



The Mega-Merge - 45 Contiguous Townships of Seismic Data in Alberta

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Abstract

Fifteen 3D land seismic surveys with a total of 180 million traces from the Wembley Valhalla area of the Peace River Arch were reprocessed and pre-stack merged into a single 3D seamless Mega-Merge volume. The surveys are part of WesternGeco's Canadian Multiclient Library. The total area covered by this Mega-Merge survey is 4,200 km², which is equivalent to 45 contiguous Townships in Western Alberta.

The surveys were acquired between 1990 and 2006 with different instruments and at different times of the year. First we review the derivation of phase compensation operators and the amplitude and frequency treatment of the data for the various vintages. Next we discuss the model-based wavelet processing and noise attenuation techniques required by the data. Then we show how a single refraction statics solution was derived for the entire area and the extensive quality control of this solution.

The uplift of the 2006 Mega-Merge reprocessing is illustrated by comparison with the original processed data. The seamless Mega-Merge increases the degree of confidence in new prospects, most especially near the survey overlap areas. State-of-the-art reprocessing adds additional interpretational confidence. Time-slices of the final migrated volume and a semblance cube will be shown, demonstrating the lateral coherency improvements across channels and faults and the increases in temporal and spatial resolution.