

the Island Trader



Island Tug and Barge's new 65,000 barrel oil tanker is more than just a big barge — it's big business for one of BC's fastest-growing independent tug outfits.

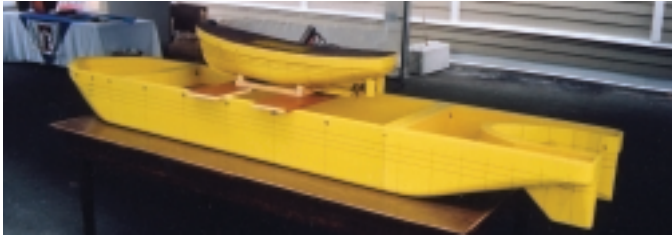
STORY AND PHOTOS BY SIMON HILL

On November 7, 2003, after a 35-day delivery voyage from the Chinese port of Shanghai, Island Tug and Barge's 126-foot, 2650-horsepower offshore tug **Island Monarch** slipped under the Lion's Gate Bridge pushing the company's biggest new barge yet, the 65,000 barrel, double-hulled Class A oil barge **Island Trader**. The 112.4-metre (369-foot) **Island Trader** is tangible proof of Island Tug and Barge's commitment to fleet renewal and modernization. It's also a key asset in the company's drive for business — according to company president Capt. Bob Shields, one goal of building the **Island Trader** is to capture Canadian petroleum import and export volumes out of Vancouver that are now carried almost exclusively by U.S. tonnage. Island Tug is already the largest supplier of bulk fuel products to Vancouver Island, and its large fleet of specialized tug and barges

carry cargo up and down the West Coast. "We believe our oil company partners would prefer an all-Canadian solution to their transportation needs," says Shields, "and particularly one provided by Island Tug and Barge because of the commitment we have made to safety, technology and service." (Island Tug is ISO 9002 certified and follows the ISM Code for Safety Management established by the International Maritime Organization. In 2001, the company was awarded the Pacific States/British Columbia Oil Spill Task Force Legacy Award for Oil Spill Prevention, Preparedness and Response). To accommodate future plans for the **Island Trader** to run seasonal cargoes to the arctic and possibly also serve East Coast markets, it was designed and constructed to ice-strengthened Arctic Class A1 standards and to lock and canal dimensions.

Specifications

Length overall:	112.4 metres (369 feet)
Breadth, moulded:	21 metres (69 feet)
Depth, moulded:	9.6 metres (31.5 feet)
Design draft:	6.4 metres (21 feet)
Gross Registered Tonnage (GRT):	5320 tons
Net Registered Tonnage (NRT):	2910 tons
Capacity:	65,320 Bbls at 95 per cent
Cargo tanks:	12



Prior to construction of the **Island Trader**, scale models of the barge and of the **Island Monarch** were constructed and tank-tested. This ensured optimum hull design for speed and efficiency, and backed up the ATB pin loading calculations.

Designed and Built for Success

From the start, Island Tug and Barge knew they wanted their new oil barge to be an ATB (Articulated Tug and Barge) unit. The company had already had good success with the pusher barges and was sold on the speed, fuel efficiency and comfort benefits of ATB setups. Island Tug selected the Intercon pin system for the **Island Trader** and its partnered tug the **Island Monarch** to provide the ability to push in the widest range of sea-states, with complete elimination of hull contact and a fail-safe mechanical engagement system.

Dixon Naval Architects Ltd. and Peter S. Hatfield Ltd. did the design work for the barge, and in early 2002, prior to construction of the real vessel, a scale model was constructed for tank testing at the BC Research Institute at UBC. This ensured optimum hull design for speed and efficiency. A model of the **Island Monarch** was also built and tested together with the barge model for the modifications and ATB pin loads needed to partner the tug with the barge (see "**Island Monarch** — Pushing into the 21st Century," **Mariner Life**, September 2003).

