

DATASHEET

Annular Barrier Testing Service using Well Integrity Check (WIC) and Annular Integrity Tooling (AIT)

CHALLENGE

Barrier verification is often the most challenging element of well abandonment, particularly when barriers include newly installed cement in a casing annulus. A simple pressure test of the wellbore confirms good cement in the wellbore, but only infers the quality of the cement behind the casing.

The annular cement can be logged with conventional tooling and if necessary, some or all of the cement can be drilled out. However, this is time consuming, expensive, and only provides an indicative measurement of the cement quality.

Furthermore, current techniques are limited to logging a single annulus. Although PWC and other techniques have been shown to be effective in multiple annuli, the ability to maximise the potential cost savings are subject to the limited verification options available. We see this challenge whenever PWC or perf and circulate barriers are installed during abandonment, slot recovery and zonal isolation operations.

SOLUTION

HydraWell and Exedra joined forces in July 2020 to combine their technology and capabilities, introducing a dynamic new solution to this challenge.

Exedra's WIC system tests barrier integrity by releasing a dose of pressurised tracer gas beneath a barrier once it is installed and cured, and then monitors for traces of this element above the barrier.

Teamed with HydraWell's downhole expertise, AIT deployment equipment and operational methodology, WIC offers more cost-effective plugging solutions whilst reducing the risk of leaks from permanently plugged wells.



INNOVATIVE

This forward thinking, collaborative approach can be incorporated into a PWC service, or delivered stand alone.

Furthermore, it is available to suit a wide range of casing sizes

DATASHEET

Annular Barrier Testing Service using Well Integrity Check (WIC) and Annular Integrity Tooling (AIT)

WIC SYSTEM

The WIC system releases a known volume of pressurised Helium below the barrier after the installed cement has gained sufficient compressive strength to act as a barrier. The helium dissolves in the wellbore fluid and is carried by that fluid through any leak path through the barrier. Circulating out the fluid above the barrier brings any leaked fluid to surface where de-gassed Helium can be detected, in concentrations down to 1ppm, by conventional gas chromatography equipment typically carried by a drilling rig.

The method also enables verification of pressure integrity in the direction towards the external environment, which is not possible with today's used methods. Using HydraWell's suite of Annular Integrity Tooling (AIT) allows the system to be deployed on field proven equipment, and integrated into a PWC downhole assembly.

AIT

After perforating the desired interval with TCP guns, an activation ball is dropped and the AIT is activated. The cup integrity is then tested in blank casing before the cups are positioned across the lower perforated interval, and pressure is applied. If the formation is holding the applied pressure and no return from the upper perforations is observed, the formation barriers are verified. The test can be repeated to confirm the initial test result. The AIT can now be disconnected and an internal cement plug can be set. The tool can also be retrieved to surface depending on the next operational steps to be performed.



BENEFITS

- Expand range and application of annular barriers including those difficult to verify
- Cost effective abandonment options
- Reduced barrier installation costs including potential elimination of rig mobilisation
- Cost effective alternative verification
- 50-75% cost reduction compared to drilling out and logging
- Eliminates potential risk of damaging the barrier
- Reduces overall risk of leaks and costly remediations from plugged wells
- Provides a direct measure of barrier integrity without relying on interpretative assessment