

## **GEOLOGIC AND ENGINEERING FIELD STUDY OF THE NORTHEAST HITCHCOCK FIELD, GALVESTON COUNTY, TEXAS**

David L. Egleston Jr.,<sup>1</sup> Anne Verzeletti<sup>1</sup> and Saad Al-Haddad<sup>1</sup>

### **ABSTRACT**

The NE Hitchcock Field is a water-drive gas reservoir producing from the Oligocene Frio Formation. The structure in the field is a series of growth-fault bounded rollover-anticlines. In the field, the Frio consists of three units. The lowest is a wave-dominated prograding delta of widespread extent. The upper unit is a wave-dominated transgressive beach/barrier bar. The middle unit is an erosively based channel deposit, which has cut into the prograding delta. Recurrent movement on faults which existed at the time of Frio deposition localized channel erosion. The valleys created by the erosion were filled with very clean and permeable sands deposited by fluvial or estuarine processes.

The aquifer which supports the NE Hitchcock water-drive is separated into many fault-bounded blocks. Movement on the blocks may range from zero to 60 feet. The pressure histories of the field indicate that the wells are in pressure communication, thereby identifying the fault system as non-sealing. Combining the production histories with the pressures, gas/water contacts were mapped for several time intervals. Tracking the movement of the contacts indicates that preferential fluid flow paths exist. The fault system may be a conduit for water encroachment to the producing wells. The highly permeable channel sands may also be preferential fluid pathways.

Integrating the geological and engineering disciplines resulted in a reservoir simulation of the field which emphasized the heterogeneities, and modelled the fluid movement through the aquifer.

---

<sup>1</sup> Colorado School of Mines, Golden, Colorado 80401