

WELL INTEGRITY: CEMENT EVALUATION

# Radial Analysis Bond Log (RAL) service

Maintain production and avoid water production from channels

### Applications

- Identify channels accurately in fast formations
- Detect presence of microannulus

### Features and Benefits

- Can be run in casing sizes from 4 to 9 1/16 in. without loss of quality
- Saves rig and nonproductive time (NPT) costs by evaluating multiple-sized casing in one pass
- Smaller tools—1 1/16-in.-diameter with temperature rating up to 450°F (232°C) and 2 3/4-in. tool with flask rating up to 500°F (260°C)—provides reliable high pressure/high-temperature operations
- Can be run with an optional gamma ray and neutron tool to improve correlations

The **Radial Analysis Bond Log™ (RAL™) well integrity evaluation service** improves cement evaluation compared to conventional cement bond logs. The RAL service combines eight radially distributed receivers with a 5-ft (1.5-m) receiver to provide detailed analysis of casing formation bonding. The results are immediate and can be easily interpreted by the operator.

Before final well completions are made, the zones being completed must be analyzed for hydraulic isolation to prevent possible crossflow between reservoir zones behind casing. The RAL service simplifies interpretation by displaying the full 360° circumference of the surveyed casing section with a 2D graphic map.

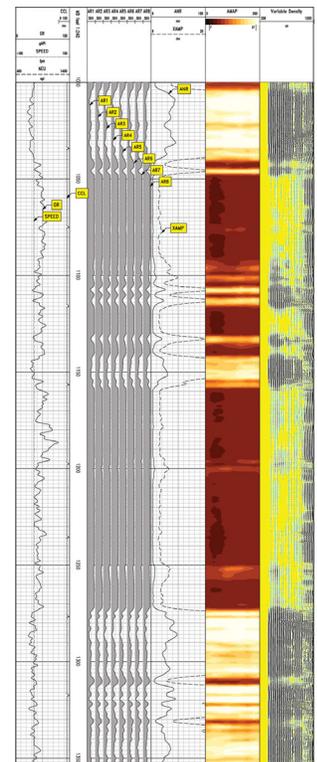
It immediately highlights the location and extent of any present cement channels.

Because the RAL service provides more information in a user-friendly format, well operations can continue and remedial efforts can begin with complete confidence.

### Specifications

<b>Diameter</b>	2.75 in. (70 mm)
<b>Pressure rating</b>	20,000 psi (137.9 MPa)
<b>Temperature rating</b>	350°F (177°C)
<b>Minimum pipe size</b>	4 in. (101.6 mm)

1 1/16-in.-diameter (42.86-mm-diameter) instruments and instruments with temperature ratings up to 500°F (260°C) are also available. Contact your Baker Hughes representative for more information.



The RAL log service presents vital cement information in an easily understood manner. The log above clearly shows excellent cement bond over most of the middle 400 ft (121 m). Poor cement is also shown above and below this interval.