LUNCHEON MEETING—MAY 28, 1986

ALLEN HUCKABAY—Biographical Sketch

Allen Huckabay grew up in Dallas, Texas, and received his Bachelor of Science Degree in Geology from Southern Methodist University in 1968. Drafted shortly after entering graduate school at the University of South Carolina, he worked as a geologist at the Army Corps of Engineers' Waterways Experiment Station in Vicksburg, Mississippi. Afterwards, he returned to South Carolina and received his Masters Degree in 1972.

Allen is employed by Union Texas Petroleum Corporation in Houston. For the past twelve years, Allen has been involved in petroleum exploration initially working various trends in the onshore Texas Gulf Coast. Since 1979, he has been involved in more frontier-type exploratory projects such as the Appalachians, offshore California, and onshore and offshore Alaska.

SEISMIC STRATIGRAPHY OF THE WINEDALE PROSPECT: UPDIP WILCOX TREND - ONSHORE TEXAS GULF COAST

In the central Texas Gulf Coast, the Late Paleocene/Eocene Lower Wilcox Formation consists predominately of massive sands updip of the Lower Cretaceous Shelf Margin. An exception to this is in northern Lavaca County where the Lower Wilcox was incised by submarine canyons (e.g. the Yoakum Shale Channel) during Middle Wilcox Time. The productive sands in Valentine Field and other nearby fields are remanants of the Lower Wilcox between, and in places below, these shale filled canyons.

Regional speculative seismic data was examined northeast of the anomalous Lavaca County area to find analogous geological conditions where there was unleased acreage. In northeast Fayette County, near the town of Winedale, terracing was noticed at the Lower Cretaceous Edwards and Sligo levels. There was a corresponding "wipe-out" of reflectors within the Lower Wilcox above this terracing.

Prospect detailing seismic data indicated that the terracing had localized lateral continuity. A flat spot was mapped at Lower Wilcox, Edwards, and Sligo levels. This feature was found to influence even the surface topography. When regional dip was removed, the present-day flat spot became a closed structure.

A well was drilled to test the Lower Wilcox reflection "wipe-out" zone. The well resulted in a Lower Wilcox discovery with an initial potential of 2.5 MMCFGPD and 50 BCPD. Sidewall cores, taken every foot through the producing sand, were analyzed for mineral content of component grains, grain size, porosity, permeability, type of clays, etc. Sidewall cores of the high resistivity spikes bounding the producing sand, as well as many of the other Lower Wilcox sands, encountered lignitic coals. A synthetic seismogram of the producing well showed that the top of the Lower Wilcox as picked on the regional seismic data correlated to the uppermost coal.

The producing sand is genetically indistinguishable from the other Lower Wilcox sands. It has a blocky, massive character, decreasing upward grain size, and is bounded by thin coals. A fluvial, point-bar, delta plain depositional setting was indicated.

Examples of producing point-bar sands from Mississippi and Wyoming were studied and a development strategy was formulated. Because the discovery well had a water contact, two delineation wells were drilled updip - 5000' apart, and each about 3000' from the discovery. The producing sand pinched-out, and both offset wells were dry holes.

The massive, Lower Wilcox sands did not correlate well between the three wells but individual coals and groups of coals made excellent correlations. Two short seismic lines were shot to tie the producing well and the two dry holes. During processing, a filter analysis revealed that coherent energy above 50 Hz was preserved and relatively noise free down to the depth of the reservoir. A wide band pass (i.e. 12-75 Hz) was therefore included allowing for much greater resolution.

The previously acquired seismic data was reprocessed to include the high frequencies, and it was noted that the Lower Wilcox was composed of a series of cycles. The seismic cycles were transferred to the well logs, and cycle boundaries correlated with slightly thicker coals or groups of coals which were widespread in aerial extent.

Within the producing sand seismic cycle, a strong pinchout was seen on the strike and dip seismic lines near the producing well. Strong pinch-outs were also noted within other seismic cycles.

Some sort of 3-D program is necessary to trace the pinchouts within various seismic cycles across the Winedale structure. The VSP (Vertical Seismic Profile) may have been helpful, but in 1978 when these wells were drilled, it was still considered an experimental tool and not routinely available.