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Using Seismic Attributes in the Wamsutter Development Area of the Washakie Basin in Wyoming to Identify Stratigraphic Facies

Recent processing improvements in existing seismic surveys and new seismic acquisition in the Wamsutter Development Area in Sweetwater County, Wyoming have made seismic stratigraphic facies interpretation in the area more achievable, especially through the use of seismic attribute analysis. The area described in this paper extends from Tierney Field to Bitter Creek Field. Production in the area comes from several depositional environments including Upper Almond shoreface and marine sands, Middle Almond fluvial, coastal plain, and lagoonal deposits, and Lower Almond stacked fluvial channel sands. Individual sand bodies are generally too thin to resolve, but fluvial, coastal plain, lagoonal, shoreface and marine facies along with relative sea level changes can be identified from seismic and used to predict sand fairways.

Approximately 600 square miles of 3-D seismic data was acquired in this area between 1995 and 2000. Reprocessing has increased the resolution of the earlier data through improved refraction statics corrections, velocity analysis, and migration. The newest data has twice the fold of the original survey and full azimuth offsets. Well data throughout the area was integrated with this seismic data to generate chronostratigraphic horizon interpretations and attribute analyses including amplitude, coherency, and spectral decomposition. Upper Almond transgressive bars and associated tidal channels between Tierney and Bitter Creek have been mapped, along with Middle and Lower Almond fluvial and lagoonal systems. The resulting interpretations are being used as analogs to locate similar stratigraphic units and predict higher potential sand fairways beyond well control as development in the Wamsutter area moves westward.