

FERRIES OF THE ARCTIC



Driven by two John Deere-powered generator sets and four propulsion engines, the *Louis Cardinal* leaves the community of Tsiigehtchic, located at the confluence of the Mackenzie and Arctic Red rivers.

Photo by Jim Thorne

John Deere-powered ferries aid the trek north to Canada's new road to the shore of the Arctic Ocean

The new Inuvik-Tuktoyaktuk Highway, also known as Highway 10, is the first all-weather road to Canada's Arctic Coast. Located in the Northwest Territories, the road starts from Inuvik and extends north across permafrost before reaching the community of Tuktoyaktuk, situated on the shore of the Arctic Ocean.

This long-awaited two-lane gravel road opens year-round traffic to residents of Tuktoyaktuk and is expected to lead to an

economic boost for the remote community. The new road offers more affordable shipment of goods and services, reducing the living costs for residents. It will also draw tourism, giving visitors a rare opportunity to dip their toes into the icy waters of the Arctic Ocean or brave a polar plunge.

Even traveling to Inuvik, where the new road extends from, is a long, barren trek. From the Yukon, motorists travel north, crossing the Arctic Circle and into the Northwest

Territories on Highway 8 (Dempster Highway) before reaching the Peel and Mackenzie rivers. During the winter and spring, vehicles cross on frozen rivers using "ice crossings." From June to October, seasonal ferry services are available. The *M/V Abraham Francis* is a cable ferry that crosses the Peel River using a pulley assembly. About 64 kilometers (40 miles) down Dempster Highway, *M/V Louis Cardinal* makes an 8-minute run, shuttling vehicles across the Mackenzie River.

ARCTIC OCEAN



The Government of the Northwest Territories (GNWT) owns and operates the ferries and, seven years ago, began the process of repowering its fleet with John Deere engines. Frontier Power Products, a John Deere engine distributor in Delta, British Columbia, has years of experience custom packaging marine engines for GNWT.

The cable ferry *Abraham Francis* was repowered with John Deere–powered generator sets in 2012. Two years later, the ferry *Johnny Berens* received new radiator-cooled John Deere–powered generator sets, followed by two PowerTech™ 6090AFM marine propulsion engines.

Commissioned into service in 1972, the *Louis Cardinal* received a new set of John Deere–powered generator sets in 2015. In 2017, the GNWT determined it was time to repower the ferry's four propulsion engines, awarding the bid to Frontier Power Products, which packaged four John Deere PowerTech 6135AFM85 marine engines to Transport Canada specifications.

"Repowering *Louis Cardinal* with Tier 3/ Stage III A emissions was critically important to our bid review," says Delia Chesworth, GNWT's director of air, marine, and safety. "We also wanted fuel-efficiency, because fuel is so very expensive in the North."

There is a lot of pre-planning required to overcome the logistics of the Northwest Territory. And, the engines for *Louis Cardinal* needed to be delivered in a relatively short timeframe. "We have a period in late fall and early spring when the river ice is not strong enough to carry vehicles," explains Chesworth. "We had to get the engines there before the ice road went out. The Frontier Power team was great about making sure we were meeting our timelines."

By mid-April — before the ice roads thawed — Frontier Power delivered all four engines, complete with wiring harnesses and other components, 3,600 kilometers (2,237 miles) to Inuvik, where the *Louis Cardinal* was dry docked for the repower.

"We receive excellent communication from Frontier Power Products and their marine salesman, Bill Stewart," says Chesworth. "There was a training session that Bill held with our marine manager in British Columbia. Basically, to go over the system in advance

and show him what he needed to do to install the engines. It was very beneficial to both our marine manager and the success of this project."

The GNWT's marine manager and his crew paired the 317-kW (425-hp) engines with 64 x 58-centimeter (25 x 23-inch) props through Twin Disc transmissions with a 2.04:1 gear ratio. The repower was completed by mid-May — before ferry season started up.

"It's necessary to use these ferries to get to the newly opened Inuvik-Tuktoyaktuk Highway," says Greg Hanna, a spokesperson for the GNWT. "We receive calls, practically daily, from people looking to get up to Tuktoyaktuk and the Arctic Ocean. People from around the world were banking on this ferry to be back in the water on time. We had a timeframe and it was met, and everything went very smoothly."

 **Distributor: Frontier Power Products in Delta, British Columbia, Edmonton and Calgary, Alberta; www.frontierpower.com**