SHORE-BASED LOG PROCESSING
HOLE 1039D

Bottom felt: 4362.5 mbrf (used for depth shift to seafloor)
Total penetration: 406.5 mbsf

Logging Tools

The logs were recorded using the logging-while-drilling (LWD) technique, which allows scientists to obtain open-hole logs during drilling operations. The advantages of this technique are many: real-time analysis can accelerate drilling speed, avoid stuck pipe, and reduce borehole problems. LWD can also collect data open-hole in the uppermost part of the hole; this cannot be accomplished with wireline tools as the drill string is usually kept in the upper part of the borehole where hole conditions are generally bad.

The LWD employs the following tool combinations:

- CDR = compensated dual resistivity (resistivity-gamma ray)
- CDN = compensated density neutron (density-porosity-caliper)

Processing

- **Depth shift:** Original logs have been depth shifted to the seafloor (−4362.5 m).
- **Gamma-ray data processing:** Processing of the data is performed in real-time onboard by Schlumberger personnel. Gamma-ray data is measured as natural gamma ray (GR) and spectral gamma ray (NGT); during Leg 170 only the former has been corrected for hole size (bit size), collar size, and type of drilling fluid. Because of a bug in the acquisition software, the NGT total and computed gamma ray (SGR and CGR) could not be environmentally corrected and converted into API units. For this reason, they are not included in the database.

- **Neutron porosity data processing:** The neutron porosity measurements have been corrected for standoff, temperature, mud salinity, and mud hydrogen index (mud pressure, temperature, and weight).

- **Density data processing:** Density data have been processed to correct for the irregular borehole using a technique called “rotational processing,” which is particularly useful in deviated or enlarged boreholes with irregular or elliptical shape. This statistical method measures the density variation while the tool rotates in the borehole, estimates the standoff (distance between the tool and the borehole wall), and corrects the density reading (a more detailed description of this technique is available upon request).

- **Resistivity data processing:** A deconvolution technique called “qualitative resistivity overlay” aimed at providing enhanced vertical resolutions is used for both shallow and deep resistivity measurements to compute output with 1-2-3-4-5 ft vertical resolution (documentation on this technique is also available upon request). The outputs are sampled at a 0.0762-m (3 in) sampling rate and are included in the database along with the standard 0.1524-m (0.5 ft) channels.

Quality Control

During the processing, quality control of the data is mainly performed by cross-correlation of all logging data. The best data are acquired in a circular borehole; this is particularly true for the density tool, which uses clamp-on stabilizers to eliminate mud standoff and to ensure proper contact with the borehole wall. A data quality indicator is given by the differential caliper (DCAL) channel, which measures the tool standoff during the recording. Another quality indicator is represented by the density correction (DRHO).

Additional information about LWD logs can be found in the “Explanatory Notes” and “Site 1039” chapters, this volume. For further questions about the logs, please contact:

Cristina Broglia
Phone: 914-365-8343
Fax: 914-365-3182
E-mail: chris@ldeo.columbia.edu
Hole 1039D: LWD Natural Gamma Ray-Resistivity-Penetration Logging Data
Hole 1039D: LWD Natural Gamma Ray-Resistivity-Penetration Logging Data (cont.)

Depth (mbsf)

<table>
<thead>
<tr>
<th>Depth (mbsf)</th>
<th>Gamma Ray</th>
<th>Deep Resistivity</th>
<th>Penetration Rate</th>
<th>Uranium</th>
<th>Thorium</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0  API units</td>
<td>0.3 Ohm-m</td>
<td>1.8 Ohm-m</td>
<td>0 f/hr</td>
<td>-15 ppm</td>
<td>-8 ppm</td>
</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hole 1039D: LWD Natural Gamma Ray-Resistivity-Penetration Logging Data (cont.)

