GEOLOGIC MODELS AND RESERVOIR GEOMETRIES OF AUGER FIELD, DEEPWATER GULF OF MEXICO

Located 214 miles southwest of New Orleans in 2862 ft. of water, Auger Field will have a world-record water depth Tension Leg Platform (TLP). Probable reserves of 220 MMBE exist in four main Plio-Pleistocene turbidite pay horizons. The field contains volatile oil and condensate rich gas trapped along a deep paleoridge related to a shallow piercement salt dome and large down-to-the north and down-to-the east fault systems. Ten development wells have been predrilled following the initial discovery in 1987 and appraisal in 1988. Profitable development of this turbidite field depends on predictive geologic models constructed from well log, core and 3-D seismic data.

The reservoirs range from laterally continuous sheet sands ("S" and lower "Q") to amalgamated channel sands with overlying levee and overbank deposits ("N" and "O"). Over half of the reserves (120 MMBE) exist in the lower Pliocene "S" sand which has an average porosity of 24% and permeability of 150 md. The reservoir geometry of the lower portion of the "S" sand consists of layered sheet sands laterally correlatable over thousands of feet. Core shows a dominance of 1-2 ft. partial Bouma sequences. The upper portion of the "S" sand is also correlatable, but core shows mostly massive sand with amalgamation surfaces that are very difficult to identify. The upper surface of the reservoir is channelized with local removal of 20-40 ft. of sand. The geologic model developed for the "S" sand has allowed a planned wide spacing development program.

The "Q" sand is composed of two sand packages interpreted as sheet sands and an overlying third sand interpreted as a non-leveed channel deposit. Reservoir continuity is not expected to be as good as the "S" due to poorer correlatability and varying rock quality.

The shallower lower Pleistocene "N" and "O" amalgamated channel sands have average porosities of 29% with permeabilities of 800-900 md. These reservoirs consist of massive sands deposited by amalgamating channels topped by thinning upward laminated sands and silts of levee and overbank deposits. Apparent shingling in the "O" sand necessitates an accurate geologic model to maximize drainage with the minimum number of wells.

HGS LUNCHEON MEETING— MAY 26, 1993

Social Period, 11:30 a.m.
Luncheon and Meeting, 12:00 p.m.
The Houston Club

DAVID T. McGEE—Biographical Sketch

David T. McGee is currently a Senior Geologist for Shell Offshore Inc. working on the Auger Field development. He has been working on Auger since 1990 during the predrilling phase of the field development. His responsibilities have included development and refining of reservoir geologic models, well site selection, reserve estimation, and assisting in formation of the plan of development.

He received a B.A. in geology from the University of Montana in 1983 and an M.S. degree in geology from the University of Oklahoma in 1985. Mr. McGee joined Shell in 1985 and spent five years working on regional geology and prospect generation and evaluation in the Gulf of Mexico shelf and deep water.

He is a member of American Association of Petroleum Geologists and the New Orleans Geological Society.