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# 40GRP

## Combination Gamma and Resistivity Probe

The 40GRP-1000 combination probe is ideal for slimline, one-pass, hydrogeological studies, lithology work, uranium exploration, and general borehole formation data. The totally digital probe combination measures 16, 64 inch (0.4, 1.6 meter) normal resistivity, single point resistance, self-potential, and natural gamma. It operates with the newest LoggerSuite digital logging system and software.

The 40GRP-1000 is a standalone tool. The normal resistivity measurements, single point resistance, and self-potential measurements are designed for surveying open (uncased) fluid-filled boreholes. Gamma measurements can be taken in any borehole environment.

## Application

- Bed boundary analysis
- Facies changes
- Quantitative geological formation properties
- Identification of Hydrostratigraphic units
- Aquifer thickness and Water quality
- Hydrocarbon intervals, Ore body zones, In-situ Uranium assay
- Fluid contaminant monitoring, Soil horizons, Grain size estimation


| TOOL | |
|---|---|
| Diameter | 43mm (1.7") |
| Length (min/max) | 2.21m (87") |
| Weight (min/max) | 8.8kg (19.5 lbs) |
| Temp | 0 - 70°C (32 - 158°F) |
| Max. Pressure | 200bar (29000psi) |

| Resistivity sensor | |
|---|---|
| Resistivity sensor | Stainless steel electrodes |
| Resistivity range | 0 to 10,000 Ohm-m |
| Resistivity accuracy | 1% |
| Resistivity resolution | 0.02% |
| SPR range* *Single Point Resistance | 0 to 10,000 Ohms |
| SPR accuracy | 1% |
| SPR resolution | 0.02% |
| SP range* *Self-potential | ± 1,500 mVDC |
| SP accuracy: | 1% |
| SP resolution: | 0.04% |

| Natural gamma sensor | |
|---|---|
| 0.875" (22.2mm) x 3" (75.6mm) NaI (Ti) scintillation crystal | |
| Gamma range | 0 to 100,000 cps/API |
| Gamma accuracy | 1% |
| Gamma resolution | 0.02% |

| OPERATING CONDITIONS | |
|---|---|
| Cable type | Mono, multi-conductor, coax |
| Compatibility | Scout / Opal (ALTlogger / Bbox / Matrix) |
| Digital data transmission Telemetry | Variable baudrate telemetry according to cable length/type & surface system |
| Logging speed | Variable - function of image resolution, borehole diameter, wireline and surface system model. |
| Centralisation | Not required |
| Borehole fluid | Gamma in any conditions Resistivity in uncased, fluid-filled boreholes |

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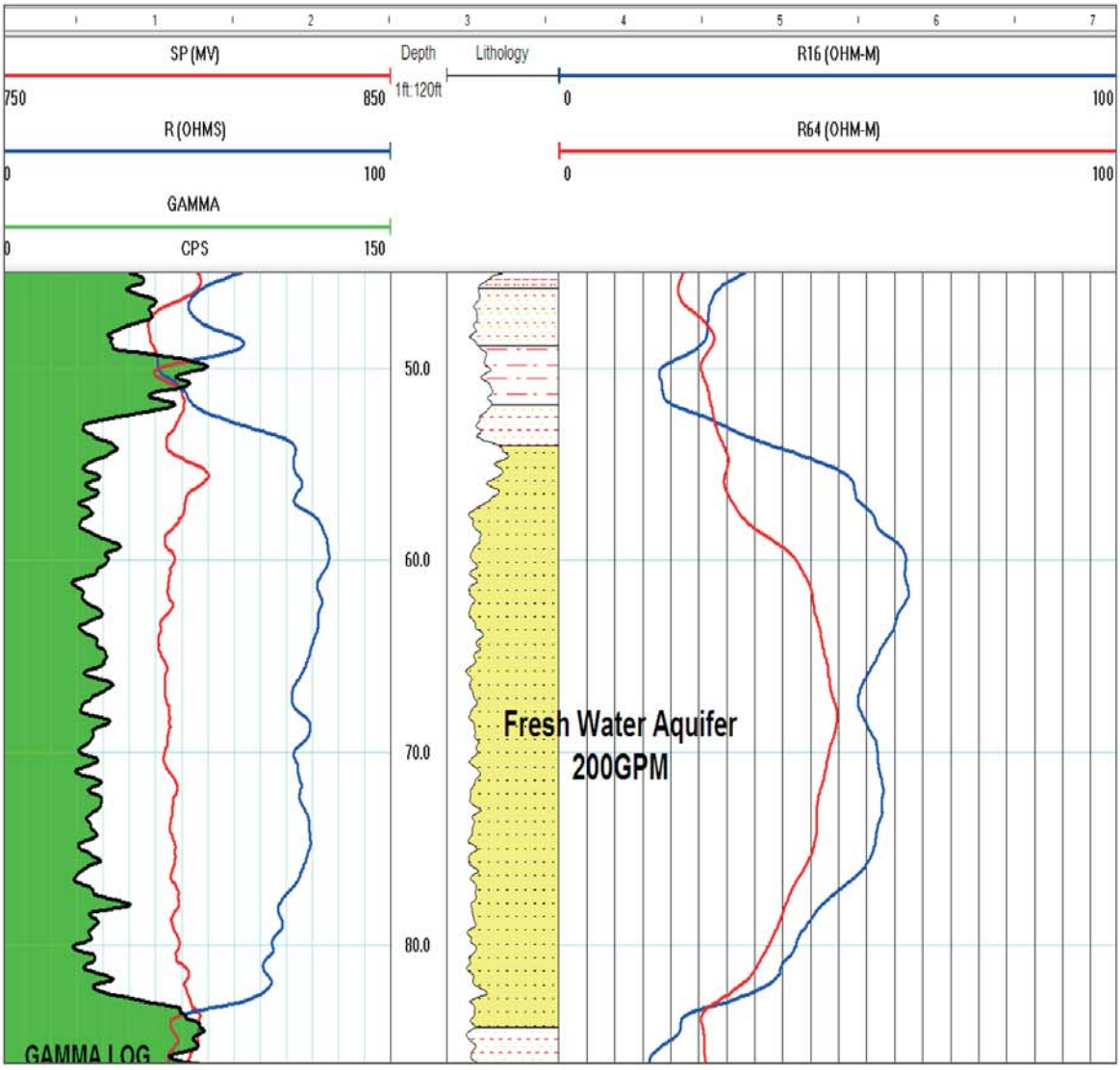
## Principle of measurement

An electric current is injected into the formation from the source electrode. Potentials due to this current flow are measured on various sense electrodes on the probe with respect to a voltage reference electrode located at the top of the isolation bridle. The spacing between the source and individual sense electrode determines the depth of investigation of the measurement. The voltage measurements are proportional to resistivity of the formation.

## Measurements features

. N16 : 16" normal resistivity in ohm-m
. N64 : 64" normal resistivity in ohm-m
. SPR : single point resistance in ohms
. SP : self-potential in mV
. GR : total gamma counts in cps/API




Sample Log from 40GRP-1000 in one logging pass.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