

## **Reassessment of Devonian Reservoirs in Green County, Indiana**

K. Chaudhary, B.D. Keith, Indiana Geological Survey at Indiana University

Devonian structures draped over Silurian reefs have long been targets for petroleum production and also for the underground storage of natural gas in the Illinois Basin. Incorrect usage of stratigraphic terminology as applied to these reservoirs within the Muscatatuck Group (Middle Devonian) has led to problems in the correlation of reservoir horizons between fields. The Muscatatuck is divided, in descending order, into the North Vernon and Jeffersonville Limestones. The Jeffersonville is locally divided into the Vernon Fork and Geneva Dolomite Members. As defined, the Geneva refers to the completely dolomitized portion of the lower Jeffersonville. Confusion arises because operators traditionally use the term "Geneva" for any part of the Jeffersonville that is dolomitized, not just the discrete dolomite in the lower part as originally defined. Detailed study of ten Devonian reservoir structures in Greene County, Indiana, which either produce hydrocarbons or are used for gas storage, shows that gas production comes mainly from the lower part of the North Vernon and the Vernon Fork Member above the Geneva. Oil production largely comes from the partly dolomitized zones in the upper middle part of the Jeffersonville with only a minor amount from the underlying Geneva. There are up to four porosity zones within the middle Jeffersonville ranging from 4 to 10 feet thick with porosity ranging from 10 to 15 percent. The Jeffersonville is light gray to buff colored. In contrast, the Geneva has 15 to 25 percent porosity that is often vuggy. Its color is a distinctive dark brown. These diagenetic zones can be correlated using porosity logs from field to field.