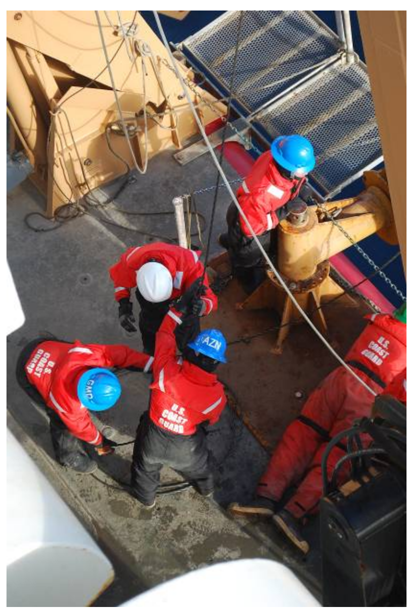





U.S.
COAST
GUARD

2. Preparatory

i. Science party technicians will prepare the core beforehand.[1] For this to be done, crewmembers will need to coil a certain amount of 9/16” wire (exact length specified by Coring Technician) on deck as shown below. Science party members will then insert liners into the core barrels and stage the piston using the slack wire.[1] The entire preparatory period will be 1-2 hours.



Note: When the wire rope is coiled on the trigger arm, ensure the coils are tight, as shown, to ensure a smooth release and interference on the weight stand when deploying.

ii. Conduct an evolution brief. Ensure all involved personnel are in attendance. Explain the steps of the deployment and conduct a walkthrough of the launch location.

iii. During this time, the OOD will maneuver the cutter bow into the elements and begin to station-keep.

iv. Stage the trigger core in starboard staging area or on the core barrel rack.

3. Setup

i. Adjust taglines on the 9/16” block to either side to align properly.

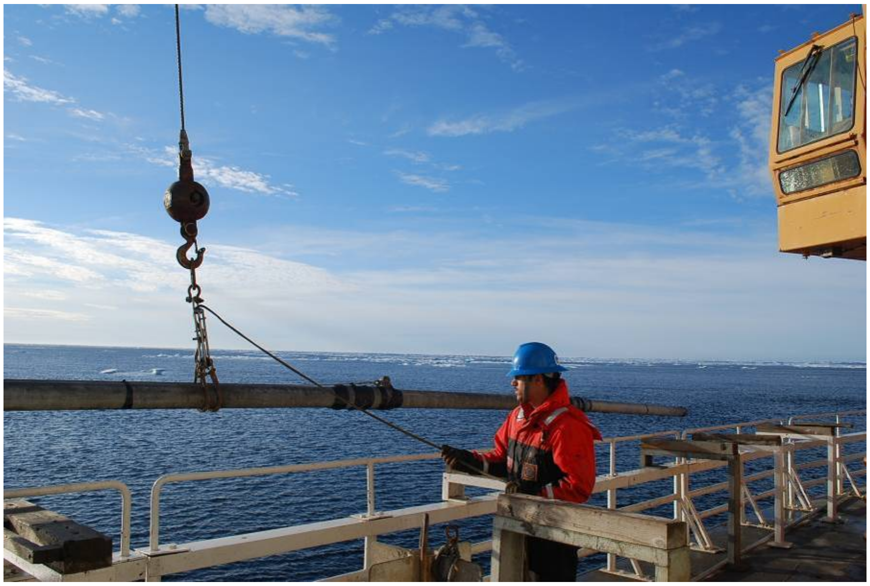
ii. Remove the ratchet straps, and any other items securing the core barrel to the benches on the working deck. Install the quick release to the shackle at the lifting point on the barrel.[1]

iii. Spot the starboard knuckle crane (auxiliary block) directly over the quick release and hook in.

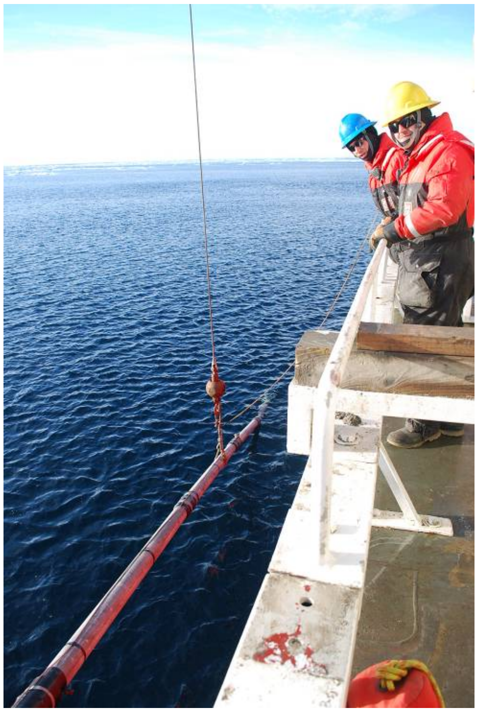
iv. Verify with the bridge that cutter is maintaining station and permission has been granted by the CO to deploy.

4. Deployment

i. Lift the core barrel free of the lifelines and slew out over the water. Ensure the core barrel clears outboard of the trigger core weight stand before lowering to the water.



ii. Lower the barrel to the water until the lower end breaks the surface. Using a deck hose, fill the core barrel with salt water until COMPLETELY full.[1]

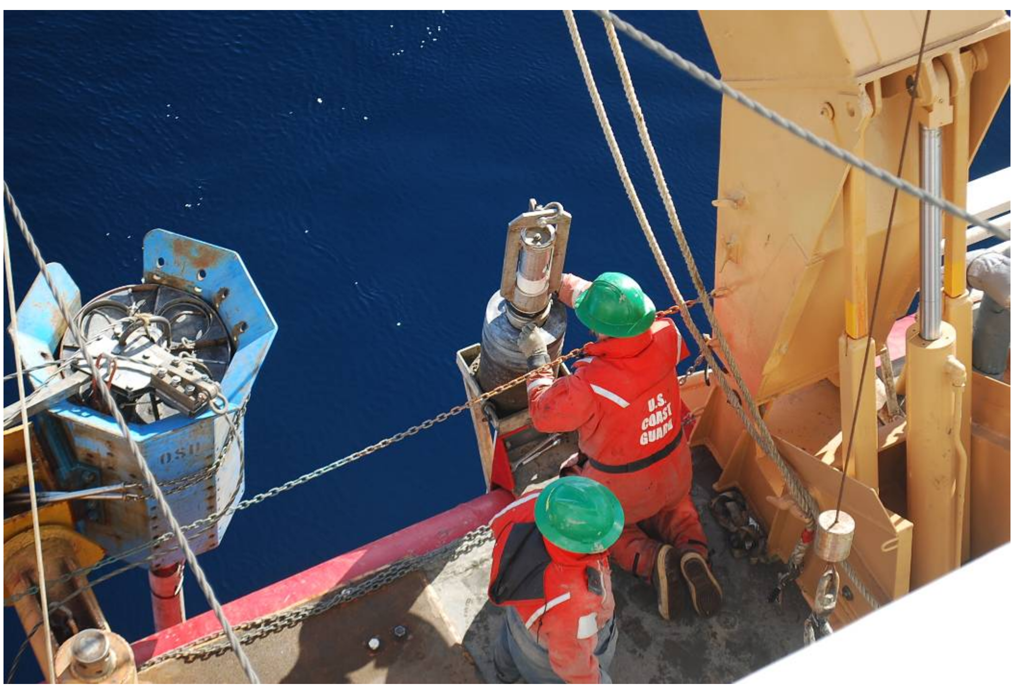


iii. Once full, consult with the Science Coring Technician and pull the quick release. The core barrel will now rotate at the pivot to the vertical position.

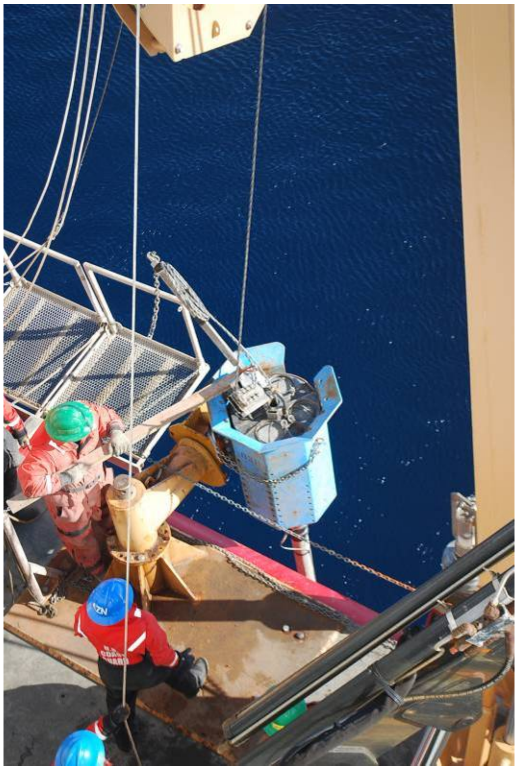
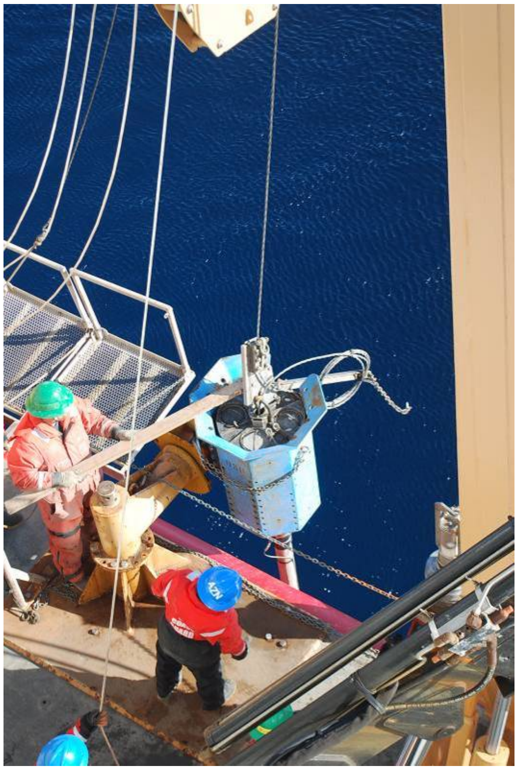
iv. Notify the bridge that the core barrel is in the water.

v. Rig the trigger core to wire rope on the HIAB Crane.[1] Using the HIAB Crane, place the trigger core in the weight stand.[1] It may be necessary to A-Frame out slightly for clearance.

vi. Once the trigger core is seated in the weight stand, attach the core to the weights using the collar and bolts.[1]



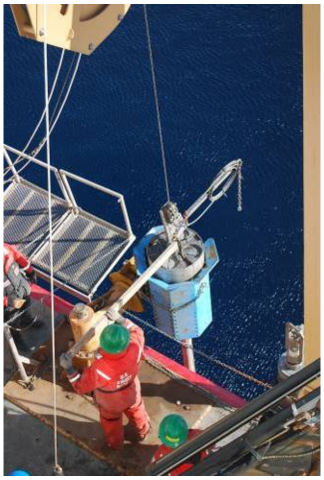
vii. Take in the 9/16" wire until it takes the load of the trigger arm. Rotate the trigger arm outboard (a 2x4 can help with this).[1]

viii. Remove the two safety pins keeping the core from rotating within the pivot stand, or falling out completely.[1]

ix. Take in 9/16" wire slowly, so that the piston core is slightly out of the pivot stand, with its weight carried by the wire. The expected weight will be confirmed by the Coring Technician; however, an empty 60-foot core typically weighs between 6,000 and 8,000lb.

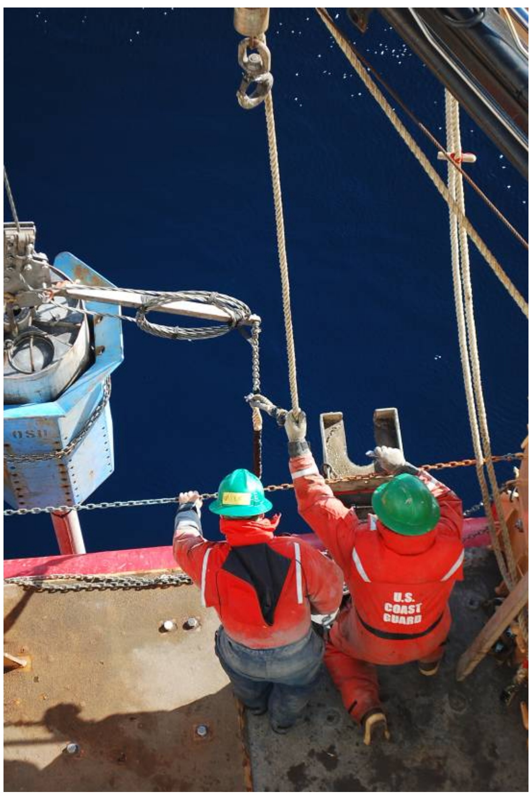
x. Using a 2x4, through the lifting point on the core, rotate the trigger arm over the trigger core.



xi. A-frame out, slightly, as required for the HIAB crane to spot over the trigger core.

