

Case study: Asia

INTeX evaluation service confirmed zonal isolation in well cemented with lightweight cement

A major operator in Asia wanted to ensure zonal isolation in critical areas prior to abandoning a land well. The well was cemented with lightweight cement using a slurry containing an additive with hollow glass beads that had been used to lower fluid density.

In many cases, conventional cement evaluation tools struggle to distinguish between the cement bond and free pipe in lightweight cement. Cement behind the pipe in this well had been curing approximately six months and had a modeled strength of 700 psi. The wellbore contained a water-based mud (WBM) of 10.2 ppg. The casing was large, 13⁵/₈-in. with a thickness of 0.625-in., increasing the difficulty of obtaining accurate measurements.

Baker Hughes proposed using its **Integrity eXplorer™ (INTeX™) cement evaluation service** in combination with the Baker Hughes **Segmented Bond Tool™ (SBT™) well integrity evaluation service** for this operation.

The INTeX service uses shear waves that respond only to solids and can accurately detect a wide range

of cement densities. Its patented electromagnetic-acoustic transducer (EMAT) sensor technology provides shear, lamb, and variable density log (VDL) measurements to determine cement bond and microannulus, without requiring a pressure pass.

The INTeX log provided a clear image showing a good cement bond over key reservoirs. The combination of Baker Hughes services successfully measured the lightweight cement behind the pipe and confirmed the zonal isolation.

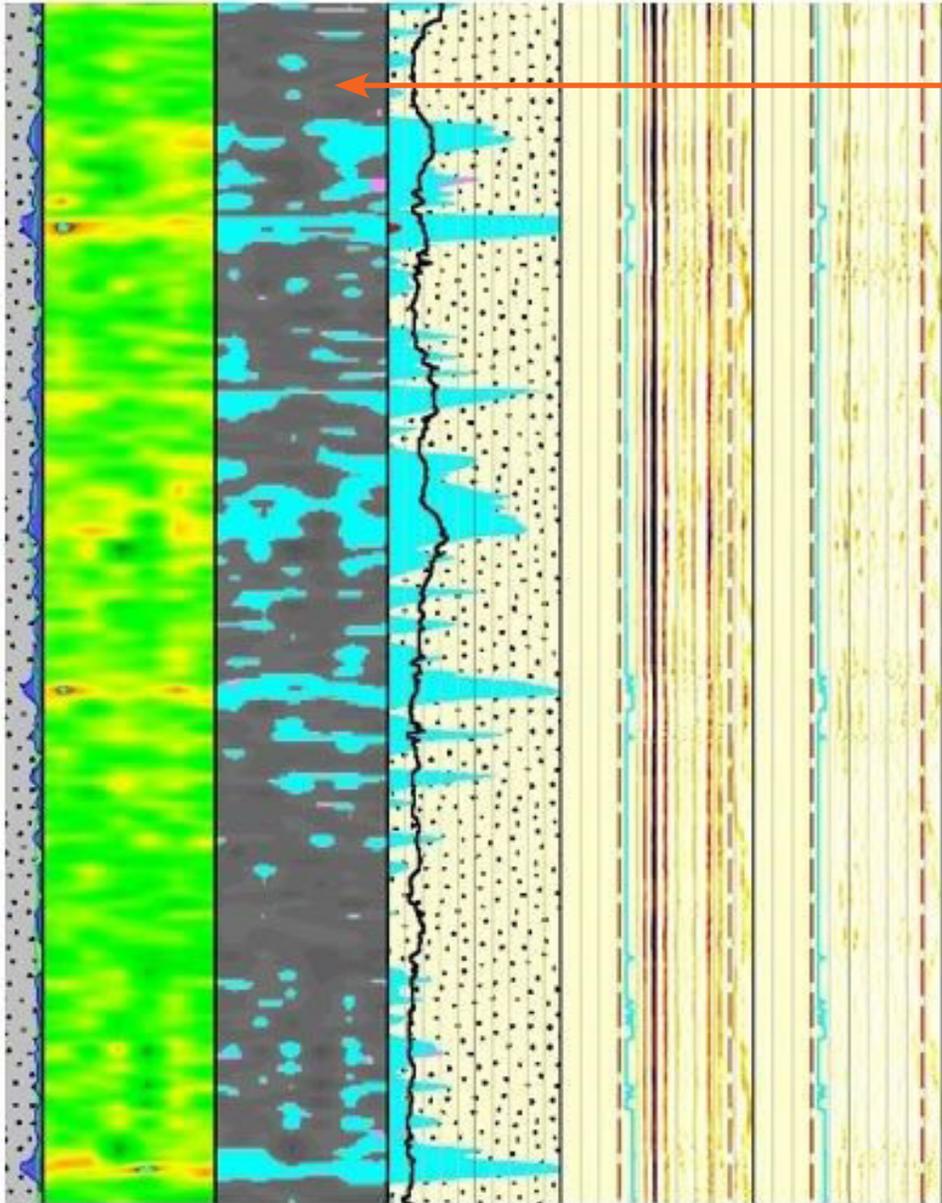
After evaluating the results, the Baker Hughes team determined that there was no need for remedial work to improve zonal isolation. Avoiding the remedial grouting procedures saved the operator two days of time, which would have cost approximately \$200,000 USD. Based on these findings, the operator was able to proceed with abandonment of the well.

Challenges

- Confirm isolation in a well with lightweight cement containing liquid suspension of hollow glass beads with a fluid density of 5.7 ppg
- Large 13⁵/₈-in. casing with 0.625-in. thickness

Results

- Confirmed zonal isolation
- Avoided remedial grouting procedures, which would have cost approximately \$200,000 USD
- Enabled well abandonment



The INTeX log indicated good cement bond (dark areas) to measure zonal isolation.