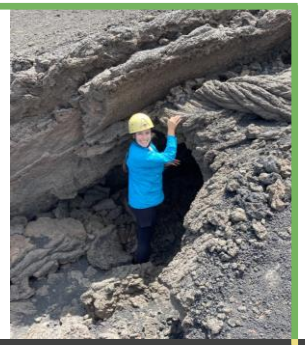
PBS-SEPM OCTOBER LUNCHEON

Tuesday, October 18, 2022 – 11:30AM

Ranchland Hills Golf Club & Online via Microsoft Teams

Early Bird Rate $25 | Walk-In/Late RSVP $35 | Student $10 | Virtual FREE

Register by 3PM on 10/14: www.pbs-sepm.org/events | info@pbs-sepm.org | (432) 279-1360



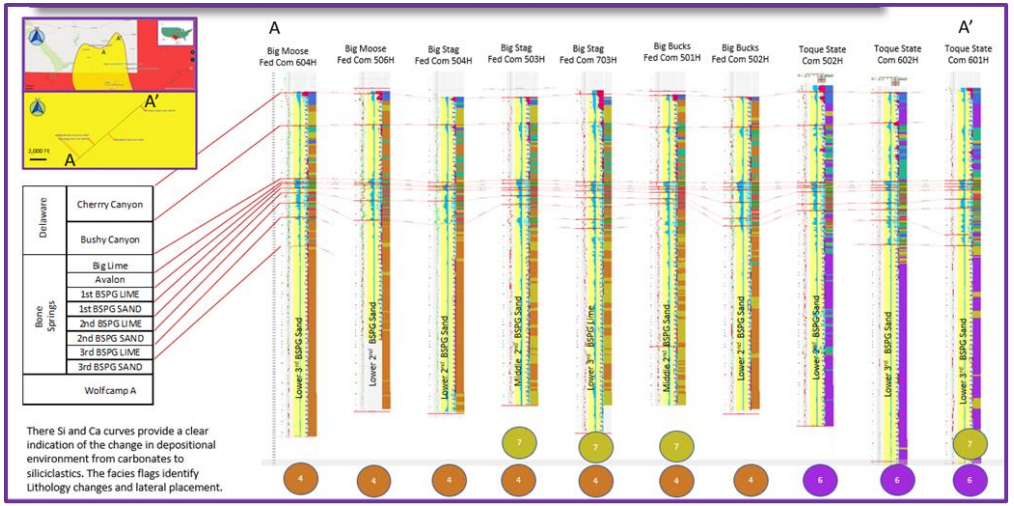
Geochemical Characterization of the Bone Spring Formation, Delaware Basin, Using Chemostratigraphy and Integrated Petrophysics

Dr. Carolina Mayorga - Geoscience Technical Advisor, Diversified Well Logging

ABSTRACT

The Delaware Basin forms part of West Texas's and New Mexico's famous petroleum-generating Permian Basin. The Bone Spring Formation is a prolific hydrocarbon producer within this basin, creating one of the world's richest oil shales. This formation has lithological sequences that are characterized by repeating carbonate and siliciclastic intervals of a third-order cycle which can largely be correlated to highstand and lowstand systems tracts, respectively. Lithological complexity and facies change are manifested by debris flows, turbidites, and slumps. In addition to glacio-eustasy, both tectonism and broader Milankovitch cycles have influenced the depositional history.

Previous investigations have utilized cores and wireline logs to provide high-resolution chemo-facies segregation, which can be correlated with reservoir and rock properties; however, core and wireline logs are sporadically collected, whereas drill cuttings are available from most wells. For this study, XRF elemental data derived from drill cuttings collected at 30 – 60ft (9 – 18m) intervals have been compared to wireline well logs. XRF measurements were categorized using hierarchical cluster and principal component analysis based on chemical facies. Chemostratigraphic units and packages were applied to generate cross-sections and facies maps to understand depositional cyclicity, terrigenous influence, grain size, mineralogy, organic content, and rock property distribution. These data sets can be used to high-grade acreage for resource identification and storage to optimize drilling performance, completion designs, and as a geosteering input.



BIOGRAPHY: *Ligia Carolina Mayorga-Gonzalez is a Ph.D. from Colorado School of Mines, working on a High-resolution Reservoir Characterization of the Lewis Shale using elemental, well log, and core data. She obtained her degree in May 2022. She graduated with her undergraduate degree in geology from the Universidad Nacional de Colombia in Bogota. She then pursued a master's degree at the University of Oklahoma. She worked for two years as a reservoir geologist at Morningstar Partners focusing on the Lewis Shale formation in Wyoming. Currently, she works as a geoscientist technical advisor with Diversified Well Logging, working on the Wolfcamp, Avalon, and Eagle ford among other formations.*