

MARINE POWER REPORT

Francesca Madre
Merri-Gale II
William T.R.

Perhaps unknown to many, Ontario's Commercial Fishing Industry plays a key role in many local economies while directly employing approximately 3500 people across the province. One drive down to Leamington, Wheatley, and Kingsville located in the southwest corner of Ontario and this will become clear as you start see many of the local fishing industry's unique looking boats. The main species harvested here on Lake Erie are pickerel, yellow and white perch, white bass and white fish.

Members of the Ontario Commercial Fisheries' Association and owner/operators of the *Francesca Madre*, *Merri-Gale II*, and *William T.R.* have recently turned to Toromont Cat for their main propulsion engine repowers. These owners selected the Transport Canada compliant Caterpillar® C18 marine engine for it's excellent fuel efficiency, class leading torque rise, and



Merri-Gale II's Cat C18 454bhp @1800rpm engine coupled to a Twin Disc MG5114SCHED gearbox completed at Toromont Cat's Concord production shop facility. Details include 3:1 reduction ratio, custom-made gearbox brackets matched to engine girder dimensions, and Racor closed crankcase ventilation system.



All existing hydraulic pumps were retained on the *Merri-Gale II* using the C18's power take-offs from the front stub shaft and SAE 'A' pump drive. Aftercooler and jacket-water systems combined on the C18 to allow single-circuit keel cooling. By designing the engine/gearbox package to maximize re-use of existing equipment total project costs expended by the owner are kept to a minimum.

great overall value. Unrestricted continuous power ratings of 454 bhp and 479 bhp at 1800 rpm were supplied.

The local shipyard Hike Metal Products in Wheatley were contracted to complete the repowers on the *Francesca Madre* and *William T.R.*. Owner/operators John and Dave Cabral and their crew completed the repower on the *Merri-Gale II*. Engine, gearbox, and equipment packages delivered by Toromont Cat were customized for each of the three boats to make integration with existing equipment and mounting as easy as possible. For example each boat has a unique set of hydraulic pumps used to drive equipment such as hydraulic generators, steering gear, bilge pumps, winches, wash pumps, and cranes. Each of these existing



Francesca Madre tied up just behind Hike Metal Products.



Merri-Gale II tied up in Wheatley harbour near Hike Metal Products.



A view of the *William T.R.* at the end of the season tied up in Kingsville. Owner/operator Don Rutgers decided on a Fernstrum packaged keel cooler as an alternative to running thick walled pipe thus greatly reducing the amount of Extended Life Coolant used. Guarding was installed around the cooler to ensure adequate protection from ice.



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Francesca Madre's 2000 C18 package with Twin Disc MG-5114DC gearbox 3.43:1 ratio, rotary oil pump to quickly drain engine and gearbox, and deep oil sump for extended oil change intervals.



The C18 engine for the Francesca Madre also included a Cat front pump-drive adapter along with Twin Disc's AM220 dual SAE 'C' power take-off. With this equipment package we were able to retain all existing hydraulic pumps onboard.



Repower of Vito Figliomeni's (above) Francesca Madre was completed by Frank Baptista and the staff at Hike Metal Products. The existing push/pull cables and levers were re-used and integrated to the new Cat Multi-Station Control Station through the use of a throttle position sensor. During the repower Hike was able to rejuvenate the wheelhouse giving it a beautiful new look. To Vito's right is the Cat Marine Power Display unit that connects to the C18 electronic engine. All essential engine and gearbox information is monitored via the Marine Power Display.

pumps were accounted for and matched PTO's were provided.

The C18 electronic engine is seamlessly integrated with each boat's control system ranging from existing push/pull mechanical control levers or electronic control levers. A new Cat Multi Station Control System, such as on the *William T.R.*, can include equipment such as a Cat control lever, start/start button panel, backup control panel, Marine Power Display, and an Electronic Troll Processor. With the Cat Marine Power Display the Captain is able to monitor the engine load in real time and make throttle adjustments to optimize fuel consumption at all combinations of speed and load.

With 18 litres of displacement the C18's torque output, especially at low rpm's, provide the Captain with excellent throttle response, which is essential during low speed manoeuvring and positioning. This truly drives home the statement that there is "no replacement for displacement". Given that the C18 engine platform is capable of producing up to 1136 bhp in recreational ratings, these commercially rated units are expected to provide dependable service for many years to come. Since these installations, EPA Tier 2 emissions compliant C18's have become available in the same power ratings and should also be considered for future projects.

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The William T.R.'s customized C18 package allowed for re-use of all existing hydraulic system components along with mounting feet designed for ease of installation.



Each Cat Multi-Station Control System supplied is uniquely configured for ease of installation by incorporating plug-and-run components and harnesses made to length. Shown here is the MSCS for the William T.R. as installed by Hike.



Mated to the C18 engine on the William T.R. is a ZF W350 gearbox with 3.5:1 ratio and a clutchable SAE 'C' PTO to drive a Denison hydraulic pump to power the hydraulic generator. With this configuration the boat's electrical load is provided from the main engine and eliminating the need to operate a separate diesel generator while under way.



Conversion of William T.R.'s propulsion engine controls include a new Cat single control lever complete with backup controls. The single control lever controls engine speed, gearbox shift engagement, as well as trolling.