World Drilling 2003 explores drilling advances

THE MISSION OF IADC's World Drilling 2003 conference, set for 25-26 June in Vienna, Austria, is to explore cutting edge technologies that open new hydrocarbon frontiers and optimize exploration of aging reservoirs. These advances will be reviewed in a forum designed to realize significant lessons and provide value for registrants.

The conference opens at 8:00 a.m. when IADC President **Dr Lee Hunt** welcomes **Larry Dickerson**, IADC's Chairman, who will make opening remarks. The first technical session will follow at 8:30.

Innovative Drilling Technology will feature four presentations moderated by **Sjoerd Brouwer**, Global Wells Activity Leader for **Shell Exploration & Production Company**. The first presentation, *Coiled Tubing Drilling (CTD) Experience in a Gas Storage Reservoir*, by **Alexander N Gnoyevykh**, **Alekxander A Riabokon** and **Vasilly I Kirshin** with **JSC Gasprom**, will present a case study of an unsuccessful CTD project in which a lateral extension was drilled from an existing well into a gas storage reservoir.

The focus of the study is on the drilling operation, problems encountered during the project and the equipment used. The lateral drilling project was a geological accomplishment but unsuccessful economicallydue to weak geological preplanning and leaving the underbalanced condition due to winter gas extraction from the gas storage reservoir.

A Al-Saadi with **Petroleum Development Oman (PDO)** discusses an *Ultra Short Radius Drilling System in PDO*. Productivity from thin reservoir layers and thin oil rims can be enhanced by drilling short laterals (i.e. 150-200 m), fully contained within the layers. Ultra short radius systems will be required to kick off and drill these laterals within the reservoir.

These systems are available as rotary steerable systems and jetting systems. The paper will discuss the flexible pipe rotary system, in particular the Torch Drilling Services (TDS) system and the implementation of this system in PDO.

This system has been tried three times in 2002 in the Lekhwair and Saddad fields. In two of the Lekhwair's wells a dual lateral has been drilled and completed as an open hole injector. The initial injection rates were almost doubled as a result. The third trial was on an oil producer in Saddad field. This trial was unsuccessful due to some metal existence on the hole. The paper will discuss the technology concept, describe the tool and drilling procedures and summarize the operational aspect of the trial.

Through Tubing Rotary Drilling in Shell Expro by **Chris W Kuyken** examines the business case for TTRD and the alignment with the subsurface development teams drivers. The presenation also examines Shell Expro's historical TTRD performance over seven wells; the learning curve; the current improvement initiatives; ongoing work with the industry; and early results of the TTRD campaign that began in April 2003.

Additionally, the presentation will discuss the globalization of the technology within Shell via skills and learning transfer as well as global sequencing with "staircased" technology deployment.

Martin Culen with **Precision Drilling** presents *A Direct Comparison Between Conventional and Underbalanced Drilling Techniques in the Saih Rawl Field, Oman.*

Although the benefits of underbalanced drilling (UBD) are widely accepted in North America, internationally the technology has not been fully exploited for a number of reasons, namely the justification of increased drilling costs against perceived intangible benefits. Such a justification is particularly hard for asset managers and well planner to make in the absence of any concrete industry data regarding production increases.

PDO embarked on a focused campaign to trial UB and evaluate its applicability as an enabling technology. A Zero Cost Implementation approach was used to introduce the campaign and drilling began in June 2002. Wells targeted in the Saih Rawl Field are underpressured oil wells, drilled as five-legged producer-injector pairs off of a 7-in. backbone. The wells are normally completed by means of an electric submersible pump (ESP).

Engineering for the UB project focused on the asset teams' mandate of eliminating reservoir damage.

Consequently, equipment was chosen and a program developed utilizing the injection of field natural gas via a concentric casing string to establish UB conditions.

As the technology was newly re-introduced to PDO and its contractors, a stepwise approach to drilling underbalanced was adopted for the first well, and ultimately demonstrated UBD benefits. The first two legs of the first well were drilled conventionally overbalanced and stimulated, while the third leg was drilled overbalanced, stimulated and tested with the UB separation equipment. The remaining two legs were drilled underbalanced and tested. The post drilling flow tests proved invaluable for evaluating the applicability of UBD, as the results showed a distinct increase in production from adjacent legs 200 m apart in the same reservoir.

DEEPWATER I

Deepwater I is the second technical session of the morning. The first paper to be presented is *Development Drilling Offshore Angola - The Feasibility of Using Upgraded 2nd and 3rd Genera-*

tion Drilling Units in 1,450 Meters of Water, by **Dr Nigel Robinson**, **Noble Denton Europe Limited**, and **Andy Sworn**, **BP Exploration**.

