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by Douglas K Strickland (speaker),  
Keith Johnson and John Vrona  
Wolverine Gas and Oil  
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## Structural Architecture, Petroleum Systems and Geological Implications for the New Hydrocarbon Province of the Covenant Field Discovery, Sevier County, Utah

Structural analysis, seismic interpretation and organic geochemistry are all part of the petroleum systems synthesis that contributes to the Covenant Field discovery in Central Utah by Wolverine Gas and Oil Corporation. The Kings Meadow Ranch 17-1 penetrated a highly porous and permeable reservoir in the Jurassic Navajo Sandstone, which contains a 450-foot oil column. The Covenant Field is located along a frontal structural uplift of the Central Utah thrust belt, where Late Cretaceous-Early Tertiary compressional deformation resulted in the development of thrust faults and associated hanging wall anticlines buttressed against the ancestral Ephraim extensional fault. The traps are charged from Mississippian foreland basin sediments to the west of the discovery. Hydrocarbon generation was driven by initial sedimentary loading (oil generation) followed by tectonic loading (gas generation) associated with the evolving thrust belt. Evaporite deposition in the overlying Arapien formation provides a highly effective seal for the accumulations. Jurassic extensional faults may be critical in defining the location of thrust faults and antiformal stacks, which in turn define structural traps along this newly discovered onshore hydrocarbon province. ■

### Biographical Sketch

Douglas K. Strickland received his BS in geology from the University of Southern Colorado in 1973 and a masters degree from the University of Wisconsin-Milwaukee in 1975. He worked on a PhD at the University of Kansas before joining Chevron in 1978, working on the Utah-Montana overthrust belt. In 1980 he joined W.R. Grace, where he worked projects across the Rockies and held positions of increasing responsibility, becoming V.P. of Exploration in 1986. He is currently Exploration Manager for Wolverine Gas and Oil in Oklahoma City.

