Machine Learning Analytics Application to an Exploration Well in Northwestern Colombia, South America

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ABSTRACT

In 2019, a comprehensive machine learning study to determine reservoir characteristics was applied to a then recently discovered field in northwestern Colombia. A continued analysis of the area, combined with a new exploratory well is discussed in this presentation. The new well has had some petrophysical challenges in producing, so the client asked once again for assistance in determining the cause of poor performance in the well. This process now includes skeletonization of a convoluted neural network fault attribute as well as a bivariate statistical analysis on a self-organized map classified volume made up of multiple seismic attributes. This new approach to understanding the reservoir rock now attempts to link the neural classification to petrophysical properties derived from the electrical logs in the well. The heavily faulted area around the new well can be used in self-organizing mapping (SOM) to identify possible reservoir leaks as well as compartmentalization of the potential productive areas.