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Styles, Mechanisms and Hydrocarbon Implications of Syndepositional Folds in Deepwater Fold Belts: Examples from Angola and the Gulf of Mexico

This presentation will focus on a few key aspects of deepwater salt-cored fold belts, using examples from the outer Kwanza Basin of Angola and several different fold belts of the central US Gulf of Mexico margin, including the Cretaceous-Paleogene age Walker Ridge Foldbelt, the Western Atwater Foldbelt, and a late Mesozoic age fold belt.

Compressional fold belts in deepwater settings have been a major focus of recent exploration and appraisal activity. However, there is relatively little published literature describing the characteristics of deepwater fold belts in passive margins experiencing large-scale gravity spreading or sliding. These fold belts tend to be different from those formed in orogenic fold belts in several respects, and these differences influence the structural style, growth and ultimately the hydrocarbon systems of the fold belts.

Shortening of the sediment cover sequence in passive margin fold belts commonly occurs very slowly and continuously compared to the shortening in orogenic fold belts. Cover shortening is usually accompanied by continuing deposition on top of the growing fold. As a result, the sediment sequence is much thinner at the onset of folding than it is at a late stage in fold development. Where there is a long history of fold development, early-formed, short-wavelength folds are deactivated and overprinted by later, longer-wavelength folds, commonly tripling in wavelength.

Recognition of the precursory structures is important because these control the structural style of the later folds. Reservoir distribution in the lower part of the structure may be controlled by the distribution of the early folds and not by the later, more obvious, structures. The early folds may also have a critical influence on hydrocarbon migration paths.