Seismic Stratigraphic Visualization of the Lower Vicksburg Formation, South Texas

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ABSTRACT

Visualization of 3D reflection seismic volumes has become a standard technique in exploration and production settings. The employment of post-stack attribute analysis both singly and cascaded, followed by appropriate choice of color spectra, brings deeper knowledge of seismic reflection information. As technology advances, new drilling plays are often found and current field management is enhanced even by using old data. Simple post-stack attributes are applied to compare and contrast their applications in this environment. Cascaded attribute processing flows are also employed to highlight stratigraphic character that may be uninterpretable or out of focus in the original volume. For example, a series of spectral decomposition passes followed by dip estimation is used for sequence stratigraphic purposes when correlated with well control.

A 1990s vintage seismic volume in South Texas has provided numerous successful wells in the lower Vicksburg formation. An end to drilling and production could be foreseen without re-acquisition and/or reprocessing. Within the confines of the original data volume, the use of attribute analysis can be useful for improving interpretation. A review of standard techniques is covered along with their application to this volume. 2D and 3D visualization along with color analysis will be discussed along with potential pitfalls. Results are used to interpret local Jackson formation geologic history, correlate to previous well locations and determine potential future drilling locations.

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