

## Blind-Thrust Spiro Play— a Case History, Western Arkoma Basin, Oklahoma

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This paper presents a case history of the in-fill development of a portion of the Hartshorne South gas field (100+ BCF), located in the western Arkoma Basin of southeastern Oklahoma, USA. Development primarily targets the basal Atoka “Spiro” sandstone where thrust faulting compartmentalized the Spiro into separate, gas-charged reservoirs at 12,000 feet to 15,000 feet. Having no surface expression, the “blind thrust” Spiro fault blocks require detailed, subsurface imaging to identify and define drilling targets. Although the Hartshorne South gas field was developed successfully during the mid 1980’s to early 1990’s using 2D seismic for structural imaging, the increased subsurface illumination of a 50-sq-mi 3D seismic survey was required to locate the undrilled and potentially undrained structures targeted by our in-fill development program.

Interpretation of the 3D volume, integrated with well control and production performance data, identified a previously untested structure that, because of its structural orientation, was mostly invisible to the existing, predominately north-south-oriented, 2D seismic data. Amplitude analysis of reservoir continuity aided in the selection of a drill site at the optimum structural location. The Barrett Resources Watts Ranch No. 1–25 wellbore successfully encountered a productive and originally pressured “blind-thrust” Spiro reservoir.