

Custom Well Interception Mills Achieve Success in Brazil

Interception Mills, developed and manufactured by Wellbore Integrity Solutions (WIS) in Brazil exceed performance expectations in a five well interception campaign

Solution for Complex Wellbore Interception Campaign

In the planning of a multi-well abandonment campaign, the WIS' DRILCO team in Brazil worked closely with the customer and partner service companies to develop and build a customized, interception mill that would enable access into the intercepted wellbores. The interception window was required in an 8 $\frac{5}{8}$ inch external casing with 5 $\frac{1}{2}$ inch and 3 $\frac{1}{2}$ inch casing and tubing inside it. The Interception Mill was therefore designed to open a window in this complex geometry.

Key Operational Elements:

- Runs with gyro and ranging equipment was performed to ensure the positioning of the new wells and interception points.
- A conventional drilling BHA was used to touch the interception point prior to running the WIS Interception Mill.
- Over 5m of interception milling was required to ensure a high-quality window in the 8 $\frac{5}{8}$ inch casing.

To date, five wells have been intercepted successfully. The WIS Interception Mill has provided full length windows with an average milling ROP 30% higher than expected by the customer, with good well cleaning and low shock and vibrations registered.

CHALLENGE

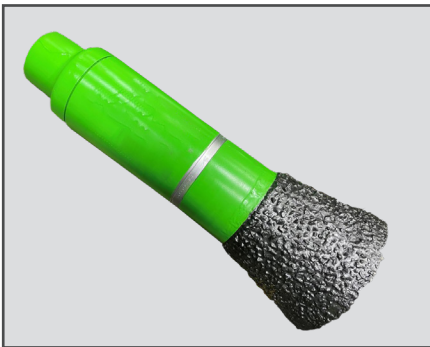
Multiple onshore wells were required to be plugged and abandoned by the customer. Several wells had suffered from casing collapse due to geological instability in the area. Therefore, usual intervention through the main wellbore wasn't an option and access through an interception window from a parallel well was required. The Interception Mill to open the window was a key item of the equipment required for these special, complex, intervention projects.

SOLUTION

A customized interception mill was developed and provided that met the technical criteria of each well size, casing configuration, and window profile to enable P&A operations.

RESULT

- Seven high quality, full length windows were opened
- The average milling ROP was 30% higher than expected by the customer
- Excellent durability and low shock and vibrations were reported during milling operations
- All mills used were able to pass through repair and redress services, optimizing the cost to the customer



Example interception mill

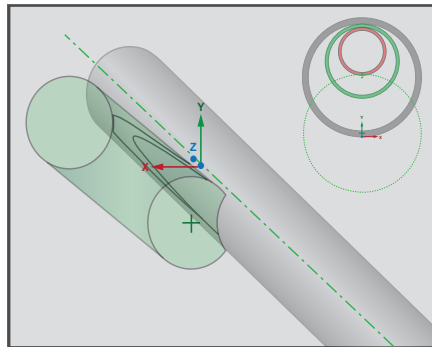


Illustration of geometry complexity