

**IODP logging contractor:** EPC

**Hole:** M0004B

**Expedition:** 302

**Location:** Lomonosov Ridge

**Latitude:** 88° 53.3667' N

**Longitude:** 135° 22.0002' W

**Logging date:**

**Bottom felt:** 1289.7 mbsf

**Total penetration:** 218.04 mbsf

**Total core recovered:** m (%)

### Logging Runs

Logging string 1: FMS/BHC/GPIT/NGT/SGT (2 passes)

No major problems were encountered while logging Hole M004B. The logs recorded were of good quality. No heave compensation was used during the operation due to the damping effect of sea ice on ocean surface movement.

### Bottom-hole Assembly

The bottom-hole assembly depths are as they appear on the logs after differential depth shift (see  $\geq$ Depth shift $\leq$  section) and depth shift to the sea floor. As such, there might be a discrepancy with the original depths given by the drillers onboard. Possible reasons for depth discrepancies are ship movement and drill string and/or wireline stretch.

Bit depth: 66.5 mbsf.

### Processing

**Depth shift:** The original logs were depth matched to the SGR from pass 1 and then shifted to the sea floor (-1291 m). The sea floor depth was determined by identifying the step in gamma ray values at the sediment-water interface from pass 2. The logging sea-floor depth is within 1.3 m of the "bottom felt" depth given by the drillers.

Depth matching is typically done in the following way. One log is chosen as reference (base) log (usually the total gamma ray log from the run with the greatest vertical extent), and then the features in the equivalent logs from the other runs are matched to it in turn. This matching is performed automatically, and the result checked and adjusted as necessary. The depth adjustments that were required to bring the match log in line with the base log are then applied to all the other logs from the same tool string.

**Gamma-ray processing:** NGT data have been processed to correct for borehole size. No correction is required for drilling fluid.

### Quality Control

Null value=-999.25. This value generally replaces invalid log values or results (ex. processed sonic data).

During the processing, quality control of the data is mainly performed by inter-comparison of all logging data. Large ( $>12''$ ) and/or irregular borehole affects most recordings. Hole deviation can also affect the data negatively; the FMS, for example, is not designed to be run in holes deviated more than 10 degrees, as the tool weight might cause the caliper to close.

Data recorded through bottom-hole assembly should be used qualitatively only because of the attenuation on the incoming signal.

Hole diameter was recorded by the calipers on the FMS (C1 and C2). The hole was undergauge ( $<9.5$  inches) for the most part and narrows significantly between 75 and 90 mbsf, at 155 mbsf and again between 180-184 mbsf.

Additional information about the logs can be found in the 'Explanatory Notes' and 'Site Chapter', [IODP Expedition 302 IR volume](#). For further questions about the logs, please contact:

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