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A Novel Approach for a better exploitation of a 3D seismic on a development field

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The main hydrocarbon-bearing reservoir over the study area is the lower Triassic Argilo-Gréseux reservoir. The Triassic sand is deposited as fluvial channels and overbank sands with a thickness ranging from 10 to 20 m, lying unconformably on the Paleozoic formations. Lateral and vertical distribution of the sand bodies is challenging which makes their mapping very difficult and nearly impossible with conventional seismic analysis.

In order to better define the optimum drilling targets, the seismic attribute analysis and reservoir characterization process were performed targeting such thin reservoir level, analysis of available two seismic vintages of PSTM cubes as well as post and pre stack inversion results were carried out. The combination of various attributes analysis (RMS amplitude, Spectral decomposition, variance, etc.) along with seismic inversion results has helped to clearly identify the channelized feature and its delineation on various horizon slices and geobodies, the results were reviewed and calibrated with reservoir properties at well location and showed remarkable correlation.

Ten development wells have been successfully drilled based on the seismic analysis study, confirming the efficiency of seismic attribute analysis to predicted channel body geometry.

Keywords: Channel, Attributes, Amplitude, Inversion, Fluvial reservoir.