Swift Drilling

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When Shell UK and NAM initiated the SWEEP project (Smart Well Engineering Exploration and Production) for a new low cost exploration and extraction initiative in the shallow waters of the Southern North Sea, Cofely Fabricom and the Van Es Group grasped the opportunity to form a joint venture for the construction and operation of a light jack-up that could meet the economic and technical challenges set by Shell. A new jack-up drilling rig concept was developed that would match the shallow water conditions and the drilling performance needed for the lighter wells. The joint venture designed the SWIFT10 to operate in water depths of 40 meters and drill down to 5,500 meters. This avoids the costly use of unnecessary large rigs in this environment. SWIFT10 is also specially designed to handle the new smaller and lighter SWEEP subsea completions. This layout and the installation procedure makes subsea completion handling much less weather dependent than working from a conventional jack-up.

The combined SWEEP and SWIFT10 concepts deliver considerable overall potential savings of 35-40%. This is due to lower investments and smaller crews, reduction of depth dependent and one-off costs, smaller drilling volumes, faster subsea completion installation and less logistical support.

“Automation is the central feature of our jack-up drilling rig. It reduces crane and logistics movements and keeps people away from machinery. It maximizes efficiency, cuts manning needs and creates first of all a safer working environment.”

**OUR JACK-UP RIG DEMONSTRATES THE VALIDITY OF NOVEL DESIGN CONCEPTS**

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Safety increased

The rig was designed with safety as the paramount factor.
People are kept away from machinery that can inflict injuries.
There have been no LTI’s over the two and a half years of operations; that also means none of the finger and hand injuries that are relatively common.

Impressive uptime

Uptime has been impressive at between 97% and 98%, so has been the drilling progress and the ability to handle kicks up to 2.2 sg.
The safety and performance achievements have also brought about a high level of pride and motivation among the crew that translates into further efficiencies and economies. Our next move is to automate further, to the extent that some of the 24 hour, 365-day operation can be transferred onshore to make greater use of our skilled workforce and expand our client base.

Automation, the key to innovation and safety

A key innovation was the introduction of a fully automated pipe warehouse and pipe handling system. The system has specially designed pipe yokes and boxes for all sizes drill pipe, casing and tubing. The yokes and boxes are filled in an onshore yard. All pipe data are recorded in a spreadsheet and the boxes are transported to SWIFT 10. The rig crew positions the boxes on the cantilever and feeds the pipe data into the rig’s PLC. Thereafter the pipe warehouse and pipe handler select and present the pipe to the drill floor in a completely hands-off mode.

Pivotal role

Operation of the Swift 10 has played a pivotal role in the success of Shell’s SWEEP project, providing a viable means of exploring and developing marginal gas fields at lower unit costs. A great deal of gas can now be extracted from smaller fields in line with the small fields policies of the respective governments to save the large fields for the future.
SWIFT Drilling is currently working on the development of SWIFT 11, a 450 tons capacity jack-up drilling unit. The rig will feature a modern CJ46 substructure with a Herrenknecht Vertical drilling package that trips “range 2 doubles”. The rig can store 7000 meter of drill pipe on the cantilever. An automatic pipe make-up and break out machine will be in the centre of the pipe deck and assures that drill pipe can be tripped in and out in doubles.

Automatic drilling
The accurate position systems of the hydraulic rig are the key to further automation of the drilling process.

We are in the process of developing the technology to automate drilling over longer intervals.

Unitong and Unislip
We plan to equip the drill floor with a Weatherford Unitong and Unislip to permit the running of drill pipe, casing and tubing without changing tongs and slips. A drill floor robot with a dedicated store will be installed to allow the installation of X-overs and subs in the well centre.

Mechanized mud handling system
We plan to mechanize the mud system and operate it from a control desk in the DCR.

Remote DCR
On SWIFT 11 the DCR will be located in the accommodation block, remote from the drill floor. It will feature a full-size operations room with four control stations of which two will contain a cyber chair. Multiple HD cameras and screens will provide excellent overview and close ups of the drill floor and other important areas that are essential to the safe operation of the drilling unit. The control room will be located next to the offices of the OIM, toolpusher, and client representatives. This makes all drilling support instantly available to the driller. The ultimate step will be an onshore primary control room with a backup control room and full intervention crew on the jack-up. It requires reliable and high capacity data communication systems but will finally bring drilling into the 3rd millennium.

Competitive through excellence
SWIFT Drilling is convinced that these modern solutions will further boost the performance of SWIFT 11, by eliminating human mistakes, reducing exposure of the drilling crew, increasing efficiency, make more efficient use of drilling management and all of this against attractive day-rates.