

What makes a shale system – gas producible? How/why may producibility vary?

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Gas producibility within a shale gas system is directly related to an inter-relationship of the developed petroleum system and its resulting influences upon the original rock: a) mineral suites, b) heterogeneity, c) organic matter, d) clay types, and e) texture. These petroleum systems induced external / internal diagenetic/metagenic fabrics correspond to: 1) insitu-stress, 2) gas source, 3) gas storage, 4) pore pressure, 5) induced seal types, 6) generated fluids, and 7) oil /water wettability.

Accurately characterizing and classifying shale gas systems suggests a need for better visualization technologies that integrate these multiple system components. One such technique being developed is termed “Tornado Charts and Sidebars”. This ongoing and developing characterization and classification system utilizes a visualization display that incorporates a tornado basis -16 layer/level method of shale gas characterization. Incorporating adjacent sidebar displays into each of these layers allows the inclusion of standardization of measurements through laboratory techniques that assess the effects of mineral suites, pore pressure, heterogeneity, organic matter, clay types, fluid and texture types, insitu-stress, gas source and storage mechanisms, wettability, fracture fabric and type, and dehydration effects as quantifiable parameters.

Characterizing each of these petroleum system induced components can lead to a better understanding of how these complex reservoirs may develop low water saturations and high gas saturations and increased gas producibility. These multiple layered and extensive characterization data sets are a foundation for the effective characterization of what makes a shale system gas producible and how and why producibility may vary.