

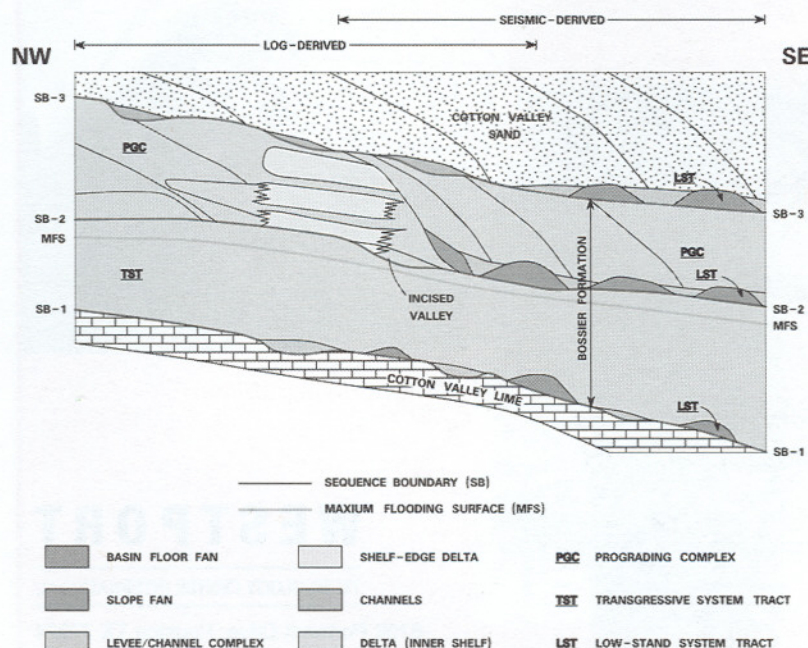
North American Explorationists Dinner Meeting

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Sequence and Seismic Stratigraphy of the Bossier Formation (Tithonian), Western East Texas Basin

Sequence and seismic stratigraphic analysis of well logs and 2-D seismic lines from Freestone, Leon, Houston, Madison, Robertson, and Limestone Counties, Texas, demonstrates that the Bossier Formation of the western East Texas Basin can be subdivided into two recognizable sequences separated by a major sequence boundary (SB-2). Similarly, the Bossier Formation is also bracketed by a basal (SB-1) and upper (SB-3) sequence boundary separating it from the Cotton Valley Lime below, and the Cotton Valley Sand above, respectively.

In seismic sections, the SB-2 boundary in the middle of the Bossier Formation was identified by tracing mounded basal reflectors and sigmoid signatures representing basin floor and slope fans. This boundary was correlated onto the shelf below stacked deltas. In well log sections, basin floor fan log signatures can be traced laterally into slope fan and stacked delta log facies. These basin floor and slope fans represent a lowstand systems tract, whereas the lower Bossier is a transgressive systems tract and the upper Bossier is a prograding complex.

Burial history analysis suggests that the lower Bossier Formation accumulated during a time of rapid mechanical subsidence when the East Texas Basin was underfilled. A drop in sea level associated with the SB-2 boundary represents a major climate shift from tropical to cooler conditions favoring rapid influx of sands from the ancestral Mississippi, Ouachita, and Red River systems. These sands developed inner shelf prograding deltaic packages, outer

shelf and incised valley fill stacked deltas, and basin submarine fan systems. The stacked deltas and basin fan sand systems all represent prospective gas plays.

Biographical Sketch

GEORGE D. KLEIN earned degrees in geology from Wesleyan University (BA), Kansas (MS) and Yale (PhD). He worked as a Research Geologist for Sinclair Research and then taught at the University of Pittsburgh and University of Pennsylvania. He joined the University of Illinois in Urbana-Champaign in 1970 where he was a Full Professor from 1972 until 1993. After serving as Executive Director of the New Jersey Marine Sciences Consortium, and Director, New Jersey Sea Grant College Program, he opened a full time geological consulting practice (SED-STRAT Geoscience Consultants, Inc.) in the petroleum field in May 1996. He is a member of AAPG, SEG, SIPES, AIPG, HGS, SEPM, and GSA.



George D Klein's expertise is in clastic facies and reservoirs (deep-water, deltas, fluvial), clastic reservoir characterization, sequence stratigraphy, seismic sedimentology, basin analysis and framework geology. He has published 287 referenced articles, books and abstracts, including the book "Sandstone Depositional Models for Exploration for Fossil Fuels" (1985) and a widely used wall chart on "Vertical Sequences and Log Shapes of Major Sandstone Reservoir Systems" (1984). ■