



# POLAR ICEBREAKERS

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### **Rajiv Khandpur**

Chief, Office of Waterways Management and Ocean Policy (CG-WWM)  
USCG HQ

[Rajiv.khandpur@uscg.mil](mailto:Rajiv.khandpur@uscg.mil)

202-372-1525 (o)

202-906-0836 (c)

### **CDR William Woityra**

Chief, Mobility and Ice operations Division (CG-WWM-1)  
USCG HQ

[William.C.Woityra@uscg.mil](mailto:William.C.Woityra@uscg.mil)

202-372-1540

# USCGC 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.

## HEALY Characteristics:

Length: 420' Width: 82'  
Draft: 29.3' Displacement: 16k LT  
Propulsion: Diesel-Electric AC/AC  
SHP: 30,000 HP (max)  
Fuel: 1.22M gals  
Continuous IB: 4.5' @ 3kts  
B&R IB: 8' backing & ramming  
Science: up to 50 scientists

## Polar Class Characteristics:

Length: 399' Width: 83.5'  
Draft: 28' Displacement: 13.1k LT  
Propulsion: Diesel-Electric/Turbine  
SHP: 18,000 HP (DE)  
60,000 HP /75k HP (burst)  
Fuel: 1.3M gals  
Continuous IB: 6' @ 3kts  
B&R IB: 21' backing & ramming  
Science: up to 35 scientists



HEALY commissioned 1999



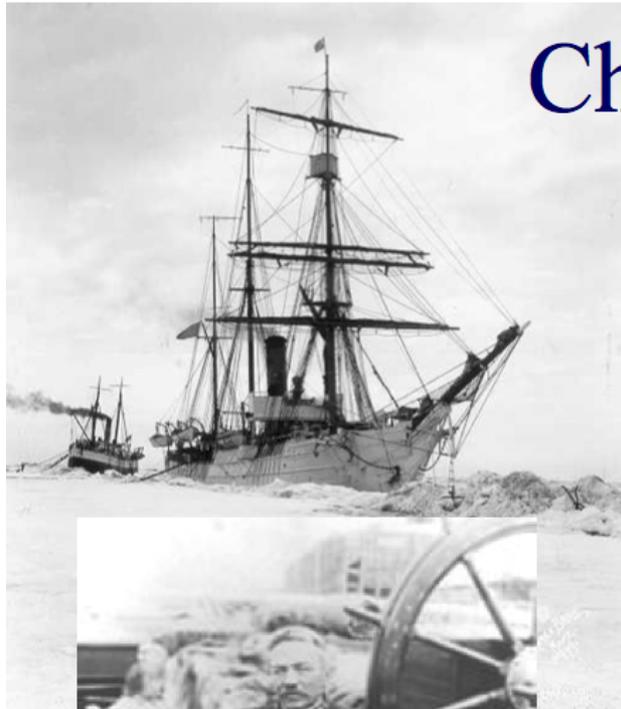
POLAR STAR & POLAR SEA  
commissioned in 1976, 1978 respectively

# 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



Discovery

Enforcement

1900

Security

Research

Future Trend

Safety/Security/Stewardship

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

2006-7  
PSTAR in caretaker status. NRC study & National policy decision?

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

Late 1970's  
POLAR STAR & POLAR SEA built

1980's  
Older icebreakers decommissioned. By 1989, PSEA & PSTAR only 2.

2001-6  
Severe Antarctic ice conditions



Homeland Security

# Thule Airbase Annual Re-supply (Operation PACER GOOSE)

- Built in 1950's
- Distant Early Warning (DEW) network
- Requires annual sealift re-supply
- 1992 US/Canada reciprocity agreement.
  - US - West Arctic
  - Canada - East Arctic
- Since 1993, CCG icebreaker support on behalf of USCG



Homeland Security

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# OPERATION DEEP FREEZE



- **Operation Deep Freeze (ODF)**
  - United States Antarctic Program (USAP)
  - Managed by NSF
  - Supported by Joint Task Force-Support Forces Antarctica
    - field support; aeromedical evacuation support; search and rescue response, sealift, port cargo handling and transportation requirements.
- **CG Support of ODF**
  - Breakout and escort MSC ships to resupply McMurdo Station (fuel, food, material, etc)
  - CG has been supporting since 1955
  - A few exceptions (NSF contracted KRASIN (2006), ODEN (2008-2011) VLADIMIR IGNATYUK (2012) – however POLAR SEA on standby ready to deploy in 48 hours



# 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



# New Polar Ice Breaker (PIB)



- 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

# HEALY escorting RENDA Nome 2011

