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Significant discoveries > North Sea



**Elder statesman:** BP's Magnus oil field celebrated its 25th anniversary in 2008. Thanks to enhanced oil recovery techniques, its life has been extended by 15 years.



# BACKYARD DISCOVERIES

Viewed through a sparkling new window across a car park, BP's former Aberdeen office is soon to be demolished, just like the belief of some commentators in the 1990s that the North Sea was finished. Reflected in its new building is BP's new North Sea vision and plan for a solid future, one that sees oil and gas production sustained for the next decade and beyond.

The North Sea story began in 1965 with BP's West Sole gas find. Industry expectations for oil were low, until the 1969 Ekofisk discovery off Stavanger, Norway, saw a surge of interest in the UK, leading BP to discover the Forties field off Scotland's east coast in 1970. Onstream five years later, to a national sigh of relief that the UK was not going to be reliant on Middle East oil, Forties at its peak met a fifth of UK oil demand, and was the backbone of North Sea production for many years.

But as it and other fields matured, and new and exotic frontiers enticed operators, including BP, industry doomsayers all but signed the North Sea's death warrant, repeatedly predicting the majors' departure. But BP is in the North Sea to stay. With a new confidence about how to achieve it, BP has a clear vision to become the best operator in the region.

"We want people to know that we are not leaving, and we intend to be here when the last drop of oil is recovered from the North Sea," says Bernard Looney, the new head of BP's North Sea business. "We are investing more today than we were five years ago, and undertaking a broader range of activities, everything from licence acquisition and exploration – the latter not something necessarily associated with the

North Sea today – to development and production, and decommissioning.

"Our vision is very simple. We are going to be the best oil and gas company in the North Sea, and we have every intention of being here for the long run. There is commitment to the North Sea all the way up through BP Group leadership. We have fantastic people here; people who remain as excited about what they're doing today as they did in the beginning."

#### **Sustainable output**

BP's North Sea oil and gas production – UK and Norway – is expected to be about 320,000 barrels of oil equivalent per day (boepd) in 2009, from 350,000 boepd in 2008 and 600,000 boepd five years ago. The company is confident of sustaining output

#### **Field profile: Norway**

BP, through Amoco, has had a presence in the Norwegian North Sea since 1965 and currently operates four fields – Valhall, Ula, Hod and Tambar. Discovered in 1969 and onstream in 1982, Valhall (below) is the eldest of the four fields. It produces 50-60,000 barrels of oil per day and is likely to continue producing until 2050. A helicopter trip to Valhall is longer than to any other field in the Norwegian sector.





## THEN + NOW

**MORTY DENHOLM**> Head of wells

“Joining the sector in 1977 aged 22, after a month in the nuclear industry, was a leap of faith. Advice back then was that oil and gas was risky, a flash in the pan. Obviously with hindsight, making the move was a good decision. In the early days, contact with the beach [onshore] was via ship-to-shore radio, there was no email. You booked a call at a certain time, went to the radio room and waited in a queue for all the different rigs calling in, and you heard everyone’s conversations. Now rigs have satellite and fibre optic links and people can use the phone and email freely. Accommodation was in six-man rooms, unless you were the boss, and we had communal showers. Now, it’s virtually all two-man rooms, and with day and night shifts, you almost have a room to yourself. Do the guys these days have it easy? Absolutely!”

at around 300,000 boepd for the next decade and well beyond, and is applying strategies to manage and optimise its regional portfolio. These include a complete study of North Sea potential that will result in a new drilling programme in 2011.

A main focus of the North Sea business is the ‘hub strategy’, which involves BP consolidating its position around its key field groupings, or hubs, and maximising the value of its extensive infrastructure. This largely involves ‘tiebacks’ or satellites – linking a new well or field to an existing platform to handle production – or mutually beneficial arrangements with third parties.

The Ula platform offshore Norway, for example, is now expected to be onstream until 2028, with reserves recovery augmented by the injection of gas procured from a nearby third-party operator. And the Andrew platform, a small field that began producing offshore UK in the mid-1990s, will process oil from the 25 million barrel Kinnoull discovery, made in 2008.

“We have fantastic people here; people who remain as excited about what they’re doing today as they did in the beginning.”

**Bernard Looney**



**Modern means:** like most other aspects of life offshore, technology has changed over the years (top). Above, BP’s new office in Aberdeen.

“These things epitomise BP’s hub strategy,” says Looney. “It is a question not just of looking down, but of looking out and making the most of the positions that we have. It has allowed us to see things that we have not seen before, and we want to do much more of this.”

