

## **Culture of Greatness—The Hunt for Unusual Resources\***

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### **Abstract**

The culture of energy and related economics is constantly evolving. One thing we know for sure is culture always trumps strategy. Just about the time we become proficient at finding unconventional gas resources, the culture of supply and demand takes over and the strategy of exploring for gas is temporarily obsolete. Now “liquid-rich” is the strategy as it matches our economic models; however, with current oil prices have we been too successful or is it just another economic cycle?

However, the liquid-rich strategy is not easy. The two premier plays—the Bakken and Eagle Ford—are very successful, but what’s next? Proven to emerging plays like those in the Permian and Powder River basins look great and appear to be technically successful but will they grow to be significant? Other plays like the A-1 Carbonate, TMS, and Monterey are tough to produce with current technology; so the jury is still out on these opportunities.

To date the most successful plays have been “in-situ” or at least “hybrid” where the reservoir is encased in, or in very close proximity to, source rock. This is true of the Bakken, Eagle Ford, Wolfcamp, and similar plays. In these cases it is primarily a matter of understanding the maturity of the source, dynamics of the reservoir, and how to drill and frac for maximum performance.

Migrated resource plays like the Mississippi carbonates in Oklahoma and Kansas are more complicated. They are essentially leaky traps; so in addition to understanding maturity and the pore system, you must clearly understand migration, formation waters, and how much oil can penetrate the pore systems of tight rocks.

Of course, along with the unconventional rock is the culture of technology. We are all aware of how the marriage of horizontal drilling and staged frac’ing has changed our culture from conventional to unconventional. In geology the “niche” technologies often hold the keys for discovery—organic geochemistry, basin “thermal” history, petrophysics, and geomechanics. In geophysics we now have micro-seismic. In reservoir engineering, it is primarily a different twist on PVT—which in the end may be the most important key for production.

Finally, there is a new breed or culture of professionals as we explore especially for liquid-rich resource plays. For conventional plays, the mindset was to start with a broad view and focus down to a limited prospect. The mindset for unconventional plays is just the opposite—we start with the minutia and expand the boundaries to include parts and even all of whole basins. The key is the geologist must first start with understanding everything possible about the rock—literally becoming an expert on its origin, chemistry, physics, etc.

It's an exciting time to be in the oil (and gas) business. It is a great culture. As long as we match our strategies to the current culture of technology and economics we can be successful.