CASE STUDY

MERLIN CONNECTORS

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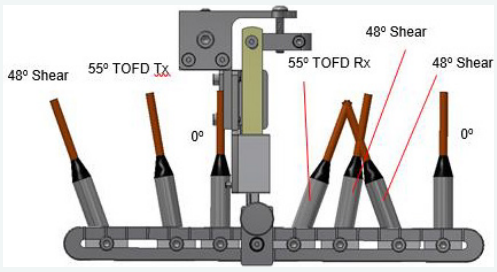
INTRODUCTION

A client required an ROV deployed inspection of critical zones on Merlin connectors for possible fatigue cracking.

PROCESS

Some of the connectors were within a base tank at 140m water depth on the seabed. There was restricted access to gain entry to the tanks and some of the connectors were in compartments 60m away from the main entrance. A mother ROV would deploy to the entrance, then a deployment ROV would be a small "observation" class LBV vehicle with limited dexterity and thrust/pull capabilities and limited lighting/no cleaning capabilities. The "dead sub" scenario was a significant risk once the scanner was magnetically adhered to, so a release mechanism also needed to be designed. Challenges ultrasonically were to offer a complete inspection suit that covered all the weak locations identified by the fatigue analysis, both internally and externally, on the connector.



A multiple probe array of selected shear wave angles and TOFD was developed and validated. A dual-axis magnetic scanner was built (MAG-Nautilus) to ensure neutral buoyancy with a magnetic release mechanism for any dead sub scenario and to allow the LBV to deploy/remove from the connectors.

OUTCOME

The complete system was validated and successfully deployed, with repeat/monitoring inspections now performed annually.