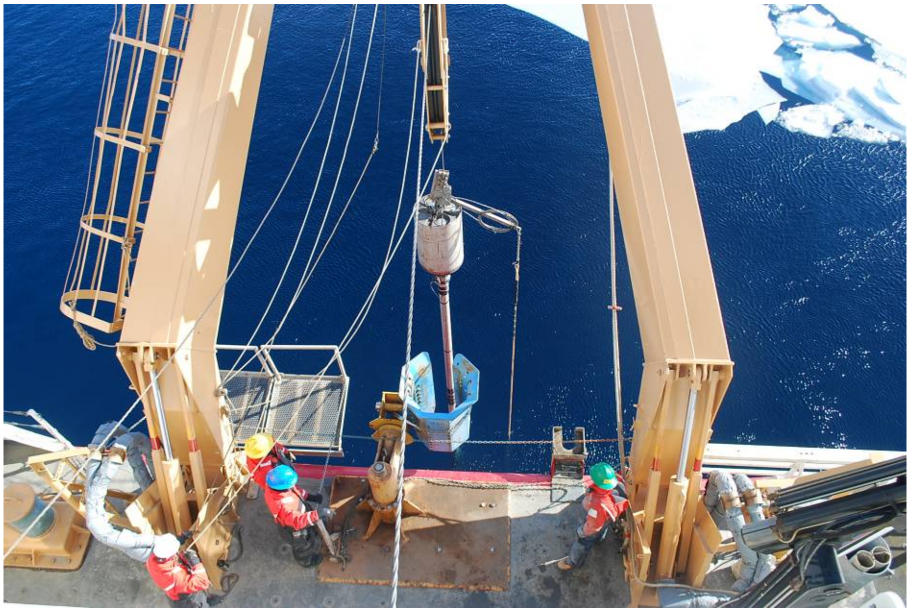
xii. Using the HIAB crane, rig the trigger line to the lifting point on the trigger core, lift from stand and lower to the water until the detachable joint sits even with the trigger arm (this will be measured by scientists beforehand).[1]

xiii. Transfer the weight of the trigger core from the HIAB crane to the trigger arm.[1] Separate the links in the rope and take rope back to spool on HIAB crane.[1] You are now ready to deploy the jumbo piston core.



xiv. Lift the piston core out of the pivot stand.

xv. A-frame boom out to the red markings on the followers (or as req'd for the piston core and trigger core to clear the pivot stand and hull of the ship.



Note: Parameters in steps xv - xvii may be modified as required. ALWAYS verify with Science Coring Technician before proceeding.

Note: Provide wire tending reports to bridge every 5 minutes, or at a frequency required by conditions.

xv. Pay out wire at 40MPM. The tension will drop near bottom depth. This indicates the trigger has released, and the jumbo piston core is now free-falling. IMMEDIATELY begin taking in wire SLOWLY (less than 10MPM). This will begin to pull the core out of the bottom.

Note: Due to speed-sensing system limitations, the winch operator must watch the winch drum on the CCTV to ensure a slow, positive recovery.

Note: Wire tension will increase dramatically as the piston core is pulled clear of the bottom. Typical tensions seen for a 60-foot core rarely exceed 12,000lb. However, for reference, the elastic strength of the 9/16" wire is approximately 20,000lb, with tensile strength rated to 24,000lb. Extra care must be taken to ensure these limits are not exceeded.

xvi. Report the bottom depth to the bridge for logging.

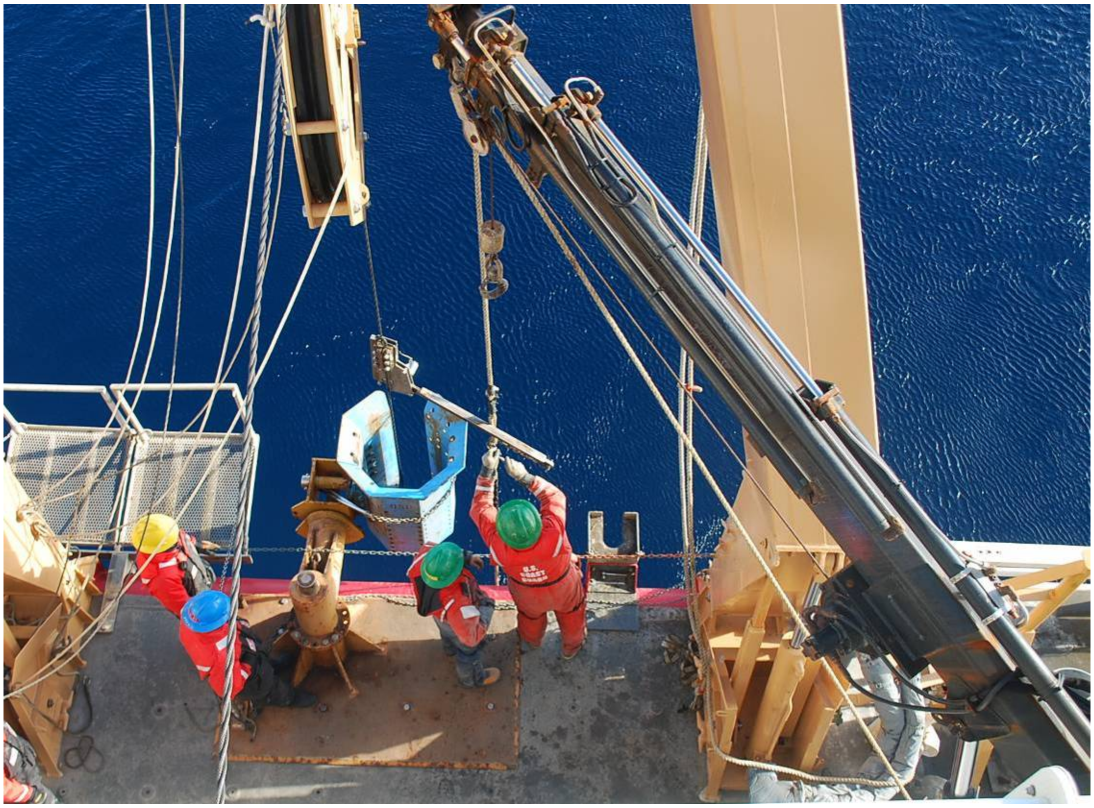
xvii. Once you have taken in the length of core (usually about 20 meters), under direction from the Science Coring Technician, proceed to take in wire at 40MPM.

5. Recovery

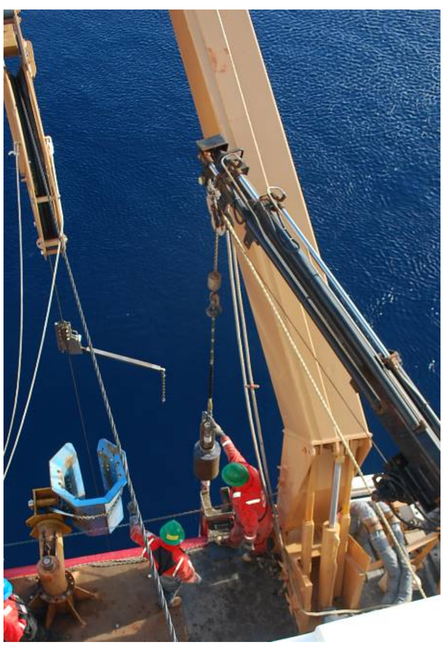
i. Similarly with the gravity core, pause 50 meters from the surface for a 'safety stop'. Ensure the deck is manned and ready for recovery and any ice or surface obstructions are cleared.

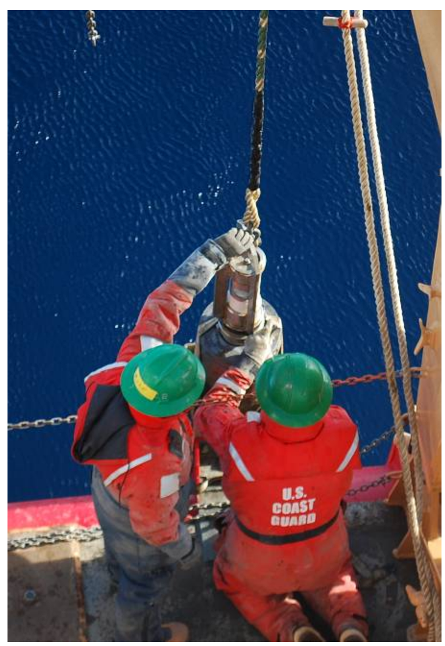
ii. Take in wire until the trigger arm appears at the height of the pivot stand and A-frame in as required to make it accessible to deck crews. The 9/16″ wire should now pass 'through' the blue pivot stand, as shown below.

iii. Rotate the trigger arm until the trigger line sits near the trigger core stand.[1] Using the HIAB crane, take the weight of the trigger core and disconnect it from the trigger arm.[1]

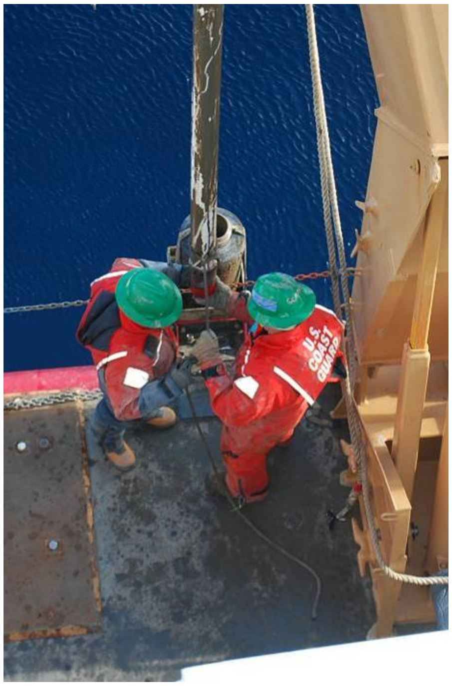


iv. Using the HIAB crane, lift the trigger core out of the water and position it in the trigger core stand.[1] Remove the four bolts and disconnect the weight collar from the core, and secure the weights to the stand using a ratchet strap.[1]

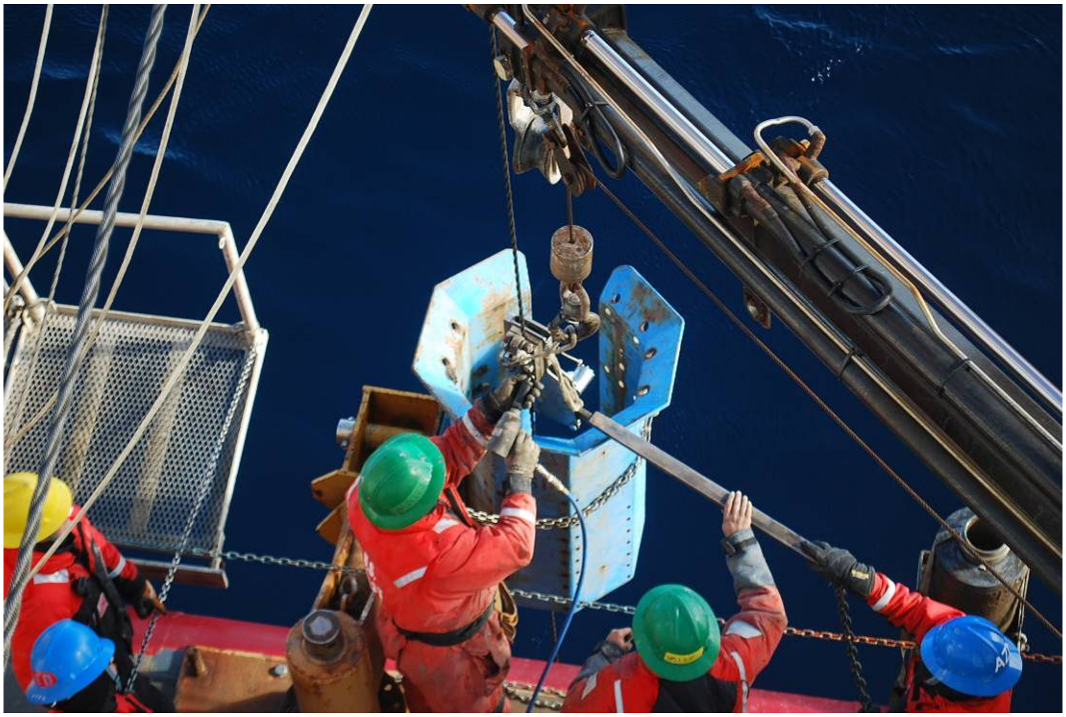




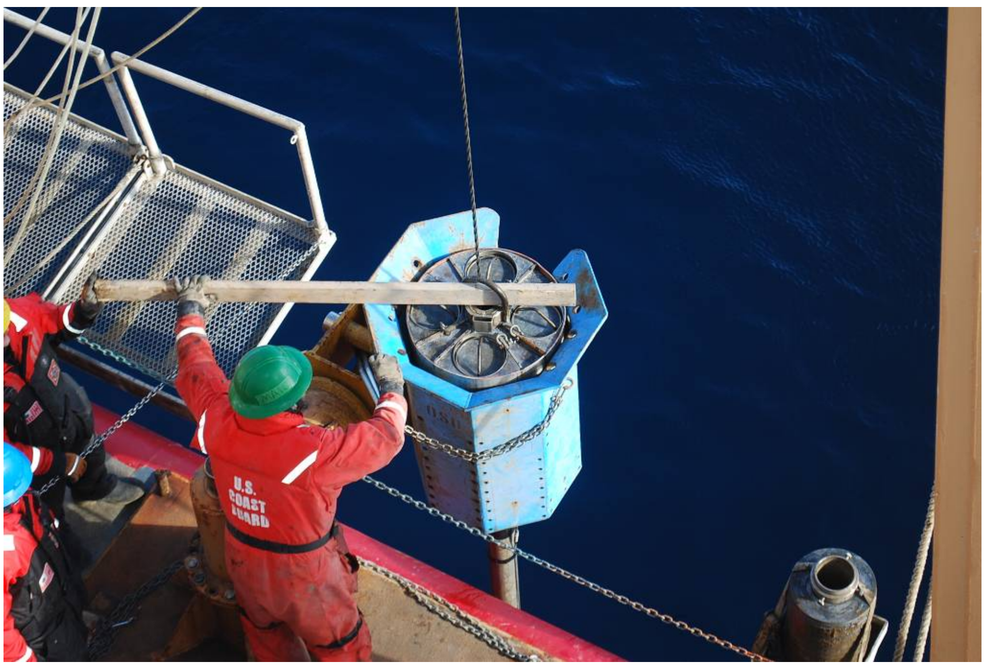
v. Scientists may want to examine the samples inside the trigger core. If this is the case, use the HIAB crane (wire rope) to lift the core out of the stand and place on deck.[1] Remember to cap the bottom to prevent loss of sediment![1]



