

## **Petroleum System Charge Analysis for Liquid-Rich Unconventional Plays**

**Michael Abrams**

Apache Corporation

### **Abstract**

Liquid-rich unconventional (LRU) plays have become a significant worldwide exploration target. We have seen greater emphasizes on defining the key petroleum systems factors required for a viable LRU play given the current lower price environment. Unlike the conventional system which requires off structure generation and migration, the liquid-rich unconventional petroleum system requires little or no migration. The liquid-rich unconventional acts as both source and reservoir; or the source rock is juxtaposed against or inter-bedded within the reservoir requiring minimal migration. There are many similarities to the conventional petroleum system but key fundamental differences are critical in understanding liquid-rich unconventional play potential. One must keep in mind not all organic rich oil generating source rocks will provide an economic liquid-rich unconventional petroleum system. Key petroleum system factors must be in place for an economic liquid-rich unconventional petroleum play to work (amount and type of organic matter type; source rock organic maturity; expulsion efficiency and fractionation; etc.). Having all of these factors does not guarantee the liquid-rich unconventional system will have sufficient production rates and ultimate recovery for an economic play, but not having one or more guarantees the liquid-rich unconventional system will be marginal or non-economic.