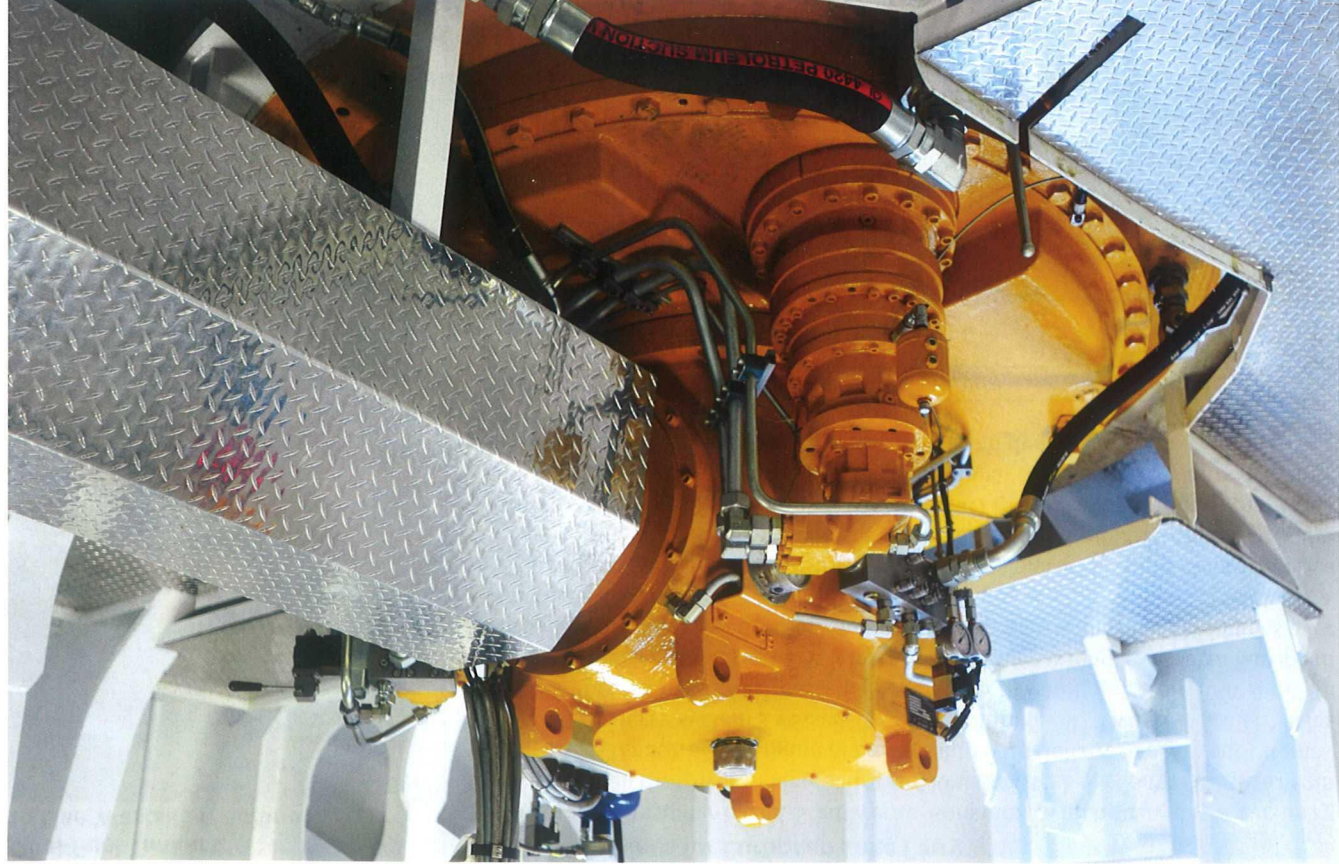


Vessel Profile: Dr. Hank Kaplan



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By Peter Marsh

(ABOVE) The *Dr. Hank Kaplan*'s the first North American boat to boast complete Caterpillar engine room, including gen-sets, main engines and the Cat Propulsion Marine 80-foot ship-handling ASD tugs for delivery in 2017. The first, named the *Dr. Hank Kaplan*, was delivered in June. The second, the *Rich Padden*, is due in the third quarter. These two craft are sister ships to the pair Diversified delivered to Harley in 2015: the *Michelle Sloan* and *Lela Franco*. Their design is the "enhanced" Ramparts 2500 class from Robert Allan (RAL) naval architects of Vancouver BC. These newest tugs follow a Harley tradition of celebrating people who have contributed significantly to medical research in the Northwest.