With the design and testing finalized, construction of the **Island Trader** began in January 2003 at Jinling Shipyard in Nanjing, China. Throughout the nine-month construction program, Island Tug's engineering team worked alongside the Chinese production team, together with owner's representative Dave Donnelly and representatives from Comor Electric. Eric Dixon from Dixon Naval Architects also worked in China during the initial startup phase of construction. "Anytime you're building something like this you're going to have owners representatives and engineering staff overseeing the build," explains ITB chief fleet engineer Andy Farmer, "but in this case we were also putting in a lot of stuff that we'd built over here, and we wanted to make sure it was done correctly. I was working with the Chinese builders installing the hydraulic equipment we'd made, and Darrell Handley from Comor Electric was making sure the electrical components were put together right." Local BC companies Austin & Denholm Industrial Sales Inc., Bosch Rexroth Canada Corp., Burrard Iron Works Ltd., Comor Electric, Finning Power Systems, Manly Marine Closures Ltd., and Skeans Group all supplied components for the oil barge's construction.

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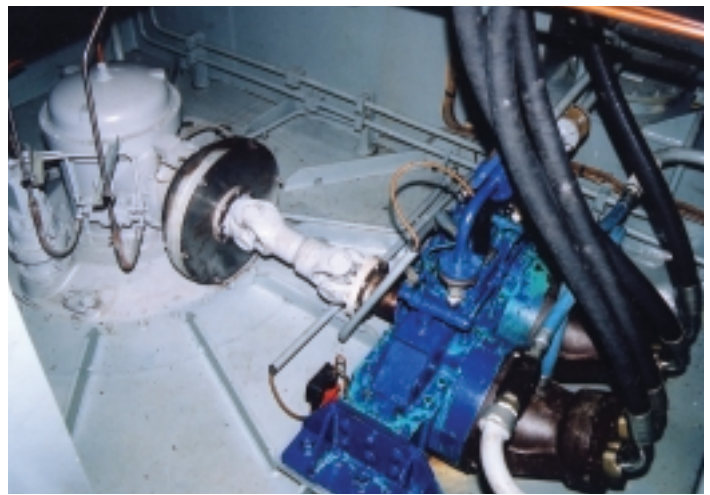
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Two hydraulic motors feed into a common gearbox to power the **Island Trader's** omni-directional 700-horsepower Schottel SPJ 132 bow thruster.

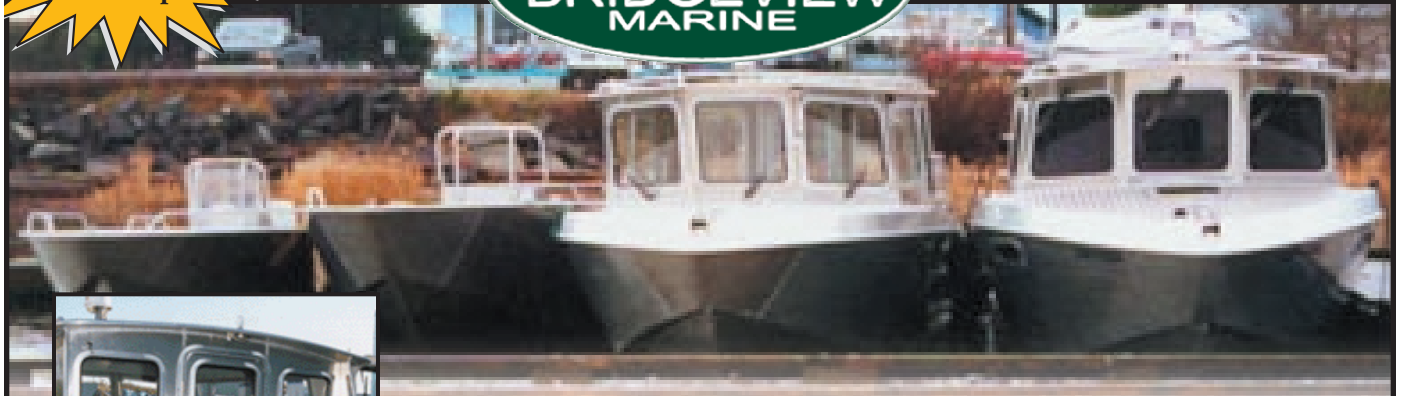
The lower pipe tunnel runs pretty much the length of the hull, between the lower hull blocks, and contains oil piping connected to suction wells in the oil tanks.

