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Constructing Regional Maturity Maps for Unconventional Success

Michael Dolan

Dolan Integration Group

Source rock maturity maps are becoming critical tools that define the success or failure in unconventional resource evaluations. Evaluating petroleum systems, whether unconventional or conventional, requires a robust understanding of source rock richness, maturity and the overall input to the hydrocarbon charge history. We are afforded many historical data sets that can build the proper framework for understanding the unconventional petroleum system. All maturity data are not created equal. A comprehensive understanding of geochemical sampling and analytical methods combined with integration of multiple geological inputs allows for regional basin genetics to be considered. Source rock maturity can be derived from rock, oil, and gas data. These data can be derived from sampling programs administered before, during, and after the drilling of a well. Collapsing all maturity data to a common maturity scale can be a challenge but is often an informative and innovative approach to describing and predicting maturity. This talk will concentrate on regional maturity interpretations that have only incorporated public data sources. The maturity data evaluation steps that must be taken for the more common sources of maturity data include reconstructing data provenance, analytical methods and integrating with our overall geologic understanding. The not so common sources of maturity data like oils and gas maturity must be combined with a solid understanding of migration in the play evaluation. We will try to consider the success and the limitations of various maturity parameters toward a regional understanding of source rock maturity in many North American sedimentary basins.

Speaker Bio:

Mr. Michael Dolan is founder and president of Dolan Integration Group (DIG) based in Boulder. He is an AAPG Certified Petroleum Geologist specializing in organic geochemistry. He has 15 years of oil and gas industry experience as a successful oil and gas exploration geochemist at companies including Mobil, ExxonMobil and DIG. He holds a BSc in Geology from the University of Illinois at Chicago and an MSc in Geochemistry from the Colorado School of Mines. He is also a member of Society of Professional Engineers (SPE).

Mr. Dolan applies his expertise in geology, geochemistry and the source rock maturation process to evaluate unconventional, fractured shale oil and gas plays. Mr. Dolan primarily focuses on regional resource assessments with emphasis toward developing domestic sources of oil and gas.

DIG is currently expanding with the inclusion of a state of the art geochemical evaluation laboratory. It will further assist Mr. Dolan in applying innovative ideas for exploration and development. Special emphasis is given to the development of reliable technologies to support evaluation techniques in shale plays. Mr. Dolan has proven that established geochemical techniques can be improved and directly applied toward the evaluation of game-changing unconventional resources.

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