



claxton®

# ➤ STRUCTURAL ASSET LIFE EXTENSION.

See how Claxton makes structural asset life extension happen for clients all around the globe.

an **ACTEON** company



MAKE  
IT  
HAPPEN.

**“TO HIGHLIGHT JUST SOME OF OUR EXPERIENCE IN THIS AREA: WE’VE INSTALLED MORE CONDUCTOR GUIDE CENTRALIZERS THAN ANYONE ELSE, MANY OF WHICH ARE RETROFIT DESIGNS, INSTALLED TO EXTEND THE WORKING LIFE OF CONDUCTORS ALREADY IN PLACE.”**



Claxton’s experience with structures means we can “take the pain away” when it comes to your structural and well conductor asset life extension issues.

Whether you’re adding – or recovering – platform slots, replacing your aged centralizers, or adding a complete retrofit conductor guide array to significantly extend the life of your platform, Claxton can make it happen.

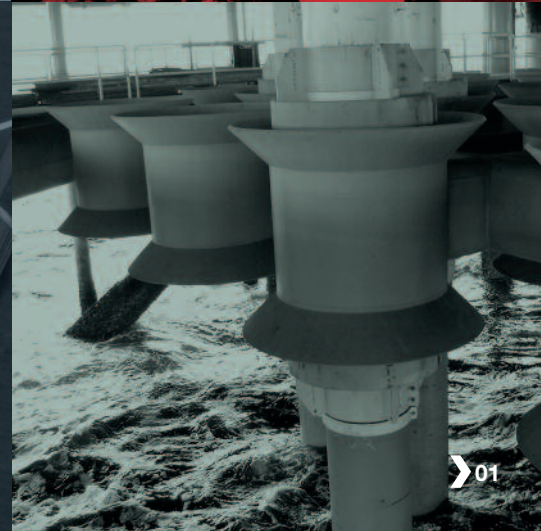
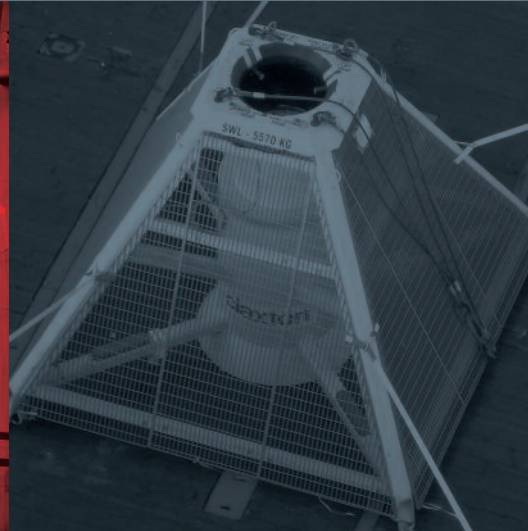
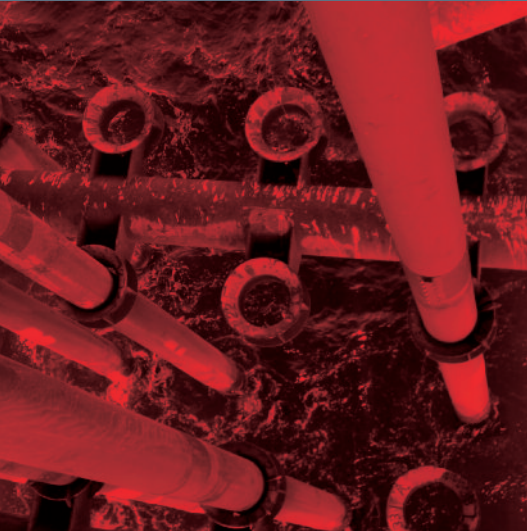
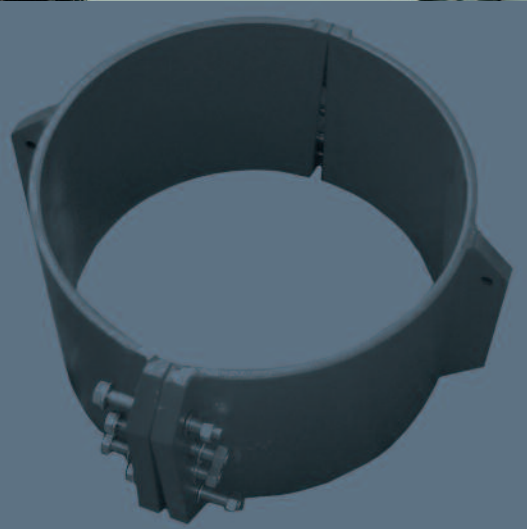
To highlight just some of our experience in this area: we’ve installed more conductor guide centralizers than anyone else (over 4,800 at the time of writing) many of which are retrofit designs, installed to extend the working life of conductors already in place. All of these devices have been built using significant analysis of the platform structure and well conductor interface. This innate understanding of the well conductor environment, complemented by proprietary tooling and field-proven procedures, enables Claxton to add significant value at all stages of the process – as the case studies in this brochure will hopefully show.