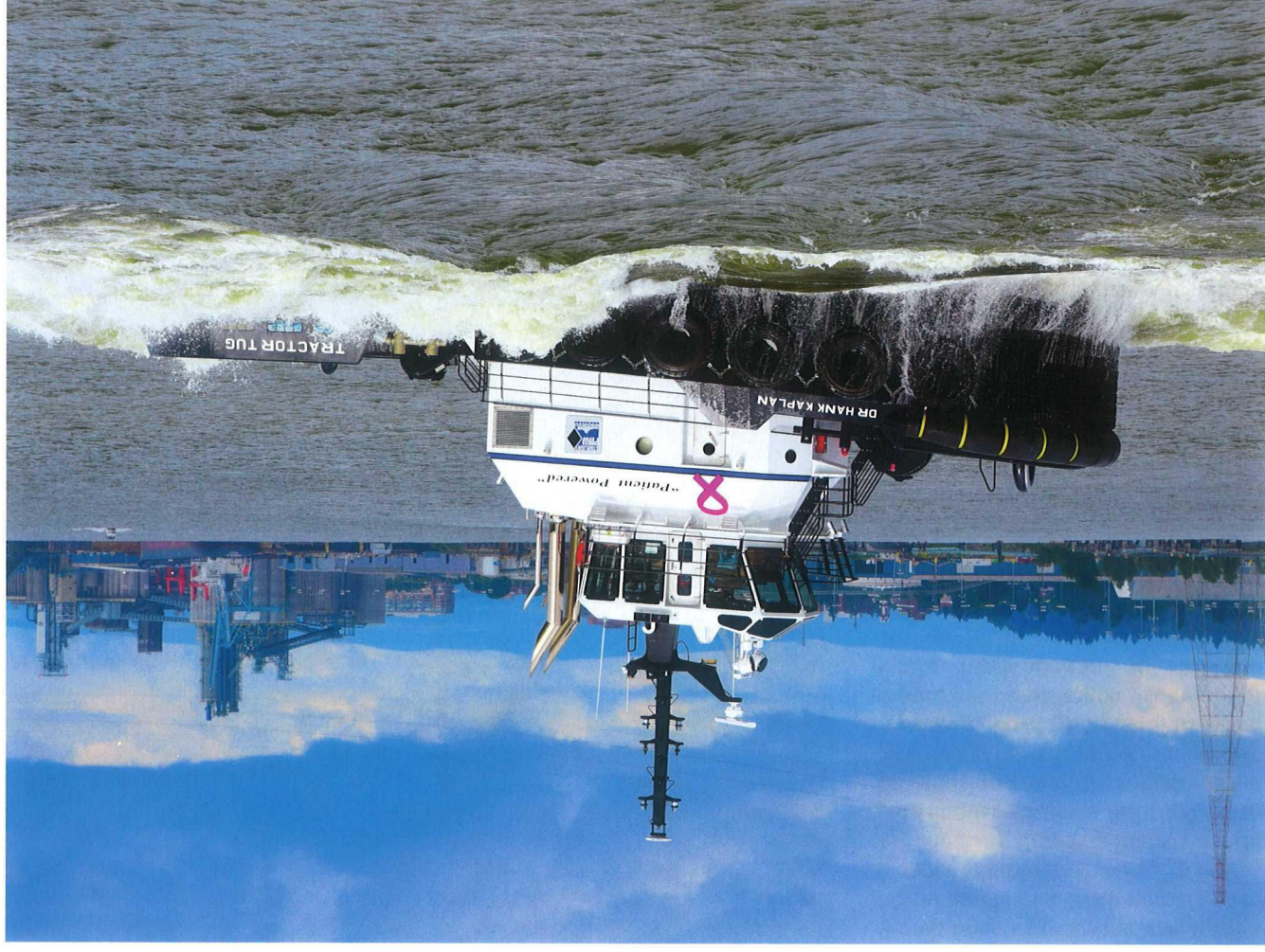
All four craft are equipped with two Caterpillar 3516 Tier 3 propulsion engines each producing 2,575 HP at 1,600 rpm. The maximum total power output of approximately 5,150 horsepower delivers 70 short tons of bollard pull. The Ramparts class is characterized by high freeboard forward to ensure good sea-going performance in exposed waters and provide enough depth of hull for crew accommodations in the forecastle. The beam is 36 feet with a draft of 16 feet 8 inches. Singapore.

