

Prototipe sistem Nuclear Magnetic Resonance Logging dengan metode Inside-Out tipe Jackson = The prototype of Nuclear Magnetic Resonance Logging system with Jackson type Inside-Out methode

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Abstrak

Prototipe sistem Nuclear Magnetic Resonance Logging (NMR Log) dengan metode Inside-Out tipe Jackson telah dibuat. Pembuatan prototipe sistem ini bertujuan untuk memahami rancangan NMR Log untuk aplikasi eksplorasi di sumur pengeboran minyak bumi. Sistem terdiri dari koil transceiver, dua magnet permanen silinder, penghasil pulsa RF, rangkaian transmitter, duplexer, rangkaian receiver dan osiloskop. Sistem NMR Log ini berhasil mengidentifikasi tiga jenis fluida (air, gliserin, dan bensin) dengan melihat parameter waktu peluruhan dan amplitudo dari sinyal Free Induction Decay (FID) akibat munculnya fenomena NMR pada atom hidrogen (H1) yang terdapat di dalam fluida.

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The prototype of Nuclear Magnetic Resonance Logging (NMR Logs) system with Jackson types Inside-Out method has been made. Prototyping system aims to understand the design of NMR Logs for applications in petroleum drilling wells exploration. The system consists of a coil transceiver, two cylindrical permanent magnets, RF pulse resource, transmitter circuit, duplexer, receiver circuit and oscilloscope. NMR Log system is able to identify three types of fluids (water, glycerin, and gasoline) by consider the parameters of decay time and amplitude of Free Induction Decay (FID) signal caused by NMR phenomenon of the hydrogen (H1) atoms in the fluid.