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RETROFIT CONDUCTOR GUIDE CENTRALIZER KEEPS DRILLING ON TRACK.

Claxton supplies retrofit solution in the West Bukha field, Oman - avoiding costly delays for DNO's drilling plan.

In the oil and gas industry, drilling programmes are often subject to change at very short notice. This, coupled with a determination to make the most effective use of rig time, can present challenges to both field operators and their service companies. Claxton recently devised an innovative solution to the issue of drilling-schedule changes that helped a client to keep its programme on track without compromising the preferred well design.

DNO International ASA was drilling offshore Oman when a short-notice change in the drilling programme brought forward the start of work on the West Bukha 4 well. The design for this well called for the installation of four centralizers on the conductor to provide structural integrity, but only two were available at the time of drilling. The schedule change meant there was no time to order the necessary additional platform centralizers from Claxton before drilling began.

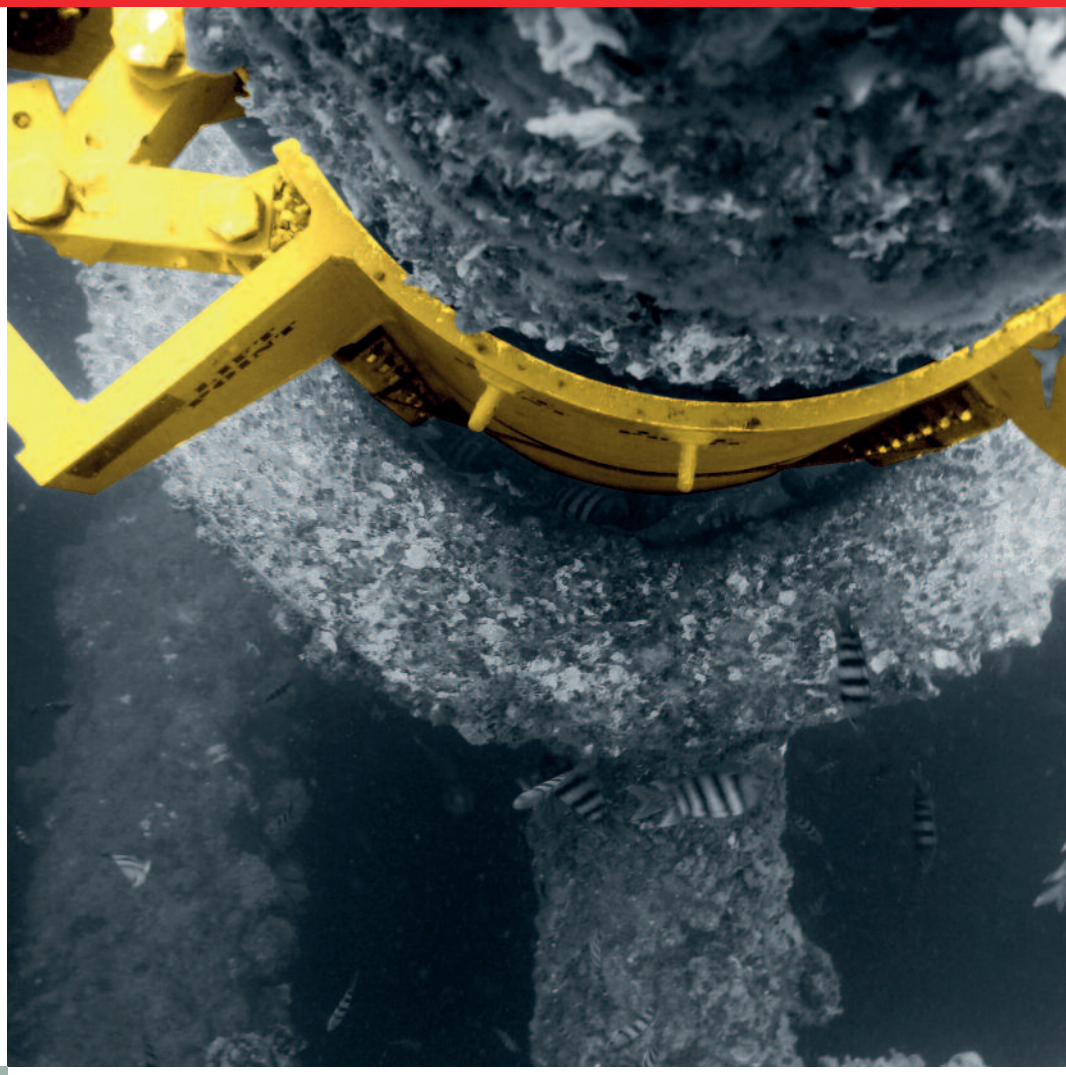
DNO could have opted not to install the additional centralizers, but this was undesirable owing to the fatigue damage that can result from the movement of the conductor and the damage to the platform guides that the conductor repeatedly hitting them could cause.

