THE 4TH GEOLOGICAL CONFERENCE
OF
THE GEOLOGICAL SOCIETY OF TRINIDAD AND TOBAGO
June 17-22, 2007, Hilton Trinidad & Conference Centre,
Port-of-Spain, Trinidad and Tobago

"Caribbean Exploration – Planning for the Future"

ABSTRACT

SEISMIC MULTI-ATTRIBUTE ANALYSIS FOR FLUID SATURATION AND LITHOLOGY DISCRIMINATION IN THE HIBISCUS FIELD, TRINIDAD & TOBAGO

Sierra, J.*, González, K., Machado, O. and Landa, A., *IGS Services & Consulting,*
Wong, C., Rojas, G. and Carnevali, B., *ENI Trinidad & Tobago.*

The aim of this study is to define a Direct Hydrocarbon Indicator (DHI) and a lithology indicator, based on elastic seismic attributes, for the Hibiscus gas field, north of Trinidad. A post-stack method, supported on model based inversion and neural networks, was followed. The lithology and fluid classification was performed in three steps: i) rock physics analysis, ii) computation of seismic attributes, and iii) neural networks classification in the multi-attribute space for lithology and fluid discrimination. (Walker, et al., 2005).

The results of the multi-attribute analysis demonstrated that it is possible to make confident lithological and fluid saturation discrimination for the MIV sand of the Hibiscus Field. Recent drilling activity has successfully corroborated the results of this study for predicting reservoir quality and fluid type. Additionally, a statistical wave deconvolution processing was applied on the angle stack (near to meddle) and the output was used as input for the spectral decomposition analysis. With this technique, strong similarities can be observed between RGB frequency composed images and the lithology indicator previously obtained from the multiattribute analysis in terms of reservoir heterogeneities. These similarities increase the confidence in the results and in the use of spectral decomposition as a promising tool for reservoir characterization.