

PULSE NEUTRON-NEUTRON LOGGING TOOL



The Pulse Neutron-Neutron (PNN) tool directly measures the decay of thermal neutrons using two highly efficient neutron counters. This direct measurement results in a purer and more accurate representation of the sigma values of the surrounding formation. PNN is ideal for wells with high salinity and low porosity, effectively distinguishing between water, oil, and gas contacts, as well as accurately determining formation residual saturation in these challenging environments.

Applications (behind casing):

- Reservoir saturation evaluation
- Gas-liquid contact determination
- Formation porosity assessment
- Time-lapse saturation monitoring
- Production diagnostics, identification of bypassed reserves

Advantages:

- High resolution neutron counters
- High stability of neutron flux
- Possibility to register neutron porosity
- Through-tubing technology (memory mode operation)
- Compatible with North Side tools



| Tool Specifications | |
|---------------------------------------|------------------------------------|
| Maximum neutron pulse repetition rate | 20 Hz |
| Neutron tube | Gas filled |
| Number of neutron detectors | 2 |
| Duration of neutron pulse | No more than 2 micro sec |
| Neutron flux, not less than | 1*10 ⁸ neutrons/sec |
| Energy of the neutrons | 14 MeV |
| Determined parameters | Σa, TRNP |
| Maximum Operating Temp | 120°C (248°F) |
| Maximum Operating Pressure | 14,700 PSI (100 MPa) |
| Logging speed | 2 - 6.6 m/min |
| Tool length | 11.15 ft (3.4 m) |
| Tool OD | 1.69" (43 mm) |
| Tool weight | 44 lbs (20 kg) |
| SRO / Memory | SRO & Memory |
| Battery life | 25 hrs |
| Memory capacity | 16 Gb (>25 hrs recording capacity) |
| H2S resistance | 6% |