

SUCCESS STORY

TARGETED INSPECTION OF JACKET STRUCTURAL CLOSURE WELDS AND ACCESS WINDOW WELDS

THE PURPOSE

This document is composed to assist our clients and the supply chain to better understand our capabilities and experience within the Subsea NDT sector.



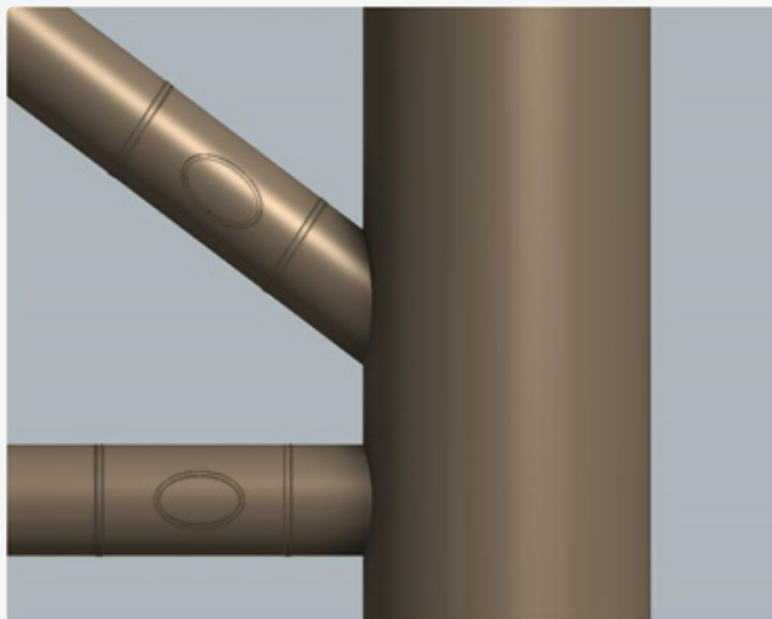
SONOMATIC



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A client has a relatively low redundancy structure with many fatigue sensitive Access Window and Closure Welds that require monitoring. The platform structure is made up of Closure Welds and Access Window Welds across all four faces of the platform jacket, and there is a yearly requirement for weld inspection on the platform.

The Access Windows were cut into the jacket to allow internal backfill welding to be conducted during the jacket manufacture. These Access Windows are of differing geometries, so no two welds are the same. Therefore, as part of the structural integrity plan, they require regular inspection for the identifying of cracks emanating from the apex region of each weld.



CHALLENGES

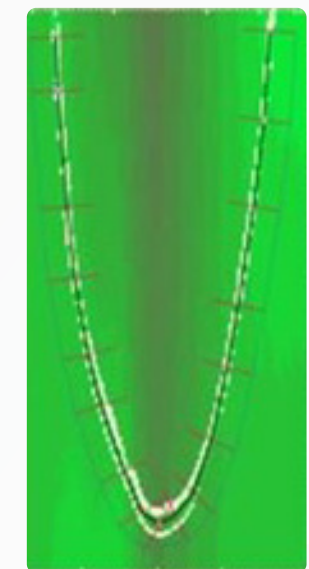
- ❏ Remove the risk to life of diver deployed inspection and plan remote operations.
- ❏ Consider the options of smaller platform deployed ROV inspection.
- ❏ Platform laydown area calculations to be performed.
- ❏ Reduce overall costs without compromising on the inspection quality.
- ❏ Design bespoke ROV deployed inspection equipment to accommodate the Closure and Access Window Welds on brace diameters of 0.8 – 1.8m.
- ❏ The Access Windows found on this structure all had slightly differing geometries, diameters, lengths and shape. They were not all easily accessible with an ROV, so deployment to the inspection region was challenging. Cleaning of marine growth needed to be conducted to provide a surface conducive to the free passage of Ultrasound.



INNOVATION

Sonomatic already had the MAG-Rover in service, this was ideal for ROV deployed inspection of Closure Welds. However, the awkward geometries of the AWW's took more consideration. A bespoke tool was designed and developed by Sonomatic with 5 axis of control that can deploy TOFD, 0° and Angle Shear Wave Pulse Echo in one deployment from the platform from a Comanche ROV. The tool has the capability to inspect the apex of each window weld and 250 mm either side of this region.

The inspection process first requires 0° inspection of weld area to map out the geometry. Using sophisticated software, the information collected is then utilised to plot out the weld profile to support the TOFD and Pulse Echo Inspections ensuring the probe assemblies are driven tangentially to the weld centreline around the weld apex.



CONCLUSION

Without this bespoke inspection technology being utilised, these welds were un-inspectable by ROV and the client would not be able to fulfil their integrity requirements. The inspection performance (accuracy & POD) delivered was critical in allowing the client to continue to safely operate the platform. This, together with the ROV deployment from the platform and no requirement for a DSV, enabled the client to reduce the risk to life, time and costs to complete the inspection.

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