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ULTRA-SONIC CASING AND CEMENT EVALUATION IN LARGE DIAMETER AND HEAVY WALL CASING

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Abstract

This paper will demonstrate cased-hole applications of ultrasonic scanning tools for use in large casing environments. Field logs are from various well bores, casing size and types, and cement slurry types. Both cement evaluation and casing inspection examples will include logs from wells large internal diameters, heavyweight casing, and hastelloy pipe.

High horizontal and vertical sampling rates permit simultaneous cement evaluation and casing inspection. Data such as acoustic impedance, cement compressive strength, casing thickness, casing outer diameter casing inner radius or diameter, casing ovality, tool eccentricity, and 40 to 200 calipers are recorded in real time in either conventional or imaging formats. Enhanced processing software provides two- and three-dimensional images.

Tool physics, operations and applications will be included along with well bore limitations and considerations particularly for use in storage caverns and disposal wells. Differing well bore and casing conditions require different logging parameters (such as scan rate and sample density) depending upon the desired measurement. Thus, the mechanical and electrical configuration of the tools is flexible to maximize signal response in all possible downhole conditions.