

Log-Derived Lithostratigraphy and Digital Mapping of Ste. Genevieve Oolite Bodies at Owensville North Consolidated Field, Gibson County, Indiana, Katy J.G. Swan, Indiana University, Department of Geological Sciences, Bloomington, IN 47405, kjswan@indiana.edu; and Brian D. Keith, Indiana Geological Survey, Indiana University, Bloomington, IN 47405, keithb@indiana.edu

The Mississippian (Valmeyeran) Ste. Genevieve Limestone is the second most productive petroleum reservoir within the Illinois Basin. The highly complex internal stratigraphy of the Ste. Genevieve makes detailed lithologic correlation difficult both on a field and basinwide scale. The Ste. Genevieve consists largely of interbedded wackestone, skeletal grainstone, calcareous mudstone, packstone, dolostone, and shale, with laterally discontinuous zones of highly porous oolite grainstone bodies that form prolific petroleum reservoirs.

Dual induction, formation density, and gamma-ray log data were used to interpret the depositional setting of the Ste. Genevieve at Owensville North Consolidated Field (Gibson County, Indiana). Examination, analysis, and correlation of 250 well logs across the field were used to generate lithofacies logs. A series of depth slices, on 2-foot intervals, were created from the data to provide an insight into the spatial distribution of lithofacies within the field. Three-dimensional imaging was used to gain an understanding of the spatial extent and orientation of derived lithofacies along with specific lithologic features within the field, in particular, the distribution of high-porosity oolitic grainstone bodies. The application of this newly developed lithofacies interpretative technique promotes effective prediction of the presence of high quality reservoirs within a carbonate depositional system.