Gamma Gun – Scintillation Tool

Provides accurate correlation of ballistic services

Applications

- Cased-hole
- Perforating formation correlation

Features and Benefits

- Highly sensitive scintillation detector
- Compact gamma ray and casing collar locator (CCL)

Tool Description

The Weatherford gamma gun-scintillation tool is a ruggedized tool fitted with a scintillation detector on the lower section of the tool and a passive CCL at the top.

The tool is designed to be run with a shooting adapter at the bottom to suit the customer's choice of gun system. The rugged design and sensitive detector enable the tool to operate reliably in the most extreme environments.

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Gamma Gun – Scintillation Tool

Specifications (Single Fire)

Ratings and dimensions (single fire)

	1-11/16 in. Single Fire	2-3/4 in. Single Fire	3-1/8 in. Single Fire	2-3/4 in. Single Fire Positive
Maximum temperature	350°F (177°C) for 4 hours	350°F (177°C) for 4 hours	350°F (177°C) for 4 hours	350°F (177°C) for 4 hours
Maximum pressure	20,000 psi (138 MPa)	20,000 psi (138 MPa)	18,000 psi (124 MPa)	20,000 psi (138 MPa)
Outer diameter	1.69 in. (42.93 mm)	2.75 in. (69.85 mm)	3.125 in. (79.375 mm)	2.75 in. (69.85 mm)
Length	53.5 in. (1531.62 mm)	57.3 in. (1455.42 mm)	57.12 in. (1450.85 mm)	57.3 in. (1455.42 mm)
Weight	21.0 lb (9.5 kg)	50.0 lb (23.0 kg)	67.0 lb (30.0 kg)	50.0 lb (23.0 kg)
Minimum casing/tubing OD	2.375 in. (60.325 mm)	3.5 in. (88.9 mm)	3.5 in. (88.9 mm)	4.5 in. (114.3 mm)
Maximum casing/tubing OD	7.0 in. (178.0 mm)	7.0 in. (178.0 mm)	11.75 in. (298.45 mm)	7.0 in. (178.0 mm)
Measurement points	Gamma Ray: 9.0 in. (228.6 mm) Casing Collar Locator: 47.0 in. (1193.8 mm)	Gamma Ray: 11.8 in. (299.72 mm) Casing Collar Locator: 47.0 in. (1193.8 mm)	Gamma Ray: 13.5 in. (342.9 mm) Casing Collar Locator: 47.65 in. (1210.31 mm)	Gamma Ray: 11.8 in. (299.72 mm) Casing Collar Locator: 47.0 in. (1193.8 mm)
Tensile strength	Tension: 60,000 lb Compression: 25,000 lb Torque: 150 lb ft (203 N-m)	Tension: 60,000 lb Compression: 25,000 lb Torque: 150 lb ft (203 N-m)	Tension: 60,000 lb Compression: 25,000 lb Torque: 150 lb ft (203 N-m)	Tension: 60,000 lb Compression: 25,000 lb Torque: 150 lb ft (203 N-m)
External markings	—	—	—	Tandem sub powder coated red to denote Shoot Positive

Borehole conditions (single fire)

	1-11/16 in. Single Fire	2-3/4 in. Single Fire	3-1/8 in. Single Fire	2-3/4 in. Single Fire Positive
Borehole fluids	No Restrictions			
Tool positioning	Centralized | Eccentralized			

Gamma Gun – Scintillation Tool

Measurements (all single fire configurations except where noted)

	Gamma Ray	Casing Collar Locator
Sensor type	NaI(Ti) Scintillation Gamma	Dual Magnet, Center Coil
Principle	Naturally Occurring Gamma	Magnetic Flux Variation
Sensor spacing	Proprietary	Proprietary
Sensitivity	Approximately 1.6 counts/API unit	Approximately 1.6 counts/API unit
Range	0 to 5,000 cps	0 to 5,000 cps
Vertical resolution	14.00 in. (355.6 mm)	14.00 in. (355.6 mm)
Precision	5% at 100 GAPI at 15 fpm (4.6 m/min)	5% at 100 GAPI at 15 fpm (4.6 m/min)
Data transmission	Analog, Pulse, + Polarity	Analog, Line Wobble, mV
Logging speed	Maximum: About 30 to 45 ft/min (9 to14 m/min)	
Sample rate (3-1/8 in. single fire only)	4 to 10 samples/ft (10 to 40 samples/meter)	

Calibrations (single fire)

	1-11/16 in. Single Fire	2-3/4 in. Single Fire	3-1/8 in. Single Fire	2-3/4 in. Single Fire Positive
Primary	Approx. 1.0 cps/GAPI unit	Approx. 1.6 cps/GAPI unit	Approx. 1.0 cps/GAPI unit	Approx. 1.6 cps/GAPI unit
Secondary	Thorium sleeve, API calibrated	Thorium sleeve, API calibrated	Thorium sleeve, API calibrated	Thorium sleeve, API calibrated
Wellsite verifier	Thorium sleeve, API calibrated	Thorium sleeve, API calibrated	Thorium sleeve, API calibrated	Thorium sleeve, API calibrated

