



SHELL BRENT FIELD DECOMMISSIONING PROJECT

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A WORD FROM **ROB MAXWELL**

Welcome to issue #21 of Brent e-news

This edition will focus on an update of the progress of the Brent Field decommissioning programme, a review of the project activities in 2019 and a look ahead to 2020.

Introducing Rob Maxwell

During 2019 we saw a change in the Brent decommissioning leadership team when Duncan Manning, the long-term Brent asset manager, left to take up a new role with Shell in the Hague. In June 2019 we welcomed Rob Maxwell as the Brent asset manager. Rob joined Shell from BG after the Shell acquisition of BG in 2016. As an introduction to the Brent stakeholders, we interviewed Rob for this edition of Brent e-news.

Q. Rob, can you tell us about your background and what you have been doing since you joined Shell?

A. I graduated with a degree in Biochemical Engineering and joined BG Group on their graduate programme in 2005, before enjoying eight years in different roles within Operations & Projects, including four years offshore in the central North Sea. Having joined the corporate team I was the business advisor to the CEO, supporting the Shell/BG integration, from the announcement of the deal in April 2015 until completion in 2016.

Since being with Shell I have been the lead for the upstream operations business in Queensland Gas Company from 2016 to 2018 based in Brisbane, Australia and was the asset manager for Shell's 36.8% JV interest in Danish Underground Consortium, before moving to the Brent decommissioning project this Summer.

Q. As the new asset manager for Brent, what were your first impressions of the decommissioning project team?

A. Firstly I would like to offer my huge personal thanks to Duncan Manning, and acknowledgement for his fantastic leadership of the Brent assets over the last six years. The Brent decom project team is very strong on delivery and has made exceptional progress over the past few years, with an impressive focus on execution.

A great example of this is the implementation and transfer of the lessons learned from the Delta topside lift in 2017, to the Bravo topside lift this June. We improved in all dimensions: efficiency in execution, collaborative supply chain partnerships, innovative technologies and scope optimisation.

For any decommissioning team, with such a variety of challenging tasks, the most important goal is to keep people safe. Decommissioning is a different environment, with many interfaces and tasks that are not routine. So we have to continue to strive ever harder to meet our target of Goal Zero, and ensure everyone goes home safely every day.

Q. What have been the highlights of 2019 for you?

A. 2019 has many standout milestones, when we consider that at the turn of the year, we still had three platforms manned and in less than 12 months we are now down to just Charlie, which of course is still producing.



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WE ARE CONVINCED THAT LEAVE IN PLACE IS, ON BALANCE, THE SAFEST, MOST TECHNICALLY ACHIEVABLE, ENVIRONMENTAL AND SOCIALLY SOUND SOLUTION.

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Bravo was down-manned at the end of March, and when we down-manned Alpha on 20 October, we beat our “Gold Medal Target” of everyone on Alpha being “Home for Halloween” with time to spare. Bringing everyone home for a final time from two platforms in the same year is a great achievement and a credit to everyone involved.

The Bravo topside lift was incredible, and I had the good fortune to have joined the project in time to witness the exceptional team-work and expertise of Shell, Allseas, Able UK and ALE that ensured the tow in and load on to the quayside at Able’s facility Hartlepool in June was smooth and successful.

On Charlie, the drilling rig removal project demonstrated our agility and how effectively the Operations and Project and Wells teams worked together. The decision to replace the rig with two hydraulic workover units (HWU) has been fully justified, with the first HWU up and running and getting ready for unit 2 in December. That will be another Brent first – two concurrent HWUs working on wells’ Plug and Make Safe offshore.

Q. The UK Government submitted the Brent Field derogation request to OSPAR in January 2019. Can you update us on how this was received and the progress to final approval?

A. It comes as no surprise that there has rightly been detailed scrutiny of the plans from OSPAR members. This culminated in a Special Consultative Meeting (SCM) in October – involving member countries and



Brent Alpha, now down-manned

official observers – to discuss some areas of contention, principally related to the GBS and cell content.

Following the SCM the UK Regulator has agreed to deepen their engagement with key countries who still have concerns to achieve a common understanding ahead of any decision and we support this in the spirit of the OSPAR framework, despite the formal consultation process being concluded. This is a UK Government-led process as the ultimate decision maker, to engage with the other OSPAR countries, but from Shell’s perspective we have welcomed the opportunity to listen further and engage with key stakeholders.

We understand how some people may feel that removing the sediment and legs is “the right thing to do”, but we were disappointed that Greenpeace activists chose to protest on Brent Alpha, potentially putting themselves and others at unnecessary personal risk. Stakeholders who have followed our process and engagements for many years will already be aware that we have not arrived at this recommendation lightly.

