

**CHANNEL THICKNESS ESTIMATION USING SPECTRAL DECOMPOSITION**

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The Spectral Decomposition provides a new, non-traditional approach to seismic interpretation and attributes analysis. This technique is used for imaging and mapping temporal bed thickness, channel and geological features over 3D volumes where the samples are subdivided into different frequencies ie; 10 Hz, 15 Hz, 20 Hz, etc (Kishore, 2006) . Different materials in the rock strata resonate at different frequencies, and therefore can be distinguished from one another by their frequency response.

The Spectral Decomposition techniques is widely used and successfully done for channel thickness estimation in a field scale (Partyka et al., 1999, Hall, 2004). However, channel thickness estimation in a regional scale has not been widely done. This study is the first attempt in applying this technique in the Malay Basin with regards to the I group channel. This study covers an area of 40,000 km<sup>2</sup> located in the southern half of the Malay Basin. As a control parameter the top I and top J were interpreted and 20 proportional slices were defined by using stratal slicing technique. For each interval the RMS amplitude was carried out to produce a channel map.

The spectral decomposition technique was performed to estimate the channel thickness. 20 Spectral decomposition volume attributes were generated at each interval to estimate

the channel thickness for I010 to I140 channels. The frequency range from zero to Nyquist frequency (125 Hz) was generated. In addition the frequency slice animator was used to review the Frequency tuning map to determine the Optimum Frequency (Fo). Subsequently, average velocity was utilized to calculate the channel thickness.

As the conclusion it can be deduced that the Spectral Decomposition technique worked well in the study area where the results were found to be quite matched with the channel thickness value stated in the well information. For that reason, this technique was confidently applied to some areas that do not have any well control in order to perform the channel thickness estimation.

**REFERENCES**

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