Resolution of static corrections in sand dune regions: A successful case history.

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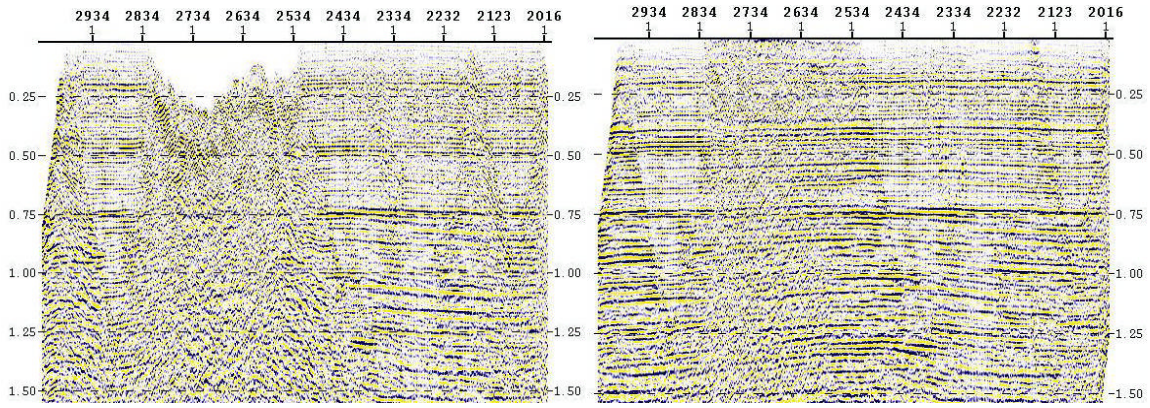
In areas prevalent with sand dunes, conventional assumptions for datum static correction computation can become invalid. The Rub Al-Khali region is well known for sand dunes and *sabkha* (salt mudflats). Variations in elevation and travel time from dune base to crest are too much for routine static correction methods. This case history shows a successful strategy of solving particular components of the static corrections independently before combining them. The components include: the sand dune correction, the base of sand to datum correction, the refraction and reflection residual static correction.

A regionally defined time/depth curve describing dune compaction in this area yields sand dune travel times. Final datum statics are calculated by adding this time to the time from base of sand to final datum, using a velocity model derived from upholes.

High and low frequency components within the composite datum statics corrections are separated. After applying only the high frequency statics, the seismic data is corrected to a smooth floating datum. To prevent stacking velocity distortions datum statics are applied from base of sand to final datum with the sand time applied residually.

Uncorrected time shifts remain in this initial model, due to differential slip and dip face compaction, and other anomalous surface consistent effects. Surface consistent refraction residual statics are computed and applied on linear moveout corrected data. The static corrections are completed with surface consistent reflection residual statics

This method led to a focused time section.



Before application of corrections. After application of corrections.