USCG Research & Development Center

ARCTIC TECHNOLOGY EVALUATION 2015: POST-EVALUATION NEWSLETTER

INSIDE FEATURES:

THE ARCTIC STRATEGY

In May 2013, the Coast Guard released its Arctic Strategy for how to overcome the region's unique challenges to perform its statutory missions. The document is centered around three strategic objectives:

- Improving Awareness
- Modernizing Governance
- Broadening Partnerships

Each of these objectives requires an element of research and development to ensure it's viability and success.

For inquiries regarding Arctic efforts, including interviews with our science team, contact the RDC Public Affairs Officer:

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2015 EXECUTIVE SUMMARY

The Research and Development Center (RDC) returned to Coast Guard Cutter HEALY (HEALY) for the third consecutive year to conduct new and follow-on technology evaluations to determine their utility for improving Coast Guard (CG) capabilities in the Arctic. A collaborative team of scientists from various CG offices, other government agencies, industry partners, and academia conducted 15 different scientific investigations and technology evaluations. The trip also included cultural liaison activities and involvement. Several teams from various media outlets were also aboard as guests of the HEALY and CG Public Affairs.

This year's evaluation primarily focused on the use of unmanned technologies and their potential application for a Search and Rescue (SAR) mission. Although the search and rescue exercise (SAREX) met almost all of its objectives, it demonstrated that there are areas in the execution of the SAREX that need to be improved upon. Communications between all parties left areas that allowed actions to occur that were detrimental to the overall operation. Real time reviewing of the live feed from the unmanned aircraft systems (UAS) showed that spotting a target from the altitudes flown in the ice fields present was extremely difficult and there is some doubt whether the UAS would be able to find the targets at all. This indicates that manned aircraft system search parameters need to be studied and those unique parameters identified will need to be developed for specific UAS and the capabilities of their sensors.

For other mission areas, a variety of technologies were evaluated. The Puma All Environment (AE) UAS conducted many different operations but experienced issues with making automatic net captures. The team also experienced some difficulties with hand launches. The evaluation determined that the ship was required to alter course to have the correct relative winds to land in the nets. Overall this system needs further development and testing to get to the state of operations that are more consistent and reliable. Improving communications in the Arctic continues to be a challenge. Current communication systems are not very reliable and are often very limited. The communications testing that was conducted during this cruise benefited from several communications development programs with the Department of Defense (DoD) and should be continued until issues are resolved. Participating in the testing for these programs keeps the CG at the forefront of being informed to support future acquisitions.

Having a ship with the capabilities of the HEALY conducting the Arctic Technology Evaluations allowed for other agencies to realize benefits from the RDC's science cruise. National Oceanographic and Atmospheric Administration (NOAA) and the United States Inter-agency Arctic Buoy Program (USIABP) were able to deploy many environmental monitoring buoys in ice conditions that will serve to increase the understanding of the Arctic Ocean. The RDC through its Arctic Technology Evaluations on HEALY is striving to provide the CG with the foresight needed to focus on solid technologies and capabilities that may be required to execute its Arctic missions. These evaluations can be an important part of future CG Arctic presence.

Rescue swimmer deployment during the SAREX for Arctic Technology Evaluation 2015.

ARCTIC SAREX

The RDC partnered with ConocoPhillips, Insitu, the National Oceanic and Atmospheric Administration (NOAA), and AeroVironment to evaluate how UAS technologies could potentially be implemented to improve the CG's SAR mission performance in the Arctic. The test control was onboard the HEALY and they were assisted by CGD17 SAR planners located at the District headquarters (HQ) in Juneau, AK. The HEALY also deployed a six-man life raft tethered to a thermal Oscar (simulated Person in the Water (PIW)) as the thermal target for the SAREX on both days. Two Self-Locating Datum Marker Buoys (SLDMB) were deployed prior to the event in an attempt to establish drift parameters for search pattern planning, however no signals were ultimately received from the buoys.

