



PBS-SEPM October LUNCHEON

Tuesday, October 17, 2023 – 11:30AM



Bush Convention Center - 105 N Main St, Midland, TX 79701

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Characterizing and Delineating Mass Transport Deposits in the Delaware Basin: An Integrated Workflow Using Image Logs and Core

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ABSTRACT

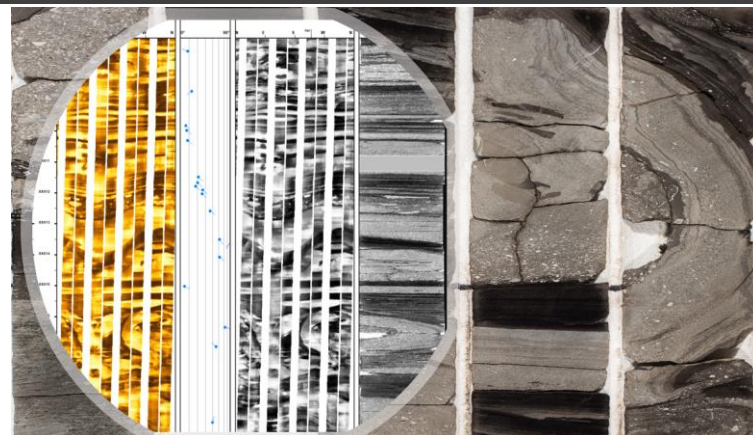
This study presents an integrated workflow, using image logs calibrated to core, to identify and delineate deep-water mass transport deposits (MTDs) in the Bone Spring and Wolfcamp Formations in the Delaware Basin. Mass transport deposits (i.e., debris flows, slumps, slides) can be prospective reservoir targets or drilling hazards depending on the character and associated properties of the deposit. Identifying MTDs is critical when trying to constrain appropriate levels of uncertainty regarding lateral continuity of well log-correlations and petrophysical properties of the reservoir. Matching petrophysical properties to production may be challenging in zones that are laterally highly variable.

Image logs provide direct evidence of deformation features and facies associated with MTDs that are not resolvable from standard logs, and in some cases, seismic. The characterization of MTD features involves integrating over 40 cores (thousands of feet) and over 140 image logs. Systematic description of deformation features in core are integrated with image logs to identify regional MTDs spanning tens of miles in the subsurface. The results will show examples of MTD features that include deformed bedding, bed-scale normal- and reverse-slip faults, folded and overturned bedding, debrites, and repeated sections in core and image logs. Characteristic bed dip patterns observed in MTDs will be shown in large regional cross sections to illustrate how these patterns can aid well log correlations and mapping.

Applying this workflow regionally has been essential in understanding sediment deposits, explaining regional changes in thickness, and informing depositional models and play concepts.

BIOGRAPHY:

Jarret Borell is a senior advising Petrophysicist at Devon Energy specializing in borehole image log interpretation. His current responsibilities include structural and stratigraphic interpretations for integration with geological, geomechanical, and completion models across all of Devon's US onshore basins. Jarret holds a B.S. and M.S. in Geology from Kansas State University and has a combined 25 years of industry experience with previous employers including Halliburton, Fronterra Geosciences, and SandRidge Energy.



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