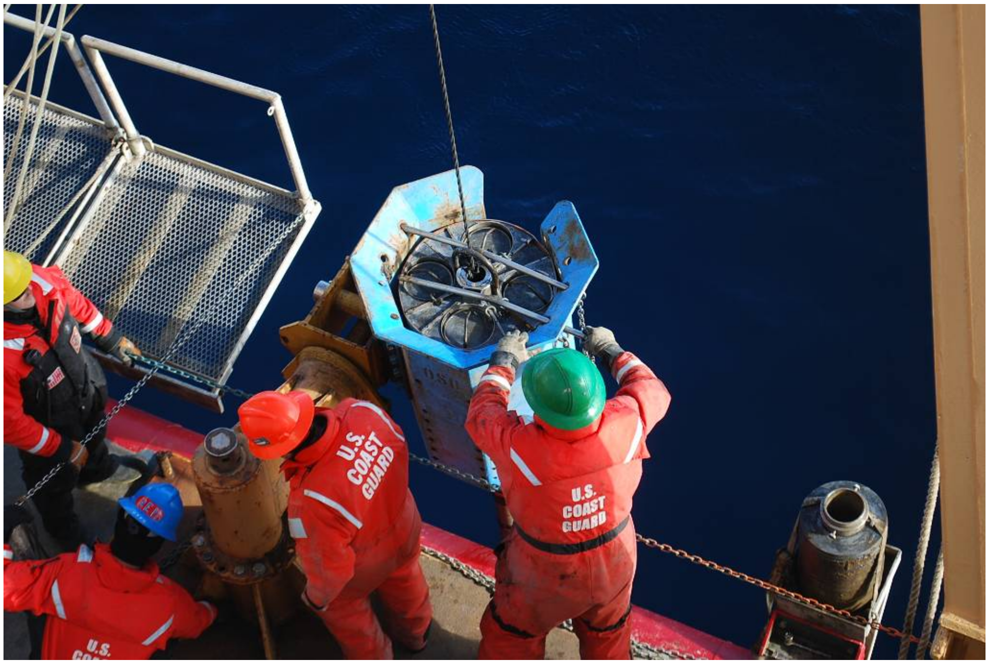
vi. Using the HIAB crane (wire rope), take the weight of the trigger arm and, using an impact wrench, disconnect the bolts holding the trigger arm to the 9/16″ wire.[1]



vii. Now you are ready to recover the jumbo piston core. A-frame boom out and take in wire slowly. Once the core appears, spot over the pivot stand. Using a 2x4, rotate the core barrel to align properly (lifting ring parallel to the hull, lifting point on weight barrel facing aft).[1]

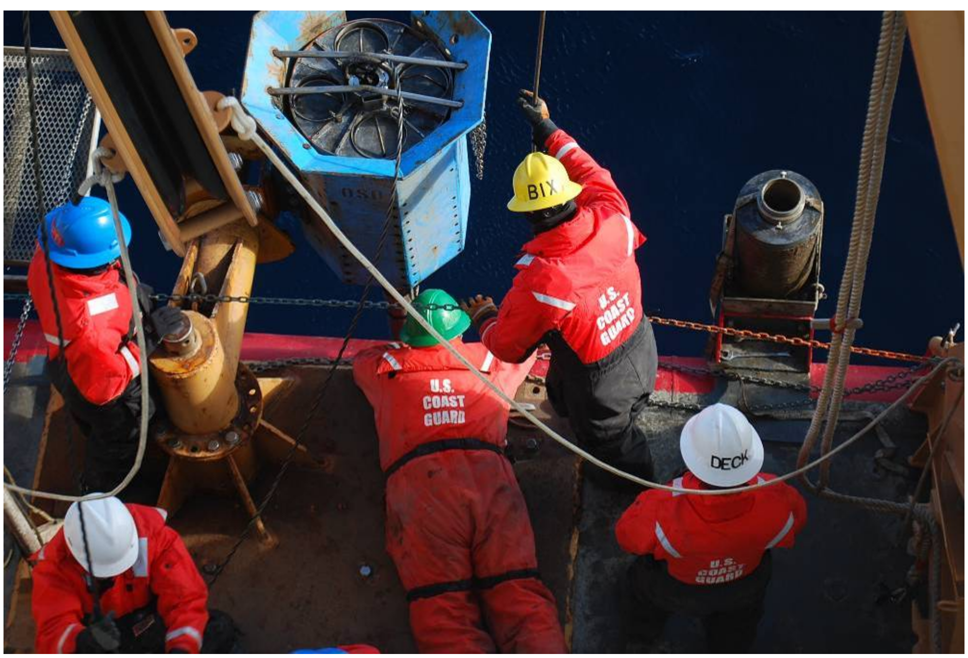


viii. Install the two safety pins into the pivot stand to keep barrel from rotating and falling out when horizontal.[1]

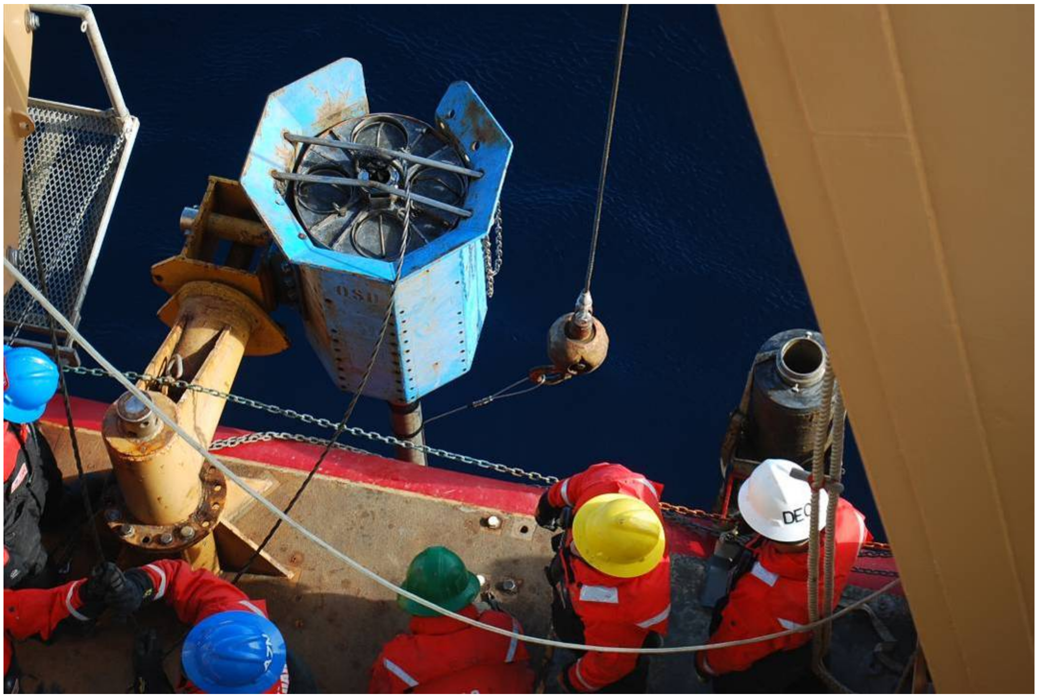


ix. Pay out an additional amount of wire and spool on deck (length specified by science party). They will need this extra wire when rigging the core for deployment (it follows the piston back down to the bottom of the next core barrel).

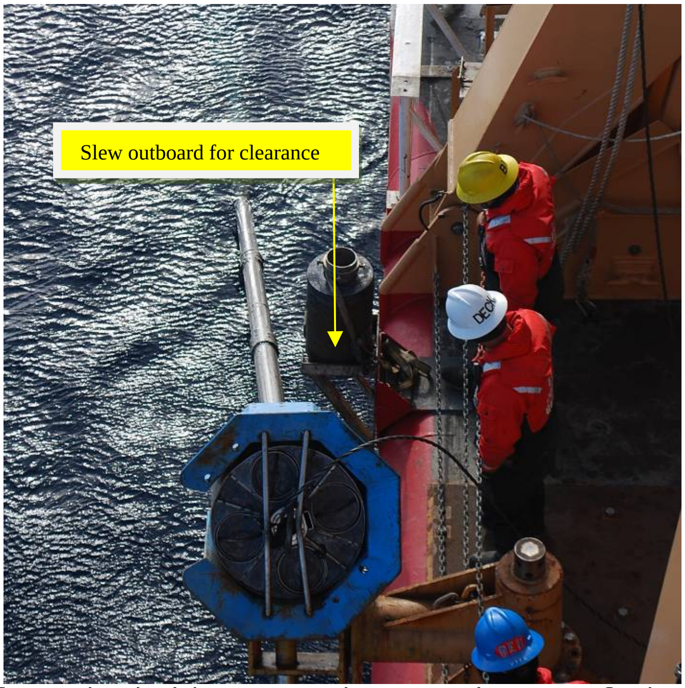
x. Spot the starboard knuckle crane auxiliary block over the lifting point on the core barrel (you may need to A-Frame in further to do this).



xi. Hook the crane block into the lifting point.[1] Slew outboard slightly and begin lifting the core barrel. As weight is taken, electrical tape holding the lifting wire to the barrel will part, essentially moving the lifting point 'down the barrel'.



xii. Ensure clearance of the core barrel outboard of the trigger core weight stand. You will need to slew outboard to ensure this clearance.



xiii. Inform the bridge once the core is out of the water.

xiv. Once clear of the weight stand, lift and slew over the benches on the working deck. Reinstall ratchet straps and other means of securing the core barrel. Stow crane and A-frame.

5. The science party will perform the extraction of the sediment and re-rig the core for deployment.[1] This should take approximately 1 to 2 hours. Keep a crewmember on deck to supervise science party members on the Hero Platform.

[1]This task was completed by the 1302 science party.

Appendix 10: PUMA/RDC sUAS Due Regard Memorandum

U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

2100 2nd ST S.W. STOP 7359
Washington, DC 20593-7359
Staff Symbol: CG-7
Phone: (202) 372-2020
Fax: (202) 372-2902

3700

MEMORANDUM

AUG 27 2013

BA Hawlk, CAPT, Acting for

From: Mark E. Butt, RDML
Assistant Commandant for Capability

To: David A. Score, RDML
Deputy Director, NOAA Office of Marine and Aviation Operations

Subj: PUMA SMALL UNMANNED AIRCRAFT SYSTEM (sUAS) OPERATIONS ABOARD COAST GUARD CUTTER (CGC) HEALY

Ref: (a) IFC for Puma AE
(b) Appendix A to Policy 2201-1-5
(c) NOAA Shipboard Operations Guide for the Puma AE
(d) ORM Assessment for Puma HEALY Operations

1. The U.S. Coast Guard Research and Development Center (RDC) and National Oceanographic and Atmospheric Administration (NOAA) plan to be engaged in small unmanned aircraft system (sUAS) operations in support of Arctic Shield 2013 from 8-20 September 2013. This effort will significantly assist the U.S. Coast Guard during the execution of its statutory missions, especially those related to oil spill response and recovery in the Arctic. Given the nature of this mission, NOAA will be performing state aircraft functions with the Puma sUAS under Article 3 of the Convention on International Civil Aviation of 1944.

2. To facilitate the joint sUAS deployment, the U.S. Coast Guard approves NOAA's request to operate the Puma sUAS with due regard from USCGC HEALY (WAGB 20) in accordance with references (a) through (d). This approval shall be rescinded if NOAA is granted state aircraft designation prior to commencing Puma sUAS operations.

3. LCDR Jeff Vajda in the Office of Aviation Forces is the Coast Guard's point of contact for this effort. He can be reached at 202-372-2214 or Jeffrey.M.Vajda@uscg.mil.