Thank you for taking the time to read this brochure. We look forward to helping with your project very soon.

**Ann Vicens**  
Product Leader – Structures

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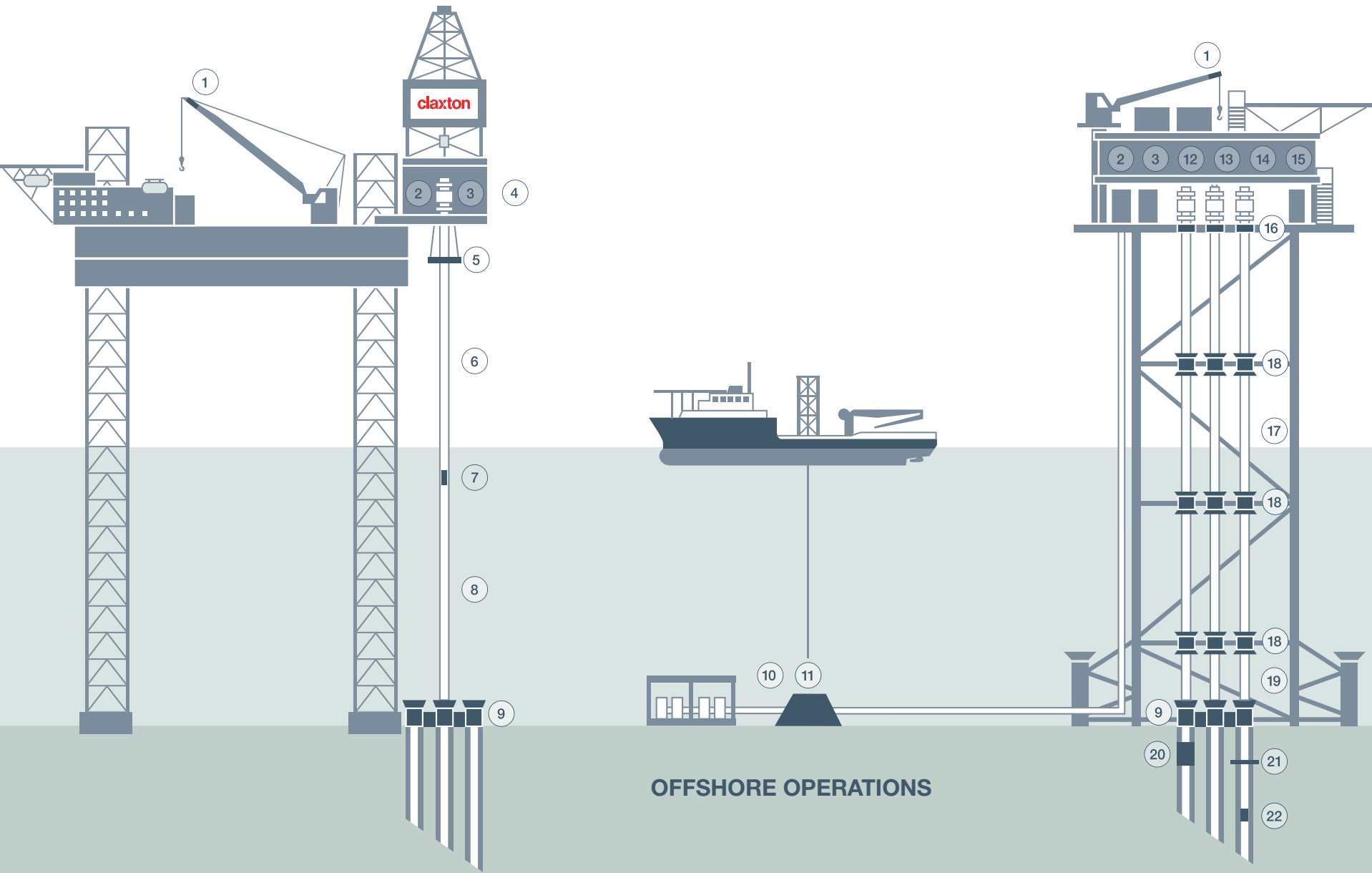
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YOUR PROJECT NEEDS TO DELIVER.

