

NMR Imaging for Core Flood Testing

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Abstract: Use of nuclear magnetic resonance (NMR) imaging to measure one-dimensional (1-D) saturation distributions along the direction of flow at various flood stages is presented. Dynamically measured saturation profiles are used in conjunction with capillary pressure curve for the rock to determine capillary pressure gradient in the direction of flow. Two-dimensional (2-D) distributions of oil and water were also imaged but only at static conditions. Images of porosity distribution in sandstones and a limestone were also obtained. Our experiences have so far proved the usefulness of nuclear magnetic resonance imaging (MRI) as a useful tool for special core analysis and identified some limitations.