POLAR ICEBREAKERS
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**USCG POLAR ICEBREAKERs Today**

POLAR SEA, POLAR STAR & HEALY are the only multi-mission U. S. surface assets capable of supporting U.S. national mission needs and capable of operating in polar regions year around.

<table>
<thead>
<tr>
<th>HEALY Characteristics:</th>
<th>Polar Class Characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length: 420’ Width: 82’</td>
<td>Length: 399’ Width: 83.5’</td>
</tr>
<tr>
<td>Draft: 29.3’ Displacement: 16k LT</td>
<td>Draft: 28’ Displacement: 13.1k LT</td>
</tr>
<tr>
<td>Propulsion: Diesel-Electric AC/AC</td>
<td>Propulsion: Diesel-Electric/Turbine</td>
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<tr>
<td>SHP: 30,000 HP (max)</td>
<td>SHP: 18,000 HP (DE)</td>
</tr>
<tr>
<td>Fuel: 1.22M gals</td>
<td>60,000 HP / 75k HP (burst)</td>
</tr>
<tr>
<td>Continuous IB: 4.5’ @ 3kts</td>
<td>Fuel: 1.3M gals</td>
</tr>
<tr>
<td>B&amp;R IB: 8’ backing &amp; ramming</td>
<td>Continuous IB: 6’ @ 3kts</td>
</tr>
<tr>
<td>Science: up to 50 scientists</td>
<td>B&amp;R IB: 21’ backing &amp; ramming</td>
</tr>
<tr>
<td></td>
<td>Science: up to 35 scientists</td>
</tr>
</tbody>
</table>

**HEALY commissioned 1999**

**POLAR STAR & POLAR SEA commissioned in 1976, 1978 respectively**
U.S. statutes/policies that govern USCG polar icebreakers

- **General Title 14 authorities for all USCG missions**: Search & Rescue, Enforcement of Laws and Treaties, Marine Safety etc.
- **General Title 10 authorities pertaining to support for National Security** – 1965 Johnson Administration decision to move all polar icebreaker responsibilities to USCG.
- **14 USC 2** – CG is tasked with developing, maintaining, and operating icebreaking facilities for the US.
- **14 USC 93** – Authorizes maintenance of icebreaking facilities
- **14 USC 94** – Authorizes conduct of oceanographic research
- **14 USC 141** – Utilization of CG personnel and facilities in assisting other federal and state agencies, including icebreaking
- **15 USC 4101** – Arctic Research and Policy Act of 1984
- **16 USC 2431** – Antarctic Marine Living Resources Convention
- **1965 USN/USCG MOA** – Transfer 5 USN breakers to USCG to form one fleet to support all national security & other polar icebreaker mission needs
- **1990 Presidential Memo** – affirmed CG’s need for three icebreakers, NSF one ice strengthened vessel
- **1996 PDD 26 (U.S. position on Arctic & Antarctic policy)** – Safety, Security, Stewardship
U.S. Polar Icebreaker Operations: Changing Priorities

**Security**
- **WWII**
  - USCG/USN
  - Wind class & Mackinaw
- **1950's**
  - DEW stations built - required icebreakers for re-supply
- **1965-66**
  - Joint study - USN transfers all icebreakers to USCG – 8 icebreakers

**Research**
- **Late 1970's**
  - POLAR STAR & POLAR SEA built
- **1980's**
  - Older icebreakers decommissioned. By 1989, PSEA & PSTAR only 2.

**Future Trend**
- **2000**
  - Severe Antarctic ice conditions 2001-6
  - PSTAR in caretaker status. NRC study & National policy decision?