#

Copy: CGC HEALY
CG-1131
CG-751
CG-926
CG-094
PAC-3
RDC
ATC

Arctic Shield 2013

9/07-20/2013

Joint Technology Demonstration After Action Report(AAR)

RESEARCH AND DEVELOPMENT CENTER
USCGC HEALY

Appendix 11: AAR PUMA/RDC Cruise

Overview: *After Action Report*
Exercise Name: Arctic Shield 2013, Oil-Spill Response, Joint Technology Demonstration
Exercise Date: *07-20 September 2013*
Sponsors: *USCG Headquarters (CG-MER, CG-711, CG-926), USCG Pacific Area (PACAREA), USCG Research and Development Center (RDC), USCG District Seventeen (D-17), Bureau of Safety and Environmental Enforcement (BSEE), National Oceanic and Atmospheric Administration (NOAA), and Department of Homeland Security (DHS) Science and Technology (S&T) Office of University Programs*
Type of Event: *Joint Technology Demonstration (JTD)*
Funding Source: Varied by unit and organization

Definitions:

1. Small Unmanned Aircraft System (SUAS)
2. Unmanned Aerial Vehicle (UAV)
3. Unmanned Underwater Vehicle (UUV)
4. Environmental Response Management Application (ERMA)
5. Remotely Operated Vehicle (ROV)
6. Vessel of Opportunity Brush Skimming System (VOBSS)
7. Demonstration Readiness Review (DRR)
8. Center for Island Maritime and Extreme Environments Security (CIMES)
9. University of Alaska, Fairbanks (UAF)
10. Air Force Special Operations Command (AFSOC)
11. Woods Hole Oceanographic Institute (WHOI)
12. Surface Wave Instrument Floats with Tracking (SWIFT)
13. Coast Guard Maritime Safety and Security Team (MSST)
14. Navy Submarine Medical Research Laboratory (NSMRL)
15. University of Washington (UW) Applied Physics Laboratory (APL)
16. Communications (COMMS)
17. Concept of Operations (CONOPS)
18. Technology Demonstration Notes (TDN)
19. Test Director (TD)
20. Arctic Survey Boat (ASB)
21. Cutter Boat-Large (CBL)
22. Continental United States (CONUS)
23. Oil simulants; peat moss and oranges

Situation:
The RDC, under the guidance of the Coast Guard's recently released Arctic Strategy, worked with partner federal agencies, university programs through Department of Homeland Security, and scientific organizations to complete a simulated spilled oil response and recovery demonstration aboard the Coast Guard Cutter HEALY in the Arctic ice field. This demonstration involved air, surface and underwater assets to simulate the likely response actions of surveillance, detection, and recovery of oil, from ice-strewn water.

Assets included one SUAS from NOAA and one from UAF (funded by DHS S&T University Programs partnering with AFSOC providing the SUAS asset), a VOBSS operated by Coast Guard Strike Team members, a ROV from Coast Guard MSST San Francisco, a WHOI UUV (funded by BSEE), and a SWIFT buoy operated by a UW graduate student (funded by UW APL).

This inter-agency exercise with partners from the scientific community was assembled to assess the potential capabilities of specific technologies to enhance the Coast Guard's capability to respond to an oil spill in the icy waters of the Arctic.

The crew of the Coast Guard Cutter HEALY was deployed to the Beaufort and Chukchi Sea to support the RDC as part of the Coast Guard's Arctic Shield 2013 mission. Units, agencies and organizations involved in this technology demonstration include: the Coast Guard Cutter HEALY, the Coast Guard Research and Development Center, the Coast Guard's National, Gulf, Atlantic and Pacific Strike Teams, representatives from Coast Guard Headquarters, Pacific Area, 17th District, and MSST San Francisco, NOAA, WHOI, BSEE, UAF, the Department of Homeland Security Maritime Center of Excellence and two international observers; one from Environment Canada and one from Sweden's Coast Guard.

Focus:

The overarching focus of this Joint Technology Demonstration was to investigate the potential and operational utility of specific types of technologies. For this demonstration, the RDC selected representative examples of technologies to evaluate. These technologies possess the requisite qualities to enhance an oil-spill response in the Arctic. This investigation was designed to evaluate all aspects of the deployment, operation, and recovery phase of each technology and did not evaluate the performance of the specific technology demonstrated. While the evaluation was conducted in three different ice conditions, it should be noted that these results might not apply to all ice conditions.

Objectives:

1. Evaluate the efficacy of five independent technologies and how each could be employed to enhance an oil-response in: 1) icy-waters, 2) at the water and ice interface, 3) under the ice, 4) on top of the ice.
2. Evaluate the integration between the evaluated technologies during the following phases: pre-staging, deployment, operation, and recovery.
3. Evaluate and document all constraints and performance characteristics of each technology type.
4. Evaluate and document all communications requirements involved with the employment of each technology type and develop recommendations to influence the development of Arctic oil-response procedures.

CONOPS:

The CONOPS for this JTD was designed to evaluate types of technologies that could enhance a Coast Guard oil-response. An oil-response scenario was used to align operational scheduling and employment of the various technologies during the surveillance, operational, and recovery phases within the JTD. The following is a short description of those technologies:

<u>SUAS</u>

During the JTD, the SUAS was used to search, detect, and map the ice floe from the air. Depending on sensor payload, the SUAS provided the TD with real-time imagery which improved situational awareness. The imagery depicted actual on-scene ice conditions, ice movements and simulated oil-spill locations, dimension and size.

UUV

During the JTD, the UUV was used to search, detect, and map the ice floe from under the ice. The UUV provided the TD with "snap-shots" of ice bottom topography, underwater imagery and oil sensing capability which improved situational awareness of the surrounding in-water area and underside ice perspectives while operating near or under the ice.

ROV

During the JTD, the ROV was used to observe in-water technologies during their operation, observed the water column and verified completeness of simulated oil-recovery from the water/ice interface. The tethered ROV also provided the TD with real-time underwater imagery which could be used to verify the completeness of the local oil-response operation.

VOBSS

During the JTD, the VOBSS was used to simulate recovery of spilled oil in icy-waters and at the water/ice interface. The VOBSS was deployed from the CGC HEALY starboard knuckle crane and was powered by a portable hydraulic power unit indigenous to the system. The VOBSS was the spilled-oil recovery device for this JTD.

ERMA

During the JTD, NOAA installed a standalone version of their Arctic ERMA to integrate and visualize data from the CGC HEALY and the technologies demonstrated. This is a continuing development initiative to advance their ERMA program.

CGC HEALY

For this JTD, the CGC HEALY was identified as the platform of choice due to its ability to operate in and through ice and facilitate simultaneous deployment of these technologies. A major benefit to the JTD was the unique capabilities of the extensive on-board deployment equipment and scientific sensors that monitored air, surface and underwater environmental conditions.

Miscellaneous

There were nine observers on-board during the JTD deployment. This diverse group were representatives from Environment Canada, Swedish Coast Guard, a student attending the Seattle school of Law, a NOAA Fellow currently working at USCG Headquarters (CG-PW), a professor from the Defense Intelligence University, a senior administrator from DHS S&T office of University Programs, and a three-person team from the Naval Submarine Medical Research Laboratory (focused on extended deployment team dynamics.) The CGC HEALY, RDC and JTD team were jointly able to provide these ship-riders with an opportunity to observe Coast Guard underway operations and operations associated with the JTD.

Participating Organizations:
CGC HEALY
USCG RDC
USCG D17
BSEE
NOAA
USCG Pacific Strike Team
USCG Atlantic Strike Team
USCG Gulf Strike Team
DHS S&T Office of University Programs
UAF
WHOI
MSST San Francisco
NSMRL
UW
Canadian Coast Guard
Swedish Coast Guard

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Outcomes:
The operational outcomes of the JTD are broken down by individual technology including the CGC HEALY. The outcomes below are an initial quick-look assessment of the observed operational outcomes captured during the JTD, with more detailed analysis pending complete review of the voluminous data in the RDC observations, CGC HEALY ship's logs, crew input and technically relative comments provided by each technology lead and subject matter expert.

General:
Overall, the JTD was successful in executing its objectives without significant incident or a safety mishap. The RDC team sufficiently evaluated each technology type and more importantly how each would notionally contribute to an oil-spill response. However, further research and performance testing of each specific technology is required to fully determine how these types of technologies would be fully integrated into the oil-spill response structure. A benefits analysis of each of the technologies and the integration of these technologies is required.

SUAS:
1. Both the NOAA and UAF SUAS were successfully employed during the JTD. After the initial DRR and safety flights, both systems were operated (flown) simultaneously at scheduled times. Both systems were influenced by the cold environment, especially icing, but initial observations indicate that there was very little degradation in meeting JTD objectives. Various payloads were employed and data captured which has yet to be fully analyzed. A member of the RDC observation team collected data during each operation and facilitated daily post demonstration debriefs to collect operator/subject matter expert input which forms the basis of this technology's lessons learned.

2. Operational deployment data:
Number of sorties – 16 (8 NOAA, 8 UAF)
Number of recoveries – 16 (8 NOAA, 8 UAF)

Total flight time – 14 hours (6.3 hours NOAA, 7.7 hours UAF)
Number of equipment mishaps – 1 (UAF aircraft due to suspected icing)

<u>UUV:</u>

1. The untethered UUV was successfully deployed and imagery from it was utilized during the JTD. The UUV technology, a deep sea capable vehicle used due to availability, required technically significant expertise to operate. Deployment of the UUV was observed to be routine however recovery of the UUV occasionally required either a small boat to assist in recovery or special shipboard equipment to facilitate use of the A-frame hook. Due to ice filling the void area behind the HEALY, the ship was sometimes required to flush out the area aft of the ship to facilitate UUV deployment/recovery. The UUV technology used in-water transducers to communicate between the UUV and shipboard base station which required extensive subject matter expertise. A member of the RDC observation team collected data during each operation and facilitated daily post demonstration debriefs to collect operator/subject matter expert input which forms the basis of this technology's lessons learned.

2. Operational deployment data:

Number of launches – 10
Number of recoveries – 10
Total operational time (in water) – 9 hours and 50 minutes
Number of equipment mishaps – 1 (operator navigational error)

<u>ROV:</u>

1. The small ROV was successfully deployed during the JTD and was successfully employed in operations outside the intended scope of the JTD. A member of the RDC observation team collected data during each operation and facilitated daily post demonstration debriefs to collect operator/subject matter expert input which forms the basis of this technology's lessons learned.

2. Operational deployment data:

Number of launches – 15
Number of recoveries – 15
Total operational time (in water) – 2 hours and 48 minutes
Number of equipment mishaps – 1 (due to ice)

VOBSS:

1. The VOBSS was successfully deployed during the JTD and performed as expected in icy waters and at the water/ice interface. A member of the RDC observation team collected data during each operation and facilitated daily post demonstration debriefs to collect operator/subject matter expert input which forms the basis of this technology's lessons learned.

2. Operational deployment data:
Number of launches – 4
Number of recoveries – 4
Total operational time – 15 hours (support, setup, breakdown)
Total operational time (in water) – 2 hours
Number of mishaps – 0

Standalone ERMA:
Standalone ERMA was successful in integrating with CGC HEALY'science computer network and interfacing with the technologies which provided sensor data (post-recovery of the technology). Initial observations indicate that methods used to transform the data for easier ingestion into ERMA was enhanced during the JTD.

CGC HEALY:
The CGC HEALY expertly facilitated deployment, operation and recovery of each of the technologies. The CGC HEALY was found to be an extremely capable platform to support, deploy and recover all JTD technologies in the Arctic ice field. The CGC HEALY also possessed air, surface and underwater environmental data which supported the JTD. The following is designed to illustrate the CGC HEALY crew resourcing and equipment requirements to support each of the technologies used during the JTD for future technology deployment consideration:

SUAS
1. CGC HEALY Crew-members for SUAS launch – 2 (one deck supervisor, one bridge member)

2. CGC HEALY Crew-members for SUAS recovery – 10 (crew to raise/lower/run the ASB) or 6 (crew to raise/lower/run the CBL)

3. Equipment – Small boat for recovery, ship's power for recharging and download of imagery

UUV

1. CGC HEALY Crew-members – 6 (deck supervisor, deck safety, winch & A-frame crane operator, two riggers, and one bridge member)

2. Equipment – either the starboard or aft A-frame, tag-lines, a lifting sling and quick-release, a grapnel hook, a small boat (in some instances) and ship's power to recharge systems and download imagery

ROV

1. CGC HEALY Crew-members – 2 (deck supervisor and one bridge member)

2. Equipment – ship's power

VOBSS

1. CGC HEALY Crew-members – 7 (deck supervisor, deck safety, crane operator, three riggers, and one bridge member)

2. Equipment – Starboard or port knuckle crane, tag-lines, extra-long lifting slings, ship's power to support the prime mover and other system support equipment

Standalone ERMA

1. CGC HEALY Crew-members – 1 (Geographical Information Systems Specialist, contracted science data network support)

2. Equipment – Ship's standalone science network, ship's power

Communications

1. CGC HEALY Crew-members – 2 (one member from the deck team and one from the bridge team)

2. Equipment – Hand-held radios, alternate Comms equipment, ship's power

Lessons Learned:

The following are abbreviated highlights of lessons learned:

General:

1. Oil response resources and support logistics were identified as significant constraints relative to Arctic operations. A combination of CONUS mobility of

JTD resources to Barrow, Alaska then coordination of those resources to CGC HEALY required strong partnerships and significant coordination.

2. Coast Guard Cutter HEALY proved to be an extremely versatile and capable evaluation platform to deploy, operate, and recover all joint technologies. Expanded research into suitable oil response surface platforms, both within government and the civilian sector, will need to be conducted.

3. Communications issues experienced during the JTD on a single platform indicate that use of multiple platforms with these technologies could present additional Comms complications which require expanded research. Furthermore, evaluation of how Comms integration into the Incident Command System (ICS) and National Incident Management System (NIMS) structures should occur.

4. For the potential on-scene commander to maintain operational perspective of the oil-response, utilization of these types of technologies that provide information of oil location below the ice, on the ice and the movement of the ice field itself were identified as critical components to effect an oil-response in the Arctic environment.

<u>SUAS:</u>

1. The CGC HEALY small boat (ASB) was required for recovery of the SUAS during the JTD since a shipboard deck-landing was not authorized. This evolution posed significantly more risk to crew-members and to the operational scenario than a shipboard deck-landing or recovery would pose. Furthermore, due to the launch and recovery wind/sea limitations of the ASB and all non ice-hardened vessels, recovery of SUAS technologies should be conducted using landings on ship-board decks to minimize risks to personnel and equipment.