<table>
<thead>
<tr>
<th>Depth (mbsf)</th>
<th>Gamma Ray</th>
<th>Deep Resistivity</th>
<th>Penetration Rate</th>
<th>Shallow Resistivity</th>
<th>Potassium</th>
<th>Thorium</th>
<th>Uranium</th>
</tr>
</thead>
<tbody>
<tr>
<td>350</td>
<td>API units</td>
<td>Ohm-m</td>
<td>t/hr</td>
<td>0.3</td>
<td>0</td>
<td>-8</td>
<td>0</td>
</tr>
<tr>
<td>400</td>
<td></td>
<td>1.8</td>
<td></td>
<td></td>
<td>wt.%</td>
<td>ppm</td>
<td>ppm</td>
</tr>
</tbody>
</table>

Note: The diagram shows variations in gamma ray, deep resistivity, penetration rate, and concentrations of potassium, thorium, and uranium with depth. The data is represented graphically with depth on the x-axis and the various parameters on the y-axis.
Hole 1039D: LWD Natural Gamma Ray-Density-Porosity Logging Data (cont.)

<table>
<thead>
<tr>
<th>Depth (mbsf)</th>
<th>Differential Caliper</th>
<th>Neutron Porosity</th>
<th>Photoelectric Factor</th>
<th>Thorium</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 in.</td>
<td>100 %</td>
<td>0 barns/e</td>
<td>8 ppm</td>
<td>0 wt.%</td>
</tr>
<tr>
<td></td>
<td>Gamma Ray 0 API units</td>
<td>Maximum Density 1 g/cm³</td>
<td>Density Correction 0.25  g/cm³</td>
<td>15 ppm</td>
<td>5 ppm</td>
</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential Caliper</td>
<td>Neutron Porosity</td>
<td>Photoelectric Factor</td>
<td>Thorium</td>
<td>Potassium</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------</td>
<td>----------------------</td>
<td>---------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>1.1 in.</td>
<td>9100 %</td>
<td>0 barns/e</td>
<td>10-8 ppm</td>
<td>10 wt.%</td>
<td></td>
</tr>
<tr>
<td>Gamma Ray</td>
<td>Maximum Density</td>
<td>Density Correction</td>
<td>Uranium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 API units</td>
<td>100 g/cm³</td>
<td>2 -0.25 g/cm³</td>
<td>5 ppm</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>0.25 -15 ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Depth (mbsf)

350

400
SHORE-BASED LOG PROCESSING

HOLE 1040C

**Bottom felt:** 4189 mbrf

**Total penetration:** 665 mbsf

**Total core recovered:** 377.3 m (74.6 %)

**Logging Runs**

**Logging string 1:** DIT/SDT/HLDT/GPIT/NGT

Wireline heave compensator was used to counter ship heave. The hole was deviated from the vertical; maximum deviation observed while logging was 11°.

**Bottom-hole Assembly**

The following bottom-hole assembly depths are as they appear on the logs after differential depth shift (see “Depth shift” section) and depth shift to the seafloor. As such, there might be a discrepancy with the original depths given by the drillers onboard. Possible reasons for depth discrepancies are ship heave, use of wireline heave compensator, and drill string and/or wireline stretch.

DIT/SDT/HLDT/GPIT/NGT: Bottom-hole assembly at ~87 mbsf.

**Processing**

**Depth shift:** No differential depth shift was necessary as only one logging pass was recorded. The amount of depth shift to the seafloor (~4184 m) differs 5 m from the drillers’ water depth; it corresponds to the depth of the seafloor as it is seen on the logs.

**Gamma-ray processing:** NGT data have been processed to correct for borehole size and type of drilling fluid.

**Acoustic data processing:** The array sonic tool was operated in standard depth-derived borehole compensated mode, including long-spacing (8-10-10-12 ft) logs. The sonic logs have been processed to eliminate some of the noise and cycle skipping experienced during the recording.

**Quality Control**

Invalid spikes were frequently recorded (PEF curve) throughout the hole.

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 hydraulic caliper on the HLDT tool (CALI).

Details of standard shore-based processing procedures are found in the “Explanatory Notes” chapter, this volume. For further information about the logs, please contact:

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E-mail: chris@ldeo.columbia.edu
Hole 1040C: Natural Gamma Ray-Resistivity-Sonic Logging Data
Hole 1040C: Natural Gamma Ray-Resistivity-Sonic Logging Data (cont.)

