

BRENT E-NEWS

SHELL BRENT FIELD DECOMMISSIONING PROJECT

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A WORD FROM DUNCAN

Welcome to issue 18 of Brent e-news.

This edition will focus on two of the project's key milestones:

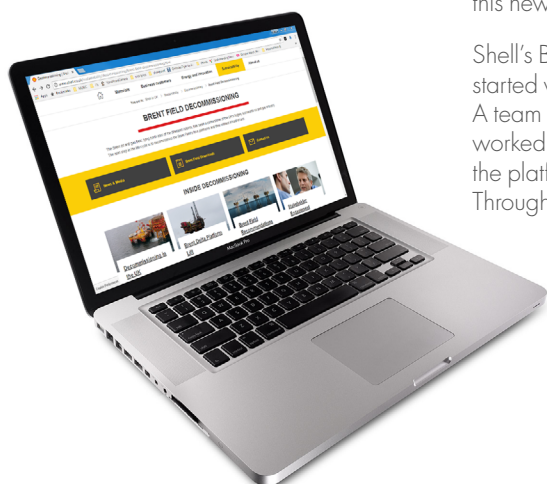
- submission of the Brent Decommissioning Programme and public consultation; and
- the world record breaking single lift of the Brent Delta platform topside.

Public consultation

Submission of the Brent Decommissioning Programme represents the culmination of over 10 years of studies, independent review and stakeholder engagement.

Our public consultation ran from February to April and we received a number of comments from interested parties including regulatory statutory consultees. You will be able to find out more later in this edition.

During this time, the media were keen to hear about the Project, and a number of interviews were conducted. We were able to share Shell's recommendations and the reason that we believe these are, on balance, the safest and most responsible way forward for the Brent Field.



With the public consultation process now closed, the next step is to conclude the formal response to all comments. Following this, we will look to update the documentation, as appropriate, for resubmitting to the regulator, the Department for Business, Energy and Industrial Strategy (BEIS) later in the year.

Brent Delta platform lift

On Friday, 28 April Allseas colossal lifting vessel "Pioneering Spirit" – with a length of 382 metres, equating to over six jumbo jets set nose to tail – successfully removed the Brent Delta platform in a single lift and commenced its transportation from the Brent Field, located 186km north east of the Shetland Islands before arriving on Tuesday, 2 May, at the Able UK Decommissioning yard in Hartlepool where over 97% of the structure will be recycled.

This marked the culmination of around five years of study and engineering work, several days of transportation and the world record breaking 10 second fast lift of the 24,200 tonne platform; a feat firmly putting this lift in the record books cementing the credibility of this new innovative lifting technology.

Shell's Brent Decommissioning team started working with Allseas in 2013. A team of engineers from both companies worked tirelessly together to ensure that the platform and vessel were ready. Through an agreement with Able UK,

the decommissioning and recycling yard quay facilities were upgraded to receive and recycle the Brent Delta platform.

This has been an exciting milestone for the Brent Decommissioning project and the wider decommissioning industry. Watching the Brent Delta platform take its final journey to Hartlepool alongside the world's media was a fitting tribute to mark the contribution of such an iconic field.

Final thoughts

Reaching this stage of the Brent Decommissioning project has not been without its challenges. However, we could not have got here without the stakeholder feedback, independent review and sense check from the public and media.

We will continue to update you as the programme is progressed. Updates will be available on the [Brent website](#).

Thank you again for your interest and involvement in Brent over the years.

Duncan Manning
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's developments, or would like to raise any particular queries or issues with the Project team, please contact us at www.shell.co.uk/brentdecomm or you can also get in touch with the team via the 'Contact us' link on the website.

A WORD FROM ALISTAIR



So far, 2017 has been very busy in the Brent Field. Brent Delta is the first of the platforms to have had its topsides lifted successfully and returned to shore for dismantling and recycling.

The remaining platforms – Alpha, Bravo and Charlie – are well underway with decommissioning preparations, however with Brent Charlie still producing hydrocarbons, there are added complexities due to production operations, well plug and make safe, and ongoing activities to extend the life of the asset, in parallel to decommissioning works.

Offshore preparation

The team has made significant progress with engineering aspects. In addition, lessons learned are being applied between platforms and shared with the decommissioning industry as Brent reaches new milestones or has information to share.

For the beginning of 2017, the prime focus was readiness ahead of the Brent Delta lift, a scope of work encompassing many areas from drone aerial surveys to the design and build of gigantic leg covers for installation post-lift. Navigation aids were also installed to assist fishermen and other users of the sea.

