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Core Lab

Formation Damage Evaluation and Simulation System FDES-200 Datasheet

Drilling & Stimulation Properties



Formation Damage Evaluation and Simulation System, FDES-200

Formation Damage Evaluation and Simulation System, is designed to measure the effect on the permeability of reservoir rock samples from various drilling and completion fluids at reservoir pressure and temperature. Core samples are placed in a thick walled Viton sleeve with end-plugs designed to facilitate the introduction of completion acid mixes and to allow insertion of ring spacers for accumulation of filter cake at the upstream end of the sample. Simulated overburden pressure is applied to the sample with a computer controlled syringe pump and differential pressure array to ensure that the correct net confining pressure is maintained as injection pressure increases. Free-piston fluid accumulators are provided to accommodate the fluids required for flow tests. Data acquisition hardware and software logs system parameters including flow rates, pressures, differential pressure, temperatures, overburden pressure and cumulative flow volumes. Normal operating conditions for the system are 10,000 psig confining pressure, 7,500 psig pore pressure and 300 °F temperature.

NOTE: All wetted parts are of Hastelloy C-276, Viton, Teflon, and PEEK. As required other materials can be quoted upon request.

Application

Investigation of Formation Damage due to:

- Scale deposition in near wellbore environment caused by pressure decline and the mixing of incompatible brines in water injection wells.
- The effect of fines migration caused by brine salinity changes, high production flow rates and dissolution of cementing materials.
- Clay sensitivity.
- Effect of drilling fluids and completion fluids including acid and alkali mud systems. The ability to reverse flow through the core sample allows the investigation of "lift off" flow rates and the effect on producing permeability of the drilling and completion fluids.
- Return permeability investigations.
- Investigation of the effects of acidization on the permeability.