Transocean Sedco Forex sets deepwater records

OIL AND NATURAL GAS production from the deep waters of the Gulf of Mexico increased during 2001. Oil production from deepwater rose 24%, rising to a record level of 335 million barrels, a 64 million barrel jump over 2000, according to the Minerals Management Service (MMS). Natural gas production from deepwater rose a modest 0.2 tcf in 2001, increasing to 1.18 tcf produced compared with 0.98 tcf in 2000.

Deepwater fields brought on stream during 2001 ranged in water depths from 1,214 ft for Walter Oil & Gas Corp.'s Mississippi Canyon Block 68 field to ExxonMobil's Madison field in 4,854 ft of water in Alaminos Canyon Block 24.

Offshore drilling contractors like **Transocean Sedco Forex** and their customers are working diligently to increase deepwater production in the Gulf of Mexico. The contractor earlier this year set a deepwater subsea completion record and a world mooring depth record and last year drilled a well in a world record water depth of more than 9,700 ft of water.

These record deepwater wells are a continuation of the company's string of records beginning in 1974 when the contractor drilled a well in 1,969 ft of water offshore Gabon.

Transocean also drilled several wells offshore Thailand in water depths ranging up to nearly 3,500 ft of water in the mid-1970s. Transocean's experience continued in increasingly deeper waters, including several wells in 6,000 to 7,600 ft of water and then into more than 9,000 ft of water offshore Brazil and in the US Gulf.

Of the 22 deepwater and ultra-deepwater wells drilled since 1974, according to ODS Petrodata Group, Transocean drilled 18 of them. Of the remaining four deepwater wells three were drilled by Noble Drilling Corp. in more than 8,000 ft of water off Brazil. GlobalSantaFe drilled one deepwater well in approximately 7,700 ft of water, also offshore Brazil.

RECORD SUBSEA COMPLETION

This year natural gas production could increase significantly at the same time the water depth of producing fields rises dramatically. Using a Transocean Sedco Forex dual activity drillship, **Marathon Oil**, **TotalFinaElf** (TFE) and **BP** are achieving this feat with the drilling and completion of record deepwater subsea completions.

Transocean Sedco Forex's state-of-the-art ultra-deepwater drillship Discoverer Spirit earlier this year set a subsea completion record while on farmout to Marathon Oil from **Unocal**. The previous subsea completion water depth record was also held by Transocean and its drillship Discoverer Enterprise in BP's King's Peak field in 6,407 ft of water. That project included drilling and completing the well and was accomplished in 56 days.

Transocean Sedco Forex's drillship Discoverer Spirit holds the world water depth record for a subsea completion as well as the record for the deepest water well, both in the US Gulf of Mexico.

The latest record is a subsea completion in 7,209 ft of water on Marathon's Camden Hills project. That well and BP's King's Peak well will be a part of the Canyon Express gas gathering system that will tie three deepwater fields to a production platform in shallow water.

The latest subsea completion water depth record was the Discoverer Spirit's first subsea completion and was performed in 31-days. The fewer number of days compared with the Discoverer Enterprise's subsea completion is because the Discoverer Enterprise also drilled the well.

"The crews performed extremely well on their first completion well," said **Logan Puckett**, Discoverer Spirit Rig Manager.

"We benefited a great deal from the knowledge base of the Discoverer Enterprise and BP," he continued. "We were able to make additional improvements with the help of a cooperative client."

Operations on the Discoverer Spirit improved upon the Discoverer Enterprise's performance by about 12 hours. A good portion of the reduced time, according to Mr Puckett, was Marathon's procedures although lessons learned from the first ultra-deepwater completion also help reduce the completion time.

One of the challenges was working in close proximity to the Discoverer Millennium while it was drilling the development wells. At one time the rigs were only about 3,600 ft apart. There was constant monitoring between the drillships and several vessels that were running umbilicals and control lines, which were sometimes working between the two rigs.

"Although they were 3,600 ft apart," Mr Puckett said, "it looked like you could have thrown rocks at each other."

The key is keeping constant communication with all of the vessels in the area. Another key is ensuring that the dynamic positioning reference systems of each rig and vessel don't interfere with the other vessels.

Although each rig has its own frequency, Transocean and the other service companies conduct a lot of preplanning to ensure there are no problems regarding station keeping.

ULTRA-DEEPWATER RECORD

Transocean Sedco Forex also holds the deepwater drilling record with the Discoverer Spirit for an appraisal well drilled in 9,727 ft of water. The well was drilled for Unocal in Alaminos Canyon

Block 903 in the Gulf of Mexico. Transocean set the previous record, which was also a well for Unocal in 9,687 ft of water in the same block.

The rig installed and tested BOP equipment on October 27 and 28, 2001 on Unocal's Trident 2 appraisal well. The Trident 1 well was drilled in May 2001.

The Discoverer Spirit as well as Discoverer Enterprise and Discoverer Deep Seas utilize Transocean's proprietary dual activity drilling process.

The Discoverer Enterprise held the previous water depth record for a subsea completion in 6,407 ft of water in the US Gulf of Mexico.

Dual activity is designed to reduce the time required to drill exploratory wells by approximately 15% and up to 40% for production wells.

The time savings results from drilling tasks performed in parallel steps rather than sequentially with conventional offshore rigs. Unocal's unique approach to low-cost drilling also contributed to the cost savings.

"Unocal brought a very experienced team to the Gulf," Mr Puckett said.

"I attribute their success to their people as well as following and monitoring procedures."

"There is no magic equipment," he added. "They do their jobs very well."

Puckett also said the type of synthetic mud that Unocal uses in its deepwater and ultra-deepwater wells behaves very well in those conditions. Temperature variations do not appear to affect the mud as the very cold seafloor temperatures might affect other muds.

DEEPWATER MOORING RECORD

Transocean also operates another record-holding rig, the dynamically positioned semisubmersible Deepwater Nautilus. The rig holds the world mooring depth record by successfully mooring on **Shell's** Great White prospect in 8,009 ft of water in Alaminos Canyon Block 857, which spud March 6. The rig also held the previous mooring water depth record in 7,790 ft of water on Shell's Baha prospect in Alaminos Canyon Block 557 in June 2001. Additionally, Transocean held the record previous to that with the Transocean Marianas in 7,585 ft of water on Shell's Coulomb prospect in Mississippi Canyon Block 657 in early 2000.

"The Deepwater Nautilus crews and Shell have done a tremendous job of advancing the world water depth for a moored rig," said **Rick Gunnels**, Operations Manager for Transocean Sedco Forex. "This latest record supports our company's longstanding position as the industry leader in deepwater well construction while adding another milestone for the Deepwater Nautilus, which also helped Shell pioneer its expandable casing technology."

The rig set the records with a pre-set mooring system that includes eight suction piles with polyester mooring lines that are deployed by an anchor-handling vessel in advance of the rig's arrival. The lines are connected to each of the rig's mooring wires to form either a taut or semi-taut mooring system.

Compared with traditional catenary mooring systems, the pre-set system results in a much smaller mooring pattern, higher holding power, major reduction in rig mooring time and excellent positioning around pipelines and bottom obstructions.

Shell has several pre-set mooring systems that it rotates and deploys ahead of the Transocean Marianas and Deepwater Nautilus.