



U.S. Coast Guard Heavy Polar Icebreaker Requirements

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Operational Requirements for a New Heavy Icebreaker



Operational Requirements

- Seeking a multi-mission capable, heavy icebreaking vessel
- Need to replace current capabilities
- Fit within/work with standard Coast Guard systems



Concept of Operations

- Year round access to Arctic
- Seasonal access to Antarctic
- Ability to operate on scene with endurance to conduct a “campaign response” operation.
- Provide Command and Control to a variety of assets (aircraft, boats and ships)



Polar Icebreaker Missions



Defense Readiness



Ports, Waterways & Coastal Security



Living Marine Resources & Other Law Enforcement (i.e. EEZ Enforcement)



Marine Environmental Protection



Aids to Navigation



Search and Rescue



Marine Safety



Ice Operations

Constraints



- Worldwide deployable
- Climatic Envelope
- Panama Canal compliant

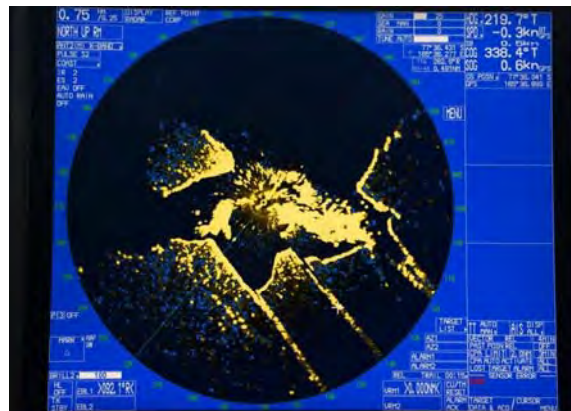
What Remained the Same?



- Need for long range, high endurance, independent operation, heavy icebreaking capability
- Need for flexibility in personnel support spaces/systems
- Interoperability to support Interagency and Interservice mission execution

Why Did It Stay the Same?

- High Latitude Mission Analysis
- Ice Trends Analysis
- Arctic & Antarctic Maritime Activity Trends



Coast Guard Cutter Polar Star's radar picture shows three entrance channels the cutter's crew has broken into the fast ice near the National Science Foundation's McMurdo Station, Antarctica, Jan. 15, 2015.

What's Changed?

- Improve reliability, maintainability, supportability, availability, & redundancy
- Meet modern environmental standards
- Enhance C5/ISR for Domain Awareness
- Improved ship control
- Modern habitability & Human Systems Integration
- Aviation & boat launch/recovery upgrades
- Space, weight and power for specialized capabilities



Why Did It Change?



- Sustainment of current icebreakers is time consuming & costly
- Increasing polar activity requires ability to execute CG and Interagency missions
- Environmental regulations & technology have evolved significantly

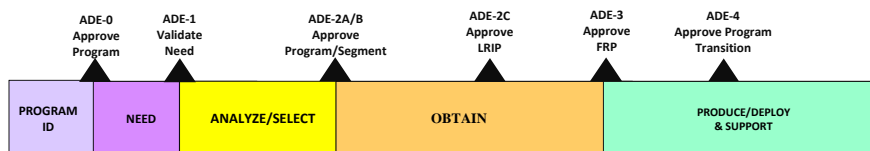
Key Performance Parameters

- Icebreaking
 - 3 knots through 6 feet (threshold) / 8 feet (objective) ice
 - Break through ridged ice of 21 feet
- Endurance
 - No replenishment for 80 days (threshold) / 90 days (objective)
- Interoperability
 - Exchange voice & data with DHS/USCG, DOD, stakeholders

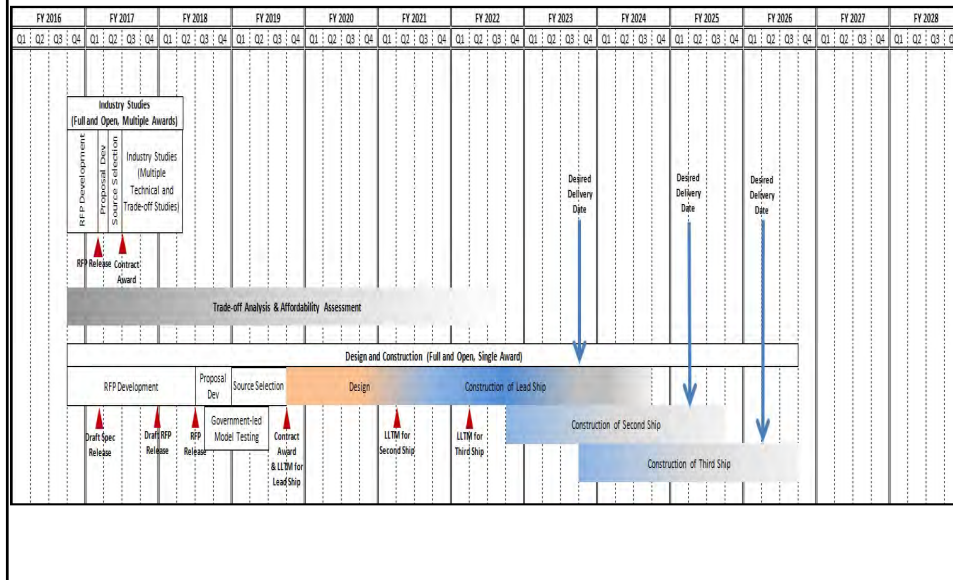


Coast Guard Acquisition Process

- During the “Need Phase”, stakeholders are consulted and Operational Requirements are developed.
- During the “Analyze/Select Phase”, affordability concerns are considered and tradeoffs are made on Operational Requirements.



Acquisition Timeline



Basic Vessel Constraints

- Length overall less than 460 feet.
- Crew size estimated at 136 people.
- Detachment size 35 threshold/ 50 objective.
- Three propulsors, at least two azimuthing – adds tremendous maneuverability

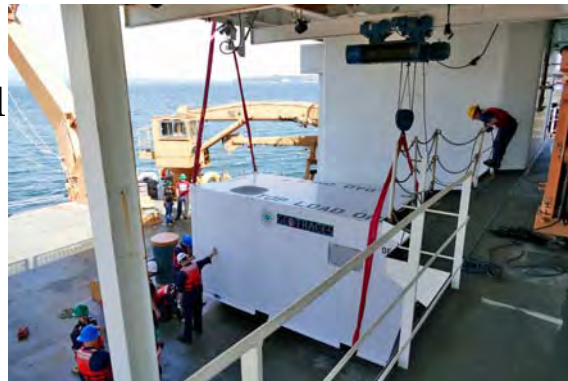


Science & Survey Requirements

- Hydrographic CTD casts.
- Multibeam sonar to support hydrographic survey capability in accordance with International Hydrographic Organization standards to include the continental shelf, Arctic ridges and basins, and full ocean depth.
- Continuous measurements and data recording of oceanic properties.
 - Continuous surveys of water depth.

Multi-mission Requirements

- Reconfigurable interior work spaces (AGOR design)
- Space for 4 threshold/ 6 objective UNOLS standard science containers.
- UNOLS standard 1' square deck sockets for portable winch pool and other equipment on working decks.



Any Questions?

