
PROSPECT LUCKY: UNDERSTANDING CONTOUR ANOMALIES AND VELOCITY GRADIENTS IN OFFSHORE TEXAS

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ABSTRACT

Prospect Lucky is a low relief anticline located downthrown to the Brazos Ridge Fault System (Corsair Trend), offshore Texas. Seismic data and time maps over the prospect area show a slight benching of the time contours in an area where the overall regional dip is to the southeast. Further velocity analysis on this contour anomaly revealed a structural closure in this area.

Explorationists were aware of velocity variations along this trend. Several different seismic attributes including velocity analysis (VAs), internal velocities and checkshot surveys were integrated in contouring a velocity gradient. Applying this gradient to the time-structure map produced a depth map that revealed a low relief anticline. A key seismic line across the structure was converted to depth and demonstrated a dip reversal that was not present on the standard time section. In addition to geophysical mapping, the integration of well log correlations and dipmeter data date-supported the resulting depth map which revealed a subtle trap.

The prospect was drilled and dipmeter data confirmed the structural dip reversal and proved the existence of a subtle closure. Additional subtle features may be identified by scrutinizing contour anomalies and evaluating associated gradients.