CURRENT SEISMIC DEVELOPMENTS IN THE VAL VERDE BASIN, TEXAS

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ABSTRACT

The Val Verde Basin may offer viable domestic exploration opportunity for the 1990s based upon large reserves potential, playable acreage, new seismic technology and techniques.

Because much of the basin is overlain on the surface by high velocity Cretaceous limestones, seismic exploration techniques have resulted in limited mapping abilities in the area and contributed to curtailed exploration. Relatively deep objectives, relatively sparse deep penetrations and higher risks have also contributed to past exploration difficulty, now seen as opportunity.

Recent seismic hardware and software developments enable acquisition of more finely sampled data over broader dimensions and enable an attack on high velocity surface problems from different perspectives.

Such developments and potential applications were investigated during noise study and seismic test data acquisition and processing efforts in the Val Verde Basin beginning in March, 1989.

Test data and diagnostics, as shown in this paper, led to new seismic reconnaissance of the basin which continues in progress.

Seismic resolution achieved during reconnaissance projects, as shown by representative seismic sections in this paper, demonstrate current seismic abilities and limitations in mapping forelands and subthrust lower paleo structure, Pennsylvanian unconformity, Permian shelf margins and overthrust sections.

PERMIAN BASIN OIL AND GAS FIELDS: INNOVATIVE IDEAS IN EXPLORATION AND DEVELOPMENT