

Pliocene Trend in the Deep-Water, Garden Banks Area of the Gulf of Mexico

by

Barbara J. Bascle, Nancy K. Shepard, and Philip C. Smith

Garden Banks Block 568, OCS G-12662, Well Number 1, is the southernmost well in the eastern Garden Banks area to penetrate Pliocene sediments. The well encountered 3,730 feet of Pliocene sediments before reaching salt at 15,090 feet. The Pliocene section has water-wet, fair-to-good reservoir-quality sands. Individual sand thickness range from a few feet to two hundred feet.

Log characteristics indicate sand deposition occurred in slope/basin-floor fan complexes during the Pliocene. Channel-levee complexes, amalgamated channel sands, fan-lobe deposits, and turbidite sheet sands can be identified on well logs. Channels evidence the existence of a system for transporting sand southward into the undrilled portion of the study area.

The study area is in the deep-water Flexure Production trend that includes the Auger Field. Intense salt diapirism during the Pleistocene characterized the trend. Salt structures include shallow, geographically extensive ridges and shallow, isolated piercement diapirs. Interdomal basins contain thick accumulations of Pliocene and Pleistocene sediments.

Analyses of well and seismic data yield a map that ranks, from low to high, the hydrocarbon potential of the subbasins containing Pliocene sediments. Low potential areas have seismic correlations tied to well data that indicate Pliocene sediment are not present. Medium potential areas meet two or more of the following criteria: well data showing the presence of Pliocene sediments; seismic correlations indicating Pliocene sediments at drilling depths greater than 22,000 feet; and a lowered confidence level of the seismic correlations in areas of structural complexity. High potential areas meet two or more of the following criteria: wells with reservoir-quality Pliocene sands; wells with hydrocarbons in Pliocene sediments; seismic correlations showing Pliocene sediments at drilling depths of 22,000 feet or less; and seismic-data character indicative of sand-rich facies. These rankings indicate that the eastern Garden Banks area has significant acreage with high potential for future hydrocarbon discoveries in Pliocene sediments (see map on back).

References

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