

## Tunnel Mapping Contract in Middle East Goes to Aberdeen Firm

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Aberdeen based CDL has successfully completed a contract in the Middle East to map the course of flooded underground tunnels using an ROV, specialist navigation equipment and support divers. The sub-sea navigation specialists were working jointly with Seaeye, and Abwood Marine to map the exact position of tunnels that spanned 1,000 m.

Equipment used included a Seaeye Falcon ROV and navigation equipment from CDL which comprised a CDL MiniSpool ring laser gyro inertial system, along with a CDL MiniPulse (profiling sonar) and interface electronics. The MiniSpool, which was originally developed for spool-piece metrology, is a result of combining the CDL MiniPOS with an RDI Workhorse Doppler Velocity Log (DVL) and provides highly accurate positional outputs. The MiniSpool uses a Digiquartz depth sensor for depth aiding, and gives an altitude output from the DVL. It has been used recently in another application by a survey company to conduct a seabed bathymetry survey, giving depth, altitude, and UTM position from a single sensor pack. Abwood Marine supplied the support divers.

3-D computer software was developed for display and analysis and gives a flythrough image of the inside of the tunnels which can then be exported and displayed in CAD format. A positional accuracy of 1.5 metres (0.2%) over the whole distance was achieved.

Commenting on the contract CDLs' managing director, Matt Blair, says:

"These projects have provided new applications for inertial navigation and the tunnel work has shown in a controlled environment the overall accuracy that can be achieved with inertial technology. CDL is continually adapting to meet the demands of emerging markets and therefore is able to grasp new opportunities when they arise."

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