## Posters

# Application of Triaxial Induction Logs in the Analysis of Thin Bedded Sandstone Reservoirs

**G.B. Asquith, Texas Tech University**

In order for conventional Induction logs to result in optimal measurement of the formations resistivity two conditions are required: 1.) the borehole axis is perpendicular to the formations bedding planes (i.e. radial symmetry)], and 2.) the resistivity of the formation is uniform [i.e. horizontal resistivity (Rh) and vertical resistivity (Rv) are equal]. Triaxial Induction logs measure both horizontal (Rh) and vertical (Rv) resistivities at varies depths into the formation regardless of formation/ borehole geometry. Thus eliminating the problem of measuring resistivity in highly deviated well bores or when formations are steeply dipping.

The poster is about the application of Triaxial Induction logs in the analysis of thin-bedded sandstone reservoirs where Rh and Rv are not equal (i.e. non-uniform resistivity). When a thin-bedded sandstone reservoir is logged with a standard induction log the horizontal resistivity measurement is dominated by the more conductive interbedded shale. The result is a resistivity (Rt) value that is too low, which results in an over estimation of water saturation (Sw). Triaxial Induction logs measure both horizontal resistivity (Rh) and vertical resistivity (Rv). The vertical resistivity (Rv) is dominated by the resistive interbedded sandstones which results in a more accurate Rt and water saturation (Sw).

An example from a thin-bedded turbidite sequence from off-shore West Africa is presented to illustrate the importance of the Triaxial Induction logs in the log analysis of thin-bedded sandstone reservoirs. Two depths from the 500 meter thick sequence were selected:

760 meters Sw(Rh) = 0.73 Sw(Rv) = 0.23
990 meters Sw(Rh) = 0.37 Sw(Rv) = 0.22

The amount of difference between Sw (Rh) and Sw(Rv) at the two depths is the result

of a lower sand/shale ratio at 760 meters compared 990 meters. The above results illustrate the importance of the Triaxial Induction Log in the analysis of thin-bedded sandstone reservoirs.