Inferring Thin Bedded Strata from Seismic using Mathematical Techniques

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This paper presents the research and anticipated results of a bed boundary detection program used to infer characteristics of thin-bedded stratigraphic packages on seismic data using borehole image logs. Many untapped reservoirs are located in geologically thin-bedded strata that are beneath seismic resolution. This research will aid in detecting these reservoirs and by-passed pay from seismic that can increase productivity of existing fields. The methods used include generating an automated bed boundary detection algorithm, generating a log that can be matched to the seismic data, and using a neural network program to make inferences about the thin-bedded packages on the seismic data. The data will be analyzed by several methods including manual interpretation, Excel spreadsheets, MATLAB and EMERGE software packages. Possible outcomes include providing a more efficient way to detect bed boundaries, automatic plotting of bed thickness trends, and improved detection of thin-bedded reservoirs.