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**Karachaganak Field, Kazakhstan**

Karachaganak field (16 billion BOE) located in northwestern Kazakhstan was discovered in 1979. Agip, BG, Texaco and Lukoil operate the field under a 40-year PSA that was signed in November 1997. The Karachaganak massif (15 km x 30 km) is a complex retrograde gas-condensate reservoir with a 1450-meter gas-condensate column overlying a 200-meter oil column.

Heterogeneous reef and platform carbonate reservoirs range in age from Late Devonian (Famennian) to Early Permian (Artinskian). From Late Devonian to Early Carboniferous, a peritidal ramp evolved into an isolated platform along the northern margin of the Precaspian basin. The Early Carboniferous platform features marginal bioherms with an internal lagoon. Early Permian pinnacle-like bioherms and bioherm slope facies overlie the erosional unconformity at the top of the Carboniferous. The reservoir seal is formed by Early Permian (Kungurian) evaporites which immediately overlie the Artinskian carbonates.

Limestone and dolomite reservoirs are generally low porosity and low permeability. While dolomitisation locally enhances reservoir quality, there is no obvious correlation of dolomite content with reservoir quality. Initial reservoir quality is impacted adversely by early diagenetic, marine calcite cementation and late diagenetic, anhydrite precipitation. By well, average porosities and permeabilities vary from 7.3 to 15.4% and 1.3 to 81.1 mD, respectively.

Current reservoir characterisation involving interpretation of lithofacies, diagenesis and porosity types and distribution from available core and well data has resulted in an interim 3D stochastic model. A 3D seismic program (840 sq. km) was acquired in 1999 and is currently being processed.