We have considered all the factors: understanding what is contained in the cells and making our recommendations based on reasoned and balanced judgment, backed by a decade of research and the depth of technical studies that have been undertaken, alongside the essential independent review.

We are convinced that Leave in Place is, on balance, the safest, most technically achievable, environmental and socially sound solution.

Q. In 2020 the Project enters its 14th year – what are you looking forward to and what are the key challenges?

A. I’m looking forward to us collectively delivering on our key goals for 2020 and continuing to enhance Brent’s legacy through excellence in decommissioning.

By December 2020 we aim to have lifted the Alpha topside and jacket and progressed the wells’ Plug and Make Safe on Brent Charlie. We anticipate having received a decision from the Regulator on our application to derogate the GBS and Alpha jacket footings.

Probably most significantly and the most poignant milestone will be the final Cessation of Production (CoP) on Brent Charlie. This will bring to an end over 40 years of production from the iconic Brent field, and an event that will be marked accordingly.

To achieve our goals, the key challenges will be to deliver safely and efficiently a multitude of concurrent activities on Brent Charlie. We go into 2020 with Charlie still producing, the two hydraulic workover units busy operating on wells’ Plug and Make Safe, a range of topsides lift preparatory engineering scopes to be progressed and continuing to work on the Attic Oil Recovery from the Charlie storage cells. You can read about the 2019 major projects in this issue.

Thank you for your continued interest in Brent.

Rob Maxwell
Brent Asset Manager ■

ONE-TO-ONE ENGAGEMENT



If you would like to be briefed one-to-one on any aspect of the Brent decommissioning project developments, or would like to raise any particular queries or issues with the project team, please contact us at www.shell.co.uk/brentdecomm

You can also get in touch with the team via the **Contact Us** link on the website or simply click [here](#).



OPERATIONAL UPDATE

FROM WILLIAM LINDSAY

2019 has been another very busy and successful year for the Brent decommissioning team and we achieved several significant project milestones.

Operationally 2019 was remarkable year for the Brent project. We set out in January with the ambitious plan to complete the engineering scopes on Brent Bravo, down-man by end of Q1, lift the topside by the end of Q2 and complete the preparations on Alpha for the topside and upper jacket lift in 2020, with down-man before the end of Q4. On Charlie we wanted to progress the wells' Plug and Make Safe as smoothly as possible, so took the decision to replace the drilling rig with two hydraulic workover units. We also continued the development of the advanced technology for the Attic Oil Recovery.

I am delighted to report that we delivered on all these key milestones. This could not have been achieved without a concerted, integrated team effort, from both Shell and our contractor companies, onshore and offshore. The one team collaborative approach ensured we could successfully employ a range of highly innovative engineering solutions, take some bold decisions and share lessons learned, while maintaining a focus on improved efficiency and reducing costs.

At Able UK, the Delta topside dismantling and recycling was completed in readiness for Bravo topside delivery, with an impressive over 97% of materials being recycled.

However, as always, our main aim is to deliver all decommissioning activities safely, with the target of Goal Zero.



As testament to the efforts of the team to improve safety, we did receive a positive endorsement for the improvement of eye-injury cases on Alpha when the team won the Learning and Sharing category at the Step Change in Safety/Oil & Gas UK Offshore Safety Awards in August 2019.

I would like to thank everyone for the focus and determination required to ensure we met our objectives this year and for the outstanding achievements. Brent continues to lead the way in groundbreaking

technology and innovative solutions to decommissioning activities.

Looking forward to 2020, we will be planning the lift of the Alpha topside and upper jacket, working towards the cessation of production on Charlie and taking all the learnings from Delta, Bravo and Alpha to focus on making Charlie the "best decommissioning project yet". ■

William Lindsay
Brent Decommissioning Project Director



Gen Martin, HSSE Conventional Oil & Gas Projects, accepts the Oil & Gas UK/Step Change in Safety Offshore Safety Award for Learning and Sharing on behalf of the Brent Alpha team, for the significant reductions in eye-injury cases.



Bravo topside lifted in 9 seconds

THERE WE GO...

25,000 TONNES OF
BRENT BRAVO TOPSIDE
LIFTED IN 9 SECONDS

In June and July 2019, the Brent decommissioning project successfully completed two major heavy lift projects: the single lift of the Brent Bravo topside and the removal of the drilling rig from Brent Charlie. Both projects are excellent examples of sharing lessons learned, innovative engineering solutions, detailed project planning, integrated "One Team" working and safe, efficient execution.

