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GYRO RETROFIT STEADIES NAVY SHIP, IMPROVES FUEL ECONOMY

Deception Pass, an 85' U.S. Navy Torpedo Weapons Retriever/Security Craft (TWR-8) is a workhorse, launching and retrieving torpedoes and towing targets, among other complex operations. To improve the crew's safety and comfort, the Navy chose Seakeeper's M21000 Gyro Stabilization System which, as an unexpected added benefit, reduced the ship's fuel consumption. While smaller Seakeeper gyros have been used on new Navy vessels, this is the first retrofit project and first use of the M21000 model.

With a home port at Naval Undersea Warfare Center, Division Keyport, Washington, Deception Pass often travels to a joint test range in Canada. Sea States 3 and 4 during transit are common. "The ship's center of height is so tall, we've had roll mitigation problems," said Richard Bottalico, marine engineer for the Naval Undersea Warfare Center in Keyport, Washington. "When we retrieve torpedoes, we like to have as flat and stable a platform as possible," since an angled ramp at the stern is lowered for the process.

After considering stabilization fins, Bottalico concluded they would affect Deception Pass' speed and weren't the most cost-effective solution. He was already familiar with gyro technology used in torpedoes, and looked into Seakeeper stabilization systems. "After a demo ride, I was sold. When

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we were in a trough, the gyro was engaged, spooled a few cycles and the boat flattened right out," he said.

"The initial benefits were roll mitigation and crew comfort," said Mike Allen, master of the TWR-8 Range Management & Operations Division. But he noted that when the gyro is engaged and the ship is on autopilot, the Seakeeper system reduces port-to-starboard roll and also helps keep Deception Pass on course, reducing fuel consumption.

"The gyro helping the autopilot, and the resulting improvement in fuel economy, was something we hadn't factored in," said Bottalico. "We were looking at slowing the roll, but now have an added benefit, it's great."

Equally effective at anchor, low speeds, in rough waves and while underway, the Seakeeper M21000 employs advanced motion control and braking systems to optimize stabilization torque. It spins a forged, high-strength steel flywheel at 4,000 rpm in a near-vacuum to generate a powerful 21,000 Newton meter seconds of righting force.

The Seakeeper gyro is mounted below deck, underneath the galley. "I thought it had to be on centerline, but you can mount it anywhere," said Bottalico. Modutech Marine of Tacoma, Washington, performed the retrofit. "They cut a hole in the hull, built the framework, put everything in, and welded the hull piece back. Modutech did an excellent job."

"The TWR-8 should experience significant roll reduction, of up to 80%, from the Seakeeper M21000 gyro," said T.J. Tracy, Seakeeper's director of military and commercial sales. "Crew safety and comfort are important on any vessel, and that's our goal as well. Our gyros' ability to be mounted in nearly any available space below deck, along with their

compact size and low power draw, make them easy to retrofit in a wide array of vessels. We're not just for new builds."

Built by SWATH Ocean Systems of Chula Vista, California, Deception Pass is one of three TWR-8 vessels designed specifically for use on the Pacific Range Complex. Powered by twin Caterpillar C32 engines, it tops out at 20 knots, cruises at 16 knots and trolls as slowly as 3 knots. The 85' aluminum ship has a 22' beam and a load capacity of 97 tons.

A multi-use vessel, it also undertakes salinity, temperature and depth testing for firing torpedoes. Deception Pass has a full electronics suite and side-scan sonar to gather underwater acoustic information. A 15"-diameter moon pool, serviced by a deck crane, extends through the hull for deployment of acoustic devices. If needed, the ship can be configured for vessel escort or port security services.

The TWR-8 retrofit is the latest in a recent string of Navy installs for Seakeeper. A new 95' Navy torpedo recovery craft scheduled to launch in early 2012 is using Seakeeper gyro stabilization. Seakeeper gyros were also installed in hulls #1 and #2 on the environmentally-friendly new RTSC-110 craft, with gyro installation on hull #3 scheduled for late 2011.

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Editor's Note: Seakeeper will exhibit in booth B8/B9, have two demo boats available and will make a presentation at MACC, June 14-16 in Virginia Beach, VA. Please contact Brook Stevens at bstevens@seakeeper.com or 410-326-1590 for more information. They will also exhibit in booth D01-01f at Nor Shipping in Oslo, Norway, from May 24-27, and at Sea Work in Southampton, UK, from June 14-16 in booth SR9.