

Collaboration and DwL Technology Tame Lost Circulation and Wellbore Instability in the North Sea

Objectives

- Drill liner from pressured shale of 727.27 psi/1,000 ft into production-depleted, catastrophic-carbonate-loss interval with a 88.31-psi/1,000 ft pore pressure.
- Mitigate the high risk for fluid losses during drilling and cementation.
- Install the liner in the carbonate interval to isolate the overpressured shales above from the depleted carbonate reservoir to be drilled using a lower mud weight to manage or eliminate fluid losses in the 8 1/2-in. hole interval.

Our Approach

- Weatherford deployed its 9 5/8-in. x 11 3/4-in. premium hydraulic drilling-with-liner (DwL) system to drill a 30-m interval and successfully isolate the pressured shale from the depleted carbonate interval.
- The liner was set in the depleted carbonate interval at a measured depth of 3,312 m, which eliminated the need to install a contingency expandable liner across the depleted carbonate interval.

Value to Client

- Early collaboration between the operator and the Weatherford team enabled seamless incorporation of the DwL engineering disciplines into the drilling plan, which was considered instrumental in the success of the DwL operation.
- The operator successfully completed their first DwL project in the North Sea after three previous unsuccessful attempts to drill this interval using conventional methods.



A 9 5/8-in. x 10 5/8-in. Defyer® DPA 4416 drillable casing bit was used to successfully complete an operator's first DwL project in the North Sea.

LOCATION

North Sea

WELL TYPE

Development

FORMATION

Shale and carbonate

INCLINATION

60°

CASING SIZE

9 5/8 in., 53.5 lb/ft, P-110, TSH-523

DwL MEASURED DEPTH

3,282 to 3,312 m

AVERAGE RATE OF PENETRATION

3 m/hr

PRODUCTS/SERVICES

- 9 5/8-in. x 11-3/4-in. premium hydraulic DwL system
- Model 402P float collars with single Sure Seal 3® Valve
- Defyer® DPA 4416 drillable casing bit
- 9 5/8-in. x 10 1/2-in. Model 542 integral centralizer subs
- Drilling-with-casing (DwC™) services
- Well Engineering and Project Management (WEPM) services