2. During the JTD, the SUAS operations provided the TD with useful information of the ice pack and open water. This information was used to determine navigational routes to initiate the simulated oil recovery phase.

<u>UUV:</u>

1. These tests demonstrated the UUV is capable of operating under various sea-ice conditions. Occurrence of drifting and rotating ice while the UUV was deployed complicated the technology operation and evolution, although the mission was successful and the vehicle was recovered. Vehicle navigation was effective with acoustic transponders deployed over the side of the ship, simplifying

deployments in the marginal ice zone. Care must be taken to ensure transponders are raised if repositioning of the ship becomes necessary.

2. Adaptive missions under ice are possible, where the mission plan can be modified on the fly based on sensor data. This ensures next deployments under ice will be capable of detecting oil in a broad survey and then undertaking fine scale mapping during the same mission.

<u>ROV:</u>

1. The small ROV system and operator were adversely impacted by the extremely cold environment, water temperatures and under-ice sea current during the JTD.

2. The ROV provided the TD with real time underwater imaging of the operational area. Furthermore, the ROV was employed to inspect ship running gear when the UUV transponder cable became fouled in the ship's port propeller.

<u>VOBSS:</u>

1. During the JTD, the VOBSS was easily setup and deployed despite the setup time for the diesel hydraulic power unit. Numerous data points were collected that require a complete review for upgrading a VOBSS for cold environment employment.

2. The VOBSS operational use and range was limited by the reach of the on board cranes which facilitated its deployment. The VOBSS current configuration required avoidance of ice to prevent damage to hydraulic lines. A self-propelled VOBSS with containment system would enhance both operational utility and effectiveness during an oil-recovery mission.

<u>ERMA:</u>

1. Due to the lack of communications infrastructure in the Arctic, online ERMA could not be employed. Standalone ERMA was employed as an advanced technology which required extensive data manipulation of the individual technology data formats in order to be properly integrated into the standalone ERMA system

2. Due to the latency of determining and developing individual data formats, standalone ERMA was not used during the operational phases of the JTD. However, once the data from each technology was integrated, standalone ERMA demonstrated the ability to be a useful tool similar to the online ERMA to enhance

an oil-spill response. The JTD supported the advancement of the standalone ERMA technology for enhanced development and future use.

3. Initial observations indicate that methods used to transform the data for easier ingestion into ERMA was enhanced during the JTD.

CGC HEALY:

1. Challenges associated with mobilizing an oil spill response in the Arctic cannot be understated. Gear required for the demonstration was loaded aboard in Seattle, WA prior to departing on deployment. If deploying directly from Seattle in response to a pollution event, it is an eleven day transit to reach Barrow, AK. Some components used during the demonstration are large/heavy enough that mobilization must be done at a pier. The closest pier capable of supporting HEALY is in Dutch Harbor, AK, a four day transit from Barrow, AK. The 48 person science team reported to HEALY from Barrow, AK via contracted helicopter over the course of two days. A logistics evolution of this magnitude from a place like Barrow requires a significant degree of coordination with personnel on site. The support network established to support science and energy research in the area primarily provided by Umiak and Polar Field Services proved invaluable to ensuring adequate lodging and an efficient mobilization process.

2. Deploying the various technologies required for the exercise was accomplished in a manner similar to HEALY's standard science missions from a command and control and manning perspective. Policy constraints for selecting and recovering the SUAS stand as the major area for potential changes that could significantly reduce risk to personnel and equipment. Due to the adverse environmental conditions present in the Arctic, shipboard landings of the SUAS would be inherently safer than using a small boat or an on ice recovery for retrieval.

3. Operating conditions and limitations for the SUAS are similar to that of the small boats, however the retrieval of the SUAS while approaching the high end of the limitation spectrum increases operational risks. Operating a small boat with high winds and elevated seas combined with a crew member leaning over the side to recover a SUAS from the water is less than desirable. Neither the CBLs' nor the ASB are rated for in-ice navigation. The odds of becoming trapped by the ice make a small boat evolution significantly more difficult and dangerous. Deployment of the ASB involves the movement of a 16,000 lb boat from a combined height of 80 feet to reach the water's edge. This deployment can only be

conducted in a docile weather state and is a lengthier deployment than lowering a CBL.

4. Deployments on ice are time driven and inefficient toward technology use. The initial time spent identifying a suitable floe combined with the time necessary to properly inspect and deem a floe safe by the ice rescue team is not suitable to on ice deployment. The total time to stage a floe that is usable for technology deployment is anywhere between two and three hours minimum, not including the time spent searching for the floe itself.

5. A shipboard landing of the SUAS is the optimum recovery method due to crew safety and operational efficiency. Minimal risks during a shipboard landing include collision with super-structure or personnel, and damage to SUAS from non-skid on landing zone. Landing the SUAS on the flight deck is significantly safer than landing the helicopters that cutters routinely receive during flight operations.

Conclusion

The JTD demonstrated that these types of technologies provide useful capability for the Coast Guard during an oil-spill response in the Arctic environment. Considerably more research is required to identify specific oil-response technologies that enhance Coast Guard response capabilities. Data captured during the JTD has provided the RDC with sufficient information to conduct post data reconstruction and analysis upon return. Following the data reconstruction and analysis phase, the RDC plans to incorporate these analyses into planning and preparations for Arctic Shield 2014.

The CGC HEALY, with its diverse capability to support science endeavors, proved to be an excellent platform for these technology evaluations. The RDC was able to test multiple technologies simultaneously thus reducing overall research costs.

Recommended Future Actions

Based on initial review of data and what was demonstrated during the JTD, recommend the RDC focus on furthering research into the required capabilities specific to individual technologies which would likely be used to enhance Coast Guard oil-spill response capabilities in the Arctic. Future RDC Arctic test evolutions should include CGC HEALY as a primary test platform with expanded oil-spill response scenarios incorporating multiple response vessels. Recommend immediate risk analysis/mitigation strategy be conducted with commensurate approval for Coast Guard shipboard SUAS landings and alternate SUAS selection approval process be secured prior to Arctic Shield 2014.

Appendix 12: Public Affairs

A. Press Releases

20 September 2013

Coast Guard Cutter Healy visits Seward, Alaska

SEWARD, Alaska — The Coast Guard Cutter Healy was moored in Seward Friday after completing 71 days of operations in the Bering Sea, Chukchi Sea, Beaufort Sea and Arctic Ocean.

While in Seward, the Healy will be open for tours on Sept. 26 and 27 from 12:30 p.m. to 3:30 p.m.The public and press are welcome to attend. All children must be accompanied by an adult and no pets are allowed aboard the cutter. Coast Guard crewmembers will be standing by to answer questions about the 420-foot icebreaker and their most recent operations in the Arctic.

During the past two and half months, the crew and embarked science teams successfully conducted two science missions and one Coast Guard mission to further our nation's scientific knowledge of the Arctic. One more science mission is yet to come for this year's deployment.

The first science mission was a multidisciplinary study sponsored by the Bureau of Ocean Energy Management 90 miles west of Barrow, near Hanna Shoal. Science members collected pelagic and benthic chemical and biological samples, observed physical oceanographic properties, and analyzed the data to establish an ecological baseline for the highly productive and biodiverse area. Equipment used included the CTD, which measures conductivity, temperature, and depth, to collect water samples at different depths and determine physical and chemical properties of the ocean. Various nets were used to collect biological samples and coring equipment was used to collect sediment and biological samples from the bottom of the ocean.

The second science mission was a study sponsored by the National Science Foundation along the North Slope in the Beaufort Sea and Amundsen Gulf. The science party focused on identifying geological evidence of a massive flood near the Mackenzie River that occurred about 13,000 years ago and had profound effects on global climate. The science party used sonar to survey the seafloor to identify ideal areas to deploy the Jumbo Piston Core, an apparatus capable of sampling sediment 40 to 70 feet into the ocean floor. Similar to the rings of a tree, the science party will analyze the different layers of sediment to learn about the water composition dating back thousands of years.

The newly completed third mission, sponsored by the Coast Guard Research and Development Center, took place near and in the ice edge. This mission's focus was to demonstrate the ability to use current technologies to respond to oil spills in the Arctic. The technologies included an unmanned aerial system, an unmanned underwater vehicle, an oil recovery skimmer, and a remotely operated vehicle. Using oranges and peat moss to simulate an oil spill, the researchers observed how effectively the technologies surveyed and monitored recovery of the simulated spill.

The fourth and final science mission of the deployment is sponsored by NSF and will take the Healy crew north of Barrow on the North Slope and potentially as far east as Amundsen Gulf and M'Clure Strait. The primary mission objectives are to conduct CTDs and recover, service and redeploy a series of bottom mounted scientific moorings. Data collected by the instruments documents the Western Arctic Boundary Current which helps improve the understanding of Arctic circulation.

The Healy, commissioned in 1999, is the nation's newest and largest U.S. high-latitude icebreaker. The cutter is 420-feet long and has extensive scientific capabilities. Homeported in Seattle, the cutter has a permanent crew of 88 and its primary mission is scientific support. In addition, as a Coast Guard cutter, the Healy is capable of other operations such as search and rescue, ship escorts, environmental protection, and the enforcement of laws and treaties in the Polar Regions.

For more information about the Healy, please check:

http://www.uscg.mil/pacarea/cgchealy   http://www.icefloe.net

U. S. DEPARTMENT OF HOMELAND SECURITY

U. S. Coast Guard

FOR IMMEDIATE RELEASE **November 5th, 2013**

Contact: ENS Rebecca Follmer
Rebecca.F.Follmer@uscg.mil

Seattle, Washington – The Coast Guard Cutter HEALY moored in Seattle this afternoon after completing 117 days underway for operations in the Bering Sea, Chukchi Sea, Beaufort Sea, and Arctic Ocean following her initial sail date of July 11. During that time, CGC HEALY and her crew of 88 successfully conducted three science missions and 1 Coast Guard mission to further our nation's scientific knowledge of the Arctic.

The first science mission was a multidisciplinary study sponsored by the Bureau of Ocean Energy Management 90 miles west of Barrow, Alaska, near Hanna Shoal. Science members collected pelagic and benthic chemical and biological samples, observed physical oceanographic properties, and analyzed the data to establish an ecological baseline for the highly productive and biodiverse area. Equipment used included the CTD (measures Conductivity, Temperature, and Depth) to collect water samples at different depths for physical and chemical properties of the ocean, various nets to collect biological samples, and coring equipment to collect sediment and biological samples from the bottom of the ocean.

The second science mission was a study sponsored by the National Science Foundation (NSF) along the North Slope in the Beaufort Sea and in Canada's Amundsen Gulf. The science party was focused on identifying geological evidence of a massive flood near the Mackenzie River about 13,000 years ago that had profound effects on global climate. The science party used sonar to survey the seafloor to identify ideal areas to deploy the Jumbo Piston Core, an apparatus capable of sampling sediment 40-70 feet into the ocean floor. Similar to the rings of a tree, the science party will analyze the different layers of sediment retrieved during coring operations to learn about the water composition dating back thousands of years.

The third mission was sponsored by the Coast Guard Research and Development Center and took place near and in the ice pack. This mission's focus was to assess the ability of current technologies to respond to oil spills in the Arctic. The technologies included an unmanned aerial system, an unmanned underwater vehicle, an oil recovery skimmer, and a remotely operated vehicle. Using oranges and peat moss to simulate an oil spill, the researchers observed how effectively the technologies surveyed and monitored recovery of the simulated spill.

The fourth science mission of the deployment was sponsored by NSF and took HEALY north of Barrow, AK on the North Slope and as far east as Amundsen Gulf. The primary mission objectives were to recover, service, and redeploy a series of scientific moorings anchored to the seafloor. Data collected by the instruments attached to the moorings documents the Western Arctic Boundary Current which helps improve the understanding of Arctic water current circulation.

The HEALY crew will remain in their homeport of Seattle until next spring when they will return to the Arctic for next year's deployment.

The HEALY, commissioned in 1999, is the nation's newest and largest U.S. high latitude icebreaker. The cutter is 420 feet long and has extensive scientific capabilities. Homeported in Seattle, the cutter has a permanent crew of 88; its primary mission is scientific support. In addition, as a Coast Guard Cutter, HEALY is capable of other operations such as search and rescue, ship escort, environmental protection, and the enforcement of laws and treaties in the Polar Regions.

For more information about HEALY, please check:
http://www.uscg.mil/pacarea/cgchealy

http://www.icefloe.net

B. AWS-13 Blog Updates

July 13, 2013

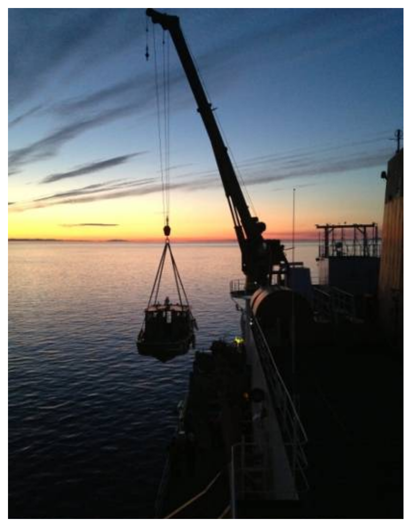
Hello friends and family!

Welcome to the Arctic West Summer 2013 (AWS-13) CGC HEALY blog. I am ENS Rebecca Follmer and I'm the new Public Affairs Officer. I am writing to you from the high seas as we transit to our first port visit this deployment in Kodiak, Alaska. I will serve as your window into the life and times of HEALY's crew as we execute the AWS-13 missions. I will provide periodic updates throughout the deployment and updates on the training and missions we undertake. Please stay tuned!

