

## **NATURAL GAMMA MODULE (NGM)**

The Dataflow Measurement Systems(DMS) Natural Gamma Module (NGM) has been developed to complement its successful range of slimhole directional measurement instruments. The addition of NGM provides directional drillers with readily available target identification information for tighter control, allowing earlier (easier and less costly) corrections to be made. Other benefits include:

- **Low Cost add-on module with High Temperature Capability**
- **Provides Real-time directional survey, steering and gamma.**
- **Standard interface providing multi-sensor options. The NGM can also be readily integrated into customer hardware platforms.**
- **The NGM will accurately chart shale bed stratification. Improved depth correlation provides faster, safer drilling in difficult fields.**
- **Its small size enables the NGM to be run in collars as small as 2.5" providing enhanced boundary marking in many slimhole applications.**
- **Provides bed correlation in field appraisal and development drilling. In many fields the NGM alone is suitable for real time casing and core point selection.**

The DMS gamma service runs within the DMS Drillog™ software platform providing real time directional and gamma data. Rig site data can be presented in log form to API format by the Drillog™ gamma service software.

### *Natural Gamma Module (NGM) Typical Performance Summary*

#### *Interface*

<i>Voltage Input</i>	<i>: +20 - 30v dc nominal</i>
<i>Max Power Consumption</i>	<i>: 0.75 Watt</i>
<i>Digital Interface</i>	<i>: 0 / 5V Pulse output</i>
<i>Output format</i>	<i>: Counts / API unit</i>
<i>Instrument OD</i>	<i>: 1.2" nom</i>
<i>Instrument Length</i>	<i>: 30" max</i>
<i>Pressure Case OD</i>	<i>: 1.5" (1.375" without shock isolation)</i>
<i>Through conductors</i>	<i>: 15 (MDS bus interface)</i>

#### *Sensors:*

*Scintillation Detector / Sodium Iodide crystal*

#### *Accuracy*

<i>Full Scale Range</i>	<i>: 0 -500 AAPI</i>
<i>Accuracy 0 -150 AAPI</i>	<i>: +/- 2 AAPI</i>
<i>Accuracy 150 - 500 AAPI</i>	<i>: +/- 10 AAPI</i>
<i>Sensitivity</i>	<i>: 1 count / API unit</i>

#### *Environmental*

<i>Operating Temperature</i>	<i>: 0 - 125°C, 150°C, 175 °C ranges</i>
<i>Shock</i>	<i>: 1000g, 1/2 sine 3mS</i>
<i>Vibration</i>	<i>: 25g rms</i>