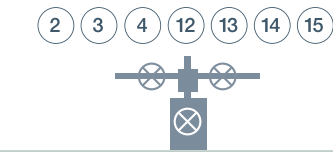
WE'LL MAKE IT HAPPEN.

OUR SERVICES



Since 1985, we've worked closely with our clients to make their projects happen. We believe in the sort of service you expect from a family business and back that up with a willingness and ability to solve operating challenges – safely and reliably – at pace.

This brochure is just a small example of what Claxton can do to make your projects happen - everything on this page is provided by our team.



ONSHORE OPERATIONS

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| ① Crane camera systems            | ⑫ Wellhead maintenance          |
| ② Wellhead design/supply          | ⑬ Hot tapping                   |
| ③ Cold cutting                    | ⑭ Equipment repair and refurb   |
| ④ Equipment rental                | ⑮ Wellhead refurb/replacement   |
| ⑤ Tension rings & tension systems | ⑯ Cellar deck centralizers      |
| ⑥ Drilling riser system supply    | ⑰ Decommissioning & abandonment |
| ⑦ Subsea/downhole cameras         | ⑱ Conductor guide centralizers  |
| ⑧ Tieback engineering             | ⑲ Slot/conductor recovery       |
| ⑨ Drilling templates              | ⑳ Cement top up                 |
| ⑩ Subsea well abandonment         | ㉑ Abrasive cutting              |
| ⑪ Protective structures           | ㉒ Internal centralizers         |



# GUIDING PRINCIPLES

claxton®



Additional slot being installed.

The addition of a new well slot to a major operator's gas platform in the UK Irish Sea will significantly extend the production life of the facility. As is often the case offshore, the project was not without its challenges and called for flexibility on the part of all concerned, not least Claxton.

Claxton was initially sub-contracted to design, fabricate and install a new conductor guide and centralizer in the platform's splash zone. Fitting the new guide, a great team effort with main contractor PSN's construction team, was a complete success; the guide was lifted over the side of the platform, slung into place within the jacket structure and firmly secured within a few hours by a crew of four abseilers. The picture opposite shows perfectly what was involved.

Thereafter, there were some changes to the original plan. With the field operator's drilling crew on site and preparing to drill, concerns emerged that whipping of the drillstring at the congested cellar deck level might lead to clashes with surrounding steelwork or piping. "The general feeling was that the provision of a drill bush in the guide at the splash-zone level would not be adequate to contain the problem and that a temporary guide was required at the cellar deck," explains Bob Leggett, Claxton's project manager for the work. "As we were already involved in the project and have a lot of previous experience with this type of work, we were asked to come up with a solution to the problem."

Claxton's answer was to install a temporary guide in the opening through the cellar deck and to provide a bush that could be run on the drillstring to sit



in the guide. Once landed in the guide, the bush, which had a polymer lining and formed a clearance fit around the drillstring, was locked in place to provide the necessary restraint at the critical point. With the initial drilling complete, the temporary guide was removed and the conductor was run into the hole.

