Seismic Stratigraphic Interpretation for Thin Layer-Cases

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A Quantitative Analysis System was developed to estimate successfully thin reservoirs which could not be revealed by traditional methods.

The seismic data were first processed carefully. Synthetic seismograms generated demonstrate the reliable quality of the seismic data, and provided basic data for generation of interpretation template curves to be used for stratigraphic interpretation. Digital computers were then used to derive the accurate coordinates of the peak and the trough of seismic wavelet associated with the thin layer of interest. Then, the effective net thickness of the thin layer was estimated from the amplitude and the time separation between the peak and the trough.

Two cases of thin stratigraphy of porous sand buried within shale in Taiwan were studied by using the method mentioned above. The sand in the first case is distributed under the footwall of a fault, at a depth of about 2,000 m, in an offshore area. The effective net thickness varies from 2 m to 10 m. The sand in the second case is distributed over channel sediments, at depth of about 1,000 m. The effective net thickness varies from 2 m to 5 m. The predicted production zones in the two cases approximate the drilling results.

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