



Contribution ID: 141

Type: Oral Presentation

Integration of SEM Images and NMR Measurements to Characterize Pore Size Distributions in Unconventional Tight Rock Reservoirs

Thursday, 25 May 2023 14:15 (15 minutes)

Pore size distribution (PSD) is a key parameter in Shale & Tight (S&T) reservoir evaluation, significantly contributing to our understanding of storage capacity and distribution / producibility of reservoir fluids. We have taken a collaborative approach to develop a new workflow for evaluation of PSD through the integration of (lab-based) 2D Scanning Electron Microscopy (SEM) and Nuclear Magnetic Resonance (NMR) T2 distributions. Our method uses large area SEM imaging and incorporates data from two different detectors to improve statistics of PSD. Application of this workflow on a variety of S&T formation samples has demonstrated promising results, enabling downhole in-situ PSD estimation for an entire NMR logged wellbore interval. This new technique has the potential to yield several impactful outcomes including improved understanding of in-situ PSD, faster / enhanced petrophysical evaluation, and improved forecasting of resource production.

Participation

In-Person

References

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Energy Transition Focused Abstracts

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Session Classification: MS10

Track Classification: (MS10) Advances in imaging porous media: techniques, software and case studies