

Exploration and Higher Risk Development of Thrusted Foreland Reservoirs, Val Verde Basin, Texas

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The Val Verde Basin is a southern extension of the Delaware Basin of West Texas that was converted to a foreland trough during the Late Paleozoic Ouachita collision. This gas-rich basin has historically been known for several multiple-TCF Ellenburger fields trapped in large anticlinal structures. Despite such large reserves, the Val Verde Basin remained underexplored and poorly understood through the 1980s, owing to geologic complexity and seismic imaging problems.

In 1989, successful application of 2-D swath seismic techniques resulted in dramatic improvements in seismic data quality and opened a new phase of exploration in the basin. In 1993, a commercial new field discovery was made in a Pennsylvanian Strawn carbonate reservoir within the thrusted foreland section. Continued exploration and development of the thrusted foreland trend, using 2-D swath and 3-D seismic, led to significant discoveries in a new play: the Thrusted "Penn" Sands.

Conoco and its partners have drilled a total of 45 exploration and development

wells in the thrusted foreland trend, and made eight new field discoveries. Gross daily production from these fields averages 65 MMCFD and 2100 BOPD. Structural compartmentalization, stratigraphic variability, diagenesis, and fracturing have created a complex reservoir system. Reservoir quality and quantity are the critical uncertainties. Early in the play, the per well commercial success rate was only about 40%. Successful field development has required the collection and integration of significant amounts of geologic, geophysical, and engineering data. Interpretation of 3-D seismic data, conventional log and image data, core data, and pressure data by a multidiscipline asset team has provided the framework for understanding the depositional and structural complexities of the thrusted foreland reservoirs. As a result, our full-cycle commercial success rate has improved to greater than 70%.

BIOGRAPHICAL SKETCH

Barbara Sheedlo is an operating unit supervisor for Conoco, Inc., in Midland, TX. Barbara received her B.A. and M.A. in geology from Rice University. Upon graduation in 1984, Sheedlo started with Conoco in Lafayette, Louisiana, where she worked the Smackover trend. She subsequently moved to Houston and then to New Orleans, where she

worked shallow and deepwater plays in the Gulf of Mexico. Sheedlo joined the Midland Division in 1993 as a chief geologist, and for the last two years has led a multidisciplinary team charged with exploration and development of the Val Verde Basin.



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