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Seismic Attributes succeeded in detecting and determining the features of incised valley fill sandstone

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SUMMARY

The main objective of this study is to focus on detecting incised valley fill sandstone in the upper Morrow formation and determining its width, thickness and edges by using appropriate seismic attributes. There are seismic attributes that can display the features of channels and incised valley in seismic horizon slice very clear.

In this study, Coherence, Discontinuity along dip, Relative Amplitude change with X and Y attributes were used to detect the incised valley fill sandstone. Spectral decomposition attribute was used to determine the thickness of the incised valley fill sandstone by using frequencies from 10 Hz to 70 Hz. Most positive and negative curvatures attribute were used to determine the valley's edge. Coherence and discontinuity along dip attributes succeeded to detect the valley and also succeeded to map its width in acceptable resolution. Discontinuity along dip shows its width clearer than coherency.

As for Spectral decomposition, it displayed subtle changes in the incised valley fill sandstone. As for most positive and negative curvatures, positive curvature may indicate highs in structure and less compaction over the incised valley-fill sandstone axis. On another hand, most negative curvature shows the edge of incised valley-fill sandstone and its centre may show shale deposition. As for relative amplitude change with X and Y, they succeeded to determine the direction and the width of incised valley-fill sandstone.