At the turn of the year, work on the other platforms also ramped up. Brent Alpha received upgrades to the topsides infrastructure which will aid the work over the next decade. It included accommodation cabin upgrades, equipment replacements and general maintenance work. With 110 people onboard, decommissioning the platform requires a duty of care and continuing maintenance is key for safety and efficient decommissioning.

Activities to prepare Brent Bravo are similar to those undertaken on Delta. This work will be completed in late 2017.

Work to remove the conductors – the pieces of pipe which support the well and extend from the platform to just below the surface of the seabed – is also ongoing.

Finally, as Brent Charlie remains operational, the focus is largely on wells preparation ahead of clearing any unnecessary equipment from the platform.

Wells

Plugging and making safe work has been underway in the Brent Field since 2008 and, prior to lifting its topside, the team had safely and securely plugged all wells on Brent Delta in 2015.

Brent Bravo teams finished the last of the wells in March 2017, with 120 cement plugs and 3,000 tonnes of cement used, and 160km of steel tubing and casing brought back to shore for recycling.

Due to its location at the southern edge of the field, Brent Alpha has some of the deepest wells-over 7km deep and 5.5km long by displacement. Work is ongoing with 13 of the 28 Alpha wells sealed to date.

Brent Charlie will be the last platform to have its wells secured – in total there are 38 platform based wells. Teams travelled to the platform for preparation work in March and work will continue over the summer months.

“FOR THE BEGINNING OF 2017, THE PRIME FOCUS WAS READINESS AHEAD OF THE BRENT DELTA LIFT.”

Final thoughts

The scale of preparation work completed in the Brent Field is tremendous and the team should be proud of what has been achieved so far. Brent is one of the largest decommissioning projects in the UK North Sea and it has taken over 10 years to reach this stage.

Next, the focus will be on sharing what we have learned from the Brent Delta single lift and how these lessons can be applied across the field and industry.

Alistair Hope

Brent Decommissioning Project Director

CONTACT US

For further information on the Project, please visit www.shell.co.uk/brentdecomm or, you can also get in touch with the team via the 'Contact Us' link on the website.



The Brent Field following the removal of the Delta topside

BRENT FIELD DECOMMISSIONING PUBLIC CONSULTATION

Public consultation is the process set out by the Department for Business, Energy and Industrial Strategy (BEIS), and allows any interested party to enquire, comment or share their views on a company's decommissioning recommendations.

At the suggestion of stakeholders, and due to Brent's size and complexity, Shell agreed to double the statutory public consultation period from 30 days to 60 days. We considered the additional time would allow stakeholders and members of the public more time to read the extensive ~3,000 page documentation which reflects the outcomes of the project team in over 10 years of work, independent analysis and review.

Public consultation for the Brent Field commenced on 8 February 2017 and ended on 10 April 2017.

What did we hear?

During the public consultation period, Shell received over 30 responses from individuals and organisations.

The response included queries on the impact of: leaving in place the Gravity Base Structures (GBS); sea and bird life; potential reuse options; and decommissioning regulations. All areas that have been studied extensively by the team. These responses have been received from a mixture of statutory consultees, Brent stakeholders and

members of the public, and have been in line with those raised by stakeholders in Shell's extensive stakeholder engagements during the previous 10 years of planning for decommissioning.

A group of eight organisations (WWF UK, Greenpeace UK, RSPB Scotland, Marine Conservation Society, KIMO UK Network, Scottish Wildlife Trust, Whale and Dolphin Conservation Society and Friends of the Earth Scotland) submitted a joint response. They indicated a concern that Shell had not set the case within the Decommissioning Programme for them to come to a view.

**"WE CONTINUE TO
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AHEAD OF THE NEXT STEPS
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Having studied the content of the letter the Project team offered each of the signatories the opportunity to discuss their comments in 1-2-1 engagements, so that we could fully understand the nature and detail of their concerns, ahead of providing the formal, written response.

Reflecting on the public consultation, Brent Asset Manager Duncan Manning said: *"This is a significant chapter for the project, but one many other operators have been through ahead of us. We continue to work to discuss and close out all comments raised during consultation ahead of the next steps for the Brent Field."*

In addition to the comments received directly by Shell, BEIS have a number of statutory consultees who have also reviewed the Decommissioning Programme.

What is next?

