

"Flotel" converted to world-class deepwater semi

OVER THE PAST 5 YEARS, Diamond Offshore has been upgrading its fleet of 30 semisubmersibles to better tackle the hot deepwater market.

Its latest move has been the \$450 million conversion of the Ocean Confidence—a former North Sea, 800-bed accommodation unit—into one of the most advanced semisubmersible rigs available. The rig is one of only about a dozen semis worldwide rated for drilling in water depths of up to 7,500 ft.

The Ocean Confidence is a DNV (Det Norske Veritas) dynamically positioned Class III rig capable of operating in the extremely harsh environments of the North Sea, including the Norwegian sector.

Diamond Offshore acquired the rig from Rasmussen Shipping Company in late 1997. After converting it in shipyards in Sabine Pass, Texas, the rig completed sea trials and commissioning in the latter half of 2000. On 5 Jan, the Ocean Confidence began a 5-year contract with BP in deepwater Gulf of Mexico.

BP is quite happy with the rig. According to **Toby Wood**, well project manager about the Ocean Confidence: "The Diamond Offshore crew, along with BP supervisors and staff on board, have done a bang up job learning the rig and its equipment. Since spudding our first well on 12 Jan, we've operated 89 days and have had only 5 days of downtime. For a 5th generation startup, that's an exceptional performance."

The rig offers a number of innovative and beneficial features for deepwater drilling, including:

- Superior dynamic-positioning capabilities;
- Dual power plants to provide additional reliability;
- Automation galore.

MORE ON KEY FEATURES

The rig's prime movers provide 32,000-hp to 8 azimuthing thrusters, which enables sustained station keeping, even in the harshest environments.

"We have a state-of-the-art computer system that ties all of our dynamic positioning activities together," said **James Hebert**, operations manager for the rig.

The computer senses beacons on the seafloor, GPS signals from satellites, wind and current sensors. It compares all the data and then constantly fine-



Diamond Offshore's conversion of a North Sea accommodation unit resulted in the deepwater semisubmersible rig Ocean Confidence.

tunes the power output from the thrusters. "The result: 95% of the time we're under 2 ft off our desired location. That's phenomenal."

In addition to the 8 diesel engines that supply dynamic-positioning power, Diamond Offshore added 3 diesel engines providing a total of 19,300 hp for drilling operations and auxiliary power load.

The entire 51,300-hp capability of the vessel offers complete redundancy for both positioning and drilling—eliminating any need for power shedding from the drilling operation to augment positioning power needs in severe weather.

On the drill floor, a driller, an assistant driller, and one roughneck can run the entire operation, thanks to an automated iron roughneck and a pipe racking machine that can rack back both drill pipe and casing.

The driller's cabin features integrated controls that provide instantaneous updates of all drilling operations.

DRILLING EQUIPMENT

Hebert notes several enhancements that have been key to the drilling performance of the Ocean Confidence.

"Most rigs have 3 mud pumps, usually of the 1,600 hp variety. We put on four 2,200 hp pumps.

This gives us tremendous capacity—mud circulation at 2,000 gallons per minute, up to 30% higher than most rigs," he said.

"For the riser, we installed 4½-in. ID choke and kill lines versus the standard 3½-in. ID. In deep water, this allows you to circulate kicks out more efficiently, reducing possible damage to the well.

"On the BOP, we installed 6 rams instead of the normal 4. That allows us to have 2 pipe shear rams, instead of the normal one. In the stack, we're set for 3 sets of variables, 2 pipe shears, and one casing shear."

IT WILL PAY OFF

Converting a North Sea accommodation rig into a world-class drilling semi proved to be a bigger challenge than anyone at Diamond Offshore originally estimated.

The Aker H3.2e hull design could work in deep water anywhere in the world.

"Rather than invest in a new-build, we thought we could get to the deep water market cheaper and faster by simply upgrading this flotel," Hebert explains.

"For a whole host of reasons, it was more challenging than we thought."

The company had to add thousands of tons of steel to extend the rig's fatigue life out from 15 years to 30 years. All the horizontal cross tubes were changed.

Pontoon blisters were added to displace more water and provide better transit and operating variable deck load capacity. Some 1.3 million ft of new cable was required.

Despite cost overruns, the rig is expected to make significant profits during its initial contract. ■