Nick Dale, Claxton's business development manager, Far East (formerly general manager, Claxton Dubai), explains, "Usually, we expect to install the platform centralizers at the same time as the conductor system, but, in this case

we were unable to install a full set, so we had to find an alternative solution. We suggested retrofitting the additional centralizers during drilling, as this would enable the rig to move onto the well and start operations while we designed and fabricated the items in parallel."

Analysis of the well by Claxton's Acteon sister company 2H Offshore had shown that the conductor would require these additional centralizers: one located approximately 10m subsea and the other in the splash zone.

Dale says, "When faced with this kind of problem, some operators develop their own in-house solutions. Unfortunately, these may be simplistic or poorly engineered, and can often corrode or fail quickly and thus eventually require removal and replacement. DNO decided to use our retrofit solution because it would deliver a well-engineered design that could be installed off the critical path to save both offshore rig time and costly replacement in the longer term."



"We strongly recommend that clients should consider centralization at an early stage when planning new wells, but retrofit solutions like this one give the added flexibility to enable them to address fatigue concerns on existing wells before damage occurs."

A COMPREHENSIVE SOLUTION

Claxton in Dubai provided a complete packaged solution, including platform and rig surveys; design, analysis and fabrication of subsea and surface retrofit centralizers; and a full installation package. Claxton also engaged and managed the activities of third-party abseiling and diving teams to assist with installation.

Mid-way through the drilling programme, during drilling of the long 13⅜" casing section, there was sufficient space on the rig to enable Claxton to mobilise the installation team, abseilers and divers, and complete the subsea installation of the centralizer with no adverse effect on drilling operations.

Gordon Hunter, drilling manager, DNO, said, "Claxton provided a seamless service in terms of engineering, planning and final installation of the retrofit centralizers. During an intense period for well operations, the Claxton team went about their business in a safe and

professional manner to install well-engineered centralizers right first time."