Over the coming weeks, the project team will continue to respond to the comments received and update the Decommissioning Programme and supporting Technical Documentation ahead of resubmission to BEIS.

MORE INFORMATION

For more information about the Brent Field recommendations, or to view videos of how the project will decommission the Brent Field, please visit the [Brent Decommissioning Website](#).



The Pioneer Spirit secures the Brent Delta topside after the world's heaviest offshore single lift

A RECORD-BREAKING OFFSHORE LIFT

After decades supplying oil and gas to northern Europe, the 24,200-tonne Brent Delta platform was lifted and carried to an industrial recycling centre more than 700 kilometres away.

It was the heaviest-ever offshore lift. Twelve huge propellers linked to satellite positioning and wave-watching systems kept the world's biggest ship steady within half a metre of its targets – eight lifting points welded to one of Europe's largest oil and gas platforms.

The Pioneer Spirit's ability to stay so still at sea is a triumph for all those involved in designing, building and operating the largest vessel in the world. But guiding the ship's powerful lifting beams into the receptacles on the underside of the Brent platform demanded yet more ingenuity.

A sophisticated system of sensors and gyroscopes guided huge robotic lifting arms fitted to both bows into the platform's steel sockets, even as the ship rose and fell a few metres with the waves.

The 382-metre-long vessel then swiftly raised the structure from the three concrete legs that had supported it for four decades.

With Brent Delta held high above the waves by 16 beams each weighing more than 1,600 tonnes, the ship transported it to north-east England.

After arriving near the coastal town of Hartlepool on April 30, Pioneer Spirit transferred Brent Delta onto a 200-metre-long barge for a short final voyage into a specially adapted decommissioning facility run by Able UK.

The landmark operation was the culmination of years of preparation, the hundreds of engineers involved in constructing and operating the Pioneer Spirit, and a man who has dedicated much of his life to designing and building it.

"This is my life's dream," Edward Heerema, founder and President of ship owner Allseas, said. *"I've been working on this for 30 years."*

Despite being the boss of the company, Heerema remains a hands-on engineer. He oversaw the removal of the topside, his team's biggest lift so far, from the bridge. And he was on board for the Pioneer Spirit's maiden heavy lift – a 13,500-tonne platform off the coast of Norway in August 2016.

Gentle giant

Before the Brent Delta lift could begin, the ship filled its ballast tanks with water to ensure its two huge bows passed safely beneath the underside of the platform.

Then the captain carefully guided the bows until the platform stood safely in a lifting bay bigger than a football pitch.

Eight pairs of giant lifting beams on each bow then extended under the platform, which weighs as much as around 2,000 double-decker buses.

Camera and radar-guidance systems at the end of each beam then helped guide the coupling points onto the underside of Brent Delta, while computers worked to keep everything under tight control, despite the sea swell below.

"THE CAPTAIN CAREFULLY GUIDED THE BOWS UNTIL THE PLATFORM STOOD SAFELY IN A LIFTING BAY BIGGER THAN A FOOTBALL PITCH."

"The ship's system looks ahead at the sea motion so it can take into account wave height," said Allseas site manager Daan Akerboom.

"We also use a military-precision type of GPS receiver. All that data goes into a computer that controls the propellers and makes sure that the ship stays stable within a footprint of half a metre."



The Delta topside arriving at Hartlepool on the Iron Lady barge

"The beams then compensate for that half-a-metre movement. The ship can move up and down but the beams make sure that the centre of those sockets stay where you want them to be. The beams are standing still while the vessel is moving underneath it."

The lift begins

Once the ship and topside were securely connected, some of the water ballast weighing the ship down was pumped out to transfer around 80% of the topside's weight onto the vessel.

The Pioneering Spirit then performed another great feat of marine engineering.

Using compressed-air pumps on each arm, it raised the 24,200-tonne platform safely away from the legs in 16 seconds.

"It's always exciting when you do the quick lift," said Captain Fred Regtop. "To see such a huge weight being lifted so swiftly is really magical."

The Brent field began production in the 1970s. Delta is one of four large platforms at the field, three of which have ceased production over the last six years.

In total, around 470 oil and gas installations in the UK North Sea will need to be removed over the next few decades.

Heerema hopes the Pioneering Spirit will lift many of those platforms, but he is already dreaming up a vessel capable of taking on the world's largest offshore installations.

"We have an idea for an even bigger ship for the very biggest platforms," he says.