In the past, Harley has specified generators and ASD's from various manufacturers, but has made Caterpillar 3500-class diesels standard throughout its fleet. It made headlines in the maritime news media as the first US operator to debut Caterpillar's new emission technology of SCR exhaust treatment on the Tier 4 3516 "e" engines in the 120-foot *Earl W Reed* delivered in January by Diversified. This new pair of smaller tugs also breaks new ground as the first North American boats to specify a complete Caterpillar engine room: C7.1 gen-sets, main engine with clutch mounted on the bell housing and PTO-driven hydraulic pump, with the Cat Propulsion Marine Thruster Azimuth (MTA) completing the integrated propulsion system. This development is a result of Caterpillar's acquisition of the Swedish company Berg & Berg AB – best known for controllable-pitch propellers. They also offered an ASD with a fixed pitch propeller or an innovative feathering BCP hub for more flexibility and efficiency, manufactured in their factories in Sweden and

(ABOVE) The new 80-foot *Dr. Hank Kaplan* is named after Dr. Hank Kaplan of Swedish Cancer Institute, and continues the Harley Marine naming convention of celebrating people who have contributed significantly to medical research in the Northwest. Photo by Kurt Reed courtesy of Diversified Marine Industries.

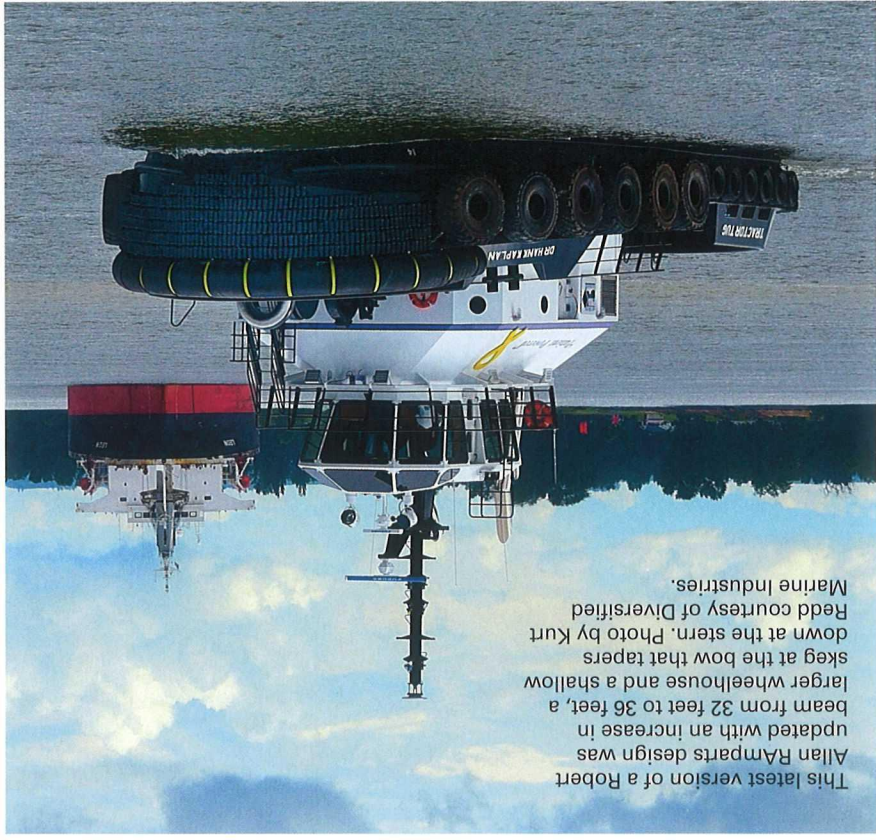
(RIGHT) The Markey-designed NexGen Automatic Power Assisted Freewheel mode can dampen drum motion while freewheeling, reacting automatically to the payout speed and allowing the Captain to keep both hands, and all his attention, on the helm controls during tethered maneuvers. Photo by Peter Marsh.

