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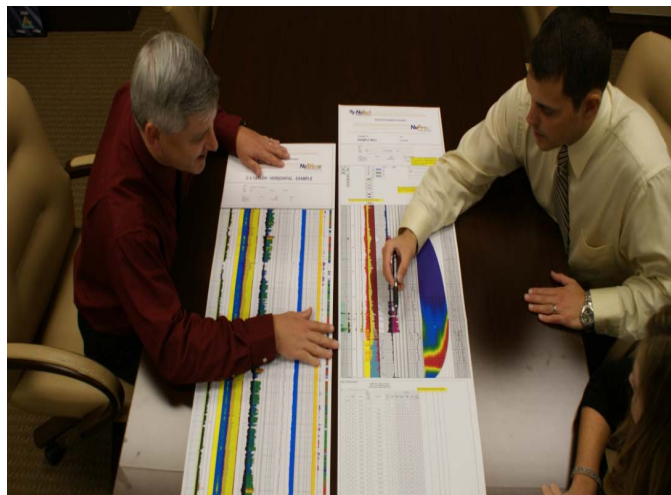
This model examines the pore space in terms of four different pore size components that help us to differentiate the different characteristics seen in silts versus clays, and enabled us to better identify favorable reservoir quality and producibility in the moveable pore space.

David Pescod: Obviously, the work you do gives people a head's up as to which shales are economic or which may be more economic than others...is that correct?

AH: That's right, Dave. We currently have about 500 clients, most of whom are independents, so they are within that industry niche where the bulk of real oil and gas exploration and exploitation is going on -- especially in the mature markets. We now help these clients identify and de-risk shales throughout all of the key basins, and across all the various shale plays -- both good and bad. My experience, given that we've now analyzed nearly 60,000 wells, is that there probably are more shales that are not economically producible than those that are. The North American/South American continents are our biggest markets to date, as these are the most mature (that is, with the most available well data) and thus permit us to refocus on shale plays as a new layer to existing productive fields. Our extensive database permits us to determine a shale's thermal maturity; that is, whether it is in a liquid or gaseous phase based on exposure to temperatures over time, and also to look at such things as rock competency. Rock competency is an especially value-added aspect of the analysis, more so than just evaluating reservoir stress and brittleness, as it helps us determine more predictably which particular completion technique or frac program might best stimulate the reservoir.

The second major aspect of NuTech's services lies in providing our clients engineering expertise that allows them to appreciate the influence of petrophysics in stimulation of reservoirs. The petrophysical input that we have developed here at NuTech (this stimulation design is called "NuStim") is geared to taking a best-practices approach to attacking stimulation of shale wells, whether the well is to be completed vertically or horizontally (most are now horizontal completions). Petrophysical analysis permits us to more predictably determine the best strategy for completing a well., The Green Point Shale up in Newfoundland, for example, happens to be more conducive to vertical completions, because even though it has some thick horizontal shale members, the pay is so stacked with different shale sequences that a vertical completion is the best choice for exploiting it.

Our petrophysical and stimulation services are all about showing how best to get at a shale to impact the maximum amount of reservoir in the wellbore.



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These methods have improved recovery percentages from around 5% in the early days of the technology up to a range of 25% to 35% today, as seen in the Barnett Shale. Being higher on the shale learning curve lets us now look at other gas reservoirs such as the Marcellus and Haynesville, or the gas window of the Duvernay in Canada. If you improve a reservoir's recovery percentages even slightly, you can have a tremendous impact on its economics, given that the volumes of hydrocarbons in place in these plays are so enormous.

Through another NuTech service known as "NuView," we analyze the data from a large volume of wells to model how an area's sediments were deposited over time, giving us a 3D picture of a reservoir's characteristics distributed statistically over the deposition system. This 3D approach is particularly helpful in refining where best to acquire the ideal land position for exploitation as well as quantifying hydrocarbons in place.

DP: With the work you've done, do you have different shale plays that are favorites or that look better than others?

AH: Absolutely. In the U.S., the best shale play - now in a proven category - is the Bakken shale in the Williston Basin. The Bakken exemplifies a successful oil liquids play because it has enormous storage capacity, thus its effective porosity is quite high. It also is deposited in a layer situated between less permeable carbonate members, so that it becomes a perfect natural conduit for productive completions. The Eagle Ford play in south Texas is probably a close second to the Bakken in terms of a successful shale play, in both the gas and oil legs of its large aerial extent. Like the Bakken, the Eagle Ford is sandwiched between a very hard, brittle substrate called the Austin Chalk and a lower, very fractured barrier formation known as the Buda. We also like the Utica shale currently being developed by Chesapeake and others, and are also evaluating some four different shales in the Permian Basin of West Texas, including the Bone Springs/Avalon shales.

DP: How does the play in Newfoundland compare to some of these?

AH: It's hard to compare the Newfoundland shale with the shales I just mentioned, largely because it is so new and there is comparatively little available data to analyze. It is more like some of the international shales, where you see such a thick package of potential pay. If these thick deposits turn out to be hydrocarbon-charged, then you are talking capacities of close to 400-900 million barrels of oil per section, so there is huge potential for economic development. But the term "potential" has to be stressed, because industry is low on this particular learning curve due to the absence of well data and being in the early "proof of concept" phase of activity.

DP: We hear some people floating around some enormous estimates of what the resource size could be on this play in Newfoundland. We are hearing billions of barrels. Is that possible?

AH: Of course it's possible, given the large amount of thickness involved. But as noted above, there's still a lot of work to be done to determine if all the elements needed to make a shale reservoir economically productive are in place in this particular play.

DP: The way you are talking here, it sounds as if there's enough shale or enough oil that the United States could become a big producer over the next while.

AH: This is already the case, Dave. U.S. oil production is growing at an amazing pace year over year already. Likewise, gas production is so plentiful that as we have seen, the oversupply is beginning to bring product prices down dramatically. The key to all shale plays is going to be making the hydrocarbons commercially viable, by using the best extraction technologies available. For example, in the heart of the Eagle Ford play, early recoveries per well were on the order of 250,000 barrels of oil. Now, many of the leading producers are upgrading their estimates to the 400,000 to 600,000 barrel per well range.

DP: Why don't we ask this question - if you had to turn on your crystal ball, and predict the price for oil a year from now, what number would you come up with?

AH: I think realistically over the next three years you will not see prices stabilizing to a predictable level. I think you are going to see variability between a lowside case of about \$90 per barrel and an upside case of \$120 to \$130 per barrel, depending largely on the supply concerns in the Middle East. Also, I don't expect increased production from our oil shales to impact the commodity price as quickly as it did with natural gas, as there's not as much infrastructure in place for oil as there is for gas. Operators are having to use railcars and trucking in most of the oil plays, as pipeline infrastructure is sparser for oil. Nevertheless, given the current prices and outlook, oil and gas liquids plays are currently making up about 90% of NuTech's business.

DEB'S DITTY:

How can I possibly be so thirsty this morning,
when I drank so much last night?