By Daniel Fineren

This story was first published on Inside Energy, Shell's digital channel exploring energy, technology and the people and ideas powering our lives. To read more go to: www.shell.com/inside-energy.html



The Pioneering Spirit travelled from the Dutch port of Rotterdam to the Brent field, removed the topside of Brent Delta and carried it to its final destination near Hartlepool, UK.



The Pioneer Spirit closes in on Brent Delta ready for the lift

DAILY BLOGS FROM BRENT DELTA LIFT AND TOW

April 25 – May 2, 2017

Written by William Lindsay,
Head of Project Delivery

April 25, 2017

We boarded the Pioneer Spirit (the Spirit) in Rotterdam on April 24 and were welcomed at sea level in person, given a safety induction and safety gear before climbing the many steps to deck level on this huge vessel.

Newcomers are given green hats to let everyone else on board know we might need some help finding our way around.

By the time we'd found our sea legs, the 'stools' that would serve as Brent Delta's temporary supports for the final leg of its journey into the recycling yard in north-east England were already installed on the barge.

The Iron Lady barge was sitting in the Spirit's topside lifting slot when we arrived. By the next morning, it had been towed out of the football-field-sized slot in preparation for our departure.

The Spirit's speaker system announced at midday that the last ferry was about to leave. A few hours later we sailed slowly out of Europe's biggest port.

April 26, 2017

The Spirit powered through sizeable swells rolling in from the North Sea. With the front slot being essentially a large wall of steel, the incoming waves banged against it with some force. As the waves diminished, our speed increased and we were now making 13 knots – cruise-liner speed. The ship can generate some 116,000 horse power, which makes it one of the most powerful in the world.

We kept sailing north, keeping mainly just inside the Norwegian sector of the North Sea. By the evening, we had passed to the west of Ekofisk, with its remaining decommissioned concrete legs clearly visible.

April 27, 2017

Ploughing through the North Sea against the wind in a 500,000 deadweight-tonne vessel takes some engine power. The ship's 12 thrusters, three on each bow and six along the stern, are powered by eight engines which can produce a staggering 95 megawatts of power (enough to power 16,000 homes). These thrusters also work in unison to hold the ship perfectly steady when in dynamic positioning (DP) mode for the lift.

We had been making good progress, passing many platforms in the UK and Norwegian sectors of the North Sea. Some are old while others are brand new. But it is clear to me that

there are plenty of potential decommissioning jobs out here for a ship like this.

The excitement grew as we approached the Brent Field in the late afternoon. It is really a magnificent sight to see four platforms that have served Shell and the UK for longer than many people on this unique vessel have even been alive.

As we approached Brent Delta, the vessel began to ballast to lower the bows ready for the lift. The ship needed a few kilometres to slow down.



PS powering through the waves en route to Brent. Six of the eight yokes (where the ship and platform connect) are visible. Photo taken from outside client office.



Moving the Iron Lady barge in to the bow slot of the Pioneering Spirit



The moment of the fast lift

April 28, 2017 – What a day!

The vessel moved within 500 metres of the platform overnight.

The excitement intensified as the eight lifting arms were connected and the ship's motion compensation system activated.

There were three main groups interacting on the bridge for the lift. The marine team looked after the vessel positioning, the ballast team controlled the height of the vessel in the water, and the Topside Lift System team drove the lifting machinery.

The fast lift itself was a fantastic spectacle. Edward Heerema – the man whose vision and capability created this unique vessel – fittingly pressed the fast-lift button that began the world record marine lift. The fast lift system achieves 1.6 metres of clearance in just seconds, with a further metre gained in the next minute by pumping 16,000 cubic metres of ballast from the bows.

The next task was to secure the topside for the voyage south to Hartlepool, on the north-east coast of England. Installing the 270-tonne leg covers and navigation aids was vital to warn away other seafarers.

May 1-2, 2017

After two days of smooth sailing we arrived at the rendezvous point for the topside transfer onto the Iron Lady barge – about 10 kilometres (6 miles) off the coast of Hartlepool – early on May 1.

The relatively calm seas that helped speed us along on our voyage across the North Sea were replaced by rougher seas. Due to the unfavourable sea and weather conditions, it was decided that the transfer would have to wait. Transferring 24,200 tonnes from one floating vessel to another is no easy task.

