PERMIAN BASIN/MID-CONTINENT EXPLORATIONISTS

PERMIAN BASIN AND MID-CONTINENT EXPLORATION MEETING— TUESDAY, JANUARY 21, 1992
Post Oak Doubletree Inn, 6:00 p.m.

The January dinner meeting of the Houston Geological Society, Permian Basin/Mid-Continent group, will feature Mr. Michael T. Reblin who will present his jointly authored paper on "A 3-Dimensional Reflection Seismic survey over the Dollarhide Field, Andrews County, Texas." This work was jointly authored by Mr. Michael T. Reblin, Unocal, Gregory G. Chapel, Unocal, Chuck Keller, HGS and Steven L. Roche, HGS.

Reservations must be made by Friday, January 17, 1992, by calling Margaret at Houston Geological Society (785-6402) before 4:00 p.m. Dinner is $20 for HGS members and $22 for non-members; no-shows will be billed.

MICHAEL T. REBLIN—Biographical Sketch

Michael T. Reblin is a consulting geophysicist for Unocal North American Oil and Gas Division, Houston. He obtained a B.S. in Applied Geophysics from Michigan technological University and an M.S. in Geophysics from the University of Utah. After a year with Gulf Oil, he joined Unocal International Division in 1974. After three years in Balikpapan, Indonesia, he worked for the Oil and Gas Division in Ventura, Anchorage and Midland.

A 3-DIMENSIONAL REFLECTION SEISMIC SURVEY OVER THE DOLLARHIDE FIELD, ANDREWS COUNTY, TEXAS

A three-dimensional seismic survey over the Dollarhide Field, Andrews County, Texas, was collected and analyzed during August 1988 through December 1989. Discovered in 1945, the field is described as a large faulted anticline. This presentation describes the design, pre-planning, acquisition and processing of this survey and the preliminary results of the interpretation.

The primary geophysical purpose of the survey is to accurately image the location of the faulting within the Dollarhide Field to aid in the future planning of enhanced recovery operations.

To design the 3-D survey, information including depth, velocity, maximum dip and reflection data quality are compiled. A subsurface bin size of 110′ inline by 110′ crossline is determined to sample adequately the subsurface of processing through 3-D migration.

Two innovations are employed to reduce the costs of the survey, wide line sampling and simultaneous sweeping. The wide spacing of the source and receiver lines result in fewer swaths to collect and fewer surface access costs. In data processing, the data volume is interpolated to a finer sampling prior to 3-D migration.

The second cost reduction technique is to use two sets of vibrator sources, simultaneously sweeping. The source separation is accomplished by upsweep-downsweep and phase rotation - summing, giving greater than 40 bd of signal separation.

Conventional data processing techniques are applied to the data volume plus 3-D DMO. 3-D migration then produces the data volume for interpretation on a workstation.

The interpretation of the 3-D data volume yields the following observations:

- Cross-faulting is much more extensive than geologically mapped with 40 acre spacing, which directly impacts the tertiary recovery program.
- Detailed Devonian structure mapping has pinpointed at least five new well locations in the Devonian Unit.