Technical Session 10: Case Histories

SPE/IADC 105649
CID's to Orphan: Transformation and Startup of Sakhalin's Ice-Resistant Drilling Platform. A.M. Higgins, B. Zaskov and P.V. Zande, ExxonMobil.

The offshore Sakhalin drilling and operating environment is one of the most challenging in the world. The milestones and learnings attained during the conversion and start up of the former Glomar Beaufort Sea 1 (CID's) to its current status as the Orlan Drilling and Production platform are detailed in this paper.

SPE/IADC 105212
Deployment of a Riserless Mud Recovery System Offshore Sakhalin Island. J.D. Brown, V.V. Urvant and J.L. Thorogood, CJSC Elvay Neftegaz; N.L. Holland, AGR Subsea.

A riserless mud recovery system enables dual gradient subsea drilling operations to take place with the well open at the seabed. There are no pressure containment devices at the wellhead, but as with earlier systems developed for deepwater drilling, mud and cuttings are returned to the rig by means of a subsea pumping system and umbilical. The system was field-tested as part of the Norwegian DEMO2000 programme. Subsequently, it has seen operational service in a multi-well drilling campaign in the Caspian Sea. This paper will describe how the system was implemented in a remote area exploration drilling operation off Sakhalin Island.

SPE/IADC 105766

The West Sak viscous oilfield on the North Slope of Alaska is being developed with extended reach multilateral wells in which horizontal slotted liners are utilized in conjunction with level 3 multilateral junction systems. Centralizers are necessary on the slotted liners to reduce drag and avoid slot plugging and limit differential sticking. Selection of proper centralizers to run through a casing window, without a whipstock in place, has been key.

Several recent failures of centralizers run through casing exist have resulted in significant lost time and cost overruns. It became essential to study the passage of a centralized liner through a casing exit. Torque and drag modeling provided the down and side force estimates exerted on the liner and centralizers as they passed through a casing exit. A test fixture was used to simulate liners being run through a casing exit.

This paper will discuss the problems noted in the installation prior to the testing program, detail the modeling used to determine the loads being exerted on the centralizers at the window, show the results of the yard tests conducted on several commonly utilized industry centralizers, and make recommendations.

SPE/IADC 105051
Step Change in Remote Exploration. R.S. Shafer, ConocoPhillips.

Remote Arctic onshore exploration can be very costly, exceeding the cost of a deepwater Gulf of Mexico well. This paper reviews the reasons for the high costs and a possible combination of new technologies and rig designs to significantly reduce the costs. A significant reduction in exploration final hole size is the primary driver, leading to a major reduction in rig size.

SPE/IADC 105874
Drilling for Coalbed Methane in the San Juan Basin with Coiled Tubing: Results, Learnings and a World First. S. Noyamaer, D. Pumphrey, T. Elden, F. Hartensteinre and C. Nelson, BP; T. Pink, Schlumberger.

Coiled tubing drilling (CTD) has proven successful throughout the world, including Azerbaijan, Canada and most notably Alaska’s North Slope. We hoped to replicate this success in the San Juan basin with a special-built hybrid CTD rig. The pilot project involved drilling 13 wells with the hybrid rig, which has not only the capabilities of CTD but also the capabilities of rotary drilling through the use of an integrated single joint top drive equipped derrick. The well types included vertical CBM gas reservoirs wells, deep set Intermediate casing strings for future rotary drillout, build and drop pad wells, and thru-bushing re-entry horizontal side-tracks. The paper will show the learning curve progression and how the project was successful in building on learnings from each previous well.

SPE/IADC 105541

ConocoPhillips is developing the Magnolia field with a TLP in 4,074 ft of water at Garden Banks block 785 in the Gulf of Mexico. The wells targeted multiple zones resulting in complex directional intervals. The wells are producing primarily from thick, fine grained reservoirs that required sand control. To ensure high-rate, long-life completions, the producing zones were frac packed. Premium screens with alternate path tubes were used on the wells due to the long-deviated intervals. This paper will discuss screen selection philosophy in fine silt reservoirs, carrier fluid selection, perforation strategy, and ability to frac across shale intervals.

Technical Session 11: Health, Safety, Security & Environment

SPE/IADC 105934
Integrating Safety Leadership and Cultural Change. G. Siokos, EDN; J. Karish, ENSCO.

This presentation will focus on the work done by ENSCO to enhance its safety culture through a leadership development program and strategy designed to develop leaders who are able and willing to make a difference in safety. First, the program and strategy integrates prescribed leadership competencies with the organization’s vision, values, strategies and safety management system. Second, it involves the top 150 leaders in the organization. Third, there is focused follow-up. Fourth, the leadership strategy is linked to other local business unit safety leadership programs. Fifth, the leadership development program challenges participants with personal feedback on their HSE leadership competencies and behaviors and encourages the development of a personal leadership development action plan.

SPE/IADC 105099

Following the events of 9/11, the International Ship and Port Facility Security Code’s (ISPS) legal requirements provided an ideal benchmark for the offshore industry to evaluate the principle and practice of existing security policies and procedures. Simply having security procedures in place does not necessarily provide effective security. Effective security plans must be designed. Has the offshore industry successfully maintained focus on this security philosophy or have concerns following 9/11 simply been left to fade away? The paper will outline the fundamental principles of a regulatory security-based thinking that should be approached.

