

Expro Excellence

Barrier Monitoring in a Temporarily Abandoned Well

Well Flow Management | Wireless Well Solutions



Objectives and background

- A major operator in Brazil commenced offshore well abandonment operations in a deepwater subsea well. During these routine operations, challenges were encountered with retrieving pipe
- To investigate the cause of the pipe fishing difficulties, we deployed our Downhole Video services and identified a jump-out in the casing. This casing damage makes conventional pipe recovery challenging and the customer was unable to immediately complete this remedial work within the available budget
- Additional time was needed to plan the remedial work and complete the full well abandonment operation. During this planning period it was necessary to ensure the well was left in a safe condition, with well integrity maintained
- Our customer intended to temporarily abandon the well with traditional cement barriers. However, due to the shallow nature of the well and the unconsolidated formation, there was a risk that the pore pressure could exceed the maximum permitted pressure for the barrier and compromise the abandonment integrity
- A solution was needed to obtain real-time pressure and temperature measurements from below the barrier to confirm the pressure remains lower than the maximum allowed pressure
- The monitoring system needed to be installed with minimal equipment footprint on the seabed and provide active monitoring until the next well intervention can be scheduled to complete the full well abandonment

- The gauges were programmed to transmit one pressure point per day to ensure the well was continuously monitored from the point of well suspension
- The system was commissioned and set up for receiving Pressure and Temperature data for up to 5 years
- Over 20 years proprietary expertise with modeling downhole Electromagnetic signal propagation, combined with our extensive global track record ensured we delivered a successful solution

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- A CaTS™ permanent monitoring system was installed using two CaTS™ Gauges below the main well barrier. The gauges were clamped onto tubing and suspended below a retrievable packer ~700m below mudline
- A modified debris cap, which included the CaTS™ Subsea Transceiver system, was deployed above the Production Adapter Base
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Value to the client

- This CaTS™ installation demonstrated the versatility of the technology by providing a solution for safety critical well integrity monitoring as an alternative application to wireless permanent monitoring for reservoir appraisal purposes
- By running a CaTS™ gauge below the upper plug in a dual barrier sealing configuration it has been possible to accurately verify, in real time, the sealing integrity of the pressure barriers placed in the well
- The active downhole well integrity monitoring system has allowed the customer to leave the temporarily abandoned well with the reassurance that a final abandonment campaign can be effectively planned and efficiently scheduled
- The below plug pressure data verifies the conditions of the well barrier and wellbore environment prior to re-intervention and influences the subsequent safety considerations for execution of field operations
- Our locally established field operations team designed a technical solution that utilized equipment that was readily available in-country. This ensured a quick response time and prompt delivery for our customer

Cost saving



24/7 monitoring

