

TECHNICAL DATA SHEET

NUNAVIK



Captain	Captain Randy Rose
Ice Navigator	Captain Thomas Grandy
Chief Engineer	Gary Bishop
Flag	Marshall Islands
Built	2014, Japan Marine United Shipyard
Ship Type	Handysize
Class	DNV-GL
Ice Class	PC4
IMO number:	9673850
Gross Registered Tonnage (MT)	22,622
Length (M)	188.8
Beam (M)	26.6
Depth (M)	15.7
Deadweight (MT)	31,700
Draft (M)	11.7

CANADIAN ROYALTIES INC.

Canadian Royalties Inc. (CRI) is a Montreal-based, wholly-owned subsidiary of Jilin Jien Nickel Industry Co., Ltd., of China. Since 2001, CRI has discovered and delineated several potentially mineable nickel-copper-cobalt-platinum-palladium-gold deposits that collectively form the Nunavik Nickel Project. The initial development phase ran from 2007 to mid-2008, when the global financial crisis caused an interruption in development. In early 2010, Jilin Jien acquired CRI and, together with Chinese banks, invested approximately \$1 billion to build the mine and commence production. CRI expects to produce 20,000 tonnes per year of nickel and copper in concentrate, respectively.

NORTHWEST PASSAGE

The NWP is the shortest access route between the northern Atlantic and Pacific Oceans. Sea ice predominates in the NWP for most of the year, rendering the passage inaccessible for all but a few weeks. Vessels like the *Nunavik* are able to access the NWP for a longer time than conventional ice-classed ships and are able to do so independently, without icebreaker escort.

ROUTING



FEDNAV ICE EXPERTISE

Fednav has had a pioneering presence in Canada's Arctic for 60 years, managing mining and resupply transportation activities. Today, Fednav transports around two million tonnes annually from remote Northern mines.

Fednav has participated in virtually every shipping project in the Canadian Arctic. In 1998, Fednav became the first company to provide year-round shipping, unescorted, with the first winter voyage from Deception Bay.

Fednav owns and operates the 28,400-tonne MV *Arctic*, an oil-bulk-ore ice-breaking vessel, the 31,500-tonne MV *Umiak I*, and the 31,700-tonne MV *Nunavik*, the most powerful conventional ice-breaking bulk carriers in the world. These vessels operate independently in the harsh polar environment and provide total transportation solutions to Canada's northern mines.

ENFOTEC

Enfotec Technical Services provides support to enhance the safety and efficiency of navigation in ice and produces sea ice assessments and marine accessibility studies for current and projected shipping operations in ice-covered waters.

Enfotec supports Fednav's operations in the Arctic and the Baltic regions with expertise in ice dynamics and remote sensing. Furthermore, Enfotec's involvement in research and development helps keep Fednav at the forefront of ice navigation knowledge and technology.

Enfotec is also the developer and distributor of IceNav™, a shipboard navigation system used by many types of vessels operating in ice-covered waters worldwide. This system allows mariners to access and use satellite imagery and up-to-date ice and weather information. It also incorporates an enhanced radar for better detection of sea ice.

Earlier this year, Fednav and Enfotec employed drones for ice reconnaissance, an industry first on a commercial voyage. Advances in recent years allow for the transmission of high-quality satellite and radar images and conventional ice charts. The use of drones may lead to further enhancement of ice detection and facilitate the immediate capture of subtle ice features such as ridges, leads, and fractures, allowing navigators to see beyond the normal horizon for strategic navigation.

REGULATORY FRAMEWORK

Canada benefits from a strong regulatory regime, with both the Canada Shipping Act and the Arctic Waters Pollution Prevention Regulations (AWPPR). The AWPPR has been enforced since the 1970s and has long ensured a high degree of environmental protection. In many respects, the AWPPR serves as inspiration for the upcoming Polar Code being developed by the International Maritime Organisation.

ENVIRONMENT

In order to respect the fragile environment of the Arctic, Fednav has consulted with experts from the Canadian government as well as the environmental NGO, World Wildlife Fund, to determine the route that would least impact the wildlife habitat in the Arctic. Fednav and WWF-Canada have partnered on maritime transport in Arctic waters that aims precisely to minimize the impact of its ships' passage. WWF has been working with Fednav on two priorities of mutual interest: developing leadership in operational sustainability and philanthropic support for arctic conservation. Funding and input from Fednav led to the development of a study identifying best practices in Arctic shipping: Benchmarking for Best Practices in Arctic Shipping. Current work entails joint research on measures for reducing shipping impacts in the Hudson Strait.

By favouring the Northwest Passage over the regular Panama Canal route, the *Nunavik* will save about 40 percent of the distance and time needed to sail from Deception Bay, Quebec to Bayuquan, Liaoning Province, China. This represents roughly 5,000 nautical miles (9,400 km) or 20 days of sailing. By using the NWP instead of the Panama Canal, the *Nunavik* will save more than 1,300 tonnes of greenhouse gas emissions.