

HGS Luncheon Meeting
Thursday, September 29, 1994
11:30 - Social; 12:00 - Lunch
The Houston Club Downtown

Gulf of Mexico Turbidite Prospects: Outcrop and Modern Analogs for Tahoe and Ram Powell Fields

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Abstract

Reservoir characterization and delineation are critical in early prospect evaluation and field development. Reservoirs dominated by thin-bedded deposits with subordinate channels are particularly problematic because logs and conventional 3-D seismic cannot resolve the detailed reservoir architectures and rock properties that are necessary for accurate reservoir evaluation and simulation. Reservoirs of this type have been penetrated as both primary and secondary objectives throughout the Gulf of Mexico. In particular, the Viosca Knoll Area in the eastern Gulf of Mexico contains multiple Miocene and Pliocene thin-bedded reservoirs.

The approach used to model these reservoirs, where there is limited "hard" data to help resolve reservoir internal features and continuity, involves: 1) detailed core and high-resolution log evaluations to establish stacking patterns, permeability and porosity distributions, and net/gross; 2) analog outcrop studies and high-resolution seismic

data over a shallowly buried channel-levee system to establish conceptual models of deposition, specific information on vertical and lateral facies relationships, and bed length distributions; 3) use of deterministic and probabilistic techniques to construct the reservoir architecture and then to assign detailed rock properties from core to individual layers and; 4) detailed simulations for well test design and production performance predictions that preserve the geologic and petrophysical detail. Analog studies, depositional models, core data, architectural models, and comparison of predicted and actual field results are presented. Tahoe Field and the Ram/Powell prospect in Viosca Knoll will be briefly described to illustrate the method, predictions, and reservoir potential.

Biography

Roger D. Shew joined Shell in 1979 after receiving B.A. degrees in Earth Science and Biology from UNC-

Wilmington and a M.S. in Geology from the University of North Carolina. He began work with Shell in the Onshore Production Division and spent the first five years in Development Geology, with assignments in Petrophysics and Geophysics. Areas studied include the South Texas Wilcox and Vicksburg, mid-dip and downdip Tuscaloosa, and the Jurassic trends of East Texas, Mississippi, and Alabama.

In 1984 Roger was transferred to Shell's Bellaire Research Center in Houston. Research studies have concentrated on sedimentary and rock properties with input to petrophysical, geophysical, and reservoir characterization studies in the offshore (primarily turbidite reservoirs) and onshore fields and prospects. In 1993 Roger assumed the duties of Geological Engineering Instructor at Shell's training facility. He still maintains part time duties at the Research Center concentrating on reservoir characterization and special studies. Roger is a member of AAPG, HGS, and NOGS.