In another departure from the plan, the drilling crew decided not to install the conductor centralizer within the splash-zone guide. This was because they were concerned about problems engaging the centralizer in the guide and the effect this would have on the drilling schedule. A different type of centralizer was therefore called for, one that could be handled and installed by abseilers, like the guide itself. With the agreement of PSN and the operator, it was decided to construct the centralizer in three segments. This allowed the centralizer to be retrofitted in the guide on completion of the drilling activities. Again, the installation of the guide was a joint effort with the PSN construction team and turned out to be a complete success.

David Pugh, PSN's project engineer says, "Projects involving a number of

responsibility interfaces are prone to unforeseen change. The project team has to be flexible and able to respond quickly when deviations to plan occur. Claxton has a lot of experience of drilling associated work and was able to provide that quick response with an efficient design, build and install service. The Claxton staff were valuable members of the project team and brought with them a positive attitude to problem-solving."

Bob Leggett takes satisfaction from having been part of an imaginative project to prolong the life of an installation that was past its production peak. He says, "Claxton has previously undertaken projects to regain entry to reservoirs via existing well slots, so-called slot recoveries. By adding an entirely new slot you minimise the effect on production from the existing wells; though, as here, you have more structural issues to deal with. Each approach has its advantages. What is important is that the range of options available to operators seeking to extend the life of existing structures has been extended."



# REPLACEMENT JACKET GUIDE ASSEMBLY

A recent Claxton fabrication contract for a replacement jacket guide assembly project called for a radical technical solution. The company's involvement started in May 2011 with a survey of the existing guide assembly, which was reaching the end of its working life, at a North Sea platform. Detailed design work for a replacement then followed. With the field operator keen to make progress, Claxton's rapid response saw design engineers going offshore in a matter of days to assess the condition of the existing structure.

