U.S. Coast Guard Heavy Polar Icebreaker Requirements

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Icebreaker and Buoy Tender Policy and Capabilities

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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, 2011.
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.
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?