The removal of the Brent Delta 24,000 tonnes topside in 2017 was a world record offshore single lift at that time. For the Brent Bravo topside lift, multiple opportunities to drive step changes in execution efficiencies were identified. Innovative engineering and execution efficiencies meant work offshore was slashed, reducing workforce exposure (a key safety factor) and costs. The Bravo topside single lift – successfully completed in June 2019 – is a great example of effectively applying lessons learned and the subsequent improvements in operational efficiency.

Following the removal of Delta topside, the engineering and lift preparation learnings were transferred from Delta to Bravo, resulting in around 70% reduction in offshore man-hours exposure (for like-for-like scope), ingenious engineering changes and solutions, which all resulted in earlier down-manning.

Working closely with Allseas (owners of the Pioneering Spirit lift vessel) and a number of supply chain companies involved in the offshore execution, we adapted the engineering design to install six concrete lift points underdeck, which replaced the eight steel cruciforms used on Delta. This resulted in greatly simplified

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ENGINEERING A SOLUTION THAT ALLOWS US TO CUT THE LEGS WHILE THE PLATFORM IS STILL MANNED AVOIDS THE NEED FOR COSTLY AND COMPLEX VESSEL CAMPAIGNS IN THE FUTURE.

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scopes and reduced underdeck safety risk exposure. The Delta lift preparation required a three-season campaign and Bravo was essentially executed in one.

Like Delta, Bravo has three massive, steel reinforced concrete 12m diameter legs which needed to be cut and the 25,000 tonnes topside held securely in place before removal. Delta used unique 35-tonne circular steel restraints attached to the inside of each platform leg to strengthen and stabilise the structure after leg cutting.

Bravo employed an innovative and ingenious technique for restraining the legs after cutting through beneath the underdeck from the inside, by removing cylindrical cores from the legs and inserting specially designed steel “shear keys” into the holes left from the coring.

The Brent Decom team, working with partners Allseas, Arup and Proserv, drilled eight holes – 40 cm in diameter and 840 cm long – through the thickness of each leg to fit the shear pins. The cut points went through the shear key slots, and the keys were inserted to prevent any lateral movements. On Bravo 80% less steel was required to keep the topside stable after leg cutting compared with Delta.

Engineering a solution that allows us to cut the legs while the platform is still manned avoids the need for costly and complex vessel campaigns in the future.

Bravo was down-manned on 31st March 2019, lifted by the Pioneering Spirit on 18th June, transported to Hartlepool, transferred onto the Iron Lady barge and towed into Able UK’s Seaton port dismantling and recycling facility by 20th June.

Even the uniquely designed “feet” for holding the topside securely on the barge were reused, having been recycled from the Delta lift. Over 97% of the Delta topside has been recycled by Able UK and increased mechanisation and learnings transferred to Bravo should permit a 33% reduction in the duration of the next topside dismantling. ■



Bravo topside on the Pioneering Spirit



Bravo topside on the quayside at Able UK



Brent Bravo topside on the Iron Lady barge being towed into Able UK’s facility in Hartlepool

VIEW OUR FILM



To view the film of the full story of the Brent Bravo topside lift, visit www.shell.co.uk/brentdecomm



A BOLD DECISION

BRENT CHARLIE DRILLING RIG REMOVAL

Sometimes in decommissioning the counter-intuitive decisions can provide the right solution. Replacing existing equipment with new kit on a platform that is due to be decommissioned would not appear to represent good value. But in the case of the Charlie drilling derrick, it turned out to be a good plan.

The highest cost component in decommissioning is the Plug and Making Safe of the wells. Brent has 154 wells, and since the start of the project, costs have been halved by optimising well barrier design, application of new technologies/techniques and efficiency improvements. Having completed the wells on Delta, Bravo and Alpha, work has now started on Brent Charlie in parallel with production, adding to the complexity of simultaneous operations.

As Bethan Vasey, Brent Charlie Project Manager explained: "In 2019 the Brent Charlie wells team was faced with a dilemma as the drilling derrick, installed in 1996 and critical to the campaign, was not performing effectively, leading to significant non-productive time which was seriously impacting the schedule. Our choices were to repair the rig and attempt to keep it functioning, or remove the derrick and replace it with two modern hydraulic workover units.



Bethan Vasey
Brent Charlie
Project
Manager

The aim was to increase productivity and keep the wells campaign on track, but the removal of the derrick was complex and the risk was that it could take a lengthy time to execute, negatively impacting the schedule, and the cost."

In the Summer of 2019, Shell and Heerema Marine Contractors (HMC) collaborated to remove the drilling rig safely from the Brent Charlie platform using the Thialf heavy lift vessel in only six weeks from contractual commitment.

