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Garden Banks 625 - A Deepwater Gulf of Mexico Post-Drill Review

Abstract

The Garden Banks 625 prospect was drilled in September 1998 to test several bright spots associated Pleistocene objectives in a salt-withdrawal mini-basin. This post-drill review briefly compares and contrasts the results of this dry hole to a recently drilled 100+ MMBOE discovery nearby. This presentation was originally part of the HGS "Gulf of Mexico Dry Hole Seminar" held November 8, 2000.

Pre-drill technical analyses for this well included 3D seismic interpretation, AVO, instantaneous frequency, seafloor piston core geochemistry, and 3D acoustic impedance inversion calibrated to several wells within the basin. The integrated data suggested a strong likelihood of reservoir-quality sands with a good chance for hydrocarbon saturation. AVO analysis indicated a strong class III response at both objective levels within the trap. A high GOR oil was predicted as the most likely hydrocarbon phase based on data collected from oil-saturated seafloor piston cores. Top seal capacity and lateral stratigraphic pinch-out integrity were assessed to be the highest geologic risk attributes owing to the shallow depth of burial below mud-line (5000-8000'), the apparent lack of reflector terminations and interval thinning at the limit of amplitude anomaly in the deepest objective level.

The well results confirmed the presence of high-quality Pleistocene sand reservoirs as predicted. Post-drill log analysis, well-tie synthetic seismogram and mud log data showed that the sands had low gas saturations of 10-20%. Wellcuttings and wireline sonic confirmed the lack of adequate compaction to generate a top seal capable of trapping a commercial column of hydrocarbons. Seals that did form were subject to rupture due to frequent movement of allochthonous salt within the mini-basin. Several named tropical storms and hurricanes complicated drilling and logging operations and resulted in an incomplete wireline log suite to evaluate the deepest objective. The well was plugged and abandoned on November 4, 1998.

Biographical Sketches

MARK SUNWALL is currently exploration manager for Texaco's Deepwater Gulf of Mexico Business Unit in Bellaire, Texas. He is responsible for prospect acquisition, maturation and rank wildcat drilling. Mark began his career as a geoscientist with Texaco in 1976, after receiving a MS degree in geology from Miami University (Ohio). In the past ten years his work experience has included a broad range of technical and leadership positions in rank exploration, producing asset management, and business development, both onshore and offshore Gulf Coast. He is a member of the New Orleans and Houston Geological Societies, AAPG, SEG and the Southeastern Geophysical Society.

ROB ALEXANDER is currently a team leader for Texaco's Deepwater Gulf of Mexico Exploration Business Unit. He is responsible for lease sale and farm-in evaluations, prospect maturation, coordinating geophysical efforts, rank wildcat drilling, and compilation of regional framework data. Rob began his career as a geoscientist with Texaco in 1992 after completing a PhD in structural geology at the State University of New York at Albany and a MS at the University of Alaska – Fairbanks. His experience includes research and exploration in the shelf and deepwater areas of the Gulf of Mexico, the coastal ranges and offshore basins of California, and the Brooks Range and North Slope of Alaska. Rob is a member of the American Association of Petroleum Geologists, the Geological Society of America, the American Geophysical Union, and the Houston Geological Society. □

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Social 11:15 a.m., Lunch 11:45 a.m.