

# ROV Jason Tracked to Near 5000m



A Ranger Wideband USBL (Ultra-Short BaseLine) acoustic positioning system from Sonardyne International has provided impressive performance for the engineers from the Deep Submergence Laboratory of Woods Hole Oceanographic Institution (WHOI) when it accurately tracked the Jason remotely operated vehicle (ROV) down to the seabed in 4,700 metres of water. The recent demonstration was carried out from onboard the R/V Thomas G Thompson in the Pacific Ocean off Hawaii where Woods Hole researchers regularly conduct deep ocean research cruises.

Jason is a two-body ROV system designed and built by WHOI's Deep Submergence Laboratory. A 10 kilometre (6 mile) fibre-optic umbilical delivers electrical power and commands from the ship through Medea and down to Jason, which then returns data and

live video imagery. Medea serves as a shock absorber, buffering Jason from the movements of the ship, while providing lighting and a bird's eye view of the ROV during seafloor operations.

On route to the trials site, a Sonardyne engineer had equipped Jason with an AvTrak 2 transceiver and Medea, with a directional Compatt 5 transponder. AvTrak 2 combines the functions of transponder, transceiver and telemetry link in one low power acoustic instrument that has been designed to meet the requirements of a variety of mission scenarios and vehicle types. Onboard the Thomas G Thompson, a Sonardyne 8023 Big Head surface transceiver, specifically developed for ultra-deep target tracking, was deployed on a temporary pole over the side of the vessel.

During the deepwater dive to almost 5,000 metres, the Sonardyne system was able to achieve a positioning accuracy of 0.32% of slant range, or +/-15 metres, despite the temporary, relatively flexible, over-the-side pole. This performance proved almost as good as WHOI's existing tracking system and far more convenient to use as no seabed transponders have to be deployed first. In addition, Jason's position could be updated at 1Hz despite the water depth which helped with visualisation of the ROV's dynamics.

AvTrak2 was installed on the ROV to demonstrate the unit's Wideband positioning and bi-directional wireless communications capability as if it were an AUV or manned submersible. This proved that data and commands could be reliably and easily sent from the USBL system on the vessel and back again using SMS (Sonardyne Messaging Service) in ultra deepwater.

Because the Ranger USBL system had shown its capabilities so convincingly, the WHOI team subsequently had the confidence to use it as the primary positioning tool for two further research dives to 2,500 metres that they conducted shortly afterwards.