

## **CRUDE OIL FROM UPPER CRETACEOUS ORGANIC FACIES IN COLOMBIAN EASTERN CORDILLERA AND ITS VARIABILITY FROM SOURCE ROCK TO THE RESERVOIR**

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A thermally immature stratigraphic section of Upper Cretaceous-Chipaque Formation in Colombian Eastern cordillera was measured, described, sampled and analyzed by mean TOC-Leco, Rock Eval Pyrolysis and organic petrography in order to evaluate the effective hydrocarbon potential from this regional source rock in the study area. The main goal in this work was to determine the variability on geochemical features of crude oils expelled only from the Chipaque Formation source rock as a function of thermal maturity degree