



/ Expro Excellence

Wireless Well Solutions

World first wireless annular barrier monitoring of a non-cemented liner in a deepwater subsea well



Objectives

- New generation, non-cemented, annular barrier technology was to be evaluated by a deepwater operator, with a means to wirelessly verify the integrity of the barriers also required

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- A total of four CaTS annular barrier monitoring stations, mounted externally on 9⁵/₈" liner, were successfully deployed inside 12¹/₄" open hole or 13³/₈" casing (three discrete reservoir units in a 12¹/₄" carbonate open hole section; and a fourth zone, formed between 13³/₈" casing, 9⁵/₈" liner, the liner hanger, and an expandable barrier)
- The barriers comprised a combination of new generation mechanically expandable barriers and more well established swell packers
- The barrier performance was monitored during and after periods of production and injection, with a particular focus on any changes in barrier performance resulting from thermal cycling and acid stimulation

- Data recovery operations were performed by deploying a CaTS Active Pick-up Unit (APU) into the well on e-line; the APU was positioned adjacent to the CaTS gauge located in each zone and a command was transmitted from surface via the APU requesting the upload of data sets between specific start and end times

Value to client

- CaTS data was successfully recovered wirelessly from each of the four zones being monitored
- The data proved to be extremely valuable in validating barrier performance under static and dynamic pressure/temperature cycles during flowing and shut in periods
- CaTS gauges run with casing (no downhole gauge) therefore no additional rig time required to make up and run – traditional PDG cable, protectors and wellhead wet connectors

Expro's CaTS™ wireless communications technology transmits data and control commands using electromagnetic (EM) communications. The EM signal uses the steel construction of the well, namely casing, liner or tubing, as a signal conduit and data can be transmitted both radially and axially through pipe. Deployment options include through-tubing, externally mounted on tubing, casing or liner, or via a completion conveyed mandrel.

Intelligent well technology is increasingly being applied to enable the reservoir to be managed effectively and the recovery factor to be maximised. Achieving excellent zonal isolation behind casing is critical when planning to produce from multiple zones, or deploy intelligent well hardware.

Achieving effective cement placement and bonding between the formation and casing can be challenging, especially in deepwater and with carbonate formations, where channelling and lost circulation are common problems.

Contact

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