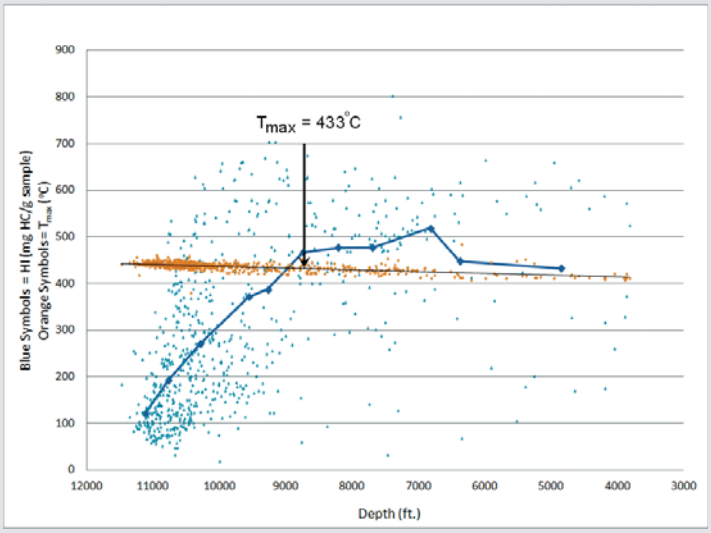

Figure 4. Plot of T_{max} (orange dots) and HI (blue dots) versus depth using data from the Bakken Formation in North Dakota. The depth averaged value of HI suggests that oil generation is occurring at a depth of at least 8,700 feet with a corresponding T_{max} of 433°C.

In a similar fashion, calibration of T_{max} to HI may be accomplished by overlaying maps of T_{max} with a map that illustrates the lateral change in HI (Nordeng et al., 2010). In both cases, the T_{max} that corresponds with rapid changes in HI provides the basis for developing a "custom" value of T_{max} that is consistent with the indication of intense oil generation provided by the HI. The advantage gained by using T_{max} rather than trends in HI is that a single calibrated T_{max} is capable of providing the same or a better measure of source rock maturity that would otherwise require several HIs. Where wells are few and far between, a single point maturation indicator may be the only way to establish the level of source rock maturity with any confidence.

Conclusion

The use of Rock Eval data in conjunction with LECO® TOC analyses is capable of providing essential information that may be used to evaluate the oil generation potential of source rocks. These data include the means to estimate the type and quantity of organic matter present in a source bed as well as data that bear on the degree of oil generation that has occurred. The inclusion of these data with other indicators of accumulated oil, such as high shale resistivities and overpressured formation pressures, are the building blocks needed to construct and calibrate a predictive three-dimensional model of oil and gas generation in North Dakota.

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Staff changes at the Dept of Mineral Resources

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Dan Wells – Production Technician – Williston District
Marc Binns – Field Inspector – Williston District
Ashleigh Day – Field Inspector – Dickinson District
Allen Christensen – Field Inspector – Williston District
Joyce Eversvik – Field Inspector – Dickinson District

Support Staff

Alison Ritter – Public Information Specialist – Bismarck Office
Linda Llewellyn – Office Assistant – Bismarck Office
Robyn Loumer – Accounting Budget Specialist – Bismarck Office

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