

Recent Logging Results down to 8600 m

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The composite log shows almost all relevant data obtained so far by logging the depth interval from 7800 m to 8640 m before setting the 7 5/8" liner. Corrections for borehole effects have not yet been applied. The preliminary lithology column has been established by the geology working group of the KTB field laboratory.

Calipers C1a & C2a, deviation, borehole azimuth, breakout orientation BO and the vertical component of the earth's magnetic field Fz were measured on February 6th, 1994 with the high temperature FMS (HFMS) sonde. Calipers C1b & C2b, mud temperature MTEM and mud resistivity MRES were measured on April 29th, 1994 with the medium temperature borehole geometry tool (MBGT). The data gap at 8138 - 8152 m is indicative for increasing logging problems at that depths: the HFMS temporarily got stuck. Since there is no swivel head available for temperatures beyond 175°C parameters such as e.g. deviation, azimuth and BO are affected by high rotation frequencies of the sondes. The maximum opening of the HFMS and MBGT caliper arms is 570 mm and 750 mm respectively. Due to sonde specifications an electronic cut-off of 50 kΩm is applied to LLD data.

Mostly unidirectional (= oval) borehole enlargement took place in the intervals 7794 - 7895 m (≈ 10% increase), 7895 - 8275 m (≈ 19% increase) and 8275 - 8500 m (≈ 5% increase) whereas circular enlargements dominate between 8500 - 8635 m (≈ 33% increase). Attention is drawn to diameters decreasing between below bitsize with values up to 30 mm particularly between 8550 - 8555 m.

From caliper, Vp, LLD and SP/EP one can distinguish two major fault zones, casing shoe - 7890 m and below 8587 m, and several minor ones. The large anomalies below 8580 m suggest together with an observed high chloride contamination of the mud an inflow of formation fluids. The measured relatively low temperature of about 201°C is due to strong cooling effects by mud circulation.

Results of the interval from 8385.1 - 8388.4 m of the HFMS logging run are shown in figure 2. Taking into consideration the borehole's deviation structures are dipping around 50° in average with a strike direction of about 150°.