SPE/IADC 105065
Multi-Skilling as a Key Factor for Economically Viable Operations in a Multi-Asset Oil Province: Oseberg East as a Case Example. J.D. Dagesdal, E. Saeverhagen and E. Nathan, INTEQ; S. Knutsen, Norsk Hydro.
New technology and business models are needed to meet the economic challenges of declining production from the North Sea oil province. Bed space limitations imposed by platform at Oseberg East dictate a manning solution that significantly reduces POB. Previous models have especially focused on the drilling contractor and production manning levels on the platform. This study will extend the operational efficiency to the drilling services by utilizing an integrated services model. The new principle employed is manning by tasks instead of manning by services. This has given a substantial reduction in headcount while maintaining quality of execution.

**SPE/IADC 105438**


The paper identifies challenges that were overcome to realize hands-free tripping, racking and un-racking of drill pipe and collars in medium and large land-based drilling rigs through the development of a new technology racking board pipe handling system.

A comparison to offshore racking board pipe handling systems highlights the technical and economic difficulties experienced in applying the land-based systems successfully with frequent moves, weight/size restrictions and reliability concerns. Field-gathered trip and connection time in comparison with a human Derrickman working the racking board are put forward. The paper looks at how conventional robotic motion control technology has resulted in reliable “Nintendo-style” control operation with smooth solid control of moving pipe.

**SPE/IADC 105612**

Hydraulic Blowout Control Requirements for Big-Bore and HPHT Developments: Validation with Field Experience. P. Oudeman, Shell.

Although blowouts are now rare, their consequences are often of such a magnitude that for each development a contingency plan should be available aimed at limiting the damage and regaining control over the outflow of the well rapidly. This plan should consider all possible blowout scenarios and the corresponding response. When capping is not an option, downdip injection of kill fluids through an existing conduit or relief well(s), the hydraulic or “dynamic” kill, is the best alternative. To plan for such an operation prior to spudding the development wells, a number of parameters needs to be known, such as the pressure regime of the blowing formation and flow resistance of the blowing well. This allows formulation of guidelines for hydraulic blowout control for (un)conventional developments, even when the exact circumstances of a blowout are not known, as is the case in contingency planning. A comparison with selected field cases of blowouts demonstrates that the formulated guidelines match the experience with actually killing these blowouts in terms of the number of wells, pump rates, and kill fluids, etc., that were eventually required.

**Technical Session 12: Rig Technology**

**SPE/IADC 105892**


The paper describes the analyses and procedures used to recover a jackup hit by Hurricane Rita. It was tilted out of level and suffered leg damage. Initial recovery attempts resulted in further leg damage, at which stage it was decided to apply temporary leg strengthening and undertake a more detailed evaluation and analysis of the best method to recover the unit. The seabed geotechnical conditions were found to be providing restraint, which helped to support the tilted configuration. However, they also had the effect of resisting rotation of the spudcan when hull levelling was attempted. This resulted in additional leg damage. This analysis identified the need for a hold-back force during the recovery procedure.

The methods described can be used for the safe recovery of a range of jackup designs that have been subjected to extreme loading events and suffered leg damage.

**SPE/IADC 105644**

Application of Purpose-Built Big Technology Results in Step Change in Drilling Time, Cost and Opportunities. E.S. Kolstad, New Tech Engineering; L.D. Steinke and L.S. Brady, Williams Production; S.P. Marchand, Helmerich & Payne IDC.

In a mature field development project challenged by difficult topography, how can a dramatic change in rig design increase drilling performance safely, efficiently, and in an environmentally conscious manner while also improving well costs? The paper will document the specification, design, and implementation of purpose-built rigs to accelerate the drilling of more than 4,000 wells in a safe, efficient, and cost effective manner. To date, the rigs have drilled an average of 29% faster than the conventional rig benchmark.

**SPE/IADC 105798**

Deepwater Drilling Operations and Upgrade. O. De Bonnados, Pride Forward; G.H. Zijderveld, GustoMSC.

Since 1999, two drillships, Pride Africa and Pride Angola, have been operating in Angolan offshore waters. From their initial startup, both vessels have been deployed in a deepwater field development role and operated under long-term contracts. This paper describes the operational experience since the startup of both vessels within their field development role; the successes and the shortcomings resulting in lessons learned which formed the base of a project plan to further enhance the operability of the vessels. In 2004-05 both vessels underwent maintenance and upgrades to reflect additional requirements requested by the operator as well as upgrades planned by the drilling contractors.

The paper will address: lessons learned with respect to the originally installed systems on both units and improvements made; the development of a project plan indicating key elements for upgrade; the preparation and execution of the docking of both vessels, specifically with respect to timing, logistics and the docking itself; the actual execution of the docking with the lessons learned; the subsequent operational and maintenance experience as a result of the upgrade process on the vessels.

**SPE/IADC 104602**


This paper will describe the design, use and results of a field trial for the UniTong, which enables the running of drill pipe, tubing and casing from 2 7/8-in. to 13 3/8-in. and is completely remotely operated. This was an important factor for Smølevig in their evaluation of the field test, which was completed with no personnel on the drillfloor. This tong is able to be parked on the well centre, and drilling, tripping and casing operations can be performed through the UniTong. Safety implications and projected operational time/cost savings over a theoretical well will be discussed as indicated by the Smølevig actual field trial.

**SPE/IADC 105883**


The paper presents operational experiences gained in using a high-efficiency ultra-large jackup offshore Norway for ConocoPhillips at the Ekofisk field. The rig features a new concept in cantilever skidding called X. It is also rigged with a quadruple derrick with dual standbuilding capability and space for casing racking. The dual pipe handling, offline activity features have saved as much as 25-30% on earlier offset wells drilled with more conventional units.