The crew poses on the drydock floor during HEALY's time in Vigor Shipyards (Base Seattle Public Affairs)

This week we got underway from Seattle on 11 July for a 4 month deployment. However, I'll begin our story with a recap of the year so far. In January, HEALY received 5 months of intensive preservation and maintenance in dry dock and dockside at Vigor Shipyard in Seattle.

Following the maintenance cycle, we sailed in June for shakedown and sea trials. During this short cruise the crew refreshed their skills and trained new crew members, conducted engineering tests, flight operations, small boat operations and several drills. We also wished farewell to several crew members and welcomed aboard the newly reported crew members in June. To the friends and family of our shipmates who transferred this summer, fair winds and open leads.



Recovering the Arctic Survey Boat near Sequim Bay during shakedown

During the first two weeks in July we loaded science equipment, food stores, and general ship's supply, changed the oil in the engines, and completed many final repairs prior to the deployment. Let's just say it was a busy time for everyone!

Deck and Science Divisions bringing aboard coring equipment from Oregon State University for our second mission.

Shortly after getting underway on the 11th we conducted flight operations with a MH-65D helicopter from Air Station Port Angeles then continued outbound to sea. The next morning marked the start of an intensive, two-day wash down of the ship known affectionately by the crew as Operation Deep Clean 2013. The efforts of the crew were evident; the ship is clean, secure for sea and ready to conduct science operations.

BM2 Kay cleaning the corners of the hangar

Back to the present, we will continue to transit to our first stop, Kodiak, Alaska. All are looking forward to a port visit somewhere other than home sweet Dutch Harbor, Alaska! Thank you for tuning in!

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

July 25, 2013

Hello friends and family!

Wow, it's already been two weeks since my last post. Time flies when you're having fun! Now let me fill you in on some of the pretty awesome things we've done over the past two weeks…

SN Martinez-Diaz proudly showing off his catch (photo by BM2 Lekich)

When I left off last, we were on our way to Kodiak, Alaska. During our transit, we were able to stop and conduct some biological sampling on Albatross Bank using fishing poles and some squid. That's right, "down down all lines, and up up all fish". HEALY's crew enjoyed a fish call before our first port call of the patrol. Many crew members caught their very own halibut.

Mt. Barometer, the hiking destination of many a HEALY crew member in Kodiak (Photo by BM2 Lekich)

Soon after our fishing stop, we finished our transit and moored in Kodiak for a few days. The weather was gorgeous! Seriously, the temperatures were in the 80's and the sky was clear. Thank you, Kodiak, for pulling out the nice weather for us. The crew had the opportunity to experience the beautiful scenery and outdoor activities the island had to offer including hiking, camping, fishing, kayaking, and even stand up paddle boarding.

After our time in Kodiak, we got underway to conduct training with MH-60 and MH-65 helicopters from Air station Kodiak. HEALY crew and the helicopter pilots gained valuable training and experience from the three days of flight operations. Working with the MH-60's was a unique experience since HEALY is one of the few cutters capable of landing the 60's on deck.

MH-60 tied down to HEALY's flight deck (Photo by ENS Follmer)

Finally, I am writing this entry while HEALY passes through the Shumagin Islands as we finish up our transit to Dutch Harbor, Alaska. The views from the transit were breathtaking and several crew members had their cameras out to try and capture the beauty of our surroundings. And once again, the weather was phenomenal with blue skies all the way through the islands.

You are now caught up concerning the life and times of the HEALY. Coming up next: Dutch Harbor, the embarkation of the first science party, and the transit north. See you soon!

A glimpse of the Shumagin Islands (Photo by ENS Follmer)

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

August 4, 2013

Hello friends and family!

Greetings from above the Arctic Circle, home of the Blue Noses. I am writing to you from amidst ice as HEALY transits to another one of our science stations. A lot has happened in this past week, so let me get started on filling you in.

MK3 Bushong taking her oath of enlistment with CAPT Reeves (Photo by MKC Riley)

When I left off last, we were on our way to Dutch Harbor, AK. We made it safely and had a couple days of logistics in port as we made our final preparations for deployment. While only in Dutch for the weekend, the crew enjoyed some final liberty time on dry land before the long leg of our patrol. We embarked the 13-01 science party and got underway for our first science mission.

On our transit north, we sailed from the Bering Sea, through the Bering Strait, and into the Chukchi Sea. On Wednesday, we crossed the Arctic Circle at the International Date Line and officially entered the realm of the Blue Nose Polar Bears. Also during our transit, we recognized three shipmates for career accomplishments. DC1 Orozco and BM2 Bichsel earned their Permanent Cutterman's Insignia, a significant milestone in the career of sea going members. Personnel earn this distinction after serving 5 years at sea and completing all required qualifications both in port and underway. The second career accomplishment was the promotion ceremony of MK3 Bushong to her new rank of 3rd Class Petty Officer. The captain and crew congratulated MK3 for her hard work and leadership as she joined the ranks of the Petty Officers, a significant achievement.

This week was also the first of many science stations. Deck Division, Science Division, and the science party are all working hard to deploy the various types of science equipment. The first science mission is a multidisciplinary study sponsored by the Bureau of Ocean Energy Management (BOEM) 90 nm west of Barrow, AK, near Hanna Shoal. Science members will collect pelagic and benthic chemical and biological samples, observe physical oceanographic properties, and analyze the data to establish an ecological baseline for the highly productive and biodiverse area. Equipment used includes the CTD (Conductivity, Temperature, and Depth) to collect water samples at different depths for physical and chemical properties of the ocean, various nets to collect biological samples, and coring equipment to collect sediment and biological samples from the bottom of the ocean.

CTD being deployed from the starboard A-frame (Photo by BMCM Sullivan)

We also encountered the first ice of our patrol. Ice coverage is currently equal to the climatological average coverage. As such, we have already seen more ice than last year, which was a record low for sea ice coverage.   In addition to ice, we saw whales, walruses, seals, and polar bears.

The first polar bear sighted during AWS-13 (Photo by BMCM Sullivan)

At the end of such a busy week, the crew had some fun as the wardroom prepared a morale dinner for the crew and the science party members. We had an evening with a tropical flare where the morale meal theme was a Luau. In addition to the Luau, the crew enjoyed a cook-out in the hangar to celebrate Coast Guard Day on 04 August. Our dedicated morale committee grilled hotdogs and hamburgers on the flight deck for the crew to enjoy.

Stay tuned for more updates on our first science mission and ice coverage. Happy Coast Guard Day and see you next time!

CG Day cake decorated by FS3 Pulotu (Photo by ENS Follmer)

The wardroom hosted Luau (Photo by FN Torres

Very respectfully,

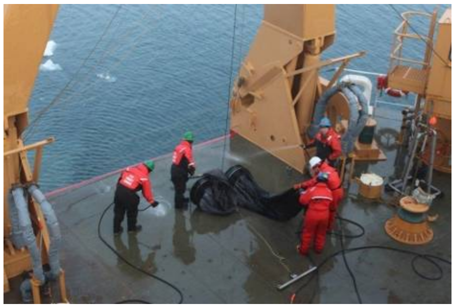
ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
“From the Arctic, Knowledge”

August 11, 2013

Hello friends and family!

I can't believe another week has already gone by! Time flew this week as we jumped from science station to science station in the ice and fog, but I am getting ahead of myself. Let me provide a re-cap for all of you.



Science party members recovering samples from the bongo net (Photo by YNC Cleverdon)

Last week we had just started our first few science stations. This past week, we conducted 24 hour science operations. Final count this week of science stations, both full stations and mini stations, was 46. Yes, 46 science stations in one week. The crew and embarked science party have been doing a fantastic job!

One of the science stations this week was unique in that we launched two small boats. One boat carried a group of scientists to collect ice samples while the other hosted a group of observers. This station conisted of having the HEALY break through a very thick ice floe . After a few back and rams with the ship, the boats were deployed to collect the broken up ice. The goal was to recover samples of ice with algae growth on its bottom. The second boat followed behind the first, taking picutres and documenting the project. At the end of the day, there was a group of cold and wet, but very happy, scientists.

Scientists recovering ice samples in one of HEALY's small boats (Photo by Bob Selby)

I know it's a little cliché to talk about the weather, but the fog is worth mentioning. We experienced almost constant fog this whole week. Driving through the ice was made more interesting by the fog, the Officers of the Deck had to rely more heavily on radar to plan for manuvering because they couldn't see the ice ahead. There were only a few hours this week when the crew wasn't lulled to sleep by the sounding of the ship's fog horn every two minutes. A true sailor's lullaby…

After a long week, the crew enjoyed a morale meal prepared by the Chief's Mess. The meal this Saturday was breakfast for dinner, but it was no average breakfast. My personal favorite were the cinnamon bun pancakes. Also on the menu were quiches, ham, sausage, eggs to order, and tater tot casserole surprise. There were also donuts, lots and lots of delicious hand made donuts. It was a wonderful end to the week!

The fog that took a liking to us (Photo by ENS Follmer)

That pretty much covers this past week. Sneak peeks into next week include the conclusion of the first mission, flight operations off of Barrow, AK to change out science parties, and the beginning of the second mission. Thank you for following along!

The chiefs serving an amazing breakfast for dinner (Photo by ENS Follmer)

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

August 18, 2013

Hello friends and family!

Welcome back to the blog. I am writing to you as we deploy the first of many jumbo cores, which is one of the primary tools we will use during this phase of the deployment. But as usual, I am getting ahead of myself. When I left off last, we were finishing up the first science mission…

This week has been a blur as the first science party made a mad science dash during their last few days onboard. The crew and the science party worked together to make sure the last of the data the party needed was collected and that all the equipment and samples were packaged and ready to ship by the time we anchored off of Barrow, AK. While at anchor, the first science party departed in the morning via the *Nunaniq*, a 145 foot landing craft. The *Nunaniq* then returned to the ship to bring supplies and the first group of personnel from the second science party.

1301 scientists embarking on the *Nunaniq* (Photo by ENS Follmer)

HEALY crew on the flight deck positioning to escort scientists from 1302 aboard (Photo by ENS Follmer)

The crew then shifted gears in the afternoon to conduct flights operations for the arrival of stores and remaining personnel. We worked with a civilian helicopter during the afternoon and the next day to complete the transfers. Overall, the science party exchange and the onload of mail, stores, and supplies went extremely well. Bravo Zulu to everyone involved in the planning and execution of the Barrow logistics stop!

The second science mission, designated as 13-02, is a study sponsored by the National Science Foundation (NSF) in the Beaufort Sea including the Alaskan North Slope, Amundsen Gulf, and possibly M'Clure Strait. The science party is focused on identifying geological evidence of a massive flood near the Mackenzie River about 13,000 years ago that had profound effects on global climate. The science party will be using sonar to survey the seafloor to identify ideal areas to deploy the Jumbo Piston Core, an apparatus capable of sampling sediment 40-80 feet below the ocean floor. Similar to the rings of a tree, the science party will analyze the different layers of sediment to learn about the water composition dating back thousands of years.

Seven years ago this week a tragic diving accident occurred aboard HEALY where two shipmates perished. While conducting a training dive in the Arctic, LT Jessica Hill and BM2 Steven Duque died. To honor their memory, 11 tolls of the bell were sounded during quarters. As a crew, we honor their loss by pledging to learn from the past, focusing on educating ourselves on the requirements of our jobs, and striving to continually execute our unique mission in the far reaches of the globe without sacrificing safety.

Science party members working with the coring equipment (Photo by ENS Follmer)

Thank you for reading and for your continued support of the ship and her crew.

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

August 25, 2013

Hello friends and family!

Welcome back to the HEALY blog. We have continued coring operations and mapping of the ocean floor. But as always, there is more to our story behind the scenes. Take a look!

This week the Weather Channel began broadcast of a documentary called "Breaking Ice". The series follows HEALY during last year's deployment and shows Germany's icebreaker RV Polarstern, which is tasked with the critical mission to resupply Germany's Antarctic research station. The series premiered on August 17th. For friends and family members of crew members aboard last year, tune in and watch your loved ones in action. Family and friends of newly reported crew members can gain some perspective of life aboard HEALY.

Friday (23 Aug) marked 21 days above the Arctic Circle for the crew. Spending so much time in the Arctic earned the crew and embarked science party the Arctic Service Medal. Congratulations to everyone who earned their first Arctic Service Medal. Welcome back for those who have served in the Arctic before!

On Saturday the crew and science party worked together to make a few adjustments to the science schedule. You may be asking yourself why am I mentioning such a mundane detail, but it's worth it to continue reading. The schedule change is important because it allowed us to travel north to find some thicker sea ice for ice liberty! And sure enough, on Saturday afternoon we found an ice floe big and stable enough. The crew and science party enjoyed an afternoon on the ice. Amazing!

Representatives from each department receiving their first Arctic Service Medals (Photo by ENS Follmer)

CAPT Reeves (r) and CDR Stanclik (l) enjoying their time on the ice (Photo by ENS Follmer)

In addition to making time in the schedule to hold ice liberty, the science party also hosted the morale meal this week. The theme was a pizza party and it was delicious. My personal favorite was the pesto pizza, and those chocolate cookies with fudge icing. Yum! Thank you science party for an amazing day!

As many of you were likely warned by your loved ones onboard, we have transited futher north and east through the week. During our travels, we have made a startling discovery of a place that few (if any) of us onboard have ever seen. Sit down for this one…we are approaching the edge of the internet. Actually, as I write this the internet signal is very weak, so I will now send greettings from beyond the cyber realm!

