

Keys to Success in the Determination of In-Situ Petrophysical Properties of Unconsolidated Sands by Traced-Coring: A Case Study

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ABSTRACT

Objectives of obtaining in-situ values of water saturation, formation water salinity, true formation resistivity (Rt) and SCAL data by core analysis can only be achieved if extraneous fluid invasion is kept at a controlled level and be corrected for it or be prevented. Impossibility of zero invasion of cores by mud-filtrate makes the traced-coring a compelling method. Application of liquid based tracers such as tritium and deuterium oxide (D20) to determine the amount of fluid invasion is highly recommended in the event of critical in-situ formation properties need to be determined from core. This study presents a set of key factors for controlling invasion of core by extraneous fluids, best practices in quantifying the fluid invasion, handling core at the surface, and suggests types of analyses, specifically, for unconsolidated formations. A comparison of petrophysical parameters determined from traced-core against the results of LWD log interpretation of the same interval is also presented to assess the success/failure of the recommended practices.