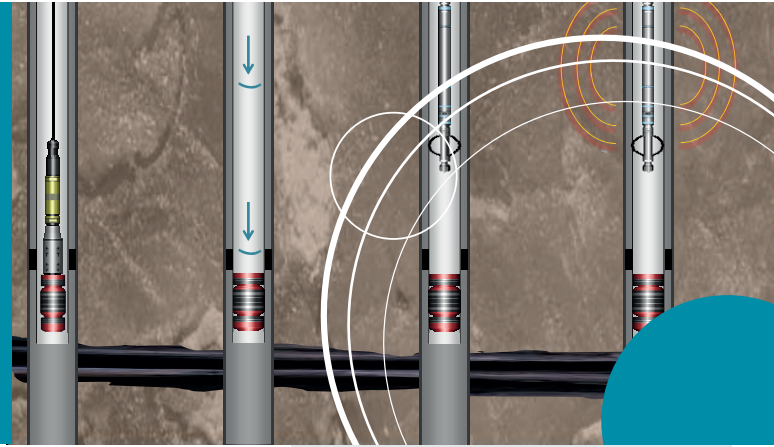




/ Expro Excellence

Wireless Well Solutions

Achieving excellence in well integrity – the application of CaTS™ wireless communications technology to verify pressure barrier sealing integrity during well suspension or P&A



Objectives

- Norsok D-010 guidelines require that two well barriers are present in a well at all times and that the integrity and function of the barrier shall be verified at the time of construction
- During workover or P&A it is common to install both deep and shallow set bridge plugs as temporary barriers. Sometimes these are necessarily set deep in the well. The sealing integrity of the lower plug can generally be validated by pressuring up from surface and monitoring for any leakage using a surface pressure gauge, however when installing the upper plug and due to the small volume of fluid between the two plugs, it is unlikely that a pressure test applied from surface will detect any leakage past the upper plug, thus verifying the sealing integrity of the plug can be inconclusive

Expro Excellence

- By installing a CaTS pressure gauge below the e-line conveyed upper plug, it is possible to monitor the pressure below the plug in real time at surface, whilst the pressure testing operation is being performed on the plug
- The Expro wireless monitoring solution uses standard completion hardware with no requirement for any electrical penetrations through the plug

- No additional components are required in the plug setting string meaning no increased rig-up height and no additional risks in tool performance or reliability
- Flexibility in deployment options – the CaTS solution is compatible with any 3rd party e-line provider's cable, CCL and plug setting tools
- The plug deployment, setting and pressure sealing verification can be completed in a single run in hole resulting in operational efficiencies

Value to client

- By running a CaTS gauge below the upper bridge plug in a dual barrier sealing configuration it has been possible to verify, in real time, the sealing integrity of the upper barrier placed in the well
- Requiring only a single run in hole to set and verify the plug resulted in a cost effective and operationally efficient abandonment campaign
- No penetrations meaning no compromise to the integrity of the well or barriers
- Compatibility with any third party plug supplier provides for flexibility in vendor selection

A key element of achieving excellence in well integrity is about having the necessary barriers in place and being able to verify them.

The Expro 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.

CaTS does not require a tubing string in the well and is not affected by cemented pipe, cement, plugs, or bridge plugs lending itself naturally to monitoring in abandoned or suspended wells without compromise to the integrity of the well. CaTS has been used to verify the sealing integrity of the upper barrier during P&A operations in 13 subsea wells.

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