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Electrical specifications while logging (single fire)

	1-11/16 in. Single Fire	2-3/4 in. Single Fire	3-1/8 in. Single Fire	2-3/4 in. Single Fire Positive
Cablehead voltage	60 V DC Positive	60 V DC internally regulated	60 V DC Internally Regulated	—
Instrument current	60 mA	60 mA	60 mA	—
Shooting power	—	300 VDC maximum, using only rollup method, never dumpfire	—	—
Shooting polarity	—	—	Single	—
Operating (-ve) V	—	—	—	-65 VDC (+/-5V), internally regulated
Operating Current	—	—	—	60 mA DC (+/- 5mA)
Shooting (+ve) V	—	—	—	380 VDC maximum, rollup method recommended

Specifications (Dual Fire)

Ratings and dimensions (dual fire)

	1-11/16 in. Dual Fire	2-3/4 in. Dual Fire	1-11/16 in. Dual Fire – High Temperature	2-3/4 in. Dual Fire – High Temperature
Maximum temperature	350°F (177°C) for 4 hours	350°F (177°C) for 4 hours	450°F (232°C) for 4 hours	475°F (246°C) for 4 hours
Maximum pressure	20,000 psi (138 MPa)			
Outer diameter	1.69 in. (42.93 mm)	2.75 in. (69.85 mm)	1.69 in. (42.93 mm)	2.75 in. (69.85 mm)
Length	60.3 in. (1531.62 mm)	57.3 in. (1455.42 mm)	69.8 in. (1772.92 mm)	75.0 in. (1905.0 mm)
Weight	21.0 lb (9.5 kg)	50.0 lb (23.0 kg)	21.0 lb (9.5 kg)	50.0 lb (23.0 kg)
Minimum casing/tubing OD	2.375 in. (60.325 mm)	3.5 in. (88.9 mm)	2.375 in. (60.325 mm)	4.5 in. (114.3 mm)
Maximum casing/tubing OD	7.0 in. (178.0 mm)			
Measurement points	Gamma Ray: 9.0 in. (228.6 mm) Casing Collar Locator: 47.0 in. (1193.8 mm)	Gamma Ray: 11.8 in. (299.72 mm) Casing Collar Locator: 47.0 in. (1193.8 mm)	Gamma Ray: 46.4 in. (1178.56 mm) Casing Collar Locator: 63.5 in. (1612.9 mm)	Gamma Ray: 17.0 in. (431.8 mm) Casing Collar Locator: 64.8 in. (1645.92 mm)
Tensile strength	Tension: 60,000 lb Compression: 25,000 lb Torque: 150 lb ft (203 N-m)			

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Borehole conditions (dual fire)

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Borehole fluids	No Restrictions			
Tool positioning	Centralized | Eccentralized			

Measurements (all dual fire configurations except where noted)

	Gamma Ray	Casing Collar Locator
Sensor type	NaI(Ti) Scintillation Gamma	Dual Magnet, Center Coil
Principle	Naturally Occurring Gamma	Magnetic Flux Variation
Sensor spacing	Proprietary	Proprietary
Sensitivity	Approximately 1.6 counts/API unit	Approximately 1.6 counts/API unit
Range	0 to 5,000 cps	
Vertical resolution	14.00 in. (355.6 mm)	14.00 in. (355.6 mm)
Precision	5% at 100 GAPI at 15 fpm (4.6 m/min)	5% at 100 GAPI at 15 fpm (4.6 m/min)
Data transmission	Analog, Pulse, + Polarity	Analog, Line Wobble, mV
Logging speed	Maximum: About 30 to 45 ft/min (9 to14 m/min)	
Sample rate (2-3/4 in. dual fire – high temperature only)	4 to 10 samples/ft (10 to 40 samples/meter)	

Calibrations (dual fire)

	1-11/16 in. Dual Fire	2-3/4 in. Dual Fire	1-11/16 in. Dual Fire – High Temperature	2-3/4 in. Dual Fire – High Temperature
Primary	Approx. 1.0 cps/GAPI unit	Approx. 1.6 cps/GAPI unit	Approx. 1.0 cps/GAPI unit	Approx. 1.6 cps/GAPI unit
Secondary	Thorium sleeve, API calibrated			
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Electrical specifications while logging (dual fire)

	1-11/16 in. Dual Fire	2-3/4 in. Dual Fire	1-11/16 in. Dual Fire – High Temperature	2-3/4 in. Dual Fire – High Temperature
Cablehead voltage	60 V DC Positive	60 V DC internally regulated		
Instrument current	60 mA			
Shooting power	300 VDC maximum, using only rollup method, never dumpfire			