The planned concept of operations for the exercises consisted of a scenario where a small plane went down in the Beaufort Sea near Oliktok Point and is emitting a signal on an Electronic Location Transmitter (ELT). The HEALY is the nearest CG response asset and initiates the search utilizing government and industry partnerships. ConocoPhillips employs Insitu to launch a ScanEagle from Oliktok Point into the Department of Energy (DOE) restricted airspace and transit out to the search area via an altitude reservation corridor as designated by the Federal Aviation Administration (FAA). A ScanEagle pilot operated Ground Control Station (GCS) onboard the HEALY takes control of the UAS and completes the search pattern provided from D17. Once the target is identified, the ScanEagle operator passes the position to SAR planners for launching manned assets out of Deadhorse and loiters overhead providing the HEALY live streaming situational awareness video. The CG's Forward Operating Location (FOL) Deadhorse manned assets, a MH-60T from Air Station Kodiak and an AW139-IGW Era Helicopters rescue helicopter launch to the identified position. The manned assets are then provided updates from the ScanEagle of the location of the targets while enroute. Once the manned assets are on scene they each simulate hoisting survivors and return to base. The ScanEagle control is then handed back off to ground operators in Oliktok Point and the SAR mission is complete.

The Arctic SAREX 2015 was conducted over two days. On the first day the two manned aviation assets from Deadhorse inadvertently departed early before the ScanEagle had located the target. This resulted in the HEALY needing to pass the target's position information to the two manned aviation assets prior to the AW139-IGW needing to return to its base for fuel. The air assets immediately found the targets, completed simulated hoisting and executed a fly over of the HEALY before returning to base. The SAREX team decided to take maximum advantage of all assembled assets and execute the SAREX again the second day. The second day, HEALY deployed the same targets in the same location. However, early fog on land caused flight delays followed by both ScanEagle assets having maintenance issues. The team executed its contingency plan and launched the AeroVironment Puma AE from the HEALY to execute the search and provide target position information for the manned aviation assets.

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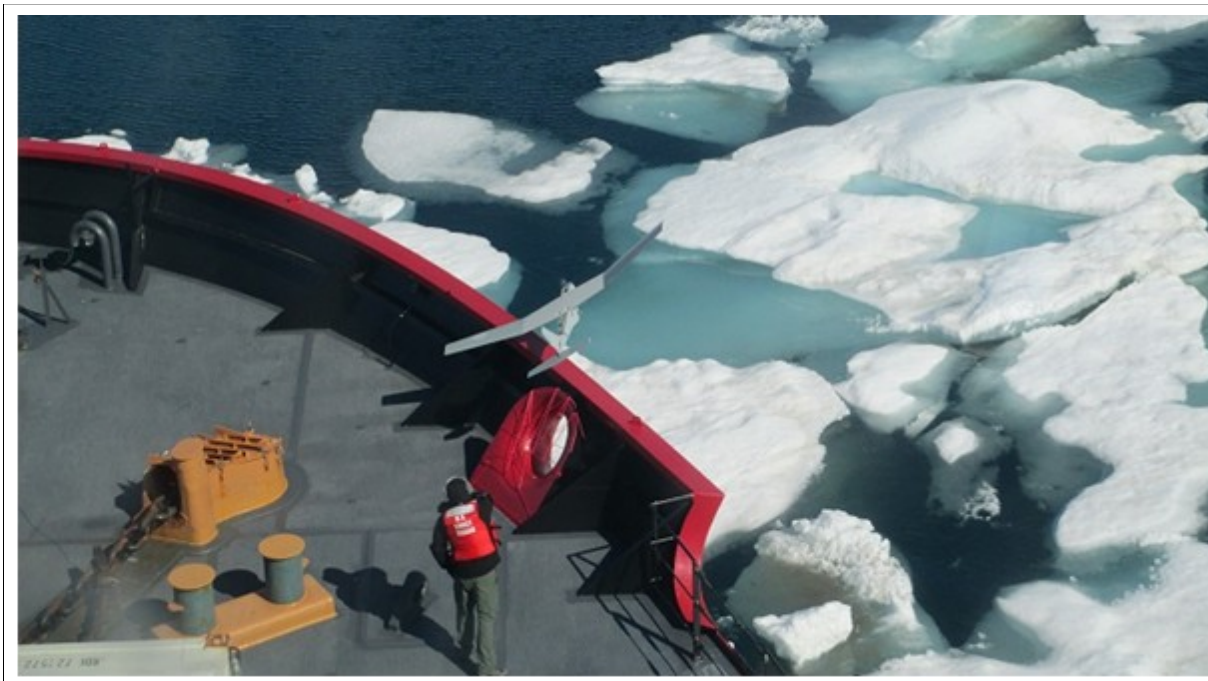