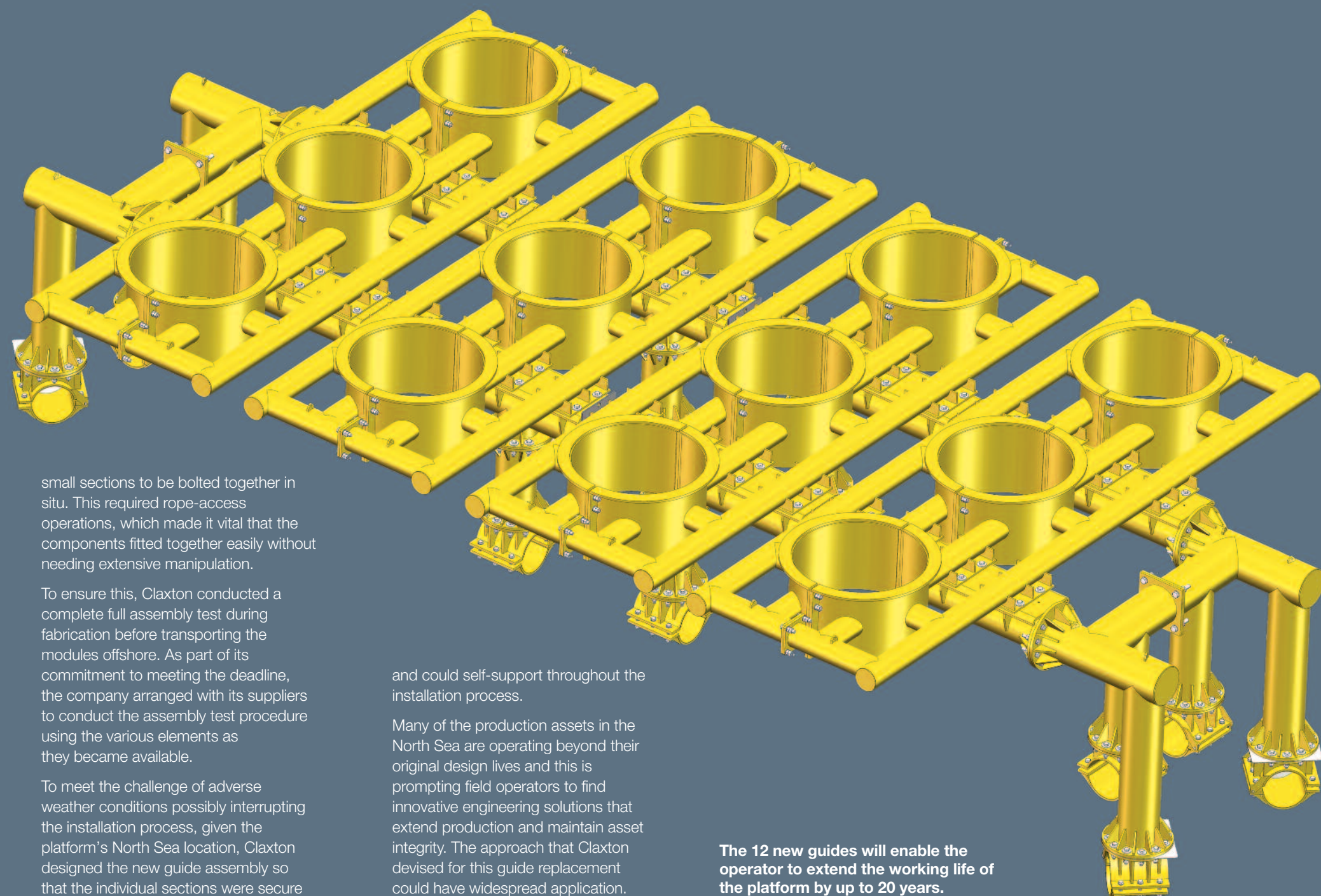


The 12 new guides will enable the operator to extend the working life of the platform by up to 20 years.

The splash zones on offshore platforms are subjected to seawater exposure and high levels of lateral loading from the risers, and, in this case, it was clear that the entire splash-zone structure needed replacing. The solution Claxton proposed involved building the new assembly on top of the old guide using existing structural members for support before removing the old structure from underneath. This multistage process called for high-precision installation of uprights, beams and four rows of guides assembled with eight new guide sections. When complete, this would replace the splash deck of the platform, provide 12 new conductor guides and enable the field operator to extend the working life of the platform by up to 20 years.

The main challenges for Claxton involved restrictions on how the assembly could be installed; its modularity; and the flexibility required to deliver an appropriate engineering solution to a very tight timescale. Ann Vicens, project engineer, Claxton, explains, "This was a large-scale project that built on our experience in this sector and work we had already conducted for the operator, including maintenance and decommissioning services. In this case, we provided full project management and the close relationship we have with our suppliers meant that we were able to complete the fabrication phase in under 14 weeks."

The project's very tight schedule presented some tricky challenges. The modular replacement structure had many



small sections to be bolted together in situ. This required rope-access operations, which made it vital that the components fitted together easily without needing extensive manipulation.

To ensure this, Claxton conducted a complete full assembly test during fabrication before transporting the modules offshore. As part of its commitment to meeting the deadline, the company arranged with its suppliers to conduct the assembly test procedure using the various elements as they became available.

To meet the challenge of adverse weather conditions possibly interrupting the installation process, given the platform's North Sea location, Claxton designed the new guide assembly so that the individual sections were secure

and could self-support throughout the installation process.

Many of the production assets in the North Sea are operating beyond their original design lives and this is prompting field operators to find innovative engineering solutions that extend production and maintain asset integrity. The approach that Claxton devised for this guide replacement could have widespread application.

**The 12 new guides will enable the operator to extend the working life of the platform by up to 20 years.**



# RETROFIT CENTRALIZER SOLUTION

How Claxton solved a tricky asset life extension problem for Subsea 7.

## THE PROBLEM

Subsea 7 approached Claxton when it had to retrofit centralizers in several subsea conductor guides beneath two platforms for an operator in the Norwegian sector of the North Sea. The project was in response to challenges connected with the inaccurate positioning or slippage of the original centralizers.

## THE SOLUTION

Engineers from Claxton and Subsea 7 jointly examined the specific practical challenges of the project. This led to Claxton modifying an existing centralizer design to produce a slim, lightweight, three-piece centralizer capable of being wrapped around the conductor and slipped down into the guide. The two parties continued to work closely to test the new design thoroughly onshore, develop installation procedures and plan the necessary diving operations.

Claxton was initially asked to supply 10 of the centralizers, all for 26" conductors: eight suitable for fitting in 36.½" guides and two for 34" guides. Later, Subsea 7 added one more of the latter design to the order and asked for this to be supplied within two weeks. Claxton delivered the centralizer 11 days after the formal request.

