

SEISMIC — STRATIGRAPHIC MAPPING OF GULF COAST STRATIGRAPHIC TRAPS

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ABSTRACT

The mappability of a seismic-stratigraphic trap depends not only on the thickness and the stratigraphic position of the objective unit, but the velocity contrast with nearby beds. Analysis of bandpass filtered sonic logs provides a useful technique for determining the portion of the frequency spectrum that carries the basic stratigraphic information. Depending on local stratigraphy, both high (75-125 hz) and low (0-10 hz) frequency components may be important in defining the trap. The filtered sonic can be used to predict the seismic mappability of stratigraphic units.

Review of seismic-stratigraphic data over fields in the Gulf Coast indicates that determining the mappability of a feature depends on complete understanding of the trap. At Walker Creek field, Smackover porosity is not resolved with a 60 hz filtered sonic. Because the basic reservoir-seal relationship is low frequency, however, the field limits are clearly expressed on real seismic-stratigraphic data. Alternatively, recognition of the pinch-out of the 20' thick Spanish Camp Sand at South Lissie field serves as an excellent example of a trap expressed as a high frequency feature.

These simple cases illustrate clearly that both high and low frequency components are required for successful seismic mapping of Gulf Coast stratigraphic traps.

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