In 2001, BP commissioned Noble Denton Europe Limited to conduct a detailed feasibility study for development drilling on Angola Block 18 using upgraded 2nd and 3rd generation semisubmersible rigs. With a water depth of 1,450 meters, the location is outside the normal range of operations for such drilling units so some upgrade would be necessary.

The drilling program was extensive with a complex arrangement of up to 40 wells. The investigation began by screening a range of possible rig designs, looking for units that could meet program requirements with only limited upgrade expenditures. From this work, two units were selected for further study, a Friede & Goldman Enhanced Pacesetter design and a Sedco 700 Series unit. This presentation will outline the basis of the study and explore the main findings.

The second paper in the deepwater topic will be *The Atlantis Artificial Seabed Concept - From Concept to Reality*, by **P. Northeim**, **Atlantic Deepwater Technology Holding A/S**.

Following this session, the keynote address will be made by a senior executive from OMV. This will be followed immediately by lunch.

HEALTH, SAFETY & ENVIRONMENT

The afternoon session, *Health, Safety and Environment*, features two presentations. The first presentation is *Remote Monitoring and Management: Maximizing the Safety and Efficiency of Rig Automation*, by **B Levett** and **L Suvans** with Varco International.

The second presentation is *Specifics of Construction and Operation of Wells in the Permafrost Zones, Industrial Safety Point of View*, by **V A Tarasenko**, Tyumen Okrug Department, T**he Federal Mining and Industrial Supervision of Russia**.

RIG LOGISTICS

The day's final session examines Rig Logistics, and will include two presentations. *Rig Buggies - An Innovative Way to Move Drilling Rigs in Saudi Arabia* by **C Bottazzi** and B Pini, with Saipem S.p.A., examines a method for moving a land rig without dismantling its principal components. Typically, moving a land rig from location to location would require extensive dismantling, relocating the unit and then reerection of the rig. With the Rig Buggies, the rig can move to its next location with the derrick fully erect with its substructure, and stands of pipe stacked vertically on the drill floor. The Buggies consist of four independent trolleys on self-steering wheels to move in the direction required. Moving a rig from one location to the next, usually 50-100 m apart, takes about 50 hours. Further improvements can reduce the time to 42-48 hours.

During the second presentation under Rig Logistics, an executive from *Pride*

International will discuss *Rig Logistics in Chad and Eastern Siberia*, examining the challenges and solutions of supply logistics in those areas.

DEEPWATER II

The conference's second day begins with **Deepwater II**, which includes *World Market Outlook for Deepwater Drilling Rigs*, by **John O'Leary**, Pride International. **C Cameron** with **Halliburton** will discuss **Novel Synthetic Base Mud Helps Cut Mud Losses and Lower Cost of Deepwater Drilling**, and **T Duhen** with Pride International will examine *Deepwater Structures including the Kizomba Project*.

RIG EQUIPMENT

The second session of the day, Rig Equipment, includes presentations by J Whyte with **National Oilwell** as he discusses *Adding the Human factor to Rig Anti-Collision Systems - A New Technology Explored*; *Reducing the Risk of Integrated Hoisting System*, by W Abouamin, Det Norske Veritas, and **G Lansdell**, **GlobalSantaFe**; and *The Effects of Improved Drill Pipe Properties in BOP Shearing Capabilities*, by B Levett, **Varco International**.

The conference's second keynote presentation will be made by Sjoerd Brouwer, followed by lunch. The first afternoon session is **Real Time Data Management**, with presentations on *Underbalanced Drilling-Remote Location Real-Time Data Operations*, by **S Saeed**, Halliburton Energy Services; and *Drilling the Wells of the Future Today, Using Real Time Planning, Operations and Learning*, by **L J Ursem** and **M Humphries**, **Shell E&P Company**.

DRILLING MANAGEMENT

The final session of the conference is **Drilling Management Systems**, including a presentation on I*nternet Reverse Auction - The Biggest Threat to the Long Term Viability of the Oil and Gas Contracting Industry, or an Effective Way to Maintain Industry Cost Effectiveness and Sustainability?* by **D Conway** and **G Bird** with Shell International E&P. The presentation looks at the introduction of internet reverse auctions in Shell International E&P, a leader in exploiting reverse auctions in the oil and gas sector. It will explore the issues and concerns that Shell faced when implementing this change management initiative as well as examining the service provider perspective that Shell has come to appreciate along the way. The effect of reverse auctions on the traditional tender process will be discussed and the key learnings, benefits and limitations highlighted.

Other presentations during this final session are *Goal Alignment Can Change the Game*, by **J O'leary** and **B Kirton**, **BP**, and **C Prusiecki** with **Schlumberger**; and **Integrated Safety Management Systems** by an executive of **Woodside**. The conference will be adjourned following this final presentation.