Automated Fault Interpretation and Extraction using Improved Supplementary Seismic Datasets

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ABSTRACT

During the interpretation of seismic volumes, it is necessary to interpret faults along with horizons of interest. With the improvement of technology, the interpretation of faults can be expedited with the aid of different algorithms that create supplementary seismic attributes, such as semblance and coherency. These products highlight discontinuities, but still need a large amount of human interaction to interpret faults and are plagued by noise and stratigraphic discontinuities. Hale (2013) presents a method to improve on these datasets by creating what is referred to as a Fault Likelihood volume. In general, these volumes contain less noise and do not emphasize stratigraphic features. Instead, planar features within a specified strike and dip range are highlighted. Once a satisfactory Fault Likelihood Volume is created, extraction of fault surfaces is much easier. The extracted fault surfaces are then exported to interpretation software for QC. Numerous software packages have implemented this methodology with varying results. After investigating these platforms, we developed a preferred Automated Fault Interpretation workflow.

BIOGRAPHIES

Trevor Bollmann is a Technical Geophysicist with the Gulf of Mexico Applied Reservoir Management Geophysics team, Chevron North America Exploration and Production. He has 2.5 years with Chevron working on reservoir properties from seismic, AVO, and seismic inversions and supplementary volume creation. Trevor has previous experience with tomographic inversion of teleseismic body waves. He holds a M.S. degree in Earth and Planetary Sciences from Northwestern University and a B.S. degree in Geology and Geophysics from Missouri University of Science and Technology

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