Geophysics International

CASE HISTORY - TERTIARY FAULT DELINEATION IN SOUTH TEXAS

Petro-Sonde Survey - Oil and Gas Division

LOCATION. Bee County, South Central Texas; U.S.A.

TOPOGRAPHIC CONTROL. U.S.G.S. Topographic map.

OBJECITVE OF THE PETRO-SONDE SURVEY. To delineate slump faults at 10,000' Wilcox level.

GEOLOGY. Tertiary age distributary mouth burs prograding out on the contemporary shelf margin inevitably caused slump faulting into the basin. Hydrocarbon accumulations typically occur on the highest sand position on the downthrown side Of the Fault.

INFORMATION AVAILABLE. Dry hole well I log on upthrown fault block, Proprietary seismic.

CALIBRATION STATIONS. Dry hole on upthrown fault block.

PETRO-SONDE SURVEY STRATEGY. 1) Calibrate on dry hole to establish the electrotelluric signals associated with the Wilcox sands. 2) Traverse south from dry hole and take readings of the Wilcox sands on 660' spacing until fault displacement could be recognized (Figure 1).

CONCLUSIONS AND COMMENTS. The Petro-Sonde accurately determined the depth and thicknesses Of the Wilcox sands (Figure 1). After establishing the relative resistivity patterns associated with the Wilcox, the pattern was correlated to the south until the fault was recognized between Petro-Sonde stations 3 and 4. The exact position Of the fault, necessary for the optimal drillsite, was not obvious on the seismic section. An additional advantage Of the Petro-Sonde survey is that it can also delineate sand distribution on downthrown side once the fault position is established.

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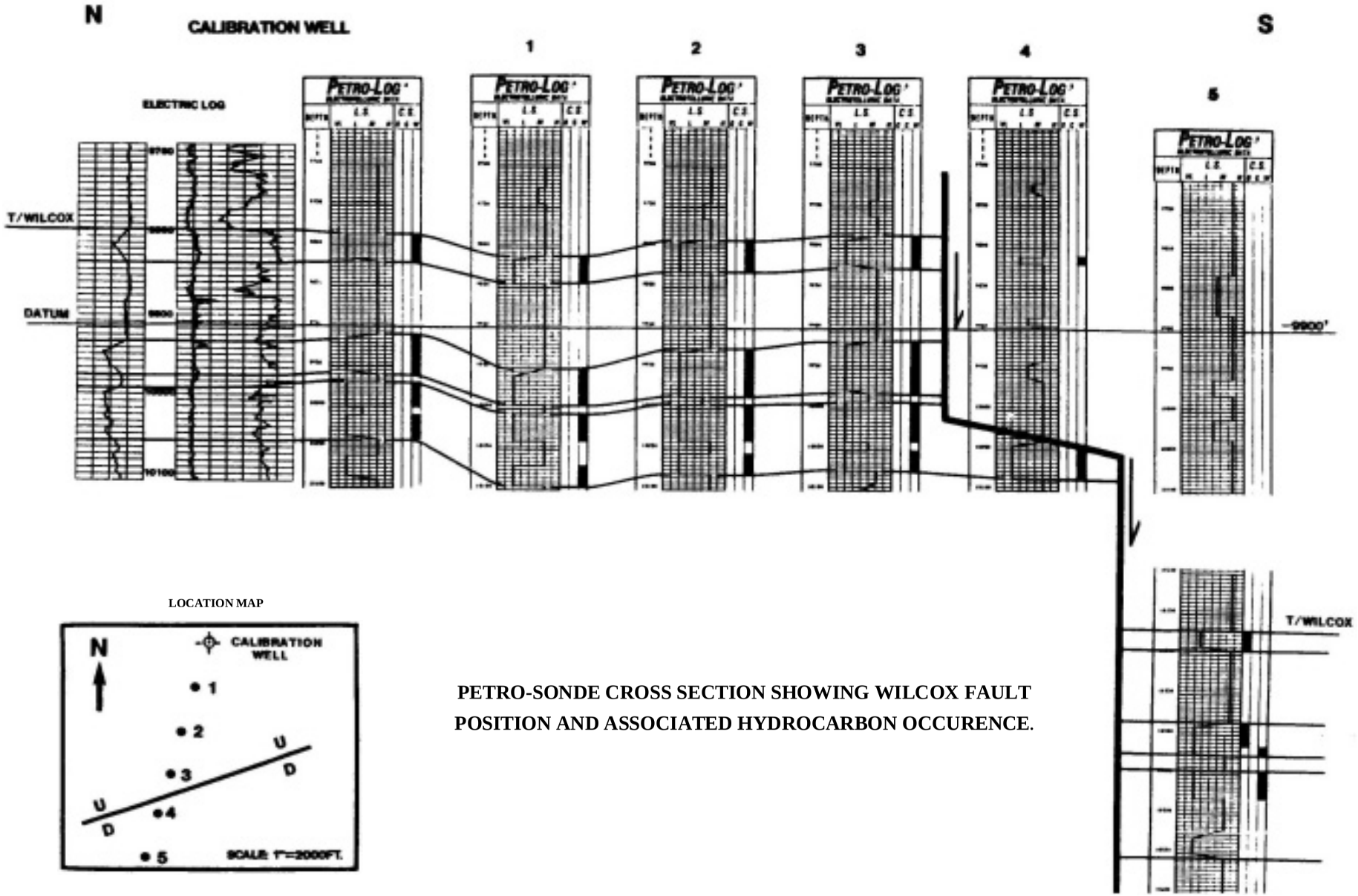

LOCATION MAP

PETRO-SONDE CROSS SECTION SHOWING WILCOX FAULT POSITION AND ASSOCIATED HYDROCARBON OCCURENCE.

EXPLANATION

C. S. - CONTENT SIGNAL INDICATES THE POTENTIAL PRESENCE. AND THE DEPTH AND THICKNESS OF OIL, GAS, AND WATERRESOURCES

L.S. - LITHOLOGIC SIGNAL DETERMINES DEPTH AND THICKNESS OF FORMATIONS.

FIGURE 1

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