## Technical breakthroughs

Also crucial are technological developments. One such example is the 5 billion barrel Clair field, discovered in 1977 and yet undeveloped for 30 years until technical breakthroughs enabled BP and its partners to develop it.

“Clair is a huge complex and highly fractured reservoir, so the difficulty with the field has always been to understand, once you start drilling and producing, how much you are going to be able to recover,” says Dave Wall, head of operations, Clair and Magnus. “Clair needed more analysis and risk assessment than most fields before we could justify a case for development of the reserves.”

Clair has been onstream for three years and just 1% of its 5 billion barrels of oil in place have been produced to date. A 1% change in the recovery rate means 50 million barrels and, Looney adds, a 50 million-barrel discovery in the North Sea today “would make all sorts of headlines.” »



### Over three decades, what's changed?

For new graduate engineers, working in the North Sea meant a steep learning curve. The vital support service infrastructure that has sprung up in Aberdeen and Stavanger over the past three decades was not there in the early days, meaning that BP and other operators carried out almost everything, from drilling and inspection, to catering and helicopter provision, themselves. Hours and roles were less regulated in the 1970s and 1980s, and everyone mucked in. People speak fondly of the strong camaraderie that characterised the early days, with communal TV rooms, makeshift cinemas and limited contact with the outside world. There was even an industry-standard two-cans-a-day beer allowance. Although life offshore has changed dramatically, for many of the people who've been around since the beginning, the North Sea has never lost its appeal. A number of BP offshore personnel even have their children working offshore, sometimes on the same platform. And the food apparently remains as good as ever, with the steaks and traditional Boxing Day seafood buffets receiving particular accolades.

One of BP's North Sea veterans is Magnus, which celebrated its 25th anniversary in 2008. According to original estimates, that anniversary would have seen the end of its operational life, but enhanced oil recovery – injecting gas into the reservoir to push the deeper oil out – is giving Magnus at least a further 15 years of production.

#### Greater clarity

Additionally, advances in seismic technology have allowed greater clarity in reservoir mapping and, consequently, the drilling of previously unknown parts of fields. BP also has an advanced technology programme analysing the opportunities for further improvement.

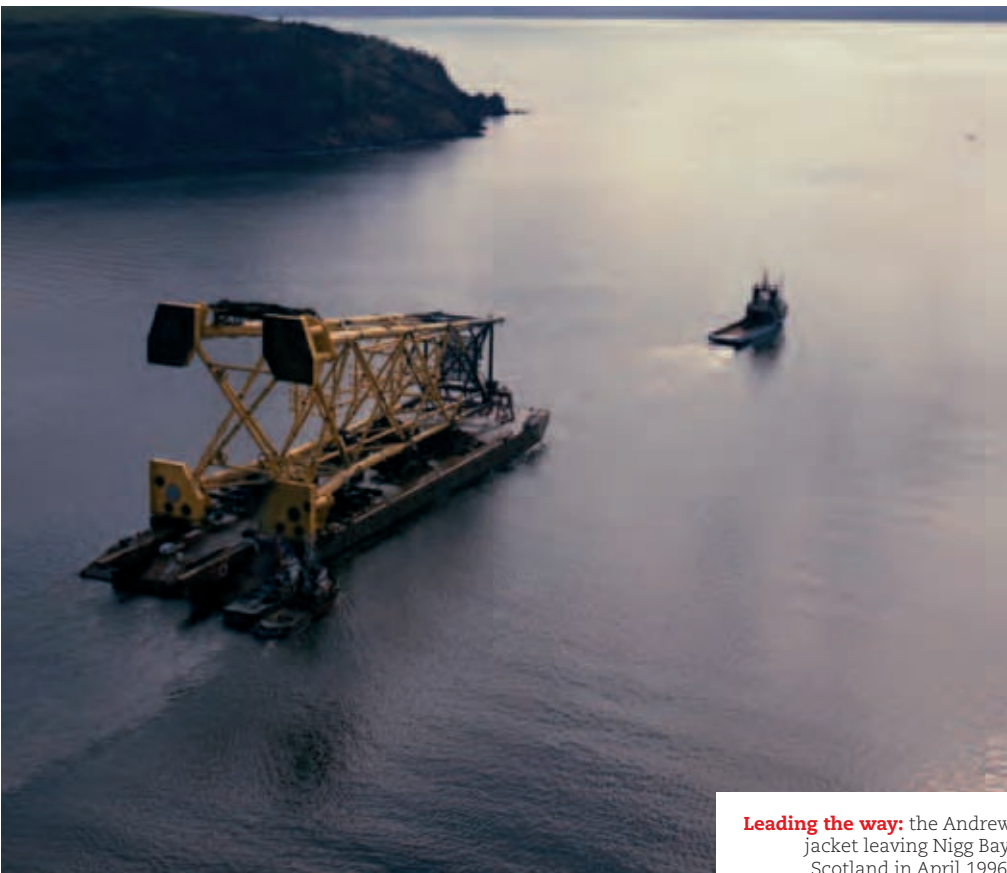
“The Foinaven field initially had a 10-year life that should have ended in 2007,” says Dave Lynch, head of resources. “We have repeated seismic surveys every two years to build up a clearer picture of the reservoir changing over time and, in doing so, have identified additional barrels that we couldn't see before, doubling resources since sanction to around 400 million barrels, and extending field life to 2021. Seismic improvements have also allowed us to identify new prospects on other fields such as Machar East, where we drilled a new well in the third quarter of 2008, the



