

LWD Top-of-Cement Evaluation Saves Eni Estimated USD 2.6 Million Offshore Alaska

sonicVISION sonic-while-drilling service gains regulatory acceptance for top of cement documentation in high-angle, extended-reach wells

CHALLENGE

Find cost-effective method that is accepted by the local regulatory agency to document top of cement (TOC) in 17 high-angle extended-reach wells.

SOLUTION

Use sonicVISION* sonic-while-drilling service to identify TOC while tripping.

RESULTS

- Gained acceptance by the local regulatory agency for method of documenting top of cement.
- Eliminated need for 18-hour tractor-conveyed wireline cement logging run.
- Saved Eni an estimated USD 2.6 million on 17-well project.

Eni decided to use the sonicVISION service to identify TOC in all the remaining wells in the program.



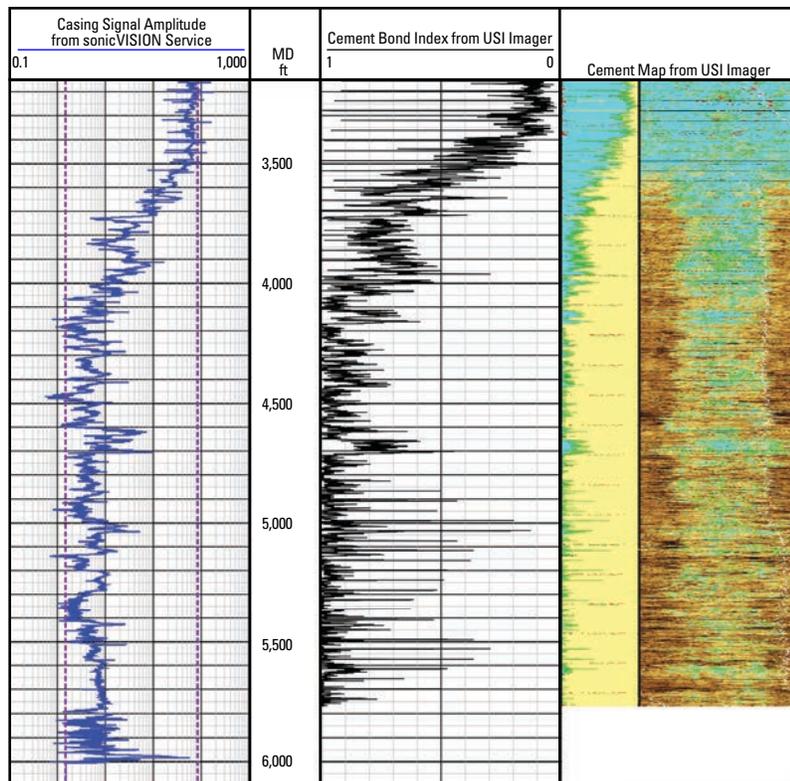
Document part of the top of cement

Eni US Operating Co. Inc. had planned a 17-well water injector program in Nikaitchuq field offshore Alaska's North Slope and was drilling the first injector well. To meet the state's requirements, TOC had to be evaluated, which presented a challenge in the high-angle, extended-reach well.

Acquire sonic data while tripping

The sonicVISION sonic-while-drilling service enabled Eni to cost-effectively acquire the necessary cement evaluation data while tripping through the intermediate casing string—after which the team planned to drill out the cement shoe track prior to drilling the horizontal section. Measurements were taken every 2 seconds, providing two samples per foot while tripping in at 900 ft/h.

After the drillstring was tripped back to surface, the sonic waveform data were processed to provide casing arrival amplitude. The TOC was identified at 3,500 ft based on high amplitude down to that point. A steady decrease in amplitude from 3,500 ft down to 4,150 ft indicated a corresponding increase in the presence of cement.



The casing signal amplitude from sonicVISION service correlated well with the cement bond index from USI imager.

CASE STUDY: sonicVISION sonic-while-drilling service identifies top of cement offshore Alaska

Because this was the first use of sonicVISION service to evaluate TOC in this area, the State of Alaska required comparison with a wireline cement evaluation log prior to approving the method for future use. A USI* ultrasonic imager, which had to be tractor conveyed because of the borehole's 85° deviation, was run to acquire a cement evaluation dataset to validate the TOC log from sonicVISION service.

Like the LWD log, the wireline log showed no cement present above 3,500 ft. Between 3,500 ft and 4,150 ft, the amount of cement identified by the USI imager increased but was concentrated on the upper side of the casing with a channel on the lower side. Below 5,100 ft, the casing appeared to be properly cemented all the way around.

Save rig time on every well

After validating the measurements from sonicVISION service with USI imager, the local regulatory agency gave its permission to use the sonicVISION service for TOC confirmation on all future injection wells in the program. Because acquiring cement evaluation data while tripping instead of making a separate tractor-conveyed wireline run would save 18 hours of rig time per well, the sonicVISION service was projected to save Eni a total of USD 2.6 million on the planned 17-well water injector program. Based on that estimate, Eni decided to use the sonicVISION service to identify TOC in all the remaining wells in the program.

Contact your local Schlumberger representative to learn more.

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