# Dolomite Identification Based on Log-Guided Geological Feature and Frequency Analysis

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## Abstract

Dolomite mapping is critical for understanding dolomitization mechanism and predicting reservoir quality, but seismic doublet is a common challenge in seismic interpretation, which makes dolomite identification difficult and affects subsequent reservoir quality analysis. This study aims to recognize the Triassic dolomite on seismic data and derisk dolomite reservoir characterization.

A novel workflow based on log-guided geological feature and frequency analysis is developed to improve the dolomite reflection tracking over seismic doublet. This workflow includes the following steps: (1) to perform spectral analysis and generate low and high frequency seismic cubes. Generally low frequency is defined as the frequency smaller than peak frequency while high frequency is greater here. Instead of spectral decomposition, narrow band filter is a convenient way to produce frequency cubes; (2) to analyze geological feature in multiple frequency bands. Frequency components show different aspects of geological features. The doublets at multiple locations (drilled and undrilled area) are analyzed and connected to geological features in the original, low and high frequency; (3) to identify dolomite reflection with log data at well location. The dolomite is recognized based on log interpretation and connected to the geologic features in the frequency bands; (4) to guide dolomite mapping across undrilled area based on the reflector identification at drilled locations.

This workflow is applied to the refluxing dolomite in the early Triassic and improve mapping of the refluxing dolomite distribution. This application shows (1) the technology based on log-guided geological feature and frequency analysis is effective on dolomite recognition over seismic doublet; and (2) it can be applied to other areas to eliminate or minimize interpretation uncertainty caused by seismic doublets.