**Flying high:** the Bruce field lies 340km (210 miles) northeast of Aberdeen, in the northern North Sea. It came onstream in 1994.

“The sector will continue as long as there is oil in the ground, providing a future for our children and grandchildren.”

**Elzbieta Kaliszuk**



**Leading the way:** the Andrew jacket leaving Nigg Bay, Scotland in April 1996.

results of which have opened up even more opportunities for us to pursue.”

BP is also seeking to drive down costs through supply chain efficiencies and working at scale where possible. Different parts of the business can learn a lot from each other and a new functional organisation has been designed to reshape the way the business works, allow more communication and exchange of ideas and optimise staff allocation.

### Aligning people

“This is all about having one North Sea organisation,” says Looney. “We have restructured into a functional organisation so, instead of having different teams working on their own areas, we are aligning people up on a discipline basis. We want to make sure that we don’t compete against each other, do things with a common lens and maximise our human resources.

“And for the first time, we have one hopper of reserves opportunities instead of the 13 we had before, making it easier to step back and look at the whole picture.”

That ‘one hopper, one North Sea’ ethos is apparent in the new building the moment people walk in. The 1,200-strong ‘human resource’ now arrives through one door only, fostering contact and information exchange between individuals on different

teams. And to complement the wealth of experience gained by the people who have worked in the North Sea for three decades, the business offers great opportunities for new entrants to the sector.

“We are going to be here for decades yet and we have to renew the organisation,” says Looney. “People ask if there are exciting opportunities for young people here, and we have lots. Here, you get to experience a whole swathe of activities from the very beginning, right through to the very end. It’s the perfect place for a young person to come and learn.”

The majority of BP’s projects today were not in the plan 10 years ago, but access to new technology can transform everything. Since its first horizontal well 15 years ago, BP has developed Andrew, Harding, Clair, Foinaven, Schiehallion and others, all with horizontal wells. Oil prices go up and down, major banks disappear and much of the world is in financial turmoil. But oil and gas reserves that have been in the ground for millions of years are not going to disappear overnight.

All it takes is for technology to catch up to reveal new opportunities; the ‘impossible’ becomes possible and the entire picture changes. Who knows what the future of the North Sea will look like 20 years from now? ■

## THEN + NOW

### ELZBIETA KALISZUK>

Offshore installation manager, Valhall and Hod (Norway)

“When I first went offshore in the 1980s, I didn’t meet a single other female on the rigs in technical professions. Particularly over the past four or five years, things have changed and now there are a lot of women in these positions offshore Norway. Our safety culture has also changed a lot since the early 2000s, when the sector had a lot of high-potential incidents. We have clearer roles, responsibilities and rules about how long people can work out on the platform in noise-exposed areas, and so on. This is a great place to work. Valhall has the reserves to be producing until 2050 and, from the perspective of those offshore, the sector will continue as long as there is oil in the ground, providing a future for our children and grandchildren.”

### JOHN CAMPBELL>

Offshore installation manager, Magnus

“There were around 1,500 people on Magnus for the offshore hook-up, and it was pretty congested. For several years after, we were finding old mattresses and sleeping bags in strange areas, because there were so many people and less control than we have now. We had four-man cabins, and people on night shift were always finding someone new in their room when they woke up. I’ve worked in maintenance, as an operations engineer, and now as offshore installation manager, and my son has worked on Magnus recently. I’ve always stayed on Magnus, and never got bored because of the sheer size of it, and because there’s always been something happening.”

