The TelePacer* modular MWD platform with spectral gamma ray (GR) provides detailed while-drilling formation structure data. This advanced GR configuration positively identifies stratigraphic laminations along the lateral by giving insight into mineral composition and clay content.

**SPECTRAL GR MEASUREMENTS FOR HIGH-VOLUME RESERVOIRS**

Using potassium, thorium, uranium, and total GR measurements, spectral GR provides three additional curves and 2% total GR precision. With this data, you can more efficiently and effectively:

- place laterals and steer within the targeted zone
- identify lateral formation heterogeneity
- determine clay type
- assess clay volume
- perform accurate well-to-well correlation
- infer total organic carbon when combined with information from pilot wells.

This module is offered within the single-collar TelePacer platform. By adding additional components without increasing the length of the drillstring, the TelePacer platform preserves the tight economics inherent to drilling in high-volume unconventional reservoirs.

**GR SENSOR SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Detector type</th>
<th>NaI scintillation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range,† gAPI</td>
<td>0 to 1,200</td>
</tr>
<tr>
<td>Measurement</td>
<td>Accuracy</td>
</tr>
<tr>
<td>Collar OD, in</td>
<td>63/4 (2 sensors)</td>
</tr>
<tr>
<td>Potassium</td>
<td>Greater of 0.002 (weight fraction) or 5% (relative error)</td>
</tr>
<tr>
<td>Thorium</td>
<td>Greater of 0.5 ppm or 5%</td>
</tr>
<tr>
<td>Uranium</td>
<td>Greater of 0.5 ppm or 5%</td>
</tr>
<tr>
<td>GR</td>
<td>Greater of 2 gAPI or 5%</td>
</tr>
</tbody>
</table>

**GR SENSOR SPECIFICATIONS**

| Max. vibration, gn [m/s²] | 20 [200] (rms, random, 5 to 1,000 Hz) |
| Max. shock, gn [m/s²] | 500 [4,903.3] |

† Extreme™ GR measurements are calibrated to API standards and are highly repeatable, even in high-temperature environments.
‡ Standard 100-gAPI shale (2% K, 12-ppm Th, 6-ppm U); 18-s averaging.

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**APPLICATIONS**

- Well placement
- Pad and factory drilling
- Underbalanced drilling
- Air drilling
- Shale gas and oil drilling
- Coalbed methane drilling
- Steam-assisted gravity drainage (SAGD)

**ADVANTAGES**

- Enables well-to-well correlation and steering within sweet spots
- Provides insight into clay content and total organic carbon
- Measures potassium, uranium, and thorium for elemental analysis
- Simplifies logistics with sourceless sensors and single-collar MWD design

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SGR Spectral Gamma Ray
The spectral GR configuration of the TelePacer platform provides advanced evaluation without adding additional components to the drillstring.