<table>
<thead>
<tr>
<th>Core</th>
<th>Recovery</th>
<th>Depth (mbsf)</th>
<th>Medium Resistivity</th>
<th>Computed Gamma Ray</th>
<th>Deep Resistivity</th>
<th>Median Velocity</th>
<th>Caliper</th>
</tr>
</thead>
<tbody>
<tr>
<td>2R</td>
<td></td>
<td></td>
<td>0.1 Ohm-m</td>
<td>75 API units</td>
<td>75 Ohm-m</td>
<td>10 km/s</td>
<td>20 in.</td>
</tr>
<tr>
<td>3R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7R</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8R</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Hole 1040C: Natural Gamma Ray-Density-Porosity Logging Data (cont.)

<table>
<thead>
<tr>
<th>Core</th>
<th>Recovery</th>
<th>Depth (mbsf)</th>
<th>Total Gamma Ray</th>
<th>Bulk Density</th>
<th>Density Correction</th>
<th>Computed Gamma Ray</th>
<th>Photoelectric Factor</th>
<th>Thorium</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td>2R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3R</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5R</td>
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<td></td>
</tr>
<tr>
<td>6R</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7R</td>
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<tr>
<td>8R</td>
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<td></td>
</tr>
</tbody>
</table>
Bottom felt: 4189 mbrf (used for depth shift to seafloor)
Total penetration: 337 mbsf

Logging Tools

The logs were recorded using the logging-while-drilling (LWD) technique, which allows scientists to obtain open-hole logs during drilling operations. The advantages of this technique are many: real-time analysis can accelerate drilling speed, avoid stuck pipe, and reduce borehole problems. LWD can also collect data open-hole in the uppermost part of the hole; this cannot be accomplished with wireline tools as the drill string is usually kept in the upper part of the borehole where hole conditions are generally bad.

The LWD employs the following tool combinations:

CDR = compensated dual resistivity (resistivity-gamma ray)
CDN = compensated density-neutron (density-porosity-caliper)

Processing

Depth shift: Original logs have been depth shifted to the seafloor (~ 4189 m).

Gamma-ray data processing: Processing of the data is performed in real-time onboard by Schlumberger personnel. Gamma-ray data is measured as natural gamma ray (GR) and spectral gamma ray (NGT); during Leg 170 only the former has been corrected for hole size (bit size), collar size, and type of drilling fluid. Because of a bug in the acquisition software, the NGT total and computed gamma ray (SGR and CGR) could not be environmentally corrected and converted into API units. For this reason, they are not included in the database.

Neutron porosity data processing: The neutron porosity measurements have been corrected for standoff, temperature, mud salinity, and mud hydrogen index (mud pressure, temperature, and weight).

Density data processing: Density data have been processed to correct for the irregular borehole using a technique called “rotational processing,” which is particularly useful in deviated or enlarged boreholes with irregular or elliptical shape. This statistical method measures the density variation while the tool rotates in the borehole, estimates the standoff (distance between the tool and the borehole wall), and corrects the density reading (a more detailed description of this technique is available upon request).

Resistivity data processing: A deconvolution technique called “qualitative resistivity overlay” aimed at providing enhanced vertical resolutions is used for both shallow and deep resistivity measurements to compute output with 1-2-3-4-5 ft vertical resolution (documentation on this technique is also available upon request). The outputs are sampled at a 0.0762-m (3 in) sampling rate and are included in the database along with the standard 0.1524-m (0.5 ft) channels.

Quality Control

During the processing, quality control of the data is mainly performed by cross-correlation of all logging data. The best data are acquired in a circular borehole; this is particularly true for the density tool, which uses clamp-on stabilizers to eliminate mud standoff and to ensure proper contact with the borehole wall. A data quality indicator is given by the differential caliper (DCAL) channel, which measures the tool standoff during the recording. Another quality indicator is represented by the density correction (DRHO).

Additional information about LWD logs can be found in the “Explanatory Notes” and the “Site 1040” chapters, this volume. For further questions about the logs, please contact:

Cristina Broglia
Phone: 914-365-8343
Fax: 914-365-3182
E-mail: chris@ldeo.columbia.edu
Hole 1040D: LWD Natural Gamma Ray-Resistivity-Penetration Logging Data (cont.)