## THE RESULT

Subsea 7 reports that the work offshore to install the centralizers went well and was devoid of incident. It was agreed that the success of the project was helped by excellent interaction between Claxton and the client.

Claxton project engineer Ann Vicens is certain this was the case: that the success of this project and others like it

was the result of the excellent interaction between supplier and client. "Collaboration is always the key," she says. "There has to be a willingness to discuss all aspects of the job and to work together to devise a practical, installer-friendly solution to the challenges expected offshore. Solid preparation up-front has the power to save considerable time and, therefore, money during the offshore operations."



Retrofit centralizer being lowered into position.

# SLOT RECOVERY ON THE BERYL B PLATFORM

Claxton's innate understanding of the platform structure/well conductor interface combined with continued investment in conductor recovery processes has enabled numerous operators to cost-effectively recover platform slots which are no longer economic – just one example of many is shown below.

## THE PROBLEM

A client wanted to recover a slot on the Beryl B platform in the North Sea, but a 20" tieback riser needed retrieving. However, there was concern regarding the structural integrity of the riser's RS-type connectors, as a similar connector had failed during a slot recovery operation and resulted in a dropped riser.

## THE SOLUTION

Claxton developed a recovery method for the 20" riser that provided an efficient means of recovery and enhanced the riser's integrity during retrieval. Additionally, we also supplied an equipment package to facilitate recovery.

We supplied a solution that involved running a new 13.¾" casing string complete with a smart anchor packer inside the 20" tieback riser to enable dual-string recovery. The 13.¾" internal casing riser provided structural strength and integrity to 20" riser when the inflatable anchor package was energised.

Claxton supplied hot tapping services to vent the pressure from the 20" x 13.¾" annuli tieback string to the rig's choke manifold, and cold cutting equipment for simultaneous severance of the 20" and



Slot recovery has proved to be a robust solution for operators looking to extend the life of their assets.

13.¾" tieback risers directly below the 20" wellhead housing.

Drilling and pinning services were supplied to bore 4" inside diameter holes to anchor the 20" tieback riser to the new 13.¾" casing string. In addition, a hydraulically activated centralizing clamp was used to restrict and minimise pipe movement during the rig floor recovery, the severance of the dual riser string and the removal of the 20" riser-bolted centralizers. The centralizer clamp was set to drift the 20" LS Vetco connector 24" inside diameter and react onto 20" outside diameter pipe.

At rig floor level, the riser recovery was undertaken using Claxton drilling and pinning machines to bore through the 20" and 13.¾" casing strings.

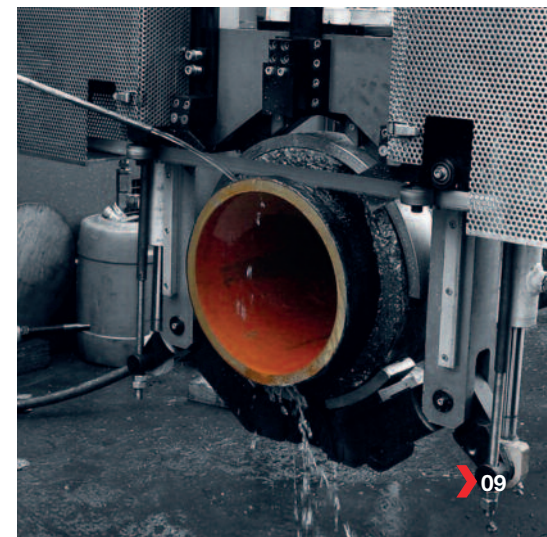
Expandable-grip pin mandrels and load pins were used to secure the strings, and Claxton rapier bandsaws dressed with 20" pipe clamp insets were used to sever the 20" and 13.¾" risers directly above the RS connector to allow for the conventional layout of the tieback strings.

## THE RESULT

The slot was recovered as per the client's brief and the 20" riser connectors did not fail during recovery.

Claxton has subsequently used similar equipment packages on several other conductor and slot recovery projects with great success.

Claxton RAPIER casing bandsaw in action.



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