

**AAPG Annual Meeting  
March 10-13, 2002  
Houston, Texas**

Ernie Morrison<sup>1</sup>, Michael Maroney<sup>2</sup>, Kitt Noah<sup>2</sup>, Robert O'Dell<sup>3</sup> (1) Murfin Drilling Company, Inc, Wichita, KS (2) Kansas Geological Survey, Wichita, KS (3) Consultant, Wichita, KS

## **Depositional Model and Exploration Potential in the St. Louis Carbonates Beneath the Hugoton Field of Kansas**

The giant Hugoton Gas Field, discovered in 1922, has grown to encompass over 4,500 square miles in Southwest Kansas. Oil and gas production from deeper horizons beneath the Hugoton, primarily from stratigraphic traps in St. Louis carbonate shoals, Chester channels and Morrow incised valleys, has increased significantly and has continued to increase over the last decade. The shallow gas wells of the Hugoton provide an information base to project the attitude of the deeper horizons. The recent application of 3D has increased the success rate but stratigraphic complexities and relative thin reservoir intervals make locating exploration targets and planning development wells a challenge.

A depositional and reservoir models for distribution and geometry of the St. Louis Limestone shoal reservoirs is proposed. The model is based on both a broad regional context and detailed field studies. An understanding of external and internal architecture of such fields as Damme (1951 discovery with 19 million barrels), Pleasant Prairie (1954 discovery with 17 million barrels), Lakin (1957 discovery with 3 million barrels), and Big Bow (1989 discovery with 6 million barrels) can improve our understanding of the distribution of favorable areas for production on both a regional and local scale. After 50 years of exploration and production, the St. Louis remains an under-drilled target that has significant potential for increased production.