AeroVironment Puma AE being launched from HEALY in support of SAREX.   USCG photo.

ScanEagle ground control operations at the Long Range Radar Site at Oliktok Point, AK. USCG photo.

This time the team elected to deploy the targets within visual range of the HEALY allowing the Puma AE operators the ability to easily detect the targets. The manned assets were vectored in from positional information provided from the Puma AE and HEALY. Both the manned aviation assets completed hoisting evolutions with rescue swimmers and returned to base.

The local and state partnerships established by the CG RDC and ConocoPhillips during the two day Arctic SAREX 2015 exercise identified many challenges associated with conducting search and rescue missions off the North Slope. The North Slope area is one of the most challenging environments in the world. Establishing protocols for communications is paramount for conducting any successful SAR mission in the Arctic. Despite communication issues, the ability to demonstrate how UAS technology can assist with SAR capabilities was demonstrated in several ways. UAS searching capabilities for small targets, however proved to be very challenging in the Arctic environment. The numerous ice ridges and ice gaps created many distracters to the operators trying to locate small targets, especially when executing a ladder search pattern. Further, the sensors used did not have the resolution required to detect the targets at the search altitudes used indicating that UAS search parameters need to be established. On the second day of testing, the team established a data link between the UAS and the shore in which live video was transmitted for viewing over the internet. RDC personnel in New London, CT and NOAA personnel in Seattle, WA watched this portion of the exercise live.

Connectivity (Video to Shore)

NOAA's Environmental Response Management Application (ERMA) is a web-based Geographic Information System (GIS) tool that integrates and synthesizes all of the available information for both emergency responders and environmental resource managers to facilitate response operations. This includes providing a visualization of the situation and improving communication and coordination among responders and environmental stakeholders. For the Arctic's distinctive conditions, this information includes the extent and concentration of sea ice, locations of ports and pipelines, and vulnerable environmental resources. The ERMA team included representatives from NOAA and 2d3 Sensing. The primary objective was to test the transfer of live streaming video from unmanned assets to ERMA for display on their emergency response website via the ship's science satellite communication system. The team also streamed the video throughout the ship giving the deck watch team a clear view of the imagery from unmanned assets during the SAREX.

Overhead monitoring of CG MH-60 during recovery, taken from AeroVironment Puma AE during SAREX. USCG image.

Aerostat Operations

The RDC and the NOAA UAS Program are evaluating unmanned airborne systems. In support of this, Inland Gulf Marine (IGM) Technologies provided their Aerostat-IC for this year's mission under a support contract through the National Science Foundation. The Aerostat was launched in varying weather conditions with a wide range of payloads and mission objectives. Operational tests resulted in establishing Arctic protocols and procedures as well as safe operational parameters for Aerostat flight operations in the Arctic. The Aerostat-IC met programmatic requirements and displayed new capabilities to maximize the range of UAS operations and the transmission of real time data to support research and response efforts in the Arctic environment. IGM minimized the footprint required for mission equipment and incorporated lessons learned from last year's shipboard tests. The team also tested the viability of real time visual forward looking ice navigation support for CG icebreaker mission support. The ability to transfer operational control of unmanned platforms to operators onboard HEALY or any other maritime asset was also demonstrated.

HEALY as seen from the Aerostat. USCG photo.

