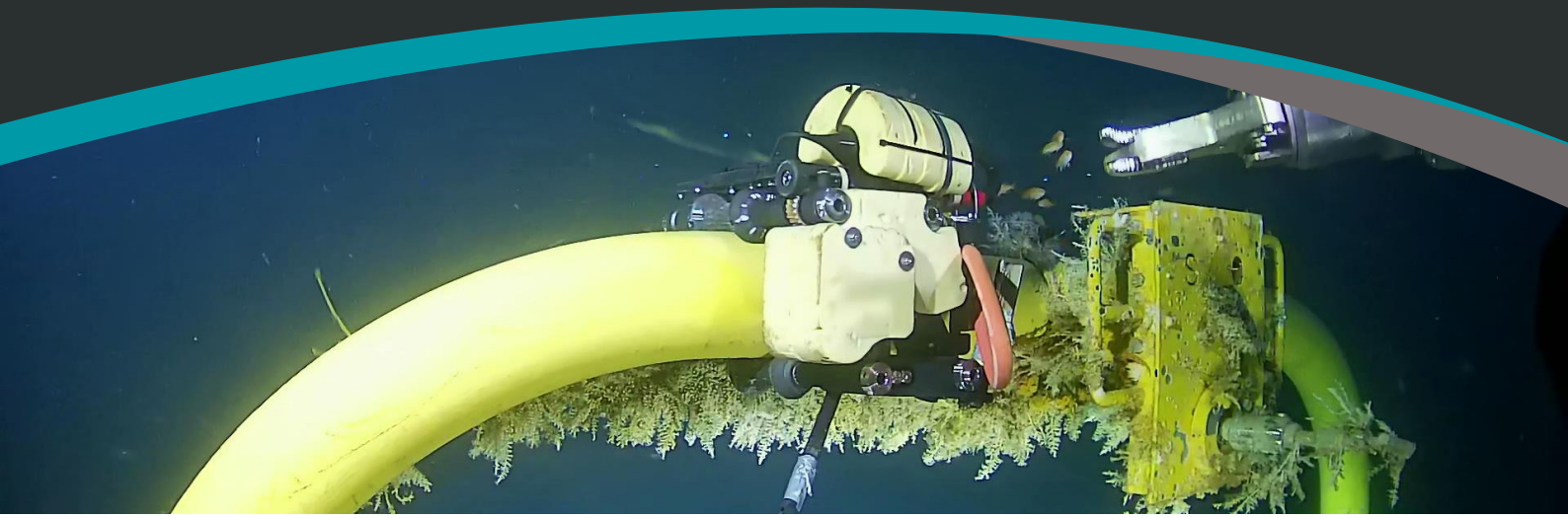
Subsea Phased Array (SPA™)



TSC Subsea develops new technology to solve the challenges of sand erosion inspection of piping inside subsea structures

THE CHALLENGE

TSC Subsea was contracted by new client Santos Ltd, to investigate sand erosion concerns on subsea structure piping in the Halyard/ Spar field, off the coast of Western Australia.

The inspection campaign covered multiple assets including Pipeline End Manifold (PLEM), tie in spool and subsea cooling skid in the Halyard Field and a PLEM in the East Spar Field.

This project presented several challenges. The piping was located inside subsea structures and difficult to access, so the reach to install the scanners with the ROV was challenging in most of the locations.

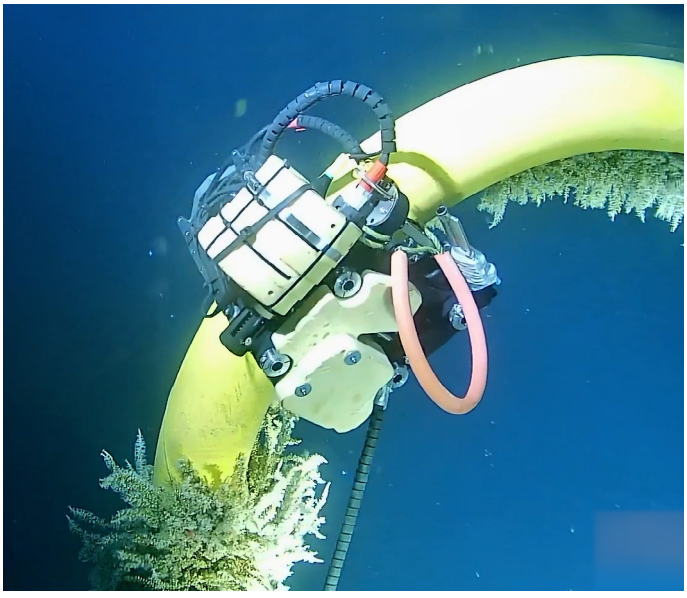
TSC Subsea utilised available design drawings to ensure tooling clearance, including use of 3D modelling.

