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BESPOKE OVERSHOT SOLUTION CAPS COLLAPSED WELLS IN THE MIDDLE EAST

An operator of an aged offshore platform in the Middle East urgently required a remedial solution when they were suddenly faced with two wells collapsing into the sea.

THE PROBLEM

During the collapse, two conductors were destroyed only a few feet apart from each other just above the seabed.

The client called on Acteon Company, Claxton, to develop a bespoke solution to connect and seal on to the two 30" conductors. With a long track record of asset life extension experience and in-house research and development (R&D) and design capability, Claxton were able to design, manufacture, assemble and test the new product before deploying it offshore for a full solution to safely cap the wells.

THE SOLUTION

To gain a sound understanding of the unique problem, meetings with the client, cementing and remotely operated vehicle (ROV) contractors were held to identify the design criteria before the Claxton in-house R&D and design teams were called on to rapidly come up with bespoke concepts.

Aged failing assets can present many unexpected challenges, which the Claxton team were prepared for. The design concepts took into account ROV interfaces, cementing package and operation, functionality, redundancy, well pressure, flow of gas and hazardous H2S and CO2 content, and of course the corroded conductor, to ensure that all unexpected eventualities were accounted for. A subsea survey was then performed by the ROV to identify the condition and dimensions of the exposed conductors to assist with the design of the solution.

The final product developed was an ROV dual seal subsea overshot with extra features specific to the requirements of this project. It included hydraulically operated slips to grip on to the conductor stump, valve assembly, resin sealant and well kill cement injection. The design incorporated technology from various Claxton product lines, making it completely unique. The slip design was taken from the Claxton positive grip tension ring, the guide cone from structural conductor guides and dual seal from the surface wellhead system.

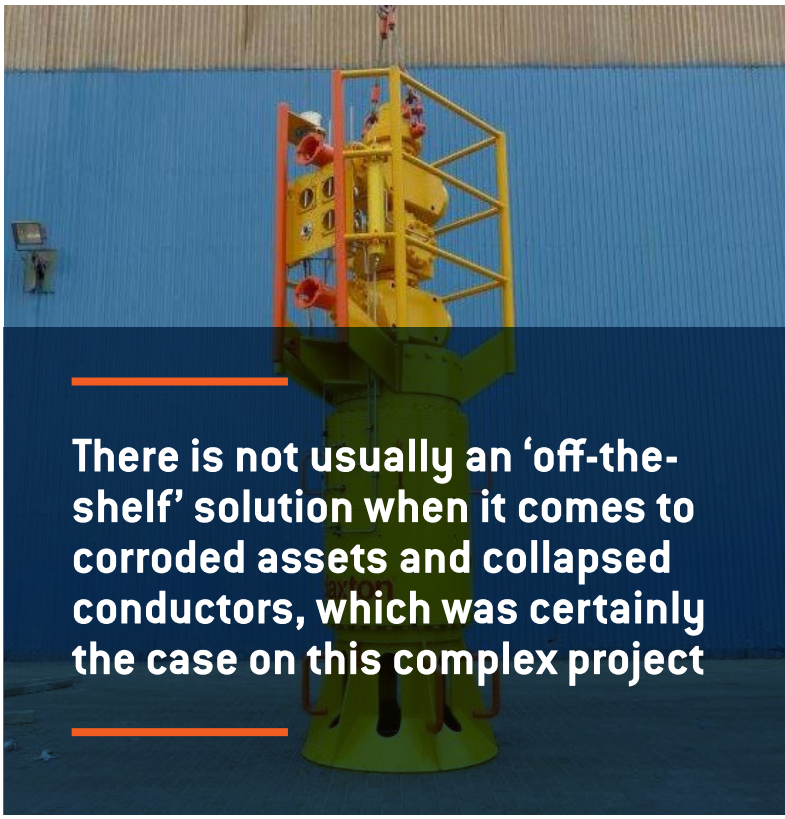
Prior to deployment of the overshot, the torn, buckled section of the top of the exposed conductor was cut off by Claxton technicians using a diamond wire saw to provide a level conductor top. To ensure the success of the operation, an ROV was used to clean marine growth, remove a vertical weld seam and machine a bevel to the conductor stump. The two ROV operated gate valves were fully opened to allow the bubbling gas to pass through the overshot during installation.

The overshot was deployed using the vessel crane and then installed on to the conductor stump, monitored by an ROV. The ROV then engaged its quad port hot stab to the overshot's receptacle and hydraulically operated the slips. The seals were energised and the void between the seals was pressure tested to confirm integrity before the resin sealant was injected into the void and the hot stab was removed. The ROV then engaged the single port hot stab to the cement injection receptacle, the top gate valve was closed, and a rapid curing cement was pumped into the well to set a high-level plug. Finally, the line was flushed through with water and the lower gate valve closed and the single port stab was removed and recovered to surface.

THE RESULT

Commenting on the project, Claxton Project Engineer Ben Griffiths said; "There is not usually an 'off-the-shelf' solution when it comes to corroded assets and collapsed conductors, which was certainly the case on this complex project. The result for the client was a bespoke subsea overshot, designed, manufactured, tested and installed within eight months, with the offshore phase lasting 24 days."

The product provided a cost-effective method for safely capping and killing the two wells, allowing the surrounding area to be returned to shipping lanes. The solution provided by Claxton saved the client from having to drill a relief well.



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