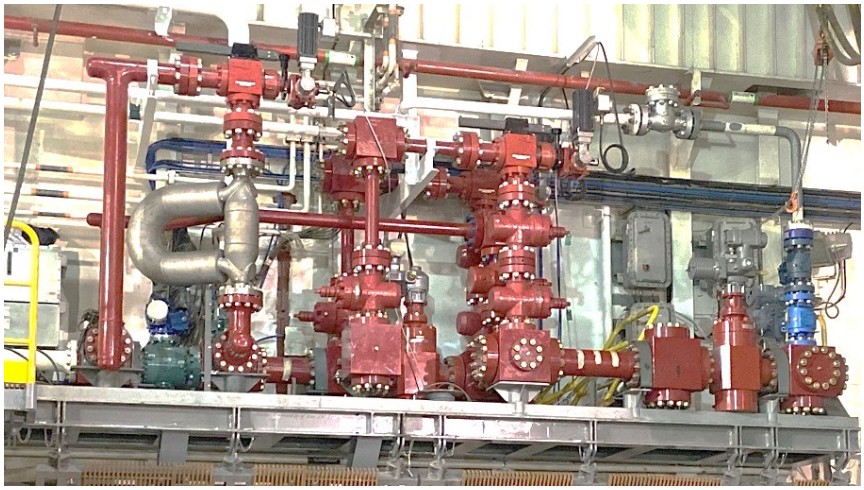
Victus™ Intelligent MPD Installation

on Jackup Rig Helps To Deliver Complex Wells Ahead of Plan in North Sea HPHT Drilling Campaign



The Victus MPD manifold, choke, flowmeter, and piping occupied a compact footprint on a specially fabricated walkway to avoid interference with lifting, cantilever skidding, or deck operations.

Objectives

- Permanently install a managed pressure drilling (MPD) manifold, MPD control system, rotating control device (RCD), and associated piping and equipment on a jackup rig.
- Integrate all MPD equipment with existing rig systems and command all MPD operations from an intelligent control system at the driller's console.
- Maintain bottomhole pressure (BHP) sufficient to drill within a narrow pressure window and cement liner across severely depleted intervals.

Our Approach

- An international oil company enlisted a drilling contractor to launch a multiple-well HPHT drilling campaign in the North Sea. The operator's plans called for MPD technology to penetrate depleted sands before reaching the targeted pay zone.
- Responding to customer needs, the drilling contractor turned to Weatherford to design and permanently install an MPD manifold, RCDs, and associated control equipment aboard a jackup rig. To meet the operator's launch deadline, the contractor needed all equipment installed before the rig departed the shipyard in 6 weeks.
- In close collaboration with the drilling contractor, Weatherford MPD experts reviewed plans and recommended the Victus intelligent MPD control system, Victus manifold, and SeaShield® RCD. The Victus integrated system analyzes downhole conditions and provides rapid automated pressure responses from the driller's console. The RCD contains and diverts annular fluid returns and gas kicks through the MPD system.

LOCATION
United Kingdom North Sea

WELL TYPE
Infill, development,
high pressure/high temperature (HPHT)

CASING SIZE AND DEPTH
20-in. casing at 3,040 ft (927 m)
13 3/8-in. casing at 12,332 ft (3,759 m)

LINER SIZE AND DEPTH
- 10-in. liner at 16,005 ft (4,878 m)
- 7-in. liner at 16,475 ft (5,022 m)
- 5-in. liner at 16,950 ft (5,166 m)

MAXIMUM DEVIATION
24°

MAXIMUM TEMPERATURE
374°F (190°C)

MAXIMUM PRESSURE
14,736 psi (101.6 MPa)

TOTAL DEPTH
16,950 ft (5,166 m)

PRODUCTS/SERVICES
- Victus intelligent MPD control system
- Victus MPD manifold and choke
- Coriolis flowmeter
- SeaShield 7875 rotating control device
- Engineering studies and real-time support

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Our Approach (continued)

- Following a 3D laser scan and rig survey, Weatherford engineers designed the MPD system by collaborating with drilling contractor engineers to route piping, valve line-ups, and control lines for quick actuation from the driller's console. The teams modeled the setup to confirm that all equipment could be placed without interfering with other operations.
- Weatherford MPD experts engineered custom electric chokes and an MPD manifold to fit within the space allocated on the rig.
- The Weatherford team permanently installed the equipment before the jackup rig embarked, which eliminated online rig-up time. Concurrent with installation, the team provided extensive MPD training for drilling crews to increase their involvement with operation and maintenance of the Victus system.
- The system was commissioned before the rig departed the shipyard.
- After drilling commenced, the Victus MPD solution provided fast, precise pressure control in response to changing downhole pressures. The MPD solution instantly detected kicks and losses to automatically maintain constant bottomhole pressure (CBHP) through challenging formations and enable the operator to reach total depth (TD).

Value to Customer

- Weatherford MPD experts designed and fabricated the Victus intelligent MPD solution with a reduced footprint for permanent installation on the drilling contractor's rig. The MPD system was hard-piped and installed in 41 days, which enabled the rig to depart the shipyard on schedule to keep the operator's planned launch date.
- Using Victus MPD technology enabled the drilling crew to prevent mud losses, set liner strings across weak formations, and safely drill to TD as planned. In addition, training the crew before the job increased their involvement with operating the system itself.
- By maintaining CBHP and managing fluid influxes and losses while drilling, the Victus MPD installation helped the operator to contain mud losses, reduce drilling fluid expense, and minimize well construction costs.

Mounting the new MPD installation against a wall near the moonpool facilitated direct access to the RCD for quick rig-up.

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