

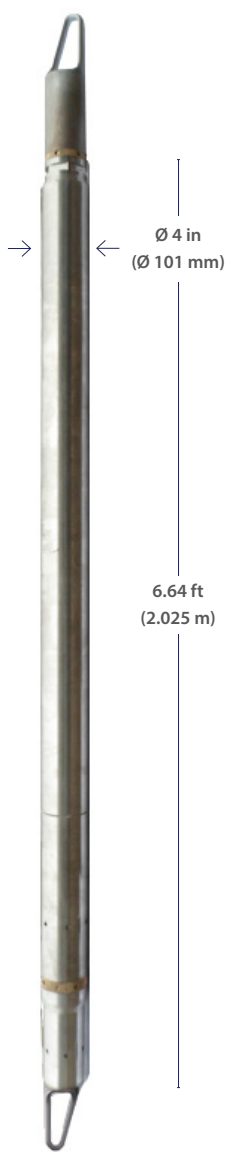


GAMMA RAY SPECTRAL TOOL (GRST)

Gowell's **GRST** tool measures discrete levels of Gamma Ray energy coming from naturally occurring radioactive elements present in formations, including Potassium (K), Thorium (Th) and Uranium (U), to provide clay type and volume analysis.

The tool contains a large scintillation crystal which provides higher detection efficiency and sensitivity.

GRST measures the naturally occurring Gamma ray Spectrum, ranging from 0 to 3,000 Kev. The result is a detailed spectrum of 256 discrete data channels. Spectral tools are extremely important as they provide a clear picture of the sedimentary environment present in the formation such as materials source, diagenesis, groundwater activity, clay type and clay content.



GRST

FEATURES

- Built in spectrum stabilization
- Detailed 256 Channel spectrum
- Can be run in combination with all Gallop tools

APPLICATIONS

- Quantitative measurement of actual radiation and separation into its three predominant components: Potassium, Uranium and Thorium
- Enhanced reservoir volumetric description and delineation
- Determines cation exchange capacity and clay types
- Determines clay and shale volumes
- Provides differentiation between radioactive pay zones and shales
- Gives crucial input for complex lithology analysis
- Detailed well-to-well correlation
- Igneous rock recognition



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SPECIFICATIONS

	GRST
GENERAL SPECS	
Maximum Operating Pressure	20,000 PSI (140 MPa)
Maximum Operating Temperature	350°F (175°C)
Maximum Hole Size	22.5 in (571.5 mm)
Minimum Hole Size	5 in (127 mm)
Diameter	4 in (101 mm)
Length	6.64 ft (2.025 m)
Recommended Logging Speed	22 ft/min (6.7 m/min)
HARDWARE FEATURES	
Voltage	220 Vac, 50 Hz
Current	100 mA
Detector Type	Scintillator Detector
MEASUREMENTS	
Measurement Range	Total GR - 1,500 API
Vertical Resolution	19.68 in (500 mm)
Accuracy	Relative Error of Total GR Strength: $\pm 5\%$ Absolute Error of U Content: $\pm 1.5 \times 10^{-6}$ Absolute Error of Th Content: $\pm 1.5 \times 10^{-6}$ Absolute Error of K Content: $\pm 0.1\%$