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Diversity of North Sea drilling market means no silver bullet will unlock remaining reservoirs

IT WOULD BE hard to sum up the North Sea's drilling market in one word, but according to **Jon Turnbull**, North Sea wells manager for BP, "diverse" would be a good choice. There's old and young geology, deepwater and shallow, subsea vs. dry tree, oil, condensate and gas, normal to high pressure, frontier developments and mature ones dating back to the 1960s. What does this all mean for the industry that is working to bring out the North Sea's remaining reserves?

"It means there's no silver bullet, no single technology that can unlock the huge reserves, which incidentally were estimated last year to amount to over

20 billion bbls equivalent, still here," he said. "The industry in the North Sea has pushed hard to advance technologies such as through-tubing drilling, both rotary and coiled tubing drilling; under-balanced drilling; multilaterals; extended reach; and low-cost wells. Although these technologies all have an important part to play, there isn't any single one that will unlock the North Sea's potential."

The downside, then, is that among a myriad of technologies with high potential, there is no one technology of sufficient scale to make a significant breakthrough.

Mr Turnbull cited the example of through-tubing rotary drilling (TTRD).

Several oil companies have attempted to cooperate to form a continuous program that would allow them to leverage the economies of scale and pull together the learnings. "In practice, it's been tough finding more than a few opportunities," he said.

According to the Industry Technology Facilitator (ITF), a UK-based not-for-profit group supported by major oil companies, its participants have decided that because current development drilling programs are targeting higher-performance wells, TTRD is not compatible at the higher oil prices. Of four operators that attended a TTRD workgroup meeting in February 2007, only one had

short-term plans for TTRD; others were putting TTRD projects on hold.

Service companies, however, noted the rising interest and demand on them for TTRD technologies, particularly from Norway but also other international areas.

There are many reasons why a technology that works in one region has only a niche application in the North Sea, Mr Turnbull said. "Many contractors and service companies ask, 'Why aren't you doing more fracing, or more stimulation, or more multilaterals?' The reasons are many, but I think operators accept the challenge. We tell our contractors that if they see a technological opportunity we're not going after, let us know. We know there's always room for technology transfers. It's just that I don't see a silver-bullet technology sitting on a shelf waiting for us to utilize."

As for whether the North Sea is risk-averse, Mr Turnbull acknowledges that it's a fair challenge, yet he points out that "it's not a particularly fruitful discussion because it depends on where you draw the line on risk-aversion." It's not hard to see that the high-cost environment of the North Sea doesn't make it an ideal playground for technology trials. "When there's only a one- or two-well application, the technology has to work or else there's no payback. That does lead to a degree of caution on applying new technology," he said. But necessity is a great motivator.

Despite that caution, Mr Turnbull stressed, the North Sea is hugely innovative, with many basins pushing technological limits. Extended-reach drilling is a good example, where on its Magnus field BP is pushing wells out to more than 8,000 m MD (26,000 ft) and in the Southern North Sea to over 6,500 m (21,000 ft). There are also numerous examples of multilaterals, smart subsea completions and leading-edge technological advances.

Another high-potential new technology that BP is pursuing for its North Sea operations is the advanced collaborative environment, which enables an onshore support team to be more integrated with offshore operations. The concept has already been incorporated into the design of BP's new office building in Aberdeen, Scotland.

Mr Turnbull said he believes the operations center will work on several levels to help improve communications, elimi-

nate downtime, improve efficiency and, in some cases, reduce the number of people needed offshore. "We're in an environment where expertise has been diluted by the upturn in activity. This technology offers great opportunities for improving our operational efficiencies."

The BP building and the collaborative center is expected to be complete by first quarter 2008.

DEVELOPMENTS

In the North Sea, BP continues to drill development wells from Clair A, which is the first platform on this relatively shallow field in 140 m water depth to the west of Shetland. It was originally discovered in 1977 but has taken until 2005

least doubled between 2003 and today." It's not just dayrates either, he said, it's across the board. "We're facing pretty tough challenges on cost."

Another challenge, specifically for the UK sector, is the loss of rigs from the North Sea to other regions. "With utilization at 100%, these departures may keep the rig market tight in the short- to medium-term," Mr Turnbull acknowledged. In this market, he pointed out, technology on rigs has ceased to be a significant differentiator. "When all rigs are on contract, the prime driver is securing one."

In HSE, he said, one challenge for BP is to keep the big picture in mind even as it works to prevent minor injuries. "We

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to develop. Additionally, appraisal drilling is taking place on the Clair Ridge, an extension of the existing Clair field, which could lead to further development.

The West of Shetlands will continue to be an important area of drilling investment for BP, Mr Turnbull said, and deepwater fields such as Foinaven and Schiehallion have continuing placement of subsea wells and exploration activity chasing small pools. BP also plans to restart drilling on the Bruce platform in the northern North Sea. Work to bring in the Rhum field had led to a break of several years, but a continuous drilling program on Bruce will begin again in September 2007.

CHALLENGES

One challenge operators are facing, Mr Turnbull said, is that although oil prices have gone up, costs have as well. "A lot of the prospects that were marginal in a \$20-\$30 environment are still marginal now because costs have increased as fast as oil prices. Industry costs have at

need to manage both occupational safety and integrity management to prevent serious incidents. We have a lot of old infrastructure here — aging platforms past their envisaged life. We're looking hard at integrity management," he said.

That's not to say that lower-potential injuries aren't important, he added. "We're in a business that operates in a harsh environment not without risk, and our resolve to avoid injuries will not waver."

AUTOMATION

Despite that current market trend, he urged, drilling contractors should continue to add automation to their rigs. "I'm a believer in automation. Where you can automate, you should. Just because you've become efficient at working in a non-automated way doesn't mean you shouldn't take steps towards automating. You have to invest in it and get down the learning curve," he said. "It will make a step-change in drilling performance eventually." ♦