<table>
<thead>
<tr>
<th>Depth (mbsf)</th>
<th>Gamma Ray 0-150 API units</th>
<th>Shallow Resistivity 0.3-5.3 Ohm-m</th>
<th>Deep Resistivity 0.3-5.3 Ohm-m</th>
<th>Penetration Rate 0-200 m/hr</th>
<th>Thorium 0-12 ppm</th>
<th>Potassium 0-10 wt.%</th>
<th>Uranium 0-8 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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</tr>
</tbody>
</table>
SHORE-BASED LOG PROCESSING
HOLE 1040E

**Bottom felt:** 4189 mbrf (used for depth shift to seafloor)
**Total penetration:** 318 mbsf

Logging Tools

The logs were recorded using the logging-while-drilling (LWD) technique, which allows scientists to obtain open-hole logs during drilling operations. The advantages of this technique are many: real-time analysis can accelerate drilling speed, avoid stuck pipe, and reduce borehole problems. LWD can also collect data open-hole in the uppermost part of the hole; this cannot be accomplished with wireline tools as the drill string is usually kept in the upper part of the borehole where hole conditions are generally bad.

The LWD employs the following tool combinations:

- CDR = compensated dual resistivity (resistivity-gamma ray)
- CDN = compensated density neutron (density-porosity-caliper)

Processing

**Depth shift:** Original logs have been depth shifted to the seafloor (~4189 m).

**Gamma-ray data processing:** Processing of the data is performed in real-time onboard by Schlumberger personnel. Gamma-ray data is measured as natural gamma ray (GR) and spectral gamma ray (NGT); during Leg 170 only the former has been corrected for hole size (bit size), collar size, and type of drilling fluid. Because of a bug in the acquisition software, the NGT total and computed gamma ray (SGR and CGR) could not be environmentally corrected and converted into API units. For this reason, they are not included in the database.

**Neutron porosity data processing:** The neutron porosity measurements have been corrected for standoff, temperature, mud salinity, and mud hydrogen index (mud pressure, temperature, and weight).

**Density data processing:** Density data have been processed to correct for the irregular borehole using a technique called “rotational processing,” which is particularly useful in deviated or enlarged boreholes with irregular or elliptical shape. This statistical method measures the density variation while the tool rotates in the borehole, estimates the standoff (distance between the tool and the borehole wall), and corrects the density reading (a more detailed description of this technique is available upon request).

**Resistivity data processing:** A deconvolution technique called “qualitative resistivity overlay” aimed at providing enhanced vertical resolutions is used for both shallow and deep resistivity measurements to compute output with 1-2-3-4-5 ft vertical resolution (documentation on this technique is also available upon request). The outputs are sampled at a 0.0762-m (3 in) sampling rate and are included in the database along with the standard 0.1524-m (0.5 ft) channels.

Quality Control

During the processing, quality control of the data is mainly performed by cross-correlation of all logging data. The best data are acquired in a circular borehole; this is particularly true for the density tool, which uses clamp-on stabilizers to eliminate mud standoff and to ensure proper contact with the borehole wall. A data quality indicator is given by the differential caliper (DCAL) channel, which measures the tool standoff during the recording. Another quality indicator is represented by the density correction (DRHO).

Additional information about LWD logs can be found in the “Explanatory Notes” and the “Site 1040” chapters, this volume. For further questions about the logs, please contact:

Cristina Broglia  
Phone: 914-365-8343  
Fax: 914-365-3182  
E-mail: chris@ldeo.columbia.edu
Hole 1040E: LWD Natural Gamma Ray-Density-Porosity Logging Data
### Hole 1040E: LWD Natural Gamma Ray-Density-Porosity Logging Data (cont.)

<table>
<thead>
<tr>
<th>Depth (mbsf)</th>
<th>Differential Caliper</th>
<th>Neutron Porosity</th>
<th>Photoelectric Factor</th>
<th>Thorium</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in.</td>
<td>%</td>
<td>barns/e</td>
<td>ppm</td>
<td>wt.%</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>150</td>
<td>1.1</td>
<td>0.25</td>
<td>0.25</td>
<td>-15</td>
<td>5</td>
</tr>
<tr>
<td>200</td>
<td>2.1</td>
<td>0.25</td>
<td>0.25</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>250</td>
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</tr>
<tr>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Graph

- **Gamma Ray**
- **Maximum Density**
- **Density Correction**
- **Uranium**
- **Potassium**

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529
SHORE-BASED LOG PROCESSING
HOLE 1042C

Bottom felt: 3585 mbrf (used for depth shift to seafloor)
Total penetration: 297 mbsf

Logging Tools

The logs were recorded using the logging-while-drilling (LWD) technique, which allows scientists to obtain open-hole logs during drilling operations. The advantages of this technique are many: real-time analysis can accelerate drilling speed, avoid stuck pipe, and reduce borehole problems. LWD can also collect data open-hole in the uppermost part of the hole; this cannot be accomplished with wireline tools as the drill string is usually kept in the upper part of the borehole where hole conditions are generally bad.