Bethan was confident this could be delivered in the compressed timescale.

"Shell and HMC have a strong track record in collaboration and the companies were able to conduct surveys and studies in three weeks to determine the feasibility of removing the rig. Driven by a short availability window of the Thialf heavy lift vessel, there was a compressed six and a half week period from contract award to prepare the platform and rig, amend the safety case, put in place all necessary permits and regulatory requirements, execute the lift and transport the rig to AF Decom's decommissioning yard in Vats, Norway. We considered that this very short project schedule was possible due to the expertise Shell has developed in delivering decommissioning projects in the North Sea, coupled with Heerema and AF Decom's experience and capabilities".

Critical to delivering this project on time was Shell's ability to draw on strong relations with regulatory bodies, to ensure all necessary permits were in place – a depth of experience from previous



Brent Charlie

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THE TRUST BETWEEN THE ORGANISATIONS, OUR CLEAR GOALS, QUICK DECISION MAKING AND AGILE WAYS OF WORKING ALLOWED A SHORT TIMEFRAME FOR DELIVERY.
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decommissioning projects – and available resources from reliable, existing supply chain partners associated with Brent. Lessons learned were incorporated into working practices by all three companies, demonstrating how experienced and motivated teams can be deployed quickly to deliver effectively.

The Thialf arrived in the Brent Field on 22 July 2019, with the 1,500-tonne rig successfully removed the next day. After sailing to Norway, the rig was safely landed on the quay at the Vats yard on 25 July for dismantling and recycling.

Summing up the key elements that were crucial to the success of the project, Bethan was clear that:

"The trust between the organisations, our clear goals, quick decision making and agile ways of working allowed a short timeframe for delivery. We focused on execution efficiency, with everything done safely and everyone realising a commitment to deliver a project of this magnitude in six weeks." ■



Team-work between Shell and Heerema was the key to success

KEY MILESTONES ACHIEVED

FOR BRENT ALPHA IN 2019

Brent Alpha project manager Pieter Hendriks is delighted with the achievements on Brent Alpha this year.

It is great to report that 2019 has been a year which has seen rapid progress for the safe removal of the Brent Alpha topside and upper jacket, which is planned for 2020. The Plugging and Making Safe of all wells was completed, and the topside has been almost entirely separated from the supporting jacket structure. Only the final cutting of the four corner legs remains before the topside can be lifted by the Allseas single lift vessel Pioneering Spirit. Additionally, the upper 85m of jacket substructure has been prepared for cutting and removal by the SSCV Sleipnir.

"When the last helicopter left Brent Alpha on 20 October, taking the final personnel off the facility and completing a safe down-man, we beat our "Gold Medal" target of having "Everyone home for Halloween", which is a great reflection on the positive team-work and focus of the crews" said Pieter. The platform is now in "lighthouse" mode and fitted with automated navigation lights.

Preparing the topside for removal involved multiple, and often simultaneous, work-scopes. These were largely carried out by our contractors, PD&MS, STORK and Allseas, with additional scopes completed by a range of partner companies. The "One Team" collaborative approach ensured that these complicated and challenging activities were executed efficiently and on time.

Work included cutting through 28 30" conductors securing the top sections to the topsides. Power and communication cables linking Brent Alpha to Brent Bravo had been cut before Brent Bravo was removed.

