



Drilling Telemetry System



TECHNOLOGY SUMMARY

In the oil and gas drilling industry, it is vital that there is efficient exchange of information between the earth's surface and regions downhole. Sandia National Laboratories has created a downhole telemetry system that utilizes inductive or capacitive coupling at joints between sections of pipe, impedance matching and coil shielding to minimize attenuation and reflection of signal to afford effective real-time or near-real-time communications in a high speed robust system that conveniently integrates into current drilling practice and other downhole applications.

Currently, the mode of communicating information is mud-pulse telemetry. While this method is commonly used, it suffers from low bit rate (<10 bits per second) and communications are uni-directional. The drilling telemetry system uses inductance or capacitance as a mode through which signal is communicated across joints between assembled lengths of pipe, which removes the need to have direct electrical contact at the pipe joints. Wire is used to transmit signal within each length of pipe. System components are then selected and positioned to focus magnetic flux thereby reducing loss of signal at the joints through reflectance. The use of bifilar or flat flex wire in this invention eliminates problems associated with attaching the wire to the drill pipe by bonding.

BENEFITS

Removes the need to have direct electrical contact at the pipe joints.

Allows for high speed communication that is invisible to conventional drilling operations.

INTELLECTUAL PROPERTY

US PATENT #7,362,235
SD# 6638 & 7114

POTENTIAL MARKET APPLICATIONS

- Oil Drilling
- Gas Drilling
- Other Downhole Applications

TECHNOLOGY READINESS LEVEL

Sandia estimates this technology at a TRL 4. Key elements have been demonstrated in laboratory environment.

Virginia Cleary | 505.284.8902 | vdclear@sandia.gov



Sandia National Laboratories

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration. SAND # 2011-4638P