

## **Through Bit Logging: A New Method To Acquire Log Data, And A First Step On The Road To Through Bore Drilling.**

John Runia  
Shell Research

and

John Boyes\*  
Reeves Oilfield Services  
East Leake, nr. Loughborough, Leicestershire LE12 6JQ, UK  
jboyes@uk.reeves-wireline.com

### **ABSTRACT**

Through Bit Logging (TBL) was developed by Shell and Reeves Oilfield Services (together with industry partners) as an alternative way to acquire log data - by conveying logging tools via the drillstring and through a specially designed bit into open hole, with the data being recorded in memory while tripping drill pipe out of the well.

The Reeves logging tools are latest technology, small diameter (2.25-inch OD) oilfield tools with low power consumption, suitable for memory and battery use. The primary measurements provide wireline-style quad-combo data plus formation pressures. The pressure tester is run on wireline through drillpipe (and bit) for real-time pressure evaluation, and is being developed for wireless operations.

This method has been tried and tested in a number of semi-vertical Shell wells. It saves tripping time and reduces open hole exposure, and is particularly well suited for difficult well environments.

The real value of the method is revealed when applied in deviated, horizontal, and in particular extended reach wells, where trip-time costs and risks are significant. To apply TBL in these environments the complete drillstring and bottom hole assembly must be through bore (to allow the logging string to pass through), while still having full directional drilling functionality, including real-time MWD capability. This 'Through Bore Drilling' system is now under development with industry partners.

It is an entirely new approach in which the drill string is not just a drilling 'machine' but also a conduit to the bit, which itself is no longer the grinding end of the drilling assembly, but also a gateway to the bore hole and formation, through which various operations are possible, ranging from logging to placement of cement, and even positioning of hardware. This can be likened to 'key hole' operating in the medical world, where numerous functions are carried out through a simple conduit brought in to place once only.

The paper gives a detailed summary of the TBL method and trials to date, and discusses the latest developments around the Through Bore Drilling system.