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Lessons from 20 Years of Turbidite Production

Industry has over 20 years of experience exploring and producing turbidite reservoirs in the Gulf of Mexico. In the early years, the potential of deep-water reservoirs was very uncertain. Since then, production experience reveals that record setting well flow rates and high well ultimate recoveries are achievable from diverse reservoir architectures and depositional settings.

Entering the 21st century, production from Gulf of Mexico, turbidite reservoirs exceeds 1 billion barrels equivalent from these prolific reservoirs. Production data is available from thin-bedded reservoirs in a channel/levee complexes deposited within unconfined slope settings and thick bedded, ponded sheet-like deposits found in confined, salt bound mini-basins.

These deepwater reservoirs are typically geo-pressured, ranging in depth from 5,000 to 20,000 feet subsea. Reservoir energy varies with pressures, aquifer influx, compaction and gas content. For discussion purposes, high oil rates and ultimates are defined as > 10 Mbpd and > 20 MMBE. The gas threshold is > 60 MMcf/day and > 115 BCF, respectively. The Gulf of Mexico data bias is gas filled channel/levee or channel sands and oil filled, ponded sheet-like sands.

Gas filled, levee reservoirs tend to be strong performers with excellent recovery over large areas within thin beds. High performing oil reservoirs are most common with sheet-like architectures. High performing channel reservoirs are fewer, albeit a small sampling in this Gulf dataset. Oil recoveries are variable while gas recoveries are higher and more forgiving in all reservoir architectures.