

LWD data processing note

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Depth index

mBRT: meter below rotary table (rig floor)

mbsf: meter below sea floor

MSL: mean sea level

Well summary

Expedition: 338

Hole: C0022A

Location: 33°13.0680'N, 136°43.4540'E

Water Depth: 2704.0mBRT (2675.5mMSL)

Rig floor to MSL Elevation: 28.5 m

Total depth: 3124.5mBRT (420.0mbsf)

Last casing : N/A

Bit size: 12-1/4"-PDC

LWD BHA: geoVISION-8, arcVISION-8, Telescope

Mud type: Seawater

Mud weight: 1.038

Mud resistivity: 0.23ohm·m@20.3degC from active tank

Mud filtrate: N/A

Mud cake: N/A

Max hole deviation: 0.67 deg@ 3091.39mBRT (387.39mbsf)

Operation and logging summary

Date: December 28-29, 2012 (RIH to recover LWD)

The mud line was observed at 2704.5mBRT from real time data during spud in. We washed down (no rotation) till 2745mBRT (40.5mbsf) to avoid bit walk, then started drilling. We stopped drilling at 2840 mBRT (135.5 mbsf), spot kill mud, and pulled out to 2740mBRT (40mbsf) for WOW. After 7hours, we resumed drill down from 2840mBRT.

No repeat log.

LWD configurations

Telescope: 1Hz, 2bps (to prevent cold start)

geoVISION: recording sampling: 5sec

Data processing

LWD data were downloaded from the recorded memory in each tool after retrieval. The raw data were delivered by the Schlumberger field engineers to the Logging Staff Scientist (LSS). The Co-Chiefs, EPM and LSS, confirmed the sea floor at 2704.0mBRT (2675.5mMSL) based on the natural gamma ray and resistivity curves extracted from the memory data. Data were recorded with reference to the rotary table (mBRT), but were also provided as referenced to the seafloor (mbsf = mBRT – 2704.0). Shallow, medium, and deep resistivity borehole images were generated using GeoFrame 4.4 from Schlumberger. The static resistivity images were processed with 128 colors gradation, and the dynamic resistivity images were processed with 128 colors gradation and a window length of 1 m. All logging data were uploaded to the onboard shared server, and distributed to the Shipboard Science Party.

Logging data quality control

Data quality was checked at three points: during data acquisition by monitoring the real-time data, validation during data processing, and through an inspection of the final, processed data. The LSS and logging scientists assessed the real-time drilling parameters, ROP (Rate of penetration), RPM (Rotation per minute), SWOB (Surface weight on bit), ECD (Equivalent circulating density), DHAT (Downhole annular temperature), Stick-slip, DWOB (Downhole weight on bit), DTOR (Downhole torque) using the witness sheets (see Expedition 338 Methods). Data from the downhole tools were assessed in terms of realistic values for the known lithology of the drilled interval. The overall quality of the processed logging data was determined to be good. Due to no rotation during wash down and drilling with low RPM, poor quality resistivity images were recorded until 2753.0 mBRT (49.0 mbsf). Sharp horizontal lines, artifacts from ship heave and pipe vibration, are observed throughout the processed resistivity images. Missing data due to high stick-slip (more than 300 c/m) are also observed. Developing breakout was observed after pipe connections at 2765.5mBRT (61.5mbsf), 2838.0 mBRT (134.0 mbsf), 2880.0 mBRT (176.0 mbsf), 2918.0 mBRT (214.0 mbsf), 2994.5 mBRT (290.5 mbsf), 3033.5 mBRT (329.5 mbsf), 3071.5 mBRT (367.5 mbsf), and 3109.0 mBRT (405.0 mbsf).

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