2-D SEISMIC REVOLUTIONIZES STRUCTURAL MODEL OF CORDONA LAKE (DEVONIAN) UNIT, CRANE COUNTY, TEXAS

T.W. Brannon, D.J. Christiansen, and F.R. Scheubel
Exxon Company, USA, Midland, Texas

ABSTRACT

Cordona Lake (Devonian) Unit, located in Crane County, Texas has produced 18 million barrels of oil since its discovery in 1949 under primary, secondary, and tertiary recovery programs. The field produces from a complexly faulted sub-unconformity truncation trap where Devonian tripolitic chert subcrops basal Permian shales and tight carbonates. A field-wide CO_2 project, implemented in 1985, provided new well control which enabled modest refinements in the geologic reservoir model. Recent acquisition of a 2-D seismic survey has significantly improved the structural interpretation of the field and has altered the model from a fairly simple horst-graben feature with 3 major faults to a fault complex possessing over 31 isolated fault segments. Since many of the faults possess relatively small displacements (±50 ft.) and the subsurface mapping was hindered by problematic correlations using mostly partial penetrations, the new interpretation would have been impossible without the seismic data. The improved structural reservoir model resulting from the integration of seismic and well log control has yielded new development drilling opportunities. Programs are underway to capture oil previously by-passed due to flooding along restricted or no-flow boundaries or trapped in isolated fault segments.