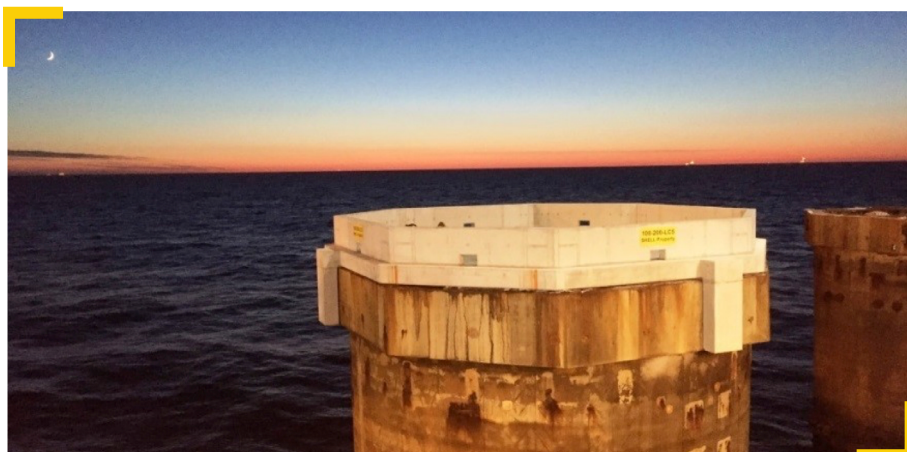
Despite calmer seas the next day, the lowering of Brent onto the 600-tonne supporting stools preinstalled on the barge took several hours.

Thanks to the close cooperation between the barge master, Teesmouth port pilots and tug captains, the Iron Lady was swiftly and safely steered into the dock at Able UK's specially-adapted facility.

A crowd of journalists and other guests who had gathered near the dockside stared in awe as the Brent Delta topside towered over them. And who can blame them?



Brent Delta on the Iron Lady at the Able quayside



Leg cover installed on BD leg

Find out more about this incredible engineering milestone here:

Watch: [One Man's Lift](#)

Watch: [World's Heaviest Lift](#)

Visit: [Brent Decommissioning website](#)



Visitors learning about the Brent Delta topside



Duncan Manning welcomes guests on VIP Day



A tour group close to the Delta underdeck

LAST CHANCE TO SEE.... DELTA EVENTS ARE A HIT WITH BRENT STAKEHOLDERS

The Brent Project team was delighted to welcome over 630 visitors to a series of events from June 20-24 at Able UK in Hartlepool, for a last chance to see the Delta topside before it is dismantled and recycled.

Shell and Able UK jointly-hosted four events, each aimed at a different group of stakeholders, including: VIPs; Shell staff, pensioners and contractors; school and college students; and the local communities from the Hartlepool area.

"We wanted to celebrate and commemorate Delta's contribution and history, and the success of the heaviest offshore single lift," Duncan Manning, Brent Asset Manager, explained. "We had a unique opportunity to invite people to see the Delta topside close up, showcase the Pioneering Spirit's technical achievement in safely removing the topside, and inform the local community about how Able would be dismantling and recycling the Delta."

Manning observed *"There was such an obvious interest from so many people when Delta arrived at Seaton Port on 2 May, and so many requests from our own staff who had worked on Delta to have a last opportunity to see it, that we were happy to extend the invitation to a wide number of groups over the week"*.

The Community Open Day on Saturday 24 June attracted almost 300 people, in three sessions, and the event was covered by the Hartlepool media. *"Delta dominates the skyline at Seaton Port and many people are aware of the benefits to the area from the investment in the strengthened Quay 6, and the creation and safeguarding of local jobs,"* said Manning.

"WE WANTED TO CELEBRATE AND COMMEMORATE DELTA'S CONTRIBUTION AND HISTORY, AND THE SUCCESS OF THE HEAVIEST OFFSHORE SINGLE LIFT."

One hundred and seventeen students aged 14-17yrs, representing seven local schools and colleges, participated in the Education Day, aimed at encouraging an interest in engineering and the STEM subjects.

All the visitor events generated very favourable comments, and there was a great deal of

appreciation from Shell staff and pensioners for the opportunity to revisit Delta, network with old colleagues, and recount the many stories from 40 years of working on the platform.

Preparations and inspections of the topside structure are now underway at Able's yard, ahead of dismantling. It is expected that over 97% of the topside will be recycled, and the work should take around 12 months to complete.



Steve Phimister, Shell UK and Ireland VP; Peter Stephenson, Executive Chairman Able UK; Alistair Hope, Brent Project Director; Edward Heerema, President Allseas.



CONTACT US

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