THE SOLUTION

As the piping to be inspected was duplex, it was decided subsea phased array (SPA) was the most appropriate technology to carry out wall thickness measurements.

The SPA was deployed using two custom tools which were designed and developed by TSC Subsea for this specific application.

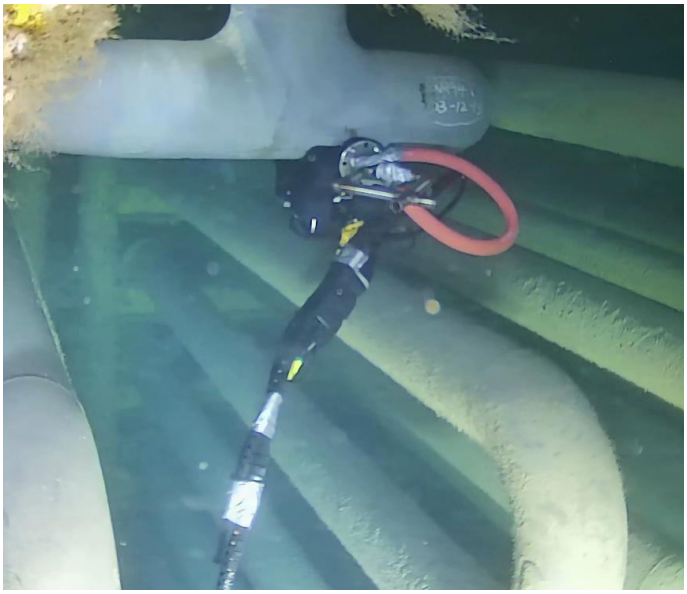
A motorised LineScanner, which included an internal encoder to measure the distance travelled, was placed on the asset to be inspected, then released to allow the ROV to observe from a distance while providing camera views.



A PalmScanner, designed to access tight inspection spaces where the LineScanner could not be used, was also deployed.

As the piping was duplex, TSC Subsea had to rely on a clamping system rather than the standard magnetic drive wheels. Using its 7-function manipulator, the ROV was able to open the motorised LineScanner to install and then remove it from the piping.

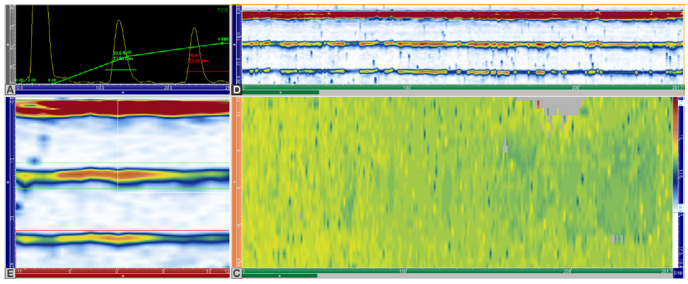
TSC Subsea's engineering team developed a 3D model to check ROV access and confirm there were no clashes between the various scanners and surrounding structures and piping. As a result, the inspection was performed successfully.



THE RESULT

TSC Subsea's world-leading expertise in diverless robotic inspection and 30 years' plus experience in engineering and NDT delivery, combined with our broad service offering, ensured all the inspections were successfully performed for the client in just two days – half of the originally estimated time required. An additional inspection location was even added to the scope during testing.

There was no evidence of erosion in any of the inspection locations.



The new Phased Array LineScanner and the PalmScanner were designed by, and are unique to, TSC Subsea. They are now included in TSC Subsea's increasingly diverse portfolio of diverless non-destructive testing (NDT) solutions.

The scanners were designed in only a few weeks – well within the original project timescale of 6-8 weeks for equipment to be ready for use.

"Having built a market leading reputation for our services in ACFM and acoustic resonance testing (ART) over the last few decades, it was fantastic to be able to launch our new SPA system in 2022 and to be able to perform such a challenging inspection with excellent output. This new technology, combined with in-house expertise is really going to help us provide the complete service to our customers and help create a testing plan that will cover all universally recognised industry standards."

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