**Present Focus**
- **2000**
  - Safety/Security/Stewardship

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**Discovery**
- **1885**
  - Cutter Bear – explores Alaskan waters for 40 years
- **1936-1941**
  - USCG initiated intensive study of heavy icebreaker design
- **1946**
  - Operation High Jump – Admiral Byrd’s Antarctic expedition
- **1955-56**
  - First Operation Deep Freeze - permanent US presence on Antarctica
- **1960s**
  - Alaskan north slope oil discovered – polar icebreakers receive national interest
- **1999/2000**
  - USCGC HEALY: Planned in 80’s, funded 90’s, operational in 2000 to support Arctic Research
Thule Airbase Annual Re-supply (Operation PACER GOOSE)

- Built in 1950’s
- Distant Early Warning (DEW) network
- Requires annual sealift re-supply
  - US - West Arctic
  - Canada – East Arctic
- Since 1993, CCG icebreaker support on behalf of USCG
OPERATION DEEP FREEZE

● Operation Deep Freeze (ODF)
  Ù United States Antarctic Program (USAP)
  Ù Managed by NSF
  Ù Supported by Joint Task Force-Support Forces Antarctica
    o field support; aeromedical evacuation support; search and rescue response, sealift, port cargo handling and transportation requirements.

● CG Support of ODF
  Ù Breakout and escort MSC ships to resupply McMurdo Station (fuel, food, material, etc)
  Ù CG has been supporting since 1955
POLAR STAR STATUS

- Caretaker Status 2007; Reactivated 2013
- Successful ODF FY 2013-14; 2014-15; 2015-16
- 2016-17 deployment
- Leaves Seattle end Nov
- En route to Hono/Sydney/arriving late Dec
- Arrives at Ice edge McMurdo on/a 5 Jan
- Departs McMurdo 9 Feb
- Seattle early April
- Shipyard / dockside availability May – Sept
- Sea trials/training /load out Oct-Nov
- Typically no science – tightly controlled by NSF
POLAR SEA STATUS

- **2010**
  - Suffered catastrophic casualty to 2 main engines
  - Further inspection revealed damage to 6 main engines and 2 generators

- **2014**
  - Slated for Decommissioning, based on PSTAR Reactivation and funding available

- **2015-present**
  - Based on Congress direction CG completed a Material Conditions Assessment and is analyzing options
  - However USCG acknowledges reactivation would be extremely challenging and risky

- **2017 Feb**
  - Polar Sustainment Alternatives Analysis due Congress
  - Polar Bridging Strategy
HEALY SCHEDULING

- Process to request ship time
  - Principal Investigator submits Ship Time Request (STR) via Unols.org
  - HEALY is not a UNOLS vessel but it uses the STR system.
  - HEALY OPS and PACAREA (Forcucci/Nolan) develop draft schedule.
  - PI and USCG iterate schedule; Publish schedule in Oct/Nov

- Nominal HEALY schedule
  - Depart Seattle June/July for Arctic West Summer mission (AWS)
  - Three science missions in July/Aug/Sep/Oct
  - Nov-May: dockside maintenance, followed by shakedown cruise
  - Every 3 years Dry dock- advanced planning for Spring cruise.
HEALY MID-LIFE MAINTENANCE

- Tentative start Fall 2023
  - 3-4 year rolling project
  - Annual 5-6 month dry-dock
  - Remain operational for mission tasking
3-VOL HIGH LATITUDE STUDY

- Recommendations – 3 Heavy IB and 3 Medium IB
  - 1H and 1M for McMurdo
    - Antarctic Treaty inspections
    - provide back-up / rescue capability
  - 2H and 1M for Arctic year round presence
    - National Defense / Sovereignty
    - Marine environmental Protection
    - Search and Rescue
    - Living Marine Resources (fisheries enforcement)
    - Thule Resupply
- 1M for Arctic Science
  - NSF / NOAA / UNOLS
● POTUS announcement September 2, 2015

● new steps to accelerate the acquisition of additional icebreakers to ensure the United States can operate year-round in the Arctic Ocean.

● accelerate acquisition of a replacement heavy icebreaker and begin planning for construction of additional icebreakers and call on Congress to work with the Administration to provide sufficient resources to fund these critical investments.
PIB FUNDING AND NEW BUILD

- **CG FY 17 Budget - $150M**
  - Funds for activities prior to detail design
  - Developed MAR, MNS, CONOP, PORD and ORD (Operational Requirement Document)
  - Will have space, power and weight to complete all CG Statutory missions including science
  - Early industry engagement (Spring 2016)

- **Senate mark of $1B to Navy (not yet guaranteed)**
  - Establishing integrated program office
  - Develop Acquisition strategy based on best practices of both services