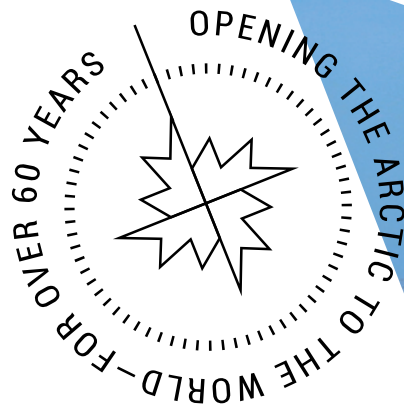




FEDNAV

**NAVIGATING
COMPLEXITY**



ARCTIC OPERATIONS



FEDNAV ARCTIC OPERATIONS AND PROJECTS



PAST ACTIVITIES | Since the company's early days, Fednav has played a leading role in supporting Arctic development, from community resupply to support for resource development and export.



1955–1985 | Opening the North

Fednav operated purpose-built Canadian-flag vessels carrying components of DEW Line stations to Arctic destinations as well as general cargo to northern communities and various mine and oil exploration sites at Spitzbergen, James Bay, Prudhoe Bay, and Axel Heiberg Island.



1974 | Initial bulk carrier operations

Fednav was awarded two contracts to transport zinc and lead concentrates from Nanisivik Mine on Baffin Island and from Polaris Mine in Nunavut—at that time, the most northerly base-metal mine in the world. Shipping from these two sites continued until their closure.



1978 | Delivery of the MV Arctic

The company's first ice-breaking cargo vessel, the *MV Arctic* was delivered to then joint-owners Fednav and the federal government under the Canarctic banner. Among its accomplishments, the ship transported crude oil from Bent Horn on Cameron Island (83° North) to Montreal.



1998 | Year-round shipping

Fednav became the first company to provide year-round shipping—unescorted—to the Arctic when the *MV Arctic* performed a first winter voyage from Deception Bay carrying nickel concentrates from Raglan mine, an operation that continues year round today.



2014 | First shipping company to employ drones

In an industry breakthrough, Fednav became the first shipping company to employ drones, or Unmanned Air Vehicles (UAVs), for ice reconnaissance on a commercial voyage.



2014 | Northwest Passage historic voyage

Fednav's icebreaking *MV Nunavik* was the first commercial cargo vessel to transit the Northwest Passage unescorted, transporting an Arctic cargo, navigating from northern Quebec to China.

CURRENT ACTIVITIES | Today, Fednav continues to play a vital role servicing five northern mines and transporting more than seven million tonnes of mineral concentrates each year.

YEAR-ROUND SERVICES INCLUDE



1998–Present | Raglan Mine

Fednav-owned *MV Arctic* transports nickel concentrates from Northern Quebec's Raglan Mine to the St. Lawrence and returns with mine resupply. In 2021, a brand-new vessel - the *Arvik I* - will be delivered ensuring uninterrupted service for the next 20 years.



2005–Present | Voisey's Bay

The *MV Umiak I* carries nickel concentrates from Northern Labrador to Quebec and Newfoundland as well as mine resupply. This vessel and its sister-ship, the *MV Nunavik*, are the largest, most powerful ice-class bulk carriers in the world.



2014–Present | Nunavik Nickel

The *MV Nunavik* hauls nickel and copper concentrates from Northern Quebec's Nunavik mine to the international market and returns with mine resupply.

SEASONAL SERVICES INCLUDE



1990–Present | Red Dog

Fednav performs about 25 sailings in the short Alaskan summer and fall to transport more than one million tonnes of zinc and lead concentrates to world destinations.



1994–Present | Ice navigation support services

Fednav Ice Services, formerly Enfotec, provides its clients with ice navigation support, critical to safe execution of voyages in ice-infested waters.



2015–Present | Baffinland

Fednav provides port operation support, ice navigation analysis, and shipping services to the Baffin Island-based iron ore mine.

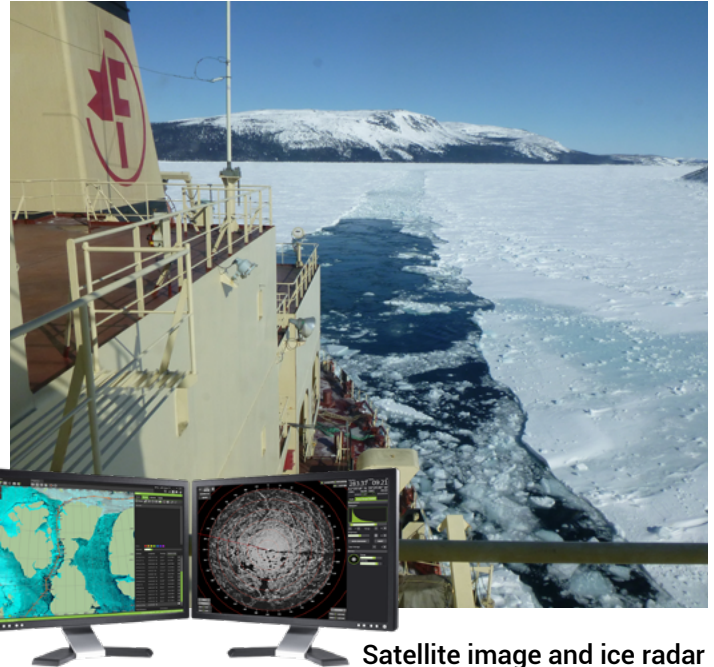
PROVIDING TAILORED TRANSPORTATION AND SUPPLY-CHAIN SUPPORT FOR ARCTIC MINES

With skills honed over more than 60 years, Fednav's **Arctic Operations and Projects** today manages transportation activities in the North American Arctic and provides resource development support. Fednav plays a leading role in developing shipping solutions for companies seeking to establish mine sites in polar regions.

HELPING YOU NAVIGATE THROUGH ICE

Fednav Ice Services provides support for safe and efficient navigation in ice-covered waters. It produces sea ice assessments and marine accessibility studies for current and projected shipping operations for the Fednav fleet when transiting in both remote polar waters and winter zones.

Additionally, Ice Services has developed and distributes IceNav™, a shipboard navigation system used by vessels travelling in ice-covered waters worldwide. This system allows mariners to access satellite imagery and up-to-date ice and weather information. It also incorporates an enhanced marine radar for the detection of sea ice.



Satellite image and ice radar

GOING FORWARD

Fednav will continue to work alongside Northern communities and resource developers to provide innovative, tailored solutions assuring cost-effective transportation solutions.



FEDNAV

Fednav is Canada's largest ocean-going dry-bulk shipowning and chartering group. For more than 75 years, the company has delivered the highest level of service, professionalism, and reliability in the international shipping industry with unwavering consistency and integrity.

With offices on four continents and a reputation built on a commitment to customer care and reliability, Fednav is the leader in international shipping on the Great Lakes as well as the Canadian Arctic, operating the world's largest fleet of ice-class bulk carriers.



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