At Hole 1042C only the CDR = compensated dual resistivity (resistivity-gamma ray) was used.

Processing

Depth shift: Original logs have been depth shifted to the seafloor (~3585 m).
Gamma-ray data processing: Processing of the data is performed in real-time onboard by Schlumberger personnel. Gamma-ray data is measured as natural gamma ray (GR) and spectral gamma ray (NGT); during Leg 170 only the former has been corrected for hole size (bit size), collar size, and type of drilling fluid. Because of a bug in the acquisition software, the NGT total and computed gamma ray (SGR and CGR) could not be environmentally corrected and converted into API units. For this reason, they are not included in the database.

Resistivity data processing: A deconvolution technique called “qualitative resistivity overlay” aimed at providing enhanced vertical resolutions is used for both shallow and deep resistivity measurements to compute output with 1-2-3-4-5 ft vertical resolution (documentation on this technique is also available upon request). The outputs are sampled at a 0.0762-m (3 in) sampling rate and are included in the database along with the standard 0.1524-m (0.5 ft) channels.

Quality Control

During the processing, quality control of the data is mainly performed by cross-correlation of all logging data. The best data are acquired in a circular borehole; this is particularly true for the density tool, which uses clamp-on stabilizers to eliminate mud standoff and to ensure proper contact with the borehole wall. A data quality indicator is given by the differential caliper (DCAL) channel, which measures the tool standoff during the recording. Another quality indicator is represented by the density correction (DRHO).

Additional information about LWD logs can be found in the “Explanatory Notes” and “Site 1042” chapters, this volume. For further questions about the logs, please contact:

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Fax: 914-365-3182
E-mail: chris@ldeo.columbia.edu
Hole 1042C: LWD Natural Gamma Ray-Resistivity-Penetration Logging Data

Depth (mbsf)

<table>
<thead>
<tr>
<th>Gamma Ray</th>
<th>Shallow Resistivity</th>
<th>Deep Resistivity</th>
<th>Penetration Rate</th>
<th>Uranium</th>
<th>Thorium</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td>API units</td>
<td>0.5 Ohm-m</td>
<td>3.5 Ohm-m</td>
<td>0 m/hr</td>
<td>15 ppm</td>
<td>12 ppm</td>
<td>0 wt.%</td>
</tr>
</tbody>
</table>

Depth (mbsf)
SHORE-BASED LOG PROCESSING
HOLE 1043B

**Bottom felt:** 4319 mbrf (used for depth shift to seafloor)
**Total penetration:** 482 mbsf

**Logging Tools**

The logs were recorded using the logging-while-drilling (LWD) technique, which allows scientists to obtain open-hole logs during drilling operations. The advantages of this technique are many: real-time analysis can accelerate drilling speed, avoid stuck pipe, and reduce borehole problems. LWD can also collect data open-hole in the uppermost part of the hole; this cannot be accomplished with wireline tools as the drill string is usually kept in the upper part of the borehole where hole conditions are generally bad.

The LWD employs the following tool combinations:

- **CDR** = compensated dual resistivity (resistivity-gamma ray)
- **CDN** = compensated density neutron (density-porosity-caliper)

**Processing**

**Depth shift:** Original logs have been depth shifted to the seafloor (~4319 m).

**Gamma-ray data processing:** Processing of the data is performed in real-time onboard by Schlumberger personnel. Gamma-ray data is measured as natural gamma ray (GR) and spectral gamma ray (NGT); during Leg 170 only the former has been corrected for hole size (bit size), collar size, and type of drilling fluid. Because of a bug in the acquisition software, the NGT total and computed gamma ray (SGR and CGR) could not be environmentally corrected and converted into API units. For this reason, they are not included in the database.

