



**Scientific Drilling's Natural Gamma Ray is a probe-based, API calibrated sensor that detects naturally occurring gamma radiation from the formation.**

Natural Gamma Ray can be run with any of SDI's MWD systems in all configurations. This flexibility places the Natural Gamma Ray directly behind the motor allowing for immediate formation evaluation.

Real-time gamma data from the tool can be used to correlate with offset logs giving the client confidence as drilling progresses.

For more information on LWD solutions, contact your Scientific Drilling sales representative or visit:

<http://scientificdrilling.com/lwd>

## APPLICATIONS

- + Shale from non-shale distinction
- + Lithology identification
- + Formation correlation
- + Picking casing and coring points
- + Geosteering
- + Shale volume estimation
- + Formation thickness

## BENEFITS

- + Provides API qualified gamma ray measurements that are 20 to 25 ft (6 to 8m) closer than standard MWD measurements
- + Works seamlessly with both MP and EM MWD systems to send real-time measurements to surface
- + Innovative design allows one probe to run in all BHA sizes

## GENERAL SPECIFICATIONS

|                                 |   |                 |
|---------------------------------|---|-----------------|
| COLLAR OD                       | 3.125 in (79.4 mm)                              |                 |
|                                 | 3.5 in (88.9 mm)                                |                 |
|                                 | 4.75 in (120.7 mm)                              |                 |
|                                 | 6.5 in (165.1 mm)                               |                 |
|                                 | 6.75 in (171.5 mm)                              |                 |
|                                 | 8.0 in (203.2 mm)                               |                 |
|                                 | 9.5 in (241.3 mm)                               |                 |
| PROBE OD                        | 1.75 in (44.5 mm)                               |                 |
| PROBE LENGTH                    | 30 in (762 mm)                                  |                 |
| MAX DOG LEG<br>(Deg/100 ft, OD) | SLIDING   | ROTATING        |
|                                 | 12° (9.5 in)                                    | 5° (9.5 in)     |
|                                 | 12° (8 in)                                      | 7° (8 in)       |
|                                 | 19° (6.75 in)                                   | 8° (6.75 in)    |
|                                 | 20° (6.5 in)                                    | 10° (6.5 in)    |
|                                 | 28° (4.75 in)                                   | 12° (4.75 in)   |
|                                 | 60° (3.5 in)                                    | 20° (3.5 in)    |
|                                 | 65° (3.125 in)                                  | 20° ( 3.125 in) |
| MAX OPERATING TEMPERATURE       | 302°F (150°C)                                   |                 |
| MAX OPERATING TEMPERATURE       | 20,000 psi (137,900 kPa) (30,000 psi available) |                 |
| FLOW RANGE<br>PER TOOL SIZE     | TOOL OD   | GAL/MIN         |
|                                 | 3.125 – 3.875 in                                | 50 – 200        |
|                                 | 4.750 – 6.500 in                                | 100 – 400       |
|                                 | 6.250 – 6.500 in                                | 200 – 600       |
|                                 | 5.000 – 8.000 in                                | 250 – 1,000     |
|                                 | 9.5 in  | 300 – 1,500     |

## MEASUREMENT SPECIFICATIONS

|                       |   |
|-----------------------|---|
| <b>DETECTOR TYPE</b>  | NaI Scintillation Crystal                       |
| <b>GAMMA RANGE</b>    | 0 – 1,000 API                                   |
| <b>RECORDING RATE</b> | 1 data point every 5 seconds                    |
| <b>REPEATABILITY</b>  | 4.75" ± 2.1 api @60ft/hr in a 100 API formation |
|                       | 6.75" ± 2.7 api @60ft/hr in a 100 API formation |

\*Specifications are subject to change without notice

Refer to MWD system technical data sheet for vibrational limits