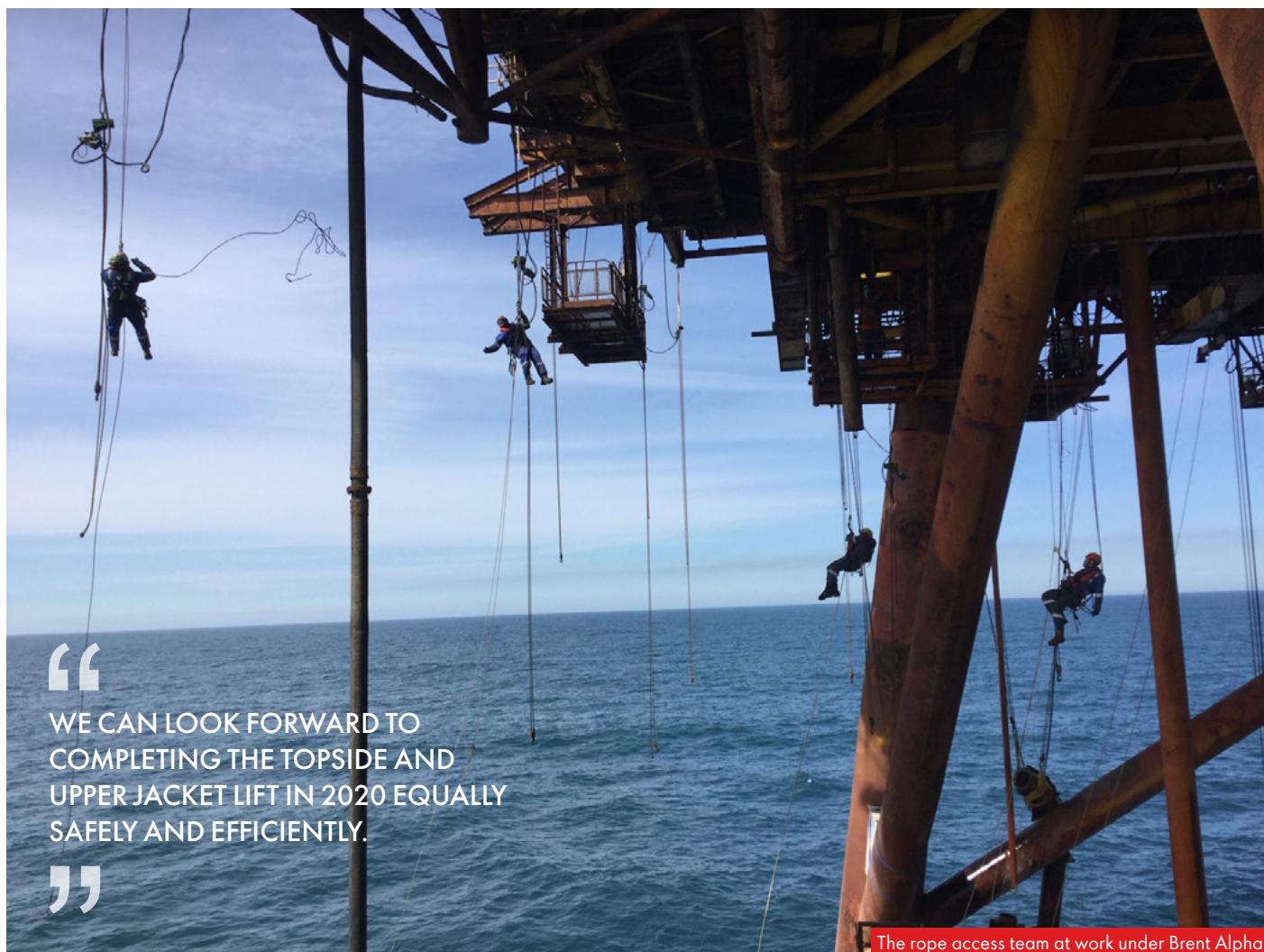


Brent Alpha

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THE "ONE TEAM" COLLABORATIVE APPROACH ENSURED THAT THESE COMPLICATED AND CHALLENGING ACTIVITIES WERE EXECUTED EFFICIENTLY AND ON TIME.

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WE CAN LOOK FORWARD TO COMPLETING THE TOPSIDE AND UPPER JACKET LIFT IN 2020 EQUALLY SAFELY AND EFFICIENTLY.

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The rope access team at work under Brent Alpha

Caissons and risers had also been cut to provide clearance during the topsides lift. A large amount of the work performed has been done by rope access under the deck, frequently working on the “spiderdeck”, six metres above the sea. This work had to be performed during the summer months to avoid winter storms.

One of the critical elements was to weld “bearing-blocks” onto each of Alpha’s six huge steel legs. These bearing blocks provide a gripping-point on each leg to allow the Pioneering Spirit to lift the platform. This work required very high-quality welding and positioning of the blocks, as well as custom scaffolding extending below the deck to support the habitat and create access for the welders. In total, 12 bearing blocks were successfully positioned and welded.

There have also been multiple vessel campaigns in 2019. In September, Heerema Marine Contractors mobilised the “Aegir” construction vessel to perform a preparation campaign on the jacket substructure. This was a 30-day campaign using ROVs to inspect and prepare the jacket, prior to lifting by the SSCV Sleipnir crane vessel in 2020. Following closely behind the Aegir campaign, Allseas arrived with the construction vessel Oceanic. This vessel supported the pumping of grout into the upper parts of the legs. These grouted sections strengthen the leg at the bearing blocks so the Pioneering Spirit can pick up the platform safely.

Pieter concludes that: “The health and safety record on Brent Alpha during 2019 has been very good and is a credit to

the companies involved, especially for the high-exposure and underdeck work performed. We have reached another “end of era” with the final down-man of Alpha, but can look forward to completing the topside and upper jacket lift in 2020 equally safely and efficiently.” ■

CONTACT US



For further information on the project, please visit www.shell.co.uk/brentdecomm

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