

## Technical Session 10: Case Histories

SPE/IADC 105649

*CIDS to Orlan: Transformation and Startup of Sakhalin's Ice-Resistant Drilling Platform.* A.M. Higgins, B. Zuskov 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 I (CIDS) 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 Elvayr Neftegaz; N.L. Rolland, 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. The paper will describe how the system was implemented in a remote area exploration drilling operation off Sakhalin Island.

SPE/IADC 105766

*How Much is Left of Your Centralizer After Exiting a Casing Window in an Extended-Reach Horizontal Multilateral? Modeling, Yard Tests and Field Results from Alaska's West Sak Development.* E.M. Peterson, M.R. Greener and E.R. Davis, ConocoPhillips; D.T. Craig, Baker Oil Tools.

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 exits 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

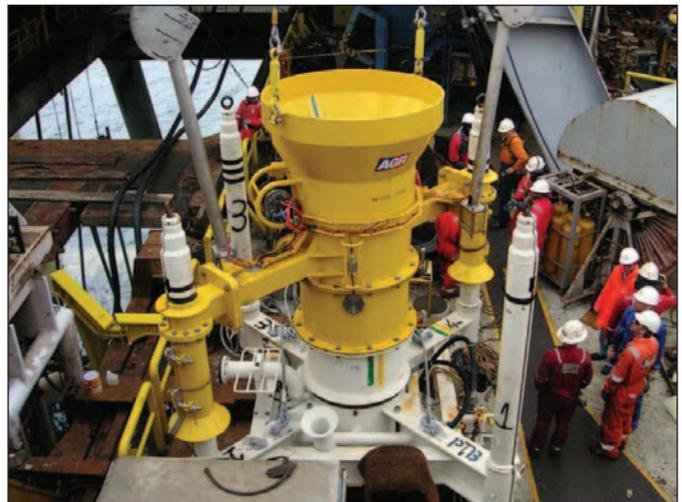
*Step Change in Remote Exploration.* R.S. Shafer, ConocoPhillips.

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. Noynaert, D. Pumphrey, T. Eiden, F. Hartensteiner 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 grassroots wells, deep set intermediate casing strings for future rotary drillout, build & drop pad wells, and thru-tubing 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 105212: A riserless mud recovery system was field-tested as part of the Norwegian DEMO2000 programme and has seen operational service in a Caspian Sea drilling campaign.**

SPE/IADC 105541

*Magnolia Deepwater Experience Frac-Packing Long Perforated Intervals in Unconsolidated Silt Reservoirs.* L.F. Eaton and W.R. Reinhardt, ConocoPhillips; J.S. Bennett, Devon Energy; K. Blake and H. Morales, Schlumberger.

ConocoPhillips is developing the Magnolia field with a TLP in 4,674 ft of water at Garden Banks block 783 in the Gulf of Mexico. The wells targeted multiple zones resulting in complex directional wells with 50-60° maximum hole angles. 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

*Improving Security on Offshore Installations.* D. Struthers, G. Esson and R. Ferguson, Poseidon Maritime.

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 ways in which regulatory and non-regulatory security-based thinking should be approached.

SPE/IADC 105065

*Multi-Skilling as a Key Factor for Economically Viable Operations in a Mature Oil Province: Oseberg East as a Case Example.* J.O. Dagestad, 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 Next Major Step in Total Hands-Free Pipe Handling — No Derrickman in the Derrick Racking and Unracking Pipe.* D. Richard, Iron Derrickman.

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 tripping and connection test times 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.

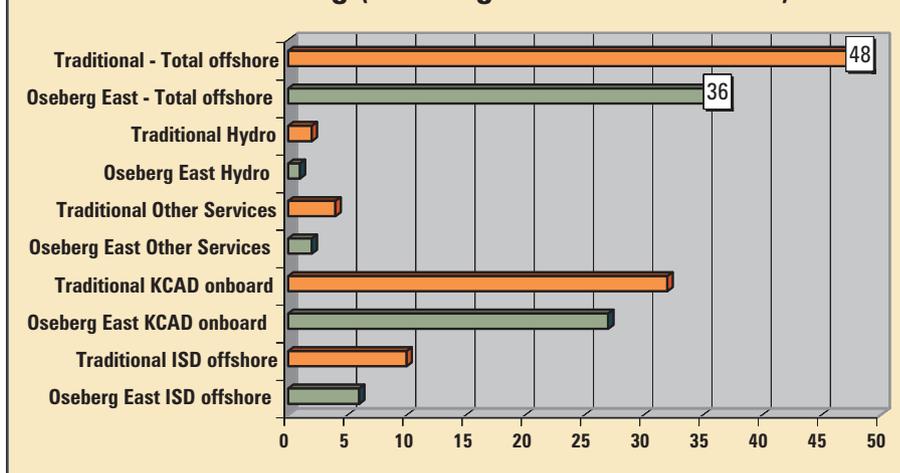
Although blowouts are now rare, their consequences are often of such a magnitude that for each development a contingency plan should be available aimed at limiting the damage and regaining control over the outflow of the well rapidly. This plan should consider all possible blowout scenarios and the corresponding response. When capping is not an option, downhole 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 required number and dimensions of relief wells, kill fluids and kill rates, pump capacity, etc. For HPHT and big-bore developments, these requirements depend on a limited number of factors, 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

*Recovery of a Damaged Jackup Following Hurricane Rita.* R.W.P. Stonor, M.J.R. Hoyle, Noble Denton Consultants; J.N. Brekke and C. Keaton, GlobalSantaFe.

### Pull Tubing (Oseberg East vs Traditional)



**SPE/IADC 105065: Previous models have focused on the drilling contractor and production manning levels on the platform at Oseberg East. A new study extends the operational efficiency to the drilling services by utilizing an integrated services model.**

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 Rig 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 26% faster than the conventional rig benchmark.

SPE/IADC 105798

*Deepwater Drillship Operations and Upgrade.* O. De Bonnafos, Pride Foramer; 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 contractor.

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

*UniTong Combined Tong for Drilling Operations.* H.R. Halse, V-Tech.

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 Smedvig 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 Smedvig actual field trial.

SPE/IADC 105883

*Improvements in Operations Using a High-Efficiency Jackup.* G. Hart and A. Ramsing, Maersk Contractors.

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 y. 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.