Specialist Survey Software Saves Time during Gas Field Infrastructure Installation



A major metrology campaign conducted off the coast of Western Australia has been completed in just 26 hours thanks to the time-saving features offered by specialist survey software supplied by British subsea technology company Sonardyne International. The project was led by global offshore construction company, EMAS CHIYODA Subsea (ECS), who was contracted by Apache Energy to install infrastructure at the Julimar natural gas field. The scope of work included installation of two manifolds, connected by five 30-metre vertical spools and five 80-metre horizontal spools.

Underwater metrology requires accurate, precise and robust measurements which are critical for successful fabrication and installation of spools and jumpers. Surveyors estimated that to gather the 10 metrologies at Julimar could take anywhere between 60

and 80 hours. By opting to use Sonardyne's Connect software package to streamline the process, the entire operation was subsequently completed in just 26 hours.

Connect was developed in partnership with survey engineering company, 4D Nav, and speeds up metrology campaigns by introducing expert settings, automated data collection and robust processing of acoustic measurements from planning through to report delivery. Not only was Connect designed to help users' save time and money, it also reduces the risk of spool pieces being fabricated incorrectly.

Acoustic positioning transponder

The work at Julimar was conducted from ECS' heavy lift, deep water, multi-lay vessel *Lewek Constellation*, operating with Sonardyne's 6G (Sixth Generation) acoustic positioning transponder hardware. These were deployed on the seabed and placed in survey receptacles attached to the various structures. The design of the ROV-friendly transponders enabled them to be moved around the site and easily and precisely aligned relative to each structures' north.

During the operation, the survey team collected depth and profile data using an ROV held digiquartz depth sensor, then heading and inclination data at each survey receptacle whilst also collecting Long BaseLine (LBL) acoustic range measurements. The collected data was analysed as one data set. The site's shallow water depth meant paying particular attention to sound velocity.

Final report

Connect's ability to edit the sound velocity applied to individual and groups of baseline observations and reprocess multiple metrologies to evaluate the effect of the changes with a few mouse clicks, proved invaluable to the ECS team. Once the data QC was completed, each spool metrology was processed and a final report generated which contained a summary of the results including hub-to-hub horizontal distances, slant range, depth differences, attitudes, plus details of the calculations to support the results.

Speaking about the success of the Connect software utilised during the Julimar project, Gerry Quinn, survey manager (Operations) with EMAS CHIYODA Subsea said his team was blown away with the speed in which these metrologies were undertaken – in particular the unprecedented time of 26 hours total to measure five 30 metre vertical jumpers (Manifold to Wells) and five 80 metre horizontal jumpers (Manifold to Manifold to PLEMs) in 80 metres water depth. The 4-man Survey team conducted not just the metrology, but the overall operations as smoothly and as efficiently as one, he added.

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