Puma AE Operations

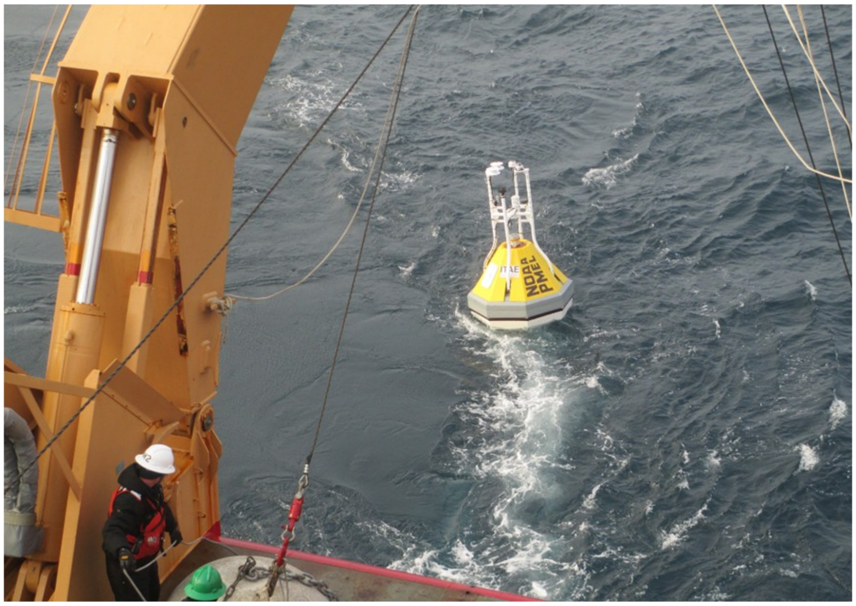
NOAA and the RDC used AeroVironment's Puma AE UAS to evaluate autonomous net capture landings and to support other unmanned systems operations and exercises as part of the Arctic Technology Evaluation. *The team successfully coordinated Puma AE operations* with the aerostat, ScanEagle, and manned aircraft, operated beyond line-of-sight, increased the UAS's operational envelope to 30-35 kts, and conducted advanced payload testing.

Puma AE UAS being prepared for launch. USCG photo.

The Puma AE team successfully relayed their live data feed from the aircraft back to the ship and then to shore via the data link aboard the HEALY. This was then accepted into the ERMA system in Seattle and was viewable over the internet. This relay had fairly good quality video of what the Puma AE was 'seeing' through its camera, but the link establishment can be difficult in the Arctic. It is dependent upon a number of factors including atmospheric conditions and geographic location. The link required a combination of fine tuning and compression software to be active. This live video streaming requires further testing and development before being an operational tool.

NOAA-PMEL Operations

The NOAA's Pacific Marine Environmental Laboratory (NOAA-PMEL) deployed a suite of oceanographic instrumentation during the Arctic Technology Evaluation. Ten buoys and two autonomous surface vessels were deployed as part of a PMEL led program, Innovative Technology for Arctic Exploration (ITAE), to evaluate innovative sensors and techniques to increase NOAA's observational capabilities in the Arctic. Data collected by these systems will be used to establish baseline measurements of physical ocean processes occurring in the Arctic Ocean. Supporting projects like these serves to increase our understanding of the climatic dynamics that are going on in the Arctic. This understanding will lead to better forecasting and increased Arctic domain awareness.



NOAA PMEL buoy being deployed from HEALY. USCG photo.

U.S. Interagency Arctic Buoy Program

USIABP buoy deployment in an ice field during the Arctic Technology Evaluation. USCG photo.

In conjunction with the University of Washington, the U.S. Interagency Arctic Buoy Program (USIABP) requested that the RDC deploy multiple drift buoys from the HEALY during ATE-15 to collect air, sea, and ice observations. A multitude of government and industry entities will use these observations for both operations and research. These uses include forecasting weather and ice, validating climate models, validating satellite data, and studying climate change. The USIABP will use the information from these buoys to close gaps in their network coverage.

