

Compensated Neutron Tool

Provides gas identification and measures porosity through the casing

Applications

- Through-casing porosity
- Gas identification

Features and Benefits

- Combinable with Radii® cement bond tools
- Configurable-source installation
- Slim profile

Tool Description

The Weatherford compensated neutron tool must be run in conjunction with a 2.75-in. digital gamma ray tool. It cannot be run alone.

Specifications

Ratings and Dimensions

Maximum temperature	350°F (177°C) (for 4 hours)
Maximum pressure	20,000 psi (138 MPa)
Outside diameter	2.75 in. (69.85 mm)
Length	61.68 in. (1,566.67 mm)
Weight	60 lb (27.2kg)
Min casing/tubing OD	4.5 in. (115 mm)
Max casing/tubing OD	9.63 in. (244.6 mm)
Tensile strength ¹	Tension: 15,000 lb Compression: 35,000 lb Torque: 150 ft.lbf
Measure points	Near detector (SS): 16.32 in. (414.53 mm) Far detector (LS): 21.36 in. (542.54 mm)

¹Strengths apply to new tools at 70°F (21°C) and 0 psi.



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Specifications (continued)

Borehole Conditions

Borehole fluids	Salt, fresh, and oil
Logging speed	Recommended: 35 ft/min (10 m/min) Max: 60 ft/min (18.2 m/min)
Tool positioning	Centralized, eccentralized

Hardware Characteristics

Source type:	15 curie Am ²⁴¹ Be neutron emitter
Sensor type	One He ³ Gas Detector Tube each
Sensor spacing	Near Detector (SS): 17.5 in. (444.5 cm) Far Detector (LS): 27.5 in. (698.5 cm)
Transmission rate	20 frames/s
Waveform	Digital telemetry data
Combinability	GR, CCL (required), RADii®, CBT, digital CBT

Measurements

Type	Neutron porosity
Principle	Ratiometric thermal neutron detection
Range	-3 to 60 porosity units
Vertical resolution	Approximately 10 in. (254 mm)
Depth of investigation	Porosity dependent, 12 in. or less (304.8 mm or less)
Accuracy (1SD)	± 2%
Primary curves	Neutron API units Near and far detector count rates
Secondary curves	Detector count-rate ratio

Calibration

Primary	University of Houston API neutron pit
Secondary	Neutron calibration tank
Wellsite verifier	350-micron curie active verifier