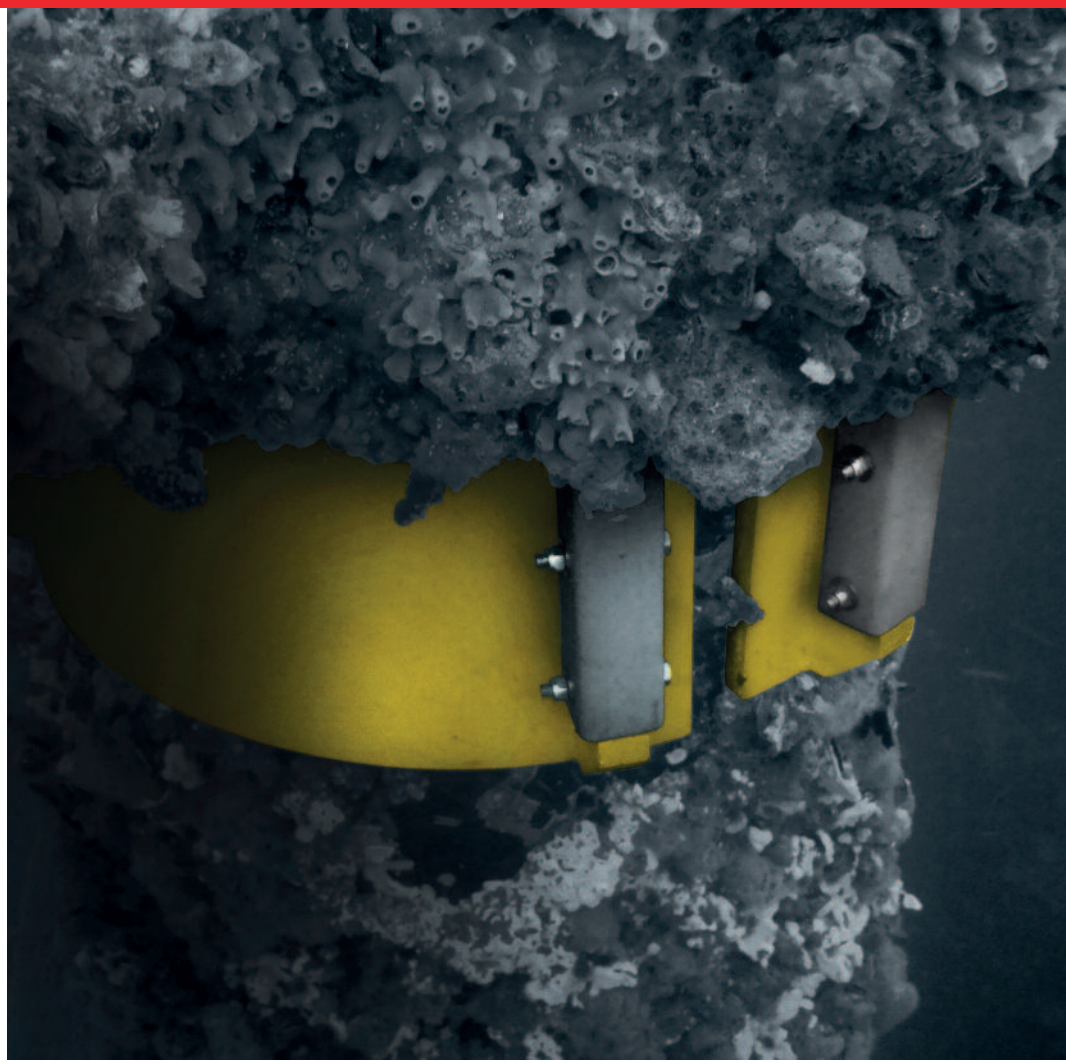
The system that Claxton supplied was a 31" conductor × 40" conductor guide, retrofit, hinged centralizer complete with polyurethane buffers, quick-release collapsible hinges and profiled fins to enable the centralizer to interface with the platform guide funnels. The centralizer was fabricated from AISI 4130 steel and had a corrosion-resistant, thermally sprayed aluminium coating.

The time to completion, discounting offshore delays, was approximately six months. This included the three months from initial discussions to contract award, one and a half months of fabrication work, one and a half months of planning, surveying and writing procedures, and finally one week offshore to complete the installation process.

Dale said, "We strongly recommend that clients should consider centralization at an early stage when planning new wells, but retrofit solutions like this one give the added flexibility to enable them to address fatigue concerns on existing wells before damage occurs and so minimise the risk of expensive repair work. A retrofit solution was perfect for the project at West Bukha 4 where there was insufficient time to fabricate the centralizers and run them with the conductors."

Claxton has extensive experience of modifying and retrofitting centralizers, and carries a broad range of proven designs. This experience made it possible to take the installation work off the critical path of the DNO project, as Dale explains, "We have provided several styles of retrofit centralizer to clients worldwide.

Centralization is an area that may be neglected during the planning process for



new wells, and ever-changing drilling schedules may mean that we have to react quickly to satisfy clients' priorities."

Retrofitting has proved its value in other fields and many different situations, as Dale points out, "We have provided retrofit solutions for old wells that were installed without centralization and where the conductor and guides were showing signs of fatigue through the unrestricted movement of the conductor within the guide. We have also provided retrofit solutions for wells where the space-out prepared during drilling was incorrect and the centralizers were pre-installed on the conductor and not in the guide."

The retrofit approach also provides a valuable solution in cases where components have reached the end of their design life.