Caterpillar has packaged this electronic controls and computer-graphic monitoring. Based on a modular principle, most components are used in other Cat Propulsion



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This latest version of a Robert Allan Ramparts design was updated with an increase in beam from 32 feet to 36 feet, a larger wheelhouse and a shallow skeg at the bow that tapers down at the stern. Photo by Kurt Redd courtesy of Diversified Marine Industries.

products ensuring a proven, reliable design. Other benefits include low levels of noise and vibration as well as simplified maintenance. Michael Braun, Caterpillar Marine tug and salvage sales manager noted, "Our integrated solutions along with our Cat dealer partners enable Caterpillar Marine to offer our customers a differentiated service experience that can't be found anywhere else." Engine room equipment also includes an Alfa Laval fuel cleaner, Quincy air compressors, and a Kidde FM-200 clean agent fire suppression system.

Harley worked closely with Robert Allan to develop this latest version of the Ramparts design. Originally engineered for Cat 3500-series 1500 HP V-12 engines, it was updated with an increase in beam from 32 feet to 36 feet - giving the double-chine hull more stability to handle the greater side-company's Render/Recover system, thrust of Cat's V-16 3500's. The engine high braking capacities, and fast line on the main deck with comfortable seating area with flat-screen TV, laundry etc. There are two well-appointed staterooms on the main deck with private facilities for captain and mate. Beneath the high foredeck, bilge pump valves are clustered under the ladder in a cutaway in the floor. Fuel capacity is 30,000 gallons in double-bottom tanks.

Exterior changes include a larger wheelhouse and a shallow skeg at the environmental needs and expectations, so the conditions can be observed from the wheelhouse or by engineers (CCTV) monitors the engine room Harley notes. A closed circuit TV reduction measures have been implemented throughout the vessel, including resiliently-mounted main engines and gensets and advanced exhaust silencer systems. In addition, rubber around the stern. Free running speed is 13 knots.

Markley supplied two sets of its latest winches: the bow hawser winch is the Markey DFFC-48, a single-drum electric hawser winch with the company's Render/Recover system, high braking capacities, and fast line on the main deck with comfortable seating area with flat-screen TV, laundry etc. There are two well-appointed staterooms on the main deck with private facilities for captain and mate. Beneath the high foredeck, bilge pump valves are clustered under the ladder in a cutaway in the floor. Fuel capacity is 30,000 gallons in double-bottom tanks.

9-inch Spectra type line and a rated performance of 28,000 pounds at 54 feet per minute.

The Line Tension Display in the wheelhouse displays full-time active line-tension when drum brake is set. The design also features the NexGen Automatic Power Assisted Freewheel mode that can dampen drum motion while freewheeling. By reacting automatically to the payout speed, NexGen mode allows the Captain to keep both hands, and all his attention, on the helm controls during tethered maneuvers.

The electric aft winch is the Markey model DFFC-32, a single-drum electric auxiliary deck winch with local and remote controls, for general service on escort and ship-assist vessels. It has a drum capacity of 250 feet of 6.5-inch Spectra line and a rated pull of 11,350 pounds at 50 feet per minute. It features high braking capacity and fast line speeds in a powerful, compact design. The 20-HP electric motor can handle an overload of 150 percent of rated torque without stalling, and has a total brake capacity of 214,000 pounds.

The tugs are built with the most technically and environmentally advanced equipment available and will exceed all regulatory and environmental needs and expectations, so the conditions can be observed from the wheelhouse or by engineers (CCTV) monitors the engine room Harley notes. A closed circuit TV reduction measures have been implemented throughout the vessel, including resiliently-mounted main engines and gensets and advanced exhaust silencer systems. In addition, rubber around the stern. Free running speed is 13 knots.

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The increased beam results in a quality of life on board.

accommodation areas to improve the

has raised over \$100 million for CF research. "These two gentlemen are true champions of great causes and are fortunate to have retained an exceptional team who can adapt to all the new technology," explained Harley subsidiary Startight Marine Services, which is establishing a greater presence in the competitive Puget Sound ship-assist market. The prolific Canadian office of Robert Allan Ltd. and a 160-foot by 65-foot, 1,200-ton floating drydock. This allows his crew to fabricate modules onshore under cover, then lower them onto the dry dock for final assembly and fitting out. To celebrate the first boat's completion on schedule, the Diversified crew polished the stainless steel stacks to a gleaming reflective finish. **EMM**



Two Caterpillar 3516 Tier 3 propulsion engines each produce 2,575 HP at 1,600 rpm, and maintenance is simplified by several innovative features from the yard including main engine filters located at floor level beside the engine in a tray to contain drips and bilge pump valves clustered under the ladder in a cutaway in the floor. Photo by Peter Marsh.