Seismic Attributes for Fault/Fracture Characterization

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Abstract/Excerpt

Among the various geophysical techniques available for characterizing faults and fractures, 3D seismic attributes have proven to be some of the most useful. One of the greatest strengths of 3D seismic is the dense, regular sampling of data over the region of interest, providing images that accurately represent the areal extent of the features. When seismic amplitude changes associated with the features of interest are not noticeable on vertical sections, horizontal time or horizon slices often yield distinctive patterns that are easily recognizable. Among the more valuable seismic attributes are those sensitive to reservoir impedance, thickness, or geomorphology. Although there are a few hundred seismic attributes that are in common use today, here we discuss the application of poststack attributes for the detection of faults and fractures. Dip-magnitude, dip-azimuth and coherence attributes have been used for the detection of faults and fractures since the early to mid 1990s. We demonstrate the value of using these attributes as well as the more recently developed volumetric curvature attributes in the mapping of faults and fractures in the North Sea.