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Core Lab

Resistivity Index by Continuous Oil Injection System, RICI-100
Datasheet

**Special Core Analysis Laboratory (SCAL)/
Electrical Properties (Resistivity Index,…)**

Resistivity Index by Continuous Oil Injection System, RICI-100

Resistivity Index by Continuous Oil Injection System was developed to meet the industry demand for quick accurate Resistivity Index data and is based on the continuous oil injection techniques developed by Shell Research. The production model is based on a development system used in our Aberdeen Advanced Technology Center and uses a modular approach that allows for future expansion by the addition of core holders and pump modules. The number of cells required should be specified at the time of ordering. The system consists of a bank of Hassler-type 2 electrode core holders mounted on a support frame; each core holder has a dedicated piston cylinder for oil injection, a pressure transducer and a double glass pipette to collect the eluted brine (as a visual cross check on the computer monitored injection volumes). A stepper motor drives each bank of five piston cylinders capable of controlling injection rate rates of 0.04 cm3/hour or less. Each core holder/cylinder pair has an independent valve manifold, with manual valves and a regulator to apply backpressure when saturating the core. Resistivity is measured sequentially at regular programmable intervals by a programmable RCL meter linked to the PC based data acquisition software. Confining pressure is applied to the core holders by an air driven hydraulic pumps module. The system is contained in a temperature controlled environmental cabinet. The PC based data acquisition software logs resistance, phase angle, pump displacement, pressure and temperature as well as pump control.

The RICI-100 offers a number of advantages for the determination of Resistivity Index as experimental errors are minimized by automation data acquisition, measurements equivalent reservoir stress and the ability to complete tests in four weeks or less. In addition the system enables non-liner RI vsSw function to be accurately defined.

Method Summary:

A clean dry evacuated core sample is saturated with simulated formation brine in a pressurized core holder and then flushed with brine to remove any residual trapped air. Brine is then displaced from the core by mineral oil at a very low injection rate. A semi-permeable membrane at the outlet end of the core holder prevents the mineral oil from leaving the sample. Resistance and pressure drop across the core sample are measured as a function of the volume of mineral oil injected at constant monitored temperature is. The experiment is complete when the injection pressure is equal to the entry pressure for the mineral oil to the semi-permeable membrane.

Specifications

- Confining Pressure rating 5,000 psi
- Temperature rating: ambient; controllable to 1 °C.
- Wetted parts corrosion resistant material.
- Sleeve material: Viton