



The Compensated Neutron (CNL) tool measures the hydrogen content of the formation surrounding the wellbore. The hydrogen content is related to porosity, and can be used for gas detection in combination with other tools in both open and cased hole applications.

Containing a neutron emitting source producing fast neutrons that bombard the formation. The emitted neutrons are thermalized by collisions with other nuclei. The hydrogen nuclei are considered the chief moderator of neutrons, thus porosity is measured based on the hydrogen content of the formation.

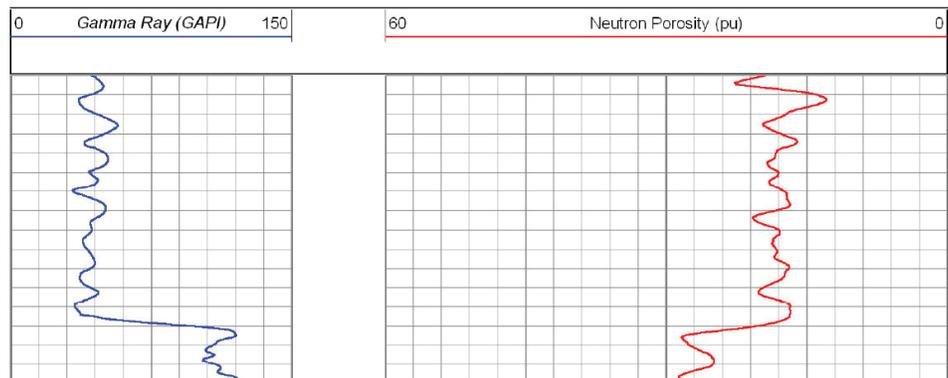
Some of the thermalized neutrons are scattered back to the tool where they are counted by two neutron detectors filled with He-3 gas. The detectors are spaced at fixed distances from the source to compensate for hole rugosity and borehole effects. The porosity measurement consists of counting the number of neutrons reaching the detectors and relating them to the pore space in the rock.

Applications:

- Porosity measurement
- Lithological identification
- Clay analysis
- Gas detection

Features

- Can be run in both open- and cased-hole environments
- Fully compatible with Sondex Ultrawire* tools
- Modeled for both AmBe and Cf neutron sources
- Industry-leading neutron detectors with excellent signal-to-noise ratio, gamma discrimination, and shock and vibration ratings
- Compact design puts sensors closer to bottom requiring less rat hole



| Specifications | |
|--|---|
| Maximum OD | 3.375 in. (85.7 mm) 5.0 in. (127 mm) w/eccentralizer |
| Makeup Length | 5.3 ft. (1.6 m) |
| Weight | 125 lb. (57 kg) |
| Maximum temperature | 302° F (150° C) |
| Maximum Pressure | 20,000 psi (137.9 Mpa) |
| Minimum Hole | 6 in. (152 mm) |
| Maximum Hole | 16 in. (406 mm) |
| Tensile Strength | 50,000 lb. (22,700 kg) |
| Compressive Strength | 7,500 lb. (3,550 kg) |
| Sensor Offsets | |
| SS Detector | 1.71 ft. (0.52 m) |
| LS Detector | 2.23 ft. (0.68 m) |
| Borehole Conditions | |
| Borehole Fluids | Fresh, Salt, Oil |
| Maximum Logging Speed | 33 ft/min (10 m/min) |
| Tool Position | Eccentralized |
| Measurements | |
| Accuracy | 0-20 pu +/- 1 pu 20-30 pu +/- 2 pu 30-60 pu +/- 6 pu |
| Vertical Resolution | 2.0 ft. (0.61 m) |
| Depth of Investigation | Dependant on Hydrogen Index |
| Measurement Range | 0-60 pu Limestone Units |
| Primary Curves | Limstone Porosity, Sandstone Porosity, Dolomite Porosity |
| Hardware & Power Requirements | |
| Tool Bus | Ultrawire* |
| Power | 75 mA (18V DC) |

Specifications courtesy of GE Oil & Gas



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