

D. A. Billman, Billman Geologic Consultants, Inc. and M. Comini, Superior Well Services, Inc.

Geologic Re-Interpretation and Production Prediction of an Upper Devonian (Lower Bradford Group) Field in Central Pennsylvania

In the course of exploiting the 5th Elk in Council Run Field area, Centre and Clinton Counties, Pennsylvania, Eastern States Exploration Company and others often encountered shallower Elk and Bradford Group Sandstones. One such area is on the Texas Gulf "A" and "B" tracts, where a Basal Bradford (driller's term) was encountered. The productive portion of the Basal Bradford is interpreted as a flood tidal delta, associated with a largely non-productive shoreface bar. This portion of Council Run Field is within the Snow Shoe Syncline, approximately 8 to 10 miles from the Allegheny Structural Front. Log derived porosities tend to be apparently low, ranging from 6% - 8%, with high resistivities (150 ohms or greater) through the interval. Water saturations calculate below 20% wet, which the wells have no signs of water production. Reserve calculations, using 20 acre spacing, from the logs indicate gas in place range from 60 to 120 MCFG. The core data that was available help to support the log-derived values. Although the typical log-derived calculations tended to be low (due to low log calculated porosities), natural open flows were common, often in the 100 MCF/D to 1+ MMCF/D range. Therefore, despite poor log calculated reserves, the reservoir was often completed and produced. Known Estimated Ultimate Recoverable reserves from the Basal Bradford range from 250 to 500 MMCF. The authors will review the actual production from numerous wells in the field and attempt to model the log-derived data to more approximate the actual production. These models will include input from the available geologic and core data.