Arctic Communications

Arctic High Frequency (HF) Communications 2015 vs. Modeled Predictions. The RDC, CG Command, Control, and Communications Engineering Center (C3CEN), PACAREA, and DHS S&T have been involved in assessing and improving radio communications in the Arctic, particularly in high latitudes. District 17 has been directly involved, with the primary goal of improving communications along the North Slope of Alaska. The RDC gathered data last year while underway on HEALY from July through August 2014, that was designed to verify a previous modeling effort by the RDC of the current capabilities and identify any shortfalls of HF communications in the Arctic Ocean. This year's effort focused on Link Quality Assessment (LQA) collection from numerous sites in the GOTHAM network while underway. Use of this data in future collaborations with D17, Communications Area Master Station Pacific (CAMSPAC), and PACAREA include using the LQA data to help with decision making in life-cycle decisions on long-term operations of specific sites in the GOTHAM network (for example, station relocation/ restoration based on the data).

Mobile User Objective System testing (MUOS). MUOS is the Department of Defense (DoD) next-generation Ultra High Frequency (UHF) satellite communications system. The goal is to have global coverage and to provide users' access to the Defense Information Systems Agency (DISA) for voice and Internet Protocol (IP) networks. United States Northern Command (NORTHCOM) is working with Lockheed Martin to establish the MUOS waveform via Joint Tactical Radio System (JTRS) compatible radios, and have tested previously up to the North Pole successfully via aircraft. This summer, the team continued to assess MUOS connectivity in high latitudes, specifically from shipborne systems. Secondary objectives include the evaluation of MUOS capabilities to run text, chat, data (file transfers from a webcam), and voice communications, and to work out any issues involved with the temporary installation and test plan prior to the HEALY's trip to the North Pole from August to October 2015. Early involvement and evaluation of the MUOS system and capabilities is critical for effective CG implementation of next-generation UHF satellite communications.

Distributed Tactical Communications (DTCS). The DTCS allows for distributed nets ("netted iridium") to operate anywhere in the world, with a range of 250 nm, in the current Phase 2 stage of development. The RDC is working with Defense Information System Agency (DISA) (via the Enhanced Mobile Satellite Service (EMSS) and Excelis (to demonstrate Phase 2 capability in preparation for Phase 3 sometime in 2016-2017. Phase 3 is planned to provide global range as well as coverage, with increased bandwidth when the Iridium NEXT constellation is operational (expected in 2017).

To demonstrate the utility of the DTCS radios in the Arctic, radios were distributed as follows: two radios at Communications Station Kodiak, one radio at Point Oliktok , and one at FOL in Deadhorse, and two radios were maintained onboard HEALY for daily point to point testing from the ship while underway. Testing from onboard HEALY went very well, with near flawless communications between users with multiple opportunities to evaluate the use the radios. First-time users had some difficulty adjusting to the nuances of the radios (manually registering, pausing to wait for satellite connection before commencing talking, etc), but all were solved after multiple uses. Connections were not restricted by location in any way, other than the need to have a clear view of the sky with the antenna. Testing during SAREX was mixed. Communications at Point Oliktok went very well to support the SAREX, as the DTCS radios were the only reliable means of communications between HEALY and Point Oliktok until the ScanEagle was launched. Communications with personnel at Deadhorse were not successful due to user error.

Communications were held out to approximately 135 nm, no formal rage testing was attempted beyond this range. The radios appear to have great capability for just-in-time voice communications for incident response or field testing. The slow bandwidth (2.4 kbps voice) requires patience while speaking, and does not have data streaming capability at this time. The DTCS radios have Global Positioning System (GPS) information which can be tracked (providing Blue Force Tracking) by DISA. C3CEN has tested the radios as potential Blue Force Tracking augmenters onboard CG helicopters. RDC plans to continue to work with DISA and C3CEN to evaluate the netted iridium capability of the DTCS in the Arctic.

Communications testing in the Arctic. USCG photo.

