

Integration of Petrophysical, Geochemical and Sedimentological Data of the North Sea Hydrocarbon Reservoir, Lewis Formation, the Beryl Field

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Extending the use of geochemical analysis in petrophysical evaluation can provide not only the missing input parameters for the petrophysical evaluation, but also a new perspective in running and correlating that evaluation; plus, it can provide new evaluating and predicting methods. These techniques proved to be useful when tried for two wells in the Lewis Formation of the Beryl Field.

The geochemical data explained some of the wireline log responses to some sedimentary facies. The correlation between wireline, geochemical and sedimentological data can provide a better understanding of reservoir architecture and sandstone interconnectedness. The presence of clay minerals in a formation has a significant impact on the petrophysical properties of the formation, therefore, on the measurements of wireline logs. A small volume of clay minerals have a big influence on porosity. By using geochemical and petrophysical data clear cross-over picks and correlatable patterns can be identified throughout the Lewis formation cored interval in wells 9/13a-S36 and 9/13a-S48.

The integration of geochemical, petrophysical and sedimentological data are valuable tools to aid in correlation and evaluating the reservoir potential of complex heterogenous, such as fluvial- lacustrine Triassic Lewis formation.