And here are a few more ice liberty pictures because I couldn't narrow down which ones to use. Enjoy!

The 13-02 science party and crew on the ice (Photo by MKC Riley)

HEALY resting next to the ice floe (Photo by LCDR Lowry)

The mustache bearing crew members showing their mustache pride (Photo by BMCM Sullivan)

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

September 1, 2013

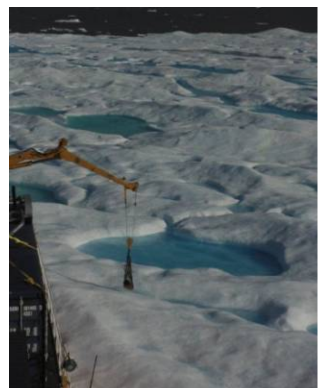
Hello friends and family!

Happy September everyone! I can't believe August is over already. Time flies when you're having fun I suppose.

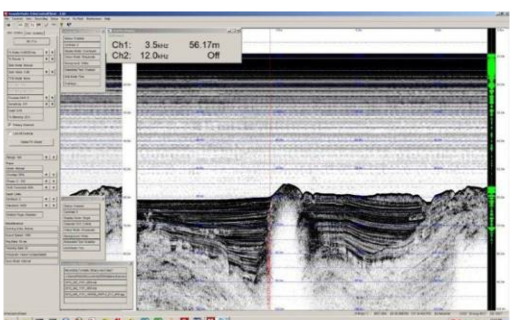
View of the ice during coring (Photo by ENS Follmer)

At the beginning of this week, the weather was spectacular! There were clear blue skies and lots of sunshine for several days. With such beautiful weather came some very pretty icescape pictures. The calm gorgeous weather also allowed us to conduct science operations and hold station with little effort required to fight the elements. Nice and smooth coring operations were a result.

Based on radarsat ice imagery, we invested some time searching for a suspected ice shelf. Ice shelves look like a tabular iceberg, but are formed from the bottom up over very long time scales. Upon arriving onscene, the piece of ice was thick, but not as thick as expected. It turns out it was not an ice shelf, but was a very thick multi-year hummocked floe. Pieces of ice like the one encountered can have keels up to 20 meters deep. We placed a drifter buoy on the ice to ensure it can be tracked.



Buoy deployment to the MYHF (Photo by LCDR Cass)



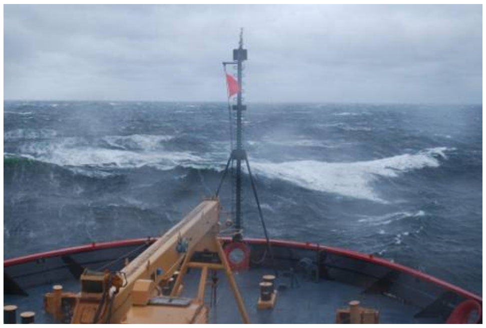
Screen shot from our sub bottom profiler of a pingo-like feature. This instrument interprets the first 100+ meters of sediment below the ocean floor. The layered sediments are our targets (Screen Shot by Woody Sutherland, SIO)

Our big accomplishment this week was being the first to core the hydrolaccoliths north of Canada. Hydrolaccoliths, more commonly known as "pingo-like features", are like little mud volcanoes. Gases are released from the permafrost in the ocean sediments. As the gas tries to escape, it pushes its way up through the sediments and mud, pushing up the mud into an ocean floor pimple if you will. The depths in this area are always uncertain because of these pingo-like features, but we traveled through and cored a few for the sake of science. The resulting cores are expected to provide the highest resolution climate record of the region, and is expected to date back over 10,000 years.

AEO's promotion to LCDR (Photo by ENS Follmer)

This week also marked the promotion of our very own Assistant Engineer Officer (AEO), LCDR Dufresne. Congratulations AEO on your promotion from LT to LCDR!

And so this entry comes full circle to talk about weather again. Only this time, the weather was not so nice. Up to 70 kt gusts and 25 ft seas met us as we were transiting between science stations on Saturday. I don't know if King Neptune was having a tantrum, but the ship was rocking and rolling to the rhythm of the pounding waves. Normal bright faces had a tinge of green added as the crew worked to secure the ship for sea during the storm. We were lucky, though, since we have a ship that rides great. I couldn't imagine being on a smaller ship and facing the same storm again, but I know many of the more seasoned crew members have ridden through such a storm on previous assignments.



View of the foc'sle and waves from the safety of a stateroom (Photo by ENS Follmer)

Coming up next time: the conclusion of the 13-02 science mission and the logistics stop in Barrow, AK. Thank you for reading and stay tuned!

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

September 15, 2013

Hello friends and family!

After a very long time above the Arctic Circle, we are heading south toward our next port call, Seward AK, for our mid-patrol break. Just in case you forgot, the last time we have been on dry land was in Dutch Harbor, AK when we brought the first science mission party onboard. Speaking of our mid-patrol break, the official halfway point of this patrol was this past Monday, September 9th. Just two more months to go!

Capt. Reeves awarding FSCS Banker his Master Cutterman designation (Photo by ENS Follmer)

FSCS Banker earned his Master Cutterman designation this week. A Master Cutterman has served for 20 years on a sea going platform. Or to say it another way, FSCS Banker has been at sea during his career longer than several of the newer crew members have been alive. Bravo zulu!

This week also marked the anniversary of Sept. 11, 2001. On Wednesday, the crew recognized a minute of silence in honor of the men and women who lost their lives on that fateful day 12 years ago. We have not forgotten.

On the science side of things, this week was a whirlwind of activity and equipment. After embarking the PUMA/RDC personnel, we headed north to the ice to conduct our operations and tests. Working the equipment in the ice provided challenges, both expected and not expected. Overall the mission was a success and the lessons learned are extremely valuable toward the end goal of determining the Coast Guard's ability to respond to an oil spill in and around ice.

The science party wanted to deploy a PUMA from the sea ice. What did that mean for us? You guessed it, a morning of ice liberty! I personally wasn't expecting any time on the ice this deployment, and now we've had two days. In addition, the PUMA launches and recoveries were a success, and everyone enjoyed a little time on the ice. The wind was biting, but many a daring soul braved the Arctic conditions because, let's face it, how many people can say they walked on an ice floe in the Arctic?

Skimmer deployed from the starboard quarter (Photo taken from the NOAA PUMA UAS)

PUMA/RDC personnel and HEALY crew on the ice
(Photo by MKC Riley)

At the end of the week we had a strange contact pop up, literally pop up, out of the ocean. After a moment of shock, we realized we were receiving a visit from the Flying Dutchman! And there be many a wog onboard who has yet to prove their worth before the court of his majesty, King Neptunus Rex. The line crossing ceremony has begun, all wogs, beware!

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

October 6, 2013

Hello friends and family!

Thank you everyone for supporting and following this blog. I can't believe it's been 3 weeks since my last entry! I apologize for keeping all of you at home waiting and watching the HEALY website with baited breath for the next post. Well, here it is… the long awaited update just for you!

When I left off last, we had just finished the PUMA/RDC mission and were transiting back from the Arctic. During our transit, Davy Jones paid us a visit to initiate all of the pollywogs onboard into the Realm of the Blue Nose and into the Realm of the Golden Dragon. The Order of the Blue Nose is earned after crossing the Arctic Circle. The Order of the Golden Dragon is earned by crossing the International Date Line. What this means for the wogs onboard: two crossings, one initiation…twice the fun!

The newly initiated Blue Noses and Golden Dragons receiving their red gear (Photo by ENS Follmer)

Following the initiation we continued on our way to Seward, AK and began our mid-patrol break. We were able to enjoy a week of hiking, a visit to Exit Glacier, dining, and shopping up in Anchorage, as well as taking advantage of cell phone service and free wifi. The American Legion in Seward also hosted a dinner for the HEALY crew, which was amazing! Add in a visit to the Alaska Sea Life Center, and you have yourself a nice relaxing week.

Four officers onboard also hosted their wetting down in Seward. For those of you who are not familiar with the term, a wetting down is a tradition where the officers who have been selected for promotion throw a party for the crew of their ship. This party, or wetting down, shows the officer's appreciation of the hard work and support of the crew. I was one of the officers to host the wetting down, and I was glad to do so. I would not have learned everything I needed to learn, or come as far as I have this tour without the training and support of the crew.

Between Seward and Dutch Harbor, we took a slight detour to visit the Holgate Glacier. The weather was clear and beautiful as we came close to the magnificent sight. I can't speak for the other crew, but I know I took a lot of pictures. But even as I tried, there was no way to capture the beauty of a glacier on a camera. Several crew members gave it their best shot, though, so I hope this photo captures some of the beauty we saw.

One of our own was promoted this past week. Congratulations to ET1 Justin Knowlton for his promotion to ET1 on October 1st! We also recognized our Sailor of the Quarter last week. Congratulations to MK3 Danielle Stevens for earning distinction as the SOQ!

HEALY crew members observe the Holgate Glacier from the fo'csle (Photo by YNC Cleverdon)

ET1 Justin Knowlton receiving his Petty Officer 1st Class insignia (Photo by ENS Zaccano)

MK3 Danielle Stevens receiving her SOQ plaque from the Command Master Chief BMCM Sullivan (Photo by ENS Follmer)

Dutch Harbor was as it has always been, with one major exception. There were paved roads by the UMC Pier! It seems like a little thing, but we were excited to see the change since the last time we pulled into Dutch. Anyway, while in Dutch we onloaded fuel and embarked our final science party.

The paved road running alongside UMC Pier (Photo by ENS Follmer)

Right after our visit to Dutch Harbor, we conducted flight operations with an MH-65 from Kodiak. As a result of a few hours of training, both the helicopter crew and our crew were able to earn several qualifications and re-certifications. Thank you Air Station Kodiak for this opportunity!

HH-65 in flight IVO Dutch Harbor (Photo by YNC Cleverdon)

The fourth and final science mission (13-03) of the deployment is sponsored by NSF and will take HEALY back to the Chukchi and Beaufort Seas. The primary mission objectives are to recover, service and redeploy a series of bottom mounted scientific moorings, ad conduct CTD's. Data collected by the instruments documents the Western Arctic Boundary Current, which helps improve the understanding of Arctic circulation.

As I am writing this, we are rocking and rolling our way north in the Bering Sea to conduct our fourth and final science mission! Many of us wish HEALY rock n' roll meant some super cool music or ice-breaking remix and not the seas and swells that are pushing the ship around, causing us to stumble a few times as we walk around, and that are rocking us to sleep at night…

Until next time!

Very respectfully,
ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

October 12, 2013

Hello friends and family!

Welcome back! It's only been a week since the last update, so let me get you caught up.

First off, we made it safe and sound to the North Slope. Although, Mother Nature did rock us around a bit on our way up. Besides a few green faces, we made it to our destination without any trouble.

Once we were on station, we started Conductivity Temperature and Depth (CTD) casts and deploying moorings. It is a running joke onboard that this mission is the "rapid fire CTD" mission. Basically, we stop, conduct a CTD cast, recover the CTD, and steam to the next station that is 2-5 miles away to cast our next CTD… and repeat many, many times. So far this week we have conducted 41 CTD's! One of our CTD lines also took us close to Barrow, AK again. It was nice to see a familiar town, even if it was from 10 miles away.

This week we deployed the first of the moorings. These moorings are really cool in that they are anchored to the ocean floor with a line of instruments attached to a float. Once deployed, the moorings are left to collect data until the following year. When they are recovered, the scientists collect the data logged through the year. For the scientists, this data delivery is like Christmas with all that oceanographic data bundled up in one bright yellow package.

Science party members and HEALY crew deploying the first of several moorings (Photo by IT1 Orellana)

This week the 1st Class Petty Officers hosted a morale meal of pizza and chili. Some of the options included Meatlovers Demise, Supply Shop Supreme, and Deck Party Pepperoni. It was fun and delicious, thank you 1st Class!

1st Class Petty Officers serving pizza, hot wings, and mozzarella sticks (Photo by ENS Follmer)

Following the delicious pizza was the HEALY classic of BINGO on the messdeck where crew competed for the prizes Morale had to offer. Personally, I was impressed with the concentration and instant silence of the crew when a new number was being called. We are pretty serious about our BINGO.

Anyway, coming up next week we have more CTD casts and mooring deployments, so stay tuned!

Very respectfully,
ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

October 20, 2013

Hello friends and family!

Welcome back to the blog. If I haven't said it yet, I would like to send a thank you everyone who has followed us throughout the deployment. Just a few weeks left!

The rapid fire Conductivity Temperature Depth (CTD) mission continued this week as we deployed another 66 casts since my last blog entry. That's right, 66! We would have been able to do more, but we did take a break from the CTD's to deploy and recover some moorings this week.

Overall we recovered 4 moorings and deployed 4 moorings this week. For mooring recoveries, we use a transducer to send a signal to the mooring quick release and tell it to let the mooring go. The mooring then floats to the surface and we come hook a line to it with our smallboat. Personally I like competing on the bridge with who can spot the mooring first after the signal is sent to release the mooring from the seafloor.

HEALY crew deploying a tripod mooring
(Photo by ENS Follmer)

Mooring deployments require a lot of good ship driving and timing. Basically, the deck force prepares the mooring back aft for deployment while the crew on the bridge drives carefully toward the intended location. Then timing has to be just right when the bridge tells the deck to release the mooring anchor. So far we've been within 3 meters for all of the deployments. Yep, this crew has skills.