(Inset photo) In the forward machinery space, a pair of Caterpillar 3412 E hydraulic power units provide hydraulic power for pumps, deck machinery and bow thruster, while a single 99 KW Caterpillar 3306 TA genset provides electrical power.

State of the Art

The resulting barge represents the current state-of-the-art in oil tank barges. Double-hulled and IMO compliant, the **Island Trader** is Transport Canada classified as a Class A Oil Barge, with ABS classification for A1 Oil Tank Barge and Arctic Class A1. Aggregate capacity is 65,320 barrels at 95 per cent, and the design incorporates the possibility of an increase to 75,000 barrels capacity to ensure room for growth in a changing market.

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To provide flexible loading capabilities the cargo is carried in twelve separate tanks, which can be accessed via four independent load and discharge systems. To meet the latest environmental standards, the barge is equipped for closed loading and vapour recovery with a common vent/overflow system that connects to shore side vapour systems, and duplex overflow alarms and protection systems are provided on each tank. A central cargo management computer system, located in a control room somewhat aft of amidships on the barge, is connected to independent tank-gauging radar systems fitted to each cargo tank.

Four Goulds Model 3410 centrifugal main pumps provide a primary pumping capacity of 4200 barrels per hour each, for a 16,800 barrel per hour total capacity at 135 psi. Four Blackmere model HFG vane-type stripping pumps (smaller capacity pumps for draining lines) provide a capacity of 1000 barrels per hour each, for a total stripping capacity of 4000 barrels per hour. All of the pumps are hydraulically powered, as is the deck gear.




At the christening in Vancouver, company president Capt. Bob Shields gave *Island Tug and Barge's* dedicated crew much of the credit for the success of the **Island Trader** project, and for the success of the growing company as a whole.

“One goal of building the Island Trader is to capture Canadian petroleum import and export volumes out of Vancouver that are now carried almost exclusively carried by U.S. tonnage.”

The deck gear includes Burrard Iron Works line-handling winches (one on each corner plus one amidships), Burrard Iron Works remote release anchor windlass, a hydraulic hose handling crane with a 23-metre (75.5-foot) reach (built by Alaska Marine Crane), and a hydraulic pollution boom reel.

The main machinery, which is installed in a machinery space at the bow of the barge, includes a pair of Caterpillar 3412 E hydraulic power units, and a single 99 KW Caterpillar 3306 TA

genset. A hydraulically powered, omni-directional 700-horsepower Schottel SPJ 132 bow thruster provides **Island Trader/Island Monarch** with the ability to manoeuvre and dock without the expense of assist tugs.

Island Trader delivered its first load of oil on December 10, 2003, transferring 4 million litres in a local voyage from the Burrard Products Terminal to loco. “It worked perfectly,” says Bob Shields, “beyond 100 per cent of what we expected. It’s fast to load and has incredibly fast pump-offs.” Following its initial commercial voyage, the **Island Trader** was already booked for fully-laden voyages out of Puget Sound. And while the initial local voyage proved that the new barge can load and unload quickly (it took only 4 1/2 hours to pump out 4 million litres), Shields points out that its true pumping capacity hasn’t been experienced yet. “We’re hoping to do a loading arm delivery with one of these Puget Sound voyages,” he says. “We were restricted to a single product arm at loco, and the loading arm should be much quicker.” Certainly the **Island Trader's** combination of big capacity and superior speed — both at the loading dock and on the water — should make it a profitable asset in the *Island Tug and Barge* fleet. 

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