Case study – 36 inch produced water caisson (upper section)

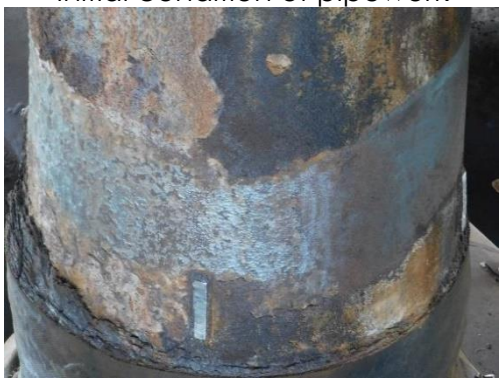
Integrity issue

The upper section of a 36 inch produced water caisson was suffering from external corrosion. It was proposed to use a Futurewrap composite repair to reinstate the strength and therefore integrity of the caisson as the remaining wall thickness was down to 2 mm in some locations.

Initial condition of pipework

Design

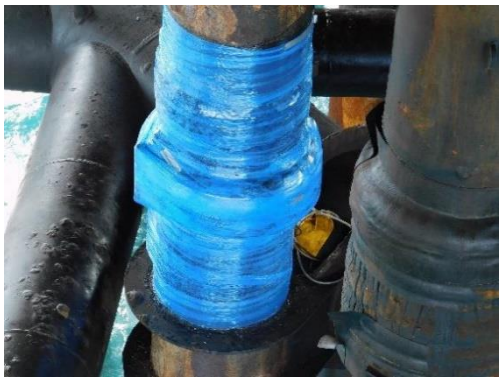
The design of the Futurewrap repair was according to ISO 24817. The design approach was to strengthen and locally leak seal. The design parameters were; internal pressure 1.5 bar, axial load 194 kN, bending moment 176.8 kNm, temperature 60^0C, design lifetime 20 years. The repair design resulted in a thickness of 6.2 mm (4 layers) of Futurewrap Carbon/Aquasplash composite repair with an axial length of 2300 mm.



After surface preparation

Installation

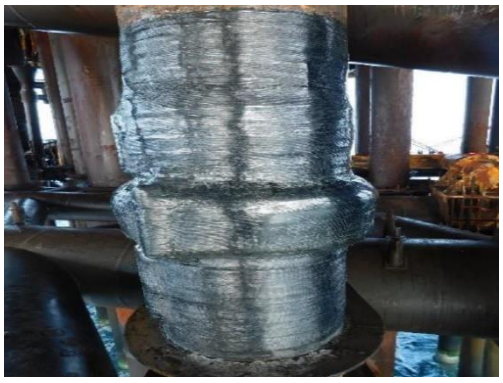
The installation steps are shown in the photographs. The caisson was depressurised. The surface preparation was to ST3 in 1 meter bands. Full QA/QC measurements were made to demonstrate that the Futurewrap repair was applied in accordance with ISO 24817. The repair was applied off ropes



During installation

Summary

A 36 inch section of produced water caisson was repaired using Futurewrap Carbon/Aquasplash composite repair. The repair was completed within 14 days allowing the pipework to be re-pressurised and returning it to its original integrity.



Final cured repair