Additive Manufacturing

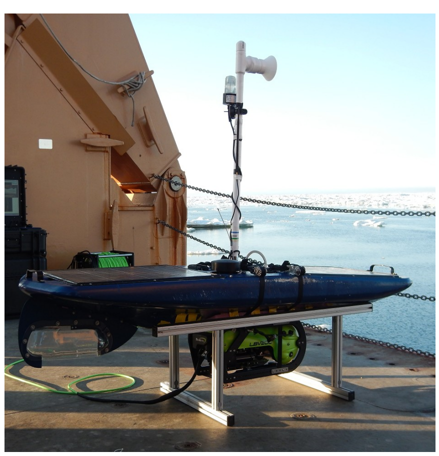
Three-dimensional (3-D) printing is predominantly used to produce prototype and non-structural production parts. Industry, in particular aerospace and defense are driving the need to develop technologies to produce structural parts that meet the rigorous requirement that are demanded. Of particular interest for this CG Academy based project, is the reduction of stock material that would be required and the reduced printing time. Critical needs that were addressed and solved underway with the plastic printer included designing and fabricating a replacement float to bring the HEALY's galley dishwasher back online, working with the ship's medical staff to create a set of foot orthotics for a crew member in immediate need of relieve from foot pain, a tiller assembly for the inflatable test boat, and a camera lens shield for one of the Wavegliders. A GoPro case (from a downloaded design) for the Aerostat team demonstrated how to quickly produce a critical component (in less than two hours) when the appropriate Computer Aided Drafting (CAD) file is available. The team also began the challenge of replacing circuit boards at sea by printing calibration boards for evaluation. These activities showed that the 3-D printer technology is a valuable asset on ship and that as it is integrated into daily operations, more and more uses will present themselves.

3-D printed camera shade for USV operations. USCG photo.

ROV and Waveglider Operations

The Navy's SPAWAR planned to test a Sensor Hosting Autonomous Research Craft (SHARC) Wave Glider to evaluate autonomous avoidance maneuvers while the vehicle was transiting in ice infested waters. The SHARC system requires Sea State 2 in order for it to propel itself. Unfortunately at no time on this cruise was sea state 2 encountered when ice was present. The sea ice edge contains many broken ice pieces that serve to dampen the motion of the waves making propulsion on wave power in this area difficult. A boat crew from the HEALY attempted to guide the upper portion of the SHARC around in broken ice for data gathering. Later in the cruise an ROV was attached to the underside of the upper portion of the SHARC so it could be remotely maneuvered in and around ice to provide an opportunity to gather additional sensor data.

One of the lessons learned from the evaluation is that experienced ROV operators are an invaluable resource for operations. They enabled the SPAWAR team to meet test objectives that otherwise would not have been possible by attaching an ROV to their WaveGlider and propelling it in a waveless ice field so that it could collect the necessary data. Operators from the CG Regional Dive Lockers also gained experience operating the tether mounted ROVs through areas of broken ice, which can limit and restrict the ROV's full capabilities. An area for improvement is the quality of the imagery from the ROV's organic cameras compared to ad-hoc mounted GoPro cameras. The GoPro camera's image quality was significantly better but, depending on the mission or objective, may not always be an option. The CG should look to increase camera resolution on any future ROV acquisitions.

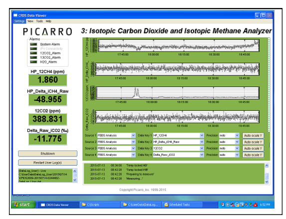


ROV strapped to the underside of the top portion of the SPAWAR wave glider, USCG photo.

