

Comprehensive Reservoir Test in Open-Perforation, Ultradeepwater Presalt Well Saves 10 Rig Hours

Quartet system enables efficient, single-trip test operation that met all objectives sooner than expected, offshore South America

CHALLENGE

Perform a comprehensive reservoir test in an open-perforation well drilled from a semisubmersible vessel in a high-cost, high-risk ultradeepwater reservoir, minimize rig time and associated costs, and maintain uncompromised service quality.

SOLUTION

Streamline test operations by using the Quartet* downhole reservoir testing system with an open-perforation adapter.

RESULTS

Saved 10 rig hours estimated to value USD 170,000 during rig-up and rig-down while meeting all test objectives and ensuring the quality of service delivery.



Minimize rig time in complex offshore environment

An operator wanted to conduct a test on an ultradeepwater reservoir offshore South America. The test environment posed a number of inherent challenges; the vertical well is in a water depth that exceeded 7,000 ft [2,134 m], has a total depth of 17,165 ft [5,232 m], and has a 10 $\frac{1}{4}$ -lbm/ft casing to just over 16,000 ft [4,877 m] followed by 7-in liner to a total depth of more than 17,000 ft [5,182 m]. Further, the zone of interest, the interval between 16,545–16,762 ft [5,043–5,109 m], was previously perforated using wireline, which must be taken into consideration when choosing a downhole reservoir testing configuration.

Test with advanced downhole test configuration

Schlumberger suggested running the Quartet system, a comprehensive, efficient downhole test system that combines four advanced technologies in one system.

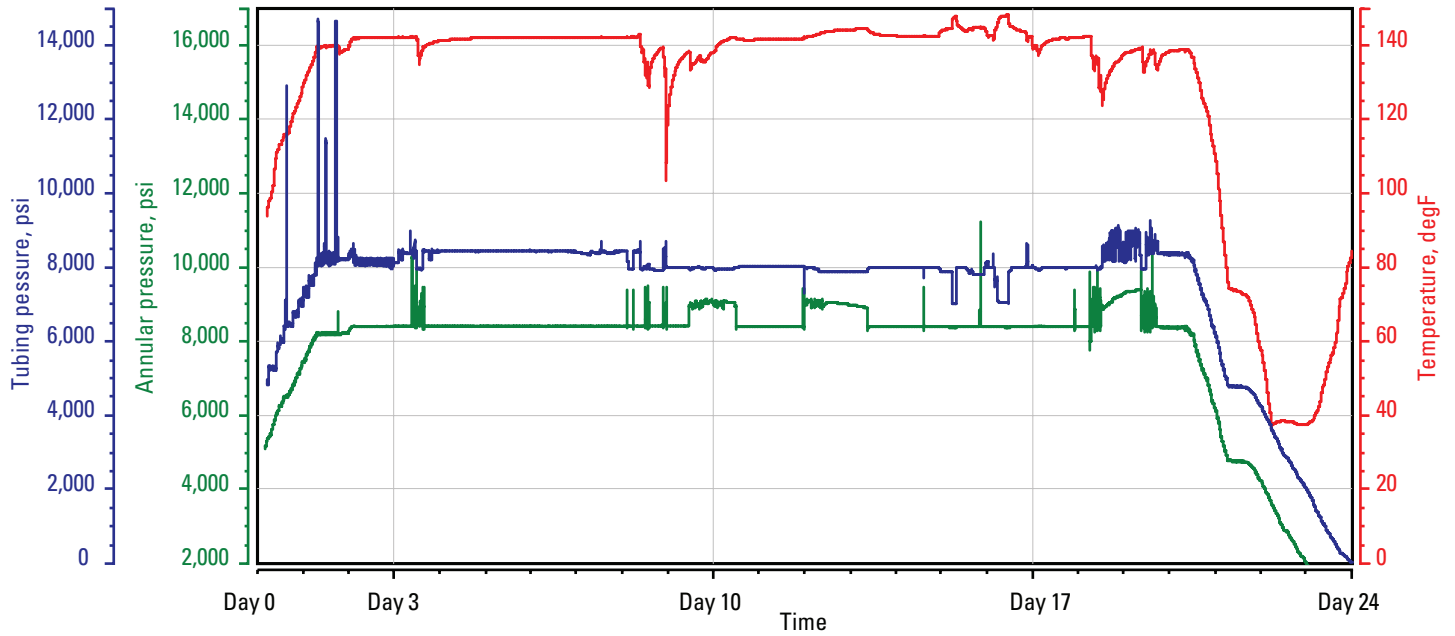
- The CERTIS* high-integrity reservoir test isolation system combines many features of a conventional retrievable packer with those of a permanent production packer, including a built-in floating seal assembly. The system eliminates the need for drill collars and slip joints, significantly reducing the number of tools in the test string and saving rig time.
- The IRDV intelligent remote dual valve combines a tester valve and a circulating valve that can be cycled independently or in sequence for efficient multicycle operations.
- CQG* crystal quartz gauges acquire high-quality pressure data throughout the test duration.
- SCAR* inline independent reservoir fluid sampling collects samples directly in the flow stream, eliminating contamination caused by dead volumes for more reliable reservoir sampling.

The operator ran an open-perforation adapter, positioned below the CERTIS system, to allow setting the packer by pressurizing the annulus to 1,900 psi [13 MPa]. The adapter enabled the fluid to pass from below, and holds the pressure from above while inside the liner. After the CERTIS isolation system was set, 240 bbl of 15% HCl was used in an acid job to clean out the perforations and induce underbalance to flow the well.

Save rig time with simplified, robust isolation

The Quartet system remained in the hole for 20 days, and its integrity remained unaffected for the entire downhole test duration. The operator met all its test objectives and saved substantial rig time. The customer estimates that during rig-up and rig-down 10 hours of rig time was saved, an amount equal to USD 170,000 in associated costs.

CASE STUDY: Running the Quartet system enables efficient, comprehensive well testing, offshore South America



Pressure and temperature measurements obtained by CQG gauges at sensor depth of more than 16,000 ft [4,877 m]. All components of the Quartet system test string reliably performed under high pressure for 20 days.

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