Elliptical "Morphotectonic" Features on Landsat Imagery in southwestern Illinois are regionally extensive, transgressive, marine sandstone. The unit ranges in thickness from zero at its pinchout edges on the north, south, and west, to a maximum thickness of 250 ft (76 m) within the study area. Depths vary structurally from 7,000 to 10,000 ft (2,100 to 3,050 m).

Structurally, the area of interest falls between the intraplateau structural front and the Allegheny Front, where stratigraphic seismic targets are predominantly thrust core of concentric folds and imbricately thrust blocks. Listric faults originate from decollement zones below the Oriskany. Major shear zones are most effectively identified by satellite imagery.

Local recoverable gas reserves from the Oriskany range from 1.5 to 5 bcf per well, with an attained average of 2.25 bcf per well. Wells penetrating fracture-enhanced Oriskany exhibit high rates of natural flow. Reservoir engineering data are effective in defining the extent of fracture envelopes. Tighter sections require acidizing and hydraulic fracturing.

POCHEL, RANDY M., Buckhorn Oil Co., Mt. Sterling, IL

Trenton strata in the western Illinois basin are very good prospects for oil exploration. Much drilling has been done in the area but, as yet, no producing wells have been completed. Oil stains and some tars have been found in some samples from most wells.

The Trenton in the area of Brown and Schuyler Counties is a fine-grained limestone that underlies the Maquoketa Shale at an average depth of 800 ft (244 m). Because of its position near the edge of the Illinois basin, the stratigraphy varies considerably and inconsistencies are present in most samples viewed.

POHN, HOWARD A., U.S. Geol. Survey, Reston, VA

Lateral Ramps, Basement Block Faults, and Igneous Intrusions in Central Appalachian Valley and Ridge Province

Radial images from the central Appalachian Valley and Ridge province show abrupt changes in wavelengths of folds along strike. These abrupt cross-structure terminations probably reflect lateral ramps that connect decollements at different depths. Field studies and seismic reflection surveys appear to support the radar observations. The locations of large lateral ramps may be controlled by cross-strike basement block faulting. Four large lateral ramps were identified; these of them show the shallower block to be to the southwest, bringing the master decollements closer to the present ground surface in that direction. The southernmost of the lateral ramps in the central Appalachians occurs at the Roanoake reentrant where several major decollements intersect the surface.

Several smaller lateral ramps complicate the larger picture because not all of them climb section to the southwest. For example, a smaller lateral ramp just north of Mathias, West Virginia, whose westward extension may truncate the Petersburg lineament, climbs section to the northeast. Extensions of this ramp both eastward and westward from Mathias appear on the radar data as lineaments and fold discontinuities.

A large lateral ramp that climbs section toward the north is present in Highland County, Virginia. This ramp and large ramps along the Susquehanna River in Pennsylvania and at the Pennsylvania–Maryland–West Virginia border coincide with belts of igneous intrusions. Cross-strike basement block faults and lateral ramps may have represented conduits for magmas to reach the surface.