Dale concludes, "The ability to devise and deliver solutions that meet customers' needs at all stages of a field's life cycle is a key part of what we do. This is a particularly important consideration when the industry is seeking to extend the life expectancy of infrastructure and assets."

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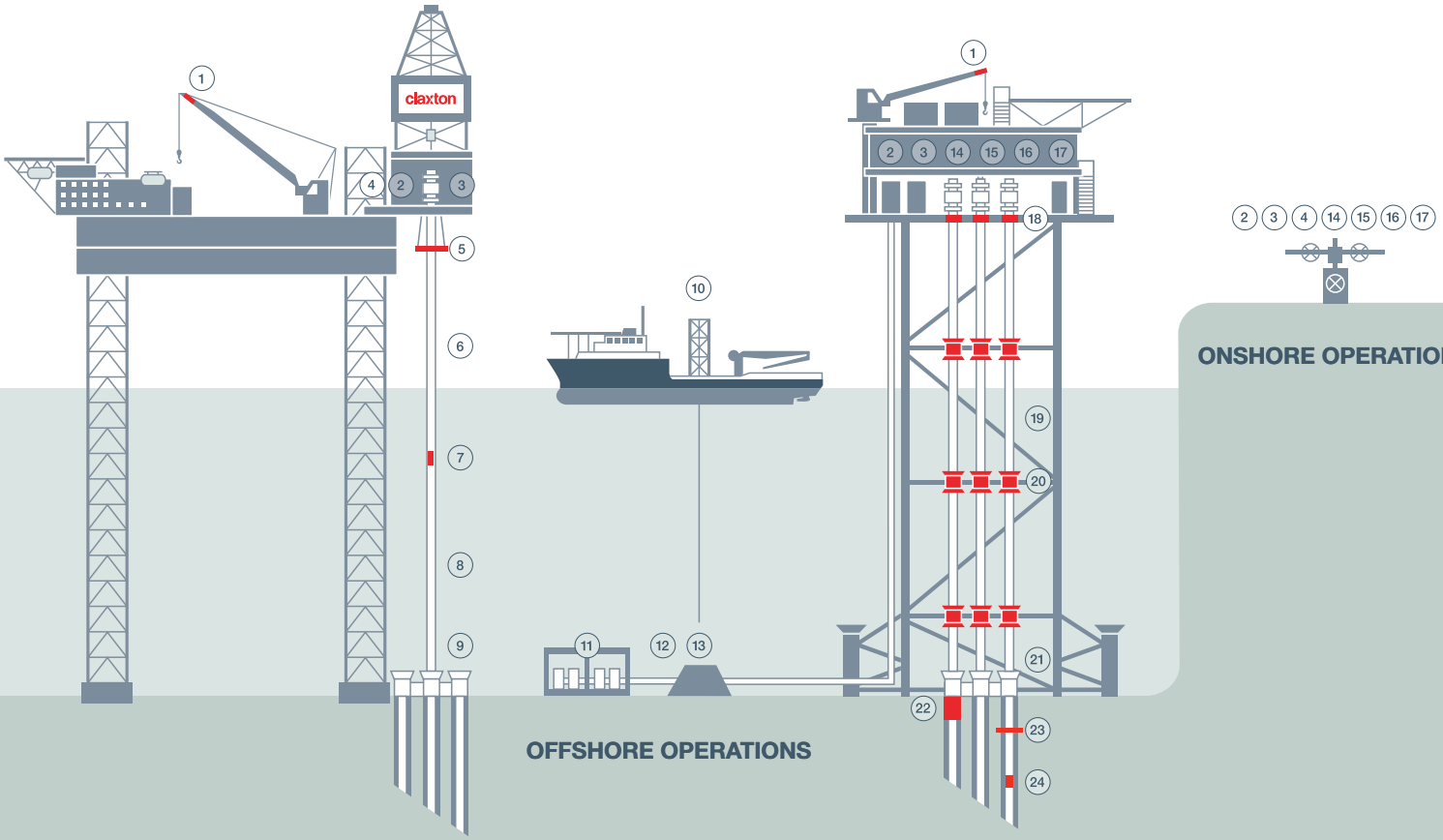

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