Partnering with Academia

Atmospheric Isotope Analysis

Members of University of Alaska Anchorage (UAA) Arctic Domain Maritime Awareness Center (a DHS S&T Center of Excellence), tested the ability of laser-based isotope devices to characterize sea ice coverage and detect diesel emission from a mobile platform in the sub-Arctic and Arctic marine environment. Over the course of this science cruise from Kodiak up into the Chukchi and Beaufort Seas and back down to Nome these devices sampled air at the bow of the HEALY continuously to collect over 10 million measurements. They measured atmospheric chemical tracers that can serve as surrogates for measuring the extent of sea ice coverage/open water ratio and the presence of petroleum in the environment. The first device is a water vapor isotope analyzer that continuously measures the concentration of water vapor in the air. This device is used to help understand ice and open water coverage independent of any satellite, radar, or visual images. Conducting their studies on the HEALY was beneficial to the testing of these laser-based devices, as it put them into a natural marine environment with a broad range of sea ice and open water conditions. The second device was used to measure isotopes that are an indication of engine exhaust products. This device successfully recorded the passage of the two helicopters during the SAREX on both days they passed by the ship. This provided a unique opportunity to verify their petroleum hydrocarbon exhaust sensing capabilities in a marine setting, which is impossible to duplicate in any other setting. The length of the ATE-15 mission was also of great importance to the technology evaluation. The 18 day duration allowed for a large number of background water vapor, carbon dioxide (CO_2), and methane (CH_4) concentration and isotope measurements, which are key to building the ability to develop sea ice-water isotope algorithms and to recognize when the CO_2 and CH_4 values which are indicative of engine exhaust and exceed diurnal and weekly variation.



Eric Klein (UAA researcher) sets up the isotope analyzer. Data screen print to right. USCG photo.

Ice Floe Research

Building on results from the evaluations in previous years, the RDC collaborated with University of Alaska Fairbanks (UAF) Arctic Domain Awareness Center and University of Delaware's Video and Image Modeling and Synthesis (VIMS) Lab to analyze their ice tracking system. The goal of their effort is to use this system to enhance the ice radar information and, thus, improve the ship's situational awareness and operational performance in ice. Overall, the team demonstrated that their Graphics Processing Unit (GPU)-enabled processor could derive ice motion fields in real time if they have access to the data stream from the ice radar. They will continue analyzing the data to determine accuracy limits and capabilities for resolving differential motion of the ice around the ship such as the opening and closing of leads. This ice movement information could then be used for operational planning during SAR cases, spill responses, as well as support HEALY's science missions.

HEALY OPS reads ice radar display while underway in the Arctic. USCG photo.

Supporting Intern Programs

This year the RDC team had the help of three interns. One, Chirawat Sanpakit, is an undergraduate Mechanical Engineer at the University of California, Riverside . He was sponsored by the DHS HS-STEM Summer Internship program. "I loved every moment of where I was and what I was doing. Sometimes things were hard, and I never made so many mistakes in such a short period of time, but I think that I have never learned so much in such a short period of time either," said Sanpakit.

The other two are DHS funded fellows with the Maritime Security Center at the Stevens Institute of Technology in Hoboken New Jersey. Hassan Shahid is currently studying towards a master's degree in Marine Systems with a concentration on Maritime Security. His research interests are maritime systems in urban and arctic environments and technologies for maritime security including remote sensing, control systems, and data networks. Hasan contributed well as a resource on the Sensor Web standards effort during ATE 2015. He worked with all the teams, assisting as needed and learning about the different technologies and the projects behind them. Nicholas Haliscak is currently studying toward the same degree. His research interests are primarily in the areas of additive manufacturing, robotics and control systems. During the cruise he helped design and produce several items including a replacement part for the ship's dishwasher and a custom orthodic device.

The RDC fully supports these programs and is pleased to play a role inspiring our future engineers.

Chirawat Sanpakit handles the tether for the ROV during a systems test. USCG photo.

Hassan Shahid deploying a drogue buoy. USCG photo.

Nicholas Haliscak displays custom orthodic. USCG photo.

Native Alaskan Interactions

While transferring the bulk of the science team from shore to the HEALY, Native Alaskan Tribal Council members and the Mayor of Nome were given a tour of the HEALY. The mayor of Nome, Denise Michels stayed on board for the next two weeks. These initiatives were a huge success, and having the Mayor and D17 Liaison onboard together created an opportunity to directly observe and understand CG operational and ATE activities, and engage and collaborate on relevant issues during the voyage. Lessons learned provide valuable information on improving the notification and selection process for the Mayor, involvement of D17 staff in voyage planning, and how this initiative can have direct positive impacts on CG operations and research activities. HEALY Command and crew provided outstanding support throughout this initiative and voyage.