LT Keplinger receiving her Permanent Cutterman's Pin from HEALY's Master Cutterman, FSCS Banker
(Photo by ENS Follmer)

We recognized several crew members this week for qualifications and good conduct awards. Bravo zulu to all of the newly qualified members! Also, congratulations to LT Keplinger for earning her Permanent Cutterman's pin! For those of you who are not familiar with this tradition, a Permanent Cutterman's pin is earned after five years of service on a sea-going platform and is a great achievement.

The dinner this Saturday was hosted by our very own Main Propulsion Division. Who knew the engineers could fix engines, and fix us up a delicious meal of hamburgers, vegetables, and those fruit pastries that were phenomenal? What can I say; the crew here has many talents. Great job!

It’s probably cliché to talk about the weather, but we had a good amount of snow this week. With snow comes… snow ball fights and snowmen!

The HEALY snowman created by MK3 McCarthy (Photo by FSCS Banker)

Coming up next week is our final mooring deployment of this mission, a mooring the crew onboard have nicknamed the Franken-Mooring. But I’ll talk more about it next week, and leave you in a cliffhanger until then. Stay tuned!

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
“From the Arctic, Knowledge”

October 27, 2013

Hello friends and family!

I am currently writing this from the Bering Sea as we make our way to Dutch Harbor, AK. Sadly, we crossed out of the Arctic Circle today and will not return until next year. So long sea ice and red gear!

Just after the submission of last week's blog, we got some up-close time with the Smoking Hills. Here's my basic understanding of the phenomena: as the deposits on the hill are moved and uncovered by weathering (wind, rain, seas, etc.), some of the minerals react with the oxygen in the air and produce the "smoke" that you see in the following pictures. It was really cool to see. It was also kind of interesting driving through a sulfur smelling fog earlier that morning as we were casting science equipment near the hills.

The Smoking Hills (Photo by BMCM Sullivan)

The Smoking Hills (Photo by FSCS Banker)

Helicopter making its approach and swirling up snow (Photo by ENS Follmer)

We conducted the shortest flight operations ever this week when we worked with the North Slope Borough SAR Helicopter to receive some critical science gear. The evolution consisted of one landing, a package transfer, and a take-off. It went extremely smooth, once the snow cleared up enough for us to conduct the operations. Thank you to everyone who made that transfer possible!

As promised in my previous blog, I will now talk about the Franken-Mooring deployment. This mooring was our last deployment of the mission. The mooring itself was pieced together with parts that were taken from other moorings and science equipment, therefore earning the name "Franken-Mooring" in honor of Halloween and Dr. Frankenstein's monster. The name is also in honor of one of our mooring technicians onboard, Frank Bahr. Long story short, the mooring's name has many layers. Yes, we are a deep thinking crew that likes to find subtle humor where we can.

The "Franken-Mooring" animated depiction (Created by John Kemp)

Saturday the Deck Division hosted a morale meal for the crew and science party. They cooked up some hamburgers, but not just any hamburgers. This division went above and beyond to make the hamburger patties by hand, with several different flavors of patties available. Well done!

Deck Division serving up some home-cooked hamburgers (Photo by ENS Follmer)

Science party and crew showing off their costumes for the contest (Photo by Toby Martin)

As all of you know, Halloween is right around the corner. The HEALY crew celebrated a little early this Saturday with a Halloween party in the hangar. The party consisted of music, a Halloween costume contest, ping-pong, corn hole, and karaoke. The science party and crew enjoyed an evening of music and Halloween fun as many people showed off their creativity through their costumes. Happy Halloween!

And so ends another installment of the weekly blog. Coming up next week is our last visit to Dutch Harbor this deployment where we will say good bye to the 13-03 science party. After that, we will start making our way across the Gulf of Alaska to Seattle!

Until next time!

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

November 04, 2013

Hello friends and family!

Welcome to the final, yes final, blog entry of AWS 2013! As many of you may or may not know, we will be returning to Seattle tomorrow, so all of you avid blog fans will have to wait until our next deployment for the next blog entry. Thank you to everyone who has followed and supported us throughout the missions and time away from home. We'll see you soon!

As promised in my last entry, we stopped for the last time this year in our home away from home, Dutch Harbor, AK. Here we said good bye to the 1303 science party and made our final preparations for the trip home.

1303 Science Party and the HEALY crew (Photo by ENS Follmer)

FS2 Pulotu saluting after receiving his 2nd Class insignia (Photo by ENS Follmer)

One of our cooks was promoted to Second Class Petty Officer. Congratulations to the newly minted Food Service Specialist Second Class, FS2 Pulotu. Bravo zulu on your accomplishment!

We conducted Damage Control (DC) Olympics this week to show off the new crew members' skills. Eight teams competed in different DC skills from racing to don the fire fighting ensemble (FFE), rigging up a P-100 pump, and finding hot spots in a smoke filled room. At the end of the afternoon, though, there was only one winning team… a team which won first off the brow privileges for when we pull in! Well done!

On Saturday, to finish up this deployment with a bang, the Chief's Mess hosted a casino event on the messdeck followed by a prize auction in the hangar. The crew played classic casino games like Black Jack, Roulette, and Texas Hold-em, along with a few games for the simple minded people like me to include War and Smoke-N- Fire. Following the games, the crew was able to spend their funny money winnings to bid on prizes in the hangar. It was a great time, so thank you Chief's Mess for putting it together!

In honor of Hispanic Heritage Month (October), some of the crew members put together a Hispanic themed dinner. I would attempt to name the foods they made, but I doubt I could spell any of them even with spell check. Regardless of spelling, the food was delicious and everyone walked away with very full stomachs.

BMCM Sullivan dealing a game of Black Jack for the crew (Photo by ENS Follmer)

P.S. I wish congratulations to all the Boston Red Sox fans out there. Hopefully the New York Yankees fans out there didn't lose a bet like LTJG Valdez did and now have to wear Red Sox gear for 24 hours…

LTJG Valdez sporting the gear of his rival team (Photo by ENS Follmer)

Very respectfully,

ENS Rebecca Follmer
Public Affairs Officer
USCGC HEALY (WAGB-20)

Ex Arctic Scientia
"From the Arctic, Knowledge"

Appendix 13: Deployment Fuel Use & Transfer

DFM	JP-5	DTG OF SOUNDING	CONFIG	REMARKS
6,373		202359Z JUN 13	2	DEP HOMEPORT
17,790		212359Z JUN 13	4	
16,630		222359Z JUN 13	2	
2,659		232359Z JUN 13	ADG	
7,481	279	242359Z JUN 13	1	
0		252359Z JUN 13	ADG	
0		262359Z JUN 13	ADG	
10,024	96	272359Z JUN 13	2	
4,280		282359Z JUN 13	1	
1,991		292359Z JUN 13	1	MOOR HOMEPORT
67,228	375	TOTALS		

Shakedown/RFS

DFM	JP-5	DTG OF SOUNDING	CONFIG	REMARKS
4,611	85	112359Z JUL 13	2	DEP HOMEPORT
20,735		122359Z JUL 13	2	
24,048		132359Z JUL 13	3	
10,689		142359Z JUL 13	2	
18,474		152359Z JUL 13	2	
11,983		162359Z JUL 13	2	
5,591		172359Z JUL 13	ADG	MOOR KODIAK
2,641		182359Z JUL 13	ADG	
2,641		192359Z JUL 13	ADG	
2,641		202359Z JUL 13	ADG	
2,641		212359Z JUL 13	ADG	
2,641		222359Z JUL 13	ADG	
5,198	163	232359Z JUL 13	2	DEP KODIAK
6,169	95	242359Z JUL 13	2	
19,140		252359Z JUL 13	2	
13,752		262359Z JUL 13	2	MOOR DUTCH HARBOR
153,595	343	TOTALS		

Northbound Transit to Kodiak, AK/Dutch Harbor, AK

DFM	JP-5	DTG OF SOUNDING	CONFIG	REMARKS
2,532		292359Z JUL 13	ADG	DEP DUTCH HARBOR
25,455		302359Z JUL 13	2	
17,135		312359Z JUL 13	2	
13,363		012359Z AUG 13	2	
8,661		022359Z AUG 13	2	
7,708		032359Z AUG 13	2	
13,273		042359Z AUG 13	2	
5,273		052359Z AUG 13	1	
6,070		062359Z AUG 13	1	
5,058		072359Z AUG 13	1	
6,255		082359Z AUG 13	1	
6,198		092359Z AUG 13	1	
4,248		102359Z AUG 13	1	
5,638		112359Z AUG 13	1	
5,899		122359Z AUG 13	1	
4,763		132359Z AUG 13	1	
7,202		142359Z AUG 13	1	
4,372	87	152359Z AUG13	ADG	ANCHOR BARROW
2,804	148	162359Z AUG 13	ADG	
151,907	235	TOTALS		

HLY 13-01

DFM	JP-5	DTG OF SOUNDING	CONFIG	REMARKS
3,745		172359Z AUG 13	ADG	DEP BARROW
6,674		182359Z AUG 13	1	
14,139		192359Z AUG 13	2	
7,254		202359Z AUG 13	1	
8,457		212359Z AUG 13	1	
7,847		222359Z AUG 13	1	
7,396		232359Z AUG 13	1	
9,893		242359Z AUG 13	2	
13,523		252359Z AUG 13	2	
11,561		262359Z AUG 13	2	
7,123		272359Z AUG 13	1	
8,009		282359Z AUG 13	1	
6,342		292359Z AUG 13	1	
8,069		302359Z AUG 13	1	
7,612		312359Z AUG 13	1	
7,960		012359Z SEP 13	1	
12,439		022359Z SEP 13	2	
8,541		032359Z SEP 13	1	
6,122		042359Z SEP 13	1	
11,860		052359Z SEP 13	2	
12,193		062359Z SEP 13	2	ANCHOR BARROW
2,206	166.7	072359Z SEP 13	ADG	
178,546	166.7	TOTALS		

HLY 13-02

DFM	*JP-5*	*DTG OF SOUNDING*	*CONFIG*	*REMARKS*
5,934	122.3	082359Z SEP 13	1	DEP BARROW
12,180		092359Z SEP 13	2	
5,118		102359Z SEP 13	2	
2,557		112359Z SEP 13	1	
5,411		122359Z SEP 13	1	
5,301		132359Z SEP 13	1	
18,108		142359Z SEP 13	2	
34,001		152359Z SEP 13	3	
21,469		162359Z SEP 13	2	
13,729		172359Z SEP 13	2	
18,348		182359Z SEP 13	2	
10,075		192359Z SEP 13	2	
7,442		202359Z SEP 13	1	MOOR SEWARD
2,475		212359Z SEP 13	ADG	
2,475		222359Z SEP 13	ADG	
2,475		232359Z SEP 13	ADG	
2,475		242359Z SEP 13	ADG	
2,475		252359Z SEP 13	ADG	
2,475		262359Z SEP 13	ADG	
5,311		272359Z SEP 13	ADG	
179,832	122.3	TOTALS		

PUMA/RDC

DFM	JP-5	DTG OF SOUNDING	CONFIG	REMARKS
5,311		282359Z SEP 13	2	DEP SEWARD
5,115		292359Z SEP 13	2	
11,021		302359Z SEP 13	2	
9,650		012359Z OCT 13	2	
5,193		022359Z OCT 13	1	MOOR DUTCH HARBOR
0		032359Z OCT 13	ADG	
4,048		042359Z OCT 13	ADG	
24,742	166.3	062359Z OCT 13	2	DEP DUTCH HARBOR
17,746		072359Z OCT 13	2	
19,133		082359Z OCT 13	2	
19,623		092359Z OCT 13	2	
11,821		102359Z OCT 13	2	
10,121		112359Z OCT 13	2	
7,518		122359Z OCT 13	1	
7,610		132359Z OCT 13	1	
10,460		142359Z OCT 13	2	
12,470		152359Z OCT 13	2	
14,031		162359Z OCT 13	2	
6,395		172359Z OCT 13	1	
13,883		182359Z OCT 13	2	
21,763		192359Z OCT 13	2	
10,070		202359Z OCT 13	2	
14,985		212359Z OCT 13	2	
14,544		222359Z OCT 13	2	
11,899		232359Z OCT 13	2	
15,631		242359Z OCT 13	2	
7,712		252359Z OCT 13	2	
17,364		262359Z OCT 13	2	
21,694		272359Z OCT 13	2	
12,283		282359Z OCT 13	2	
10,851		292359Z OCT 13	2	
6,142		302359Z OCT 13	ADG	MOOR DUTCH HARBOR
384,877	166.3	TOTALS		

HLY 13-03

DFM	JP-5	DTG OF SOUNDING	CONFIG	REMARKS
5,351		312359Z OCT 13	2	DEP DUTCH HARBOR
19,663		012359Z NOV 13	2	
18,870		022359Z NOV 13	2	
16,922		032359Z NOV 13	2	
19,297		042359Z NOV 13	2	
12,293		052359Z NOV 13	2	MOOR HOMEPORT
92,396	0	TOTALS		

Southbound Transit to Seattle

DFM (GAL)	JP-5(GAL)
1,223,864	1,408.3

AWS-13 Totals

TYPE	*DATE*	*AMT (GAL)*	*COST*	*TO/FROM*
Diesel Fuel	28JUL13	265,271	$1,008,029.80	USCGC HEALY/Dutch Harbor (North Pac Fuel)
Diesel Fuel	02OCT13	400,137	$2,034,990.72	USCGC HEALY/Dutch Harbor (North Pac Fuel)
Diesel Fuel	03OCT13	151,351		USCGC HEALY/Dutch Harbor (North Pac Fuel)

AWS-13 Onloads