

# Field Dev session includes drilling, completion

## PRODUCTION CASING

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A new technique is outlined for running production casing from semisubmersible drilling rigs on highly deviated wells on the Captain Field, UKCS, operated by ChevronTexaco.

The technique which incorporates selective-flotation techniques has been used successfully on three subsea wells to date. This is believed to be the first instance that the above technique has been used on semisubmersible rigs.

The paper also outlines the operational issues associated with the technique and how the consequent hazards were mitigated against and contingency plans put into place.

The lessons learned from performing the technique on the three wells to date will also be outlined.

*A New Approach for Running Casing from Semisubmersible Rigs on Highly Deviated Wells* (SPE/IADC 79814) by **G Rae, ChevronTexaco Upstream Europe; H Williams, K&M Technology Group; J R Hamilton, SPS AFOS International.**

## HPHT WELLS IN VENEZUELA

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Bosque field presents some of the most challenging conditions for drilling in Venezuela. The sandstone reservoir can be found below 20,000 ft, pressures exceed 12,000 psia, and temperatures are over 300° F.

The main characteristic of this area is a great inverse fault in the north-south direction called Pirital's landslide. Drilling operations struggle to overcome numerous problems, such as low rates of penetration (ROP), wellbore instability, lost circulation, and trajectory deviation.

*Drilling HP/HT Wells in Bosque Field, Venezuela - The Aloctono Block Challenge* (SPE/IADC 79815) by **J C Avila, E Zerpa, L Rojas, J G Sala, Petroleos de Venezuela SA.**

## CONOCO'S MAGNOLIA PROJECT

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Conoco's Magnolia project will utilize a Tension Leg Platform (TLP) in a record water depth of 1,425 m in Garden Banks block 783 in the Gulf of Mexico. The wells will be predrilled and then completed with a platform rig. Reservoir compaction was identified as a drive mechanism for the field.

Production is expected from unconsolidated, fine grained and over-pressured Pleistocene, Pliocene and Miocene formations.

Rock mechanics studies indicated that reservoir depletion in the low-strength and high-porosity reservoir rocks could result in significant reservoir compaction due to initial shear failure followed by pore collapse.

This paper describes the analysis of such rock failure mechanisms and projected strains, which served as the basis for deriving estimates for reservoir compaction and stretch of overlying strata.

*Magnolia Casing Design for Compaction* (SPE/IADC 79816) by **I A Ibekwe, O D Coker III, G-F Fuh, S C Actis, ConocoPhillips.**

## EXTENDED REACH DRILLING

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The experiences are described from drilling an extended reach well in February 2002 from a North Sea production platform constructed to develop a gas condensate reservoir, into an adjacent mature black oil field that had been previously developed with subsea facilities.

The background to the project meant that a new conventional subsea type well tied into the existing infrastructure would not be able to deliver some of the key elements in developing reserves from the field.

HSE issues were particularly relevant to this project given the magnitude of the well, the human challenges with using unfamiliar equipment, and the environmental regulations governing the handling of drill cuttings.

*Brae Field Extended Reach Drilling - A Case History* (SPE/IADC 79818) by **G C Lumsden, J R Parker, Marathon Oil.**

**As reserves become more peripheral to drilling centers, alternative techniques can be employed to reach out further. Roller tools have been used to overcome the difficulties associated with drilling and completing high angle wells by reducing friction and extending the reach of the completion to distances commensurate with current drilling practices.**

## DRILLING AND COMPLETION

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Six horizontal wells were recently drilled and completed in 125 meters of water by ExxonMobil as part of the Ringhorne development in the Norwegian North Sea using the Odfjell Drilling AS semisubmersible, Deepsea Bergen.

The 3,500 meter md wells were completed as natural sand packs using sand control screens in the 900m horizontal sections.

The NPT performance over the 383 day program was better than the earlier subsea development on the Balder field and significantly better than industry averages for similar work. Three key factors drove the improved performance: team structure, rig modifications and new technology.

*Improving Drilling and Completion Performance in the Norwegian North Sea* (SPE/IADC 79819) by **H A Garig, B E Williams, ExxonMobil Development Co.**

## FIT FOR PURPOSE SOLUTIONS

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Extended reach drilling and completion operations are challenging and ambitious operations that are at the limits of available technology. As reserves become more peripheral to drilling centers, alternative techniques can be employed to reach out further.

Roller tools have been used to overcome the difficulties associated with drilling and completing high angle wells by reducing friction and extending the reach of the completion to distances commensurate with current drilling practices.

The paper will describe current and future steps toward harnessing the technology in order to reach record distances within economic constraints.

*Planning Fit For Purpose Solutions with Roller Technology - The Value of Applied E-Valuation* (SPE/IADC 79822) by **S D Fraser, Weatherford International; C Mason, BP; M Reenie, ChevronTexaco.**

## MULTISTATION ANALYSIS

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The major sources of lateral position error in directional wellbore surveying with modern measurement while drilling (MWD) tools are drillstring magnetic interference, unmodeled local crustal magnetic field effects and the effect of external magnetic fields.

The use of multistation analysis combined with geomagnetic referencing to reduce these errors is gaining increasing industry acceptance.

The increase in positional accuracy available from the multistation analysis has allowed are duced gyro survey requirement in some of the cases, while still achieving the well objectives based on position.

This has provided the operator with significant cost savings.

*Multistation Analysis and Geomagnetic Referencing Significantly Improve Magnetic Survey Results* (SPE/IADC 79820 - Alternate) by **R M Lowdon, Schlumberger Drilling and Measurements.**

## NEW DOWNHOLE TOOL

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In extended reach drilling (ERD) wellbore stability is a major concern and, in order to improve it, high-density drilling fluids are frequently used.

These fluids help to control the pore pressure and support the formation while drilling.

However, they also result in higher frictional losses because the fluid has to travel a long distance in the annulus.

The development of a new downhole tool for ECD reduction is described, which can be run as an integral part of the drill string.

Design features and test results obtained with this tool are also discussed.

The authors will also introduce application of the ECD reduction tool to deep water drilling environments where it can help extend casing shoe point of multiple casing strings.

*A New Downhole Tool for ECD Reduction* (SPE/IADC 79821 - Alternate) by **P A Bern, BP; D Stewart, Rotech, D G Hosie, Gulf Technologies International; B K Lee, R Bansal, Weatherford International.** ■