

# MEETINGS

## HGS DINNER MEETING— FEBRUARY 11, 1991

### GARY J. MITCH—Biographical Sketch



Gary J. Mitch is an Area Geologist in the Southern District of ARCO Oil and Gas Company. He joined ARCO in 1980 after receiving an M.S. Degree in Geology from the University of Colorado. Gary supervises development and extension drilling for ARCO in the Western Province and portions of the Central Province in the Offshore Gulf of Mexico. His work in the past several

years has been concentrated in exploitation of deepwater sandstone reservoirs, using 3-D seismic data along with reservoir performance and facies interpretation to help delineate what are invariably complex depositional systems.

abundant, and closely integrated. Field studies like this contribute to improved resource assessment and management, and provide practical examples of reservoir configurations for use in exploration prospect analysis.

### COMPLEX RESERVOIR GEOMETRIES IN THE HIGH ISLAND A-467 FIELD, OFFSHORE TEXAS

The High Island A-467 field, located 90 miles southeast of Galveston, Texas, has produced 160 BCFG from ten reservoir levels with remaining reserves estimated at 40 BCFG. The field formed upthrown to a major expansion fault which marks the southern boundary of a basin which was active in Late Pliocene through (?) Pleistocene time. During this interval, approximately 4000' of slope sediments were deposited downdip from a shelf margin located 20 miles north. Gas reservoirs formed in submarine fans deposited during lowstand sedimentation.

Production has exceeded annual EUR estimates based on original reservoir configurations mapped with well data and a "2D" seismic grid. Reinterpretation using a 3D volume was undertaken to define accurately the productive limits and to assess remaining reserves. This was done by integration of stratigraphic cross-sections, companion 3D seismic traverses, and horizon amplitude ("bright spot") maps. Reservoir limits were delineated using areal variation in bright spot maps, combined with geologic models for submarine fan deposition and data from five years of production. Previous "single reservoir" horizon maps now contain complexities such as multiple reservoir levels, isolated channels, abrupt facies changes, and submarine erosion surfaces which may seal or leak. Following reinterpretation, several development and extension drilling opportunities were identified and drilled successfully.

Complex deepwater reservoir geometries can be interpreted with accuracy only where well and seismic data are