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**“Caribbean Exploration – Planning for the Future”**

**POSTER ABSTRACT**

**SPECTRAL DECOMPOSITION ANALYSIS, SOUTHWEST SOLDADO FIELD,  
TRINIDAD & TOBAGO**

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The aim of this study was to evidence and highlight structural and/or stratigraphic features not easily seen with traditional seismic interpretation. A rock physics study was also performed in order to evaluate the potentiality of seismically discriminate lithology and fluids with an elastic inversion as part of a more general IGS methodology for reservoir characterization.

Seismic interpreters are commonly used to work just with amplitude anomalies, based on the dominant frequency of the seismic data. Nevertheless, there still being much information that remains hided in others frequencies of the seismic bandwidth. It has been reported (Castagna, et al, 2003, Okaya, 1995, Hall, 2004 and Partyka, 1999) that each individual frequency has information associated with a particular reservoir thickness. This means that an isolated frequency would be able to map the extension of a particular stratigraphic feature. IGS Spectral Decomposition method combines three frequencies, previously extracted from the seismic signal, with the coherency cube attribute in a RGB fashion. The idea is to highlight specific characteristics or geological features related in a time window center at the reservoir of interest. The coherency cube, as used here, adds extra information that helps to define structure and/or stratigraphy in the image.

The resulting images look better from shallower horizons to deeper ones, as expected due to high to low signal to noise ratio and frequency content. It was observable good structural and

stratigraphic features that were highlighted and correlated with the actual structural framework interpreted for the area. Extension of some faults and the existence of some interesting stratigraphic features were also seen. From the rock physics, it was seen that there is a high probability to discriminate clean sands, with more than 50 % oil, from shales and shaly sandstones with oil or brine. The best attributes were Acoustic Impedance, Density and Elastic Impedance (EI40). A more rigorous sedimentary modeling study and an elastic inversion analysis are recommended.