Geophysical Characterization of the Porosity Distribution within the Clinton Formation, Ashtabula County, Ohio

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A combination of cores and geophysical logs were used to correlate the Clinton Formation in Ashtabula County and to help with an environmental analysis and porosity distribution as a means of evaluating its suitability as a target for Ohio Division of Natural Resources (ODNR) and Department of Energy (DOE) for enhanced oil/gas recovery and/or carbon sequestration.

Reflectance data was measured on one set of cores corresponding to well 408, producing mineral composition and depositional patterns. Thirty nine geophysical well logs were correlated using Geographix, with help from SPSS 17.0 factor reduction analytical tool. Plugs were measured for porosity and permeability. Thin sections were created to further analyze porosity, permeability and composition.

The Clinton Formation in Ashtabula County, Ohio deepens towards the southeast (towards the Appalachian Basin), and also thickens towards the southeast. This is consistent with previous findings on the Clinton Formation in Ohio. The Clinton Formation in Ashtabula County is fine grained sandstone, consisting mainly of quartz grains. Shale is found in different locations throughout the formation, consisting of glauconite, with red staining present on different sections of the Clinton Formation. The red staining is goethite. Calcite grains are located sparingly throughout the sandstone, with some calcium carbonate cement, as noted in the thin sections.