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# Quantification of Seismic Imaging Accuracy using Reverse Time Migration at White Castle Salt Dome, Iberville Parish, Louisiana

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**Abstract**

As part of a salt cavern development program, in 2020 Texas Brine undertook a seismic interpretation project at the White Castle Salt Dome in Louisiana, using reprocessed 3D seismic data. The project found that Reverse Time Migration (RTM) provided much better focused results than earlier migrations and was necessary to image the steep and overhanging flanks of the salt dome. Sparse data acquisition parameters over the top of the dome resulted in limited resolution of the top of salt. Careful attention to pre-processing parameters and the migration velocity model are required to achieve properly focused images. The resulting salt interpretation was used to quantify the distance of caverns from the salt edge. We observed no intra-salt features within the 3D seismic dataset that could be definitively correlated with faults or asymmetric cavern development.

The accuracy of the RTM salt flank image was quantified in 3D versus 151 salt penetration points recorded in deviated wellbores. The average absolute mistie between the seismic surface and the well penetration points was 103' (31m). This shows that 3D seismic data, if carefully processed using modern migration algorithms, can accurately image the edge of salt domes, even on steeply dipping and overhanging salt flanks.

**Key words:** White Castle, Louisiana, seismic, migration, reverse time migration, RTM, domal salt, geophysics, Gulf Coast of the U.S. and Mexico, seismic processing, imaging