

Zero NPT Performance Across 11 HPHT Wells

End-to-End MPD Execution in the North Sea Delivers 8,398 Hours of Uninterrupted Reliability

Objectives

- Drill narrow-margin sections using a statically underbalanced mud weight (MW) combined with surface backpressure (SBP) to maintain the required overbalance.
- Manage the drilling window and establish the appropriate tripping mud weight prior to pulling out of hole (POOH).
- Displace the well to tripping mud, then re-displace to an underbalanced mud weight and circulate out any influx gas before proceeding with managed pressure cementing (MPC).
- Perform extended flow checks and POOH on elevators while maintaining an adequate swab margin under managed pressure drilling (MPD) control.
- Run and cement casings and liners using MPC techniques to ensure well integrity and zonal isolation.

Our Approach

- Executed detailed pre-well planning and risk assessments to anticipate operational challenges, reduce uncertainty, and align execution across the 11-well campaign.
- Applied constant bottomhole pressure (CBHP) MPD with SafeShield® Model 7875 RCD and Victus™ intelligent MPD control system (electric chokes), supported by junk catcher, SPMS, mud gas separator, and full MPD well services.
- Conducted dynamic pore pressure tests (DPPT) and dynamic formation integrity tests (DFIT) during drilling to define and validate the operational drilling window.
- Used MPD practices to actively manage the drilling window: performed dummy connections, circulated out gas after tripping back in hole, and mitigated temperature-related pressure effects to maintain wellbore stability.
- Implemented proactive maintenance and robust equipment-management routines to prevent bearing failures and minimize unplanned downtime.
- Strengthened cross-functional collaboration among drilling engineers, rig crews, and maintenance teams to sustain operational continuity and speed issue resolution.
- Performed between-well lessons learned and continuous-improvement reviews to drive consistent performance gains and repeatable delivery.
- Completed controlled testing on a training rig prior to campaign start to qualify bearing operation outside standard specifications for drill-in-liner (DIL) applications.



Managing pressure better within a safe operating window can apply to any well and any operation. The Weatherford managed pressure wells solutions deliver comprehensive pressure management for fewer surprises and higher quality wells, increased wellbore stability, and a more productive well.

LOCATION

North Sea, United Kingdom

WELL TYPE

Exploratory

FORMATION

Upper Fulmar

WELL PROFILE

Directional

RIG TYPE

Jackup

PRODUCTS/SERVICES

- Managed pressure wells
- SafeShield Model 7875 RCD
- Victus intelligent MPD



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Value to Customer

- Delivered strong performance: 7 of 11 wells completed with zero nonproductive time (NPT), protecting schedule and budget.
- Achieved exceptional bearing reliability: zero bearing failures over 8,398 operating hours. Only two early sealing-element leaks across 91 bearing runs and 122 sealing elements, enabling >1.36 million ft (414,528 m) drilled/stripped through the system.
- Enabled full-spectrum MPD execution across the campaign, including high-pressure MPD connections (>1,000 psi), DFITs, DPPTs, MPD displacements, stripped-out-of-hole operations, injectivity tests, and MPC for casing and liner strings.
- Improved tripping efficiency: drillpipe stripped out of hole at 1.5x the speed of comparable operations while maintaining required swab margins, saving approximately \$100,000 USD per trip.
- Reduced rig time and cost through preparation: 61 bearings were pre-stabbed and mobilized with crossovers installed, saving a minimum of 2 rig hours per bearing and an estimated \$2 million USD in campaign cost.
- Executed 13 MPC jobs with consistent delivery, demonstrating repeatable capability for both casing and liner cementing operations.
- Lowered logistics and rig-up time: permanently installed MPD manifold and control system and reduced equipment loadout and online rig-up, converting recurring mobilization charges into a one-time installation cost.
- Expanded operational envelope: successfully performed drill-in-liner operations with bearings operating at 1,750 psi (12.0 MPa) and 100 rpm on all DIL applications.
- Established a proven benchmark for future MPD work through dedicated personnel, proactive maintenance, and robust risk-management processes.