**Neutron porosity data processing:** The neutron porosity measurements have been corrected for standoff, temperature, mud salinity, and mud hydrogen index (mud pressure, temperature, and weight).

**Density data processing:** Density data have been processed to correct for the irregular borehole using a technique called “rotational processing,” which is particularly useful in deviated or enlarged boreholes with irregular or elliptical shape. This statistical method measures the density variation while the tool rotates in the borehole, estimates the standoff (distance between the tool and the borehole wall), and corrects the density reading (a more detailed description of this technique is available upon request).

**Resistivity data processing:** A deconvolution technique called “qualitative resistivity overlay” aimed at providing enhanced vertical resolutions is used for both shallow and deep resistivity measurements to compute output with 1-2-3-4-5 ft vertical resolution (documentation on this technique is also available upon request). The outputs are sampled at a 0.0762-m (3 in) sampling rate and are included in the database along with the standard 0.1524-m (0.5 ft) channels.

**Quality Control**

During the processing, quality control of the data is mainly performed by cross-correlation of all logging data. The best data are acquired in a circular borehole; this is particularly true for the density tool, which uses clamp-on stabilizers to eliminate mud standoff and to ensure proper contact with the borehole wall. A data quality indicator is given by the differential caliper (DCAL) channel, which measures the tool standoff during the recording. Another quality indicator is represented by the density correction (DRHO).

Additional information about LWD logs can be found in the “Explanatory Notes” and “Site 1043” chapters, this volume. For further questions about the logs, please contact:

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Hole 1043B: LWD Natural Gamma Ray-Resistivity-Penetration Logging Data
Hole 1043B: LWD Natural Gamma Ray-Resistivity-Penetration Logging Data (cont.)
Hole 1043B: LWD Natural Gamma Ray-Density-Porosity Logging Data
### Hole 1043B: LWD Natural Gamma Ray-Density-Porosity Logging Data (cont.)

<table>
<thead>
<tr>
<th>Depth (mbsf)</th>
<th>Differential Caliper</th>
<th>Neutron Porosity</th>
<th>Photoelectric Factor</th>
<th>Thorium</th>
<th>Potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 API units</td>
<td>100 %</td>
<td>0 barns/e</td>
<td>0 -15 ppm</td>
<td>0 -12 ppm</td>
<td>0 -10 wt.%</td>
</tr>
<tr>
<td>1 in.</td>
<td>9</td>
<td>0 barns/e</td>
<td>0 -15 ppm</td>
<td>0 -12 ppm</td>
<td>0 -10 wt.%</td>
</tr>
</tbody>
</table>

### Graphical Representation

- **Gamma Ray**: Depth (mbsf) is plotted against API units from 0 to 300 mbsf.
- **Maximum Density**: Density in g/cm³ ranging from 0.25 to 2.00 g/cm³ at 250 mbsf intervals.
- **Density Correction**: Represents correction factors in barns/e, varying from 0 to 100 at 250 mbsf intervals.
- **Uranium**: Displays concentration in ppm ranging from 0 to 12 ppm at 250 mbsf intervals.
- **Thorium**: Shows concentration in ppm ranging from 0 to 12 ppm at 250 mbsf intervals.
- **Potassium**: Concentration in wt.% from 0 to 10 at 250 mbsf intervals.

**Graph Notes**:
- Depth (mbsf) is shown on the x-axis.
- Various logging parameters are graphed against depth, with consistent intervals for each parameter.
- Graphs are labeled for easy identification of data trends and values.
### Hole 1043B: LWD Natural Gamma Ray-Density-Porosity Logging Data (cont.)

<table>
<thead>
<tr>
<th>Depth (mbsf)</th>
<th>Differential Caliper (in.)</th>
<th>Neutron Porosity (%)</th>
<th>Photoelectric Factor (barns/(\text{e}^{-}))</th>
<th>Thorium (ppm)</th>
<th>Potassium (wt.%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 API units</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>350</td>
<td>1</td>
<td>90</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>400</td>
<td>2</td>
<td>100</td>
<td>100</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>450</td>
<td>3</td>
<td>90</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Diagram

- **Gamma Ray (-15 ppm to 15 ppm)**
- **Uranium (0 to 12 ppm)**
- **Thorium (0 to 10 ppm)**