Left to Right—Conocophillips rep Noreen Price, Mayor of Nome Denise Michels, and the D-17 tribal liaison Sudie Hargis. USCG photo.

Native Alaskan Tribal Council members and the Mayor of Nome toured the HEALY while picking up the science team in Nome, USCG photo.

The RDC In The Arctic

The Arctic has been a significant focal point of Coast Guard operations over the last several years. "The RDC plays a key role in charting the Service's future efforts in the Arctic by evaluating new and emerging technologies for the applicability to Coast Guard operations in the harsh and remote environment.," said RDC Commanding Officer, Capt. Dennis Evans.

The RDC first began research in the Arctic in the 1970's, assessing the burning of oil spilled on the ice. More recently, due to receding ice and increased vessel traffic and human activity, the RDC committed more of its project work to Arctic issues over the last eight years.

Since then, the RDC has commissioned studies to improve knowledge on Arctic issues, conducted oil in ice and Arctic craft testing in the Chukchi and Beaufort Seas, participated in multiple oil-in-ice response workshops and conferences, and have continuously conducted market research to identify the latest Arctic-capable technologies.

RDC 2015 Arctic Technology Evaluation Team. Left to Right—Shannon Jenkins, Stephen Dunn, Chriss Sanpackit, DJ Hastings, Scot T. Tripp, Jason Story, Nicholas Haliscak, Hassan Shahid. Center—Oscar and Don Decker, USCG photo.

The Research, Development, Test & Evaluation Program (RDT&E)

At any given time, the Coast Guard's RDT&E program is working on more than 80 projects that support Coast Guard requirements across all mission areas. The RDT&E program is comprised of the Office of RDT&E at Coast Guard Headquarters in Washington, DC, and the Research & Development Center (RDC) at New London, CT. The RDC is the Coast Guard's sole facility performing applied RDT&E experimentation and demonstrations.

The RDT&E program enhances acquisition and mission execution by helping transition new technologies into the service's operational forces. The program also provides Coast Guard leadership with knowledge necessary for making strategic decisions. Test and evaluation activities support the entire Coast Guard in requirements verification planning, including mission-specific test preparation and deck-plate procedure execution.

The RDT&E program pursues technologies that provide incremental improvements as well as those with the greatest potential to strategically transform the way the Coast Guard does business. The program leverages partnerships with academia, other government agencies and private industry to anticipate and research solutions to future technological challenges.

The RDT&E program is dedicated to maintaining a balanced portfolio of projects that supports the Coast Guard's short, medium, and long range requirements across all mission areas. Projects fall under seven main program areas including Surface, Aviation, C4ISR, Acquisition Support & Analysis, Environment & Waterways, Modeling & Simulation Center of Excellence, and Test & Evaluation.

RDC 2015 Arctic Technology Evaluation Team Members

Rich Hansen, Arctic Coordinator

Scot Tripp, Chief Scientist

Jason Story, Test Director

Deborah Hastings, Asst. Test Director

Jay Carey, Logistics

Don Decker, Arctic Comms Lead

LCDR Mike Turner, Arctic Nav Lead

Steve Dunn, UAS & SAR Demo Lead

LT Keely Higbie, UAS & SAR Demo Team

Shannon Jenkins, CG-926 Prog Office Rep

CGC Healy Website

Follow CGC Healy's activities on their public facing website at:

http://icefloe.net/

RDC Websites

The RDC's public facing website is:

http://www.uscg.mil/acquisition/rdc/

The RDC has also set up a Coast Guard–internal site to help provide RDC staff, project sponsors and stakeholders, and other members of the organization with visibility on the field activities, projects, and products being produced at the RDC. We invite you to visit the site regularly to stay up to date on the Arctic Technology Evaluation and other RDC activities. The Internal CG blog is located at:

https://cgportal2.uscg.mil/units/cg9/2/6/rdc/rdcblog/default.aspx

DHS partners can access the RDC Blog through the DHS HSIN network.