

Changing the Game: Well Integrity Measurements Acquired on Drillpipe

Paper Ref : SPWLA-2023-0117

Authors : Andrew Hawthorn, Baker Hughes; Tonje Winter and Laurent Delabroy, Aker BP; Roger Steinsiek, Ian Leslie, and Lynda Memiche, Baker Hughes; Abe Vereide, BP

Speaker : Andy Hawthorn

Abstract:

The industry is continuously challenged to improve the efficiency and safety of operations. This is evident over the last 30 years in the development and improvement of measurements acquired while drilling. However, this has, in general, until now not applied to well integrity measurements such as casing integrity and cement evaluation which have traditionally been acquired utilizing wireline deployment. This paper will show the results of a new drillpipe deployed tool that can be run in parallel with existing well operations. The results from two differing North Sea wells will be compared to traditionally acquired wireline deployed tools and will demonstrate that these measurements, and the resultant interpretation can successfully be acquired on drillpipe. This allows for much improved efficiency of operations and in fact the ability to acquire this important data in well conditions and environments where it is difficult or in some cases impossible to log with conventional wireline techniques. Two wells were selected with different degrees of difficulty in terms of measurement acquisition and showing different well trajectories and mud types. Both wells were logged with both the new drillpipe deployed technology and traditional wireline technology allowing a direct comparison of the techniques and tools and paving the way for acceptance of the new drillpipe conveyed technology. The new drill pipe conveyed tool can be run anytime drill pipe is utilized in the well. A radial distribution of ultrasonic transducers arranged on the circumference of a drill collar allows for full azimuthal interpretation of the casing and cement whilst rotating the drill pipe. Analysis of the acquired data allows for interpretation of caliper, thickness and an evaluation of the material in the annular space behind the casing. In addition, the tool can provide casing collar location in real-time and has the ability to orient downhole devices such as whipstocks, perforating guns and oriented cutters.

The two well examples conclusively demonstrate that the tool can be run in parallel with existing operations to minimize rig time and eliminate the need for a dedicated, standalone wireline operation. Also that the cement evaluation interpretation was comparable to the equivalent wireline technology. We will investigate which measurements and applications the new tool can be used for, and where there may be further room for improvement

Bio:



Andy Hawthorn has over 30 years experience in the Oil and gas Industry and has worked all over the world. Over the years he has worked in the field and on the development of LWD Seismic and Sonic, Acoustic Telemetry and Now Ultrasonic Technology. He also filled various management positions in Geomechanics and Rapid Relevant Time Seismic Earth Model Building. He is widely published across the various related professional societies and is the holder of several patents relating to these fields.