



SEATTLE, WASH – Coast Guard Cutter Polar Star (WAGB 10), a 399-foot heavy icebreaker, returns to Base Seattle after leaving the shipyard. With industrial work for reactivation now complete, the Coast Guard plans to deploy the Polar Star on Operation Deep Freeze in November. U.S. Coast Guard photo.

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## **Coast Guard Heavy Polar Icebreaker Project Taking Shape**

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The U.S. Coast Guard has a long history of executing its statutory missions in polar regions, but this task is becoming increasingly challenging given the age of its polar icebreaking fleet. With traffic in the Arctic increasing every year, the United States has a vital interest in maintaining robust polar icebreaking capability.

The Coast Guard's current polar-capable fleet consists of one refurbished, 399-foot heavy icebreaker, one 420-foot medium icebreaker, and several other ice-capable tugs and tenders. The Service has two heavy icebreakers (one currently in inactive status) that were built in the mid-1970s and designed during the 1960s. Acquiring a new heavy polar icebreaker has become a priority, but in today's fiscal climate the acquisition of such a large and complex vessel presents many challenges.

Long before any drawings are made or steel cut in the shipyard, the Coast Guard has taken a deliberative approach to defining its mission needs. To drive the beginning stages of the acquisition project, the Coast Guard has assembled a 42-member integrated project team (IPT) composed of experts from 28 different Coast Guard offices as well as representatives from eight other government agencies, including the National Science Foundation (NSF) and the Department of State.

The project has relied on a small subset of IPT members from the Office of Cutter Forces, Office of Requirements and Analysis, Office of Waterways and Ocean Policy,

and the Acquisition Directorate to draft preliminary documents that will direct activities under any future acquisition project.

The IPT built off the mission gaps identified in the Mission Analysis Report and has now completed the Mission Needs Statement, which defines what is needed to address those gaps. Lt. Cmdr. Greg Daughtry, chief requirements officer in the Office of Requirements and Analysis, said the team has now begun work to develop the Concept of Operations (CONOPS).

“The CONOPS will describe how the organization plans to utilize and maintain capability. It will describe how and where we intend to operate from a multi-mission standpoint, including defense readiness, search and rescue, law enforcement and scientific purposes,” Daughtry said.

### *Recent International Collaboration*

On Feb. 7, 2013, members of the Canadian Coast Guard’s polar icebreaking program visited Coast Guard Headquarters in Washington, D.C., to meet with their counterparts in the Service’s acquisition community and discuss mutual interests. During the meeting, representatives signed an annex to a 2009 U.S.–Canadian shipbuilding memorandum of understanding, codifying ongoing cooperation between the two nations’ efforts to obtain a polar icebreaker.

The Canadians announced their polar icebreaker acquisition project in 2008 and have completed the preliminary design phase as well as ice tank trials with three different models. In the next few months, they will choose a model to move forward into detailed design and construction. During the week of Feb. 18th, 2013, IPT members traveled to Vancouver to observe the design selection process, said Cmdr. Tim Newton, the Acquisition Directorate’s heavy polar icebreaker assistant project manager.

“We were able to see some of the challenges they’re having with setting up a single-ship program—something they haven’t done in many years. We were able to look at some of the issues they’ve dealt with and hopefully avoid some of those same problems,” Newton said.

The Coast Guard has also reached out to the Finnish government for assistance. Finland has a wealth of icebreaking expertise, as 80 percent of their trade comes in through the icy Baltic Sea. The Finns have provided information on the state of today’s icebreaker market.

### *Icebreaker Experience and Lessons Learned*

At the core of the IPT is Lt. Cmdr. Kristen Serumgard, polar icebreaker platform manager in the Office of Cutter Forces and sponsor's representative for the heavy polar icebreaker project. Serumgard is approaching her 13th year of active duty with the Coast Guard, a third of which was served on icebreaking cutters.

On her first tour of duty, she served as deck watch officer aboard the 399-foot heavy polar icebreaker Coast Guard Cutter Polar Sea (WAGB 11), including two patrols to Antarctica as part of Operation Deep Freeze, an annual mission supporting the NSF to resupply McMurdo Station. She also served two years aboard Coast Guard Cutter Hollyhock (WLB 214), an ice-capable 225-foot Juniper-class Seagoing Buoy Tender homeported in Port Huron, Mich.

Serumgard's icebreaking experience is a tremendous benefit at this point in the acquisition project lifecycle. "Much of the subject matter experts' experience is in temperate waters," she said. "So an understanding of polar conditions is very important and vital to the requirements gathering process."

In addition, her close relationship with the Coast Guard's icebreaker community is a direct line to their input and expertise. The Service's icebreaker fleet is small, and those who serve aboard these vessels consider themselves very much a family.

"We have a very small group of operators and engineers who have actually served on these vessels and understand how they operate, what events are going on, and what needs to happen," Serumgard said.

The IPT is also leveraging the Service's past experience by looking at lessons learned from two previous icebreaker acquisitions: Coast Guard Cutter Healy (WAGB 20), a 420-foot medium polar icebreaker that was commissioned in 1999 and now is the United States' newest and most technologically advanced polar icebreaker, and Coast Guard Cutter Mackinaw (WLBB 30), a 240-foot Great Lakes icebreaker commissioned in 2006.

Even though the acquisition strategy and construction process for a single hull is different than a cutter fleet, the team is also looking at how best practices and lessons learned from the Coast Guard's National Security Cutter, Offshore Patrol Cutter, and Fast Response Cutter acquisitions could apply to the heavy polar icebreaker program.

### *State of the Polar Fleet*

After several years in caretaker status, Polar Star was recently reactivated and held successful sea trials in mid-January. After a brief maintenance period to address issues identified during testing, the Coast Guard plans to deploy the Polar Star to support Operation Deep Freeze in November.

The Coast Guard's other 399-foot heavy polar icebreaker, Polar Sea, has been placed in an inactive status, while the Coast Guard conducts, as required by the recently enacted Coast Guard and Maritime Transportation Act of 2012, a business case analysis to determine the cost effectiveness of extending Polar Sea's service life until 2022.

Meanwhile, Coast Guard Cutter Healy is a capable platform for supporting polar missions in logistics, search and rescue, ship escort and environmental protection. However, the Healy was designed primarily for use as a scientific research vessel and does not have the same icebreaking capacity as the Service's heavy icebreakers.

While the reactivation of the Polar Star and the continued operation of the Healy will provide the Coast Guard with much-needed heavy and medium icebreaking capabilities in the near-term, the Service is moving forward with plans to acquire a new polar icebreaker to maintain this critical mission capability in the nation's fleet. The President requested \$8 million as part of the Coast Guard's fiscal year 2013 budget request to begin procurement and development of a polar icebreaker. The notional schedule for this project includes a construction contract award within approximately five years and delivery of the ship in a little over a decade.