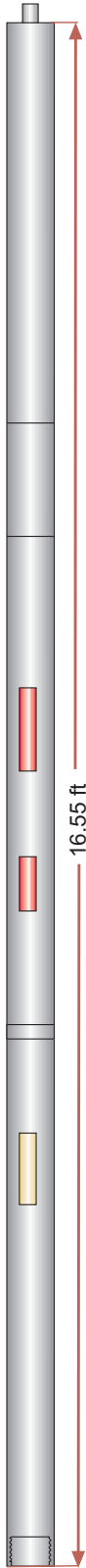


# Memory Pulsed Neutron System (MPNN)



## Highly-Effective, Multi-Faceted Problem Solver

The MPNN discriminates between water, gas, and/or oil-bearing formations in cased holes. It is ideal for identifying hydrocarbons behind producing well casings. MPNN identifies and follows:

- Gas/oil water contacts
- Hydrocarbon migrations between zones
- Other associated problems

## MPNN Example Log

The example log below was produced by the MPNN in the Gulf of Mexico. The gas zone is clearly indicated by sigma value and near/far detector ratio. The red dashed line shows the original open hole gamma ray and resistivity logs performed ~14 years earlier.

Pressure and temperature probes were run with the system. The temperature shows behind pipe gas movement. While this zone was not completed in this well, it was evident production from an offset well in the same reservoir ~0.75 miles away was being detected.

Technical Specifications	
Length:	16.55 ft (5.27m)
Maximum Outer Diameter:	1.75 in (43mm)
Pressure Rating:	14,000 psi (96,530 kPa)
Temperature Rating:	250°F (120° C)
Output Rate:	2 X 10 <sup>8</sup> neutrons/sec
Burst Frequency:	50ms between bursts
Near Detector Spacing:	15 in (38mm)
Far Detector Spacing:	25 in (63mm)
Records:	64 gates of 32ms each detector
Memory:	18 hrs logging
Battery Life:	20 hrs
Output Energy:	14MeV Neutrons

## Pioneering in Pulsed Neutron Technology

Scientific Production Services's Memory Pulsed Neutron-Neutron (MPNN) System is the first tool of its kind in the industry. The MPNN combines conventional pulsed neutron technology with dual He3 neutron detectors to provide sigma monitoring and water saturation information. These data were previously only available using an expensive electric wireline conveyed toolstring.

## Significant Features

- Battery operated
- Slickline conveyed
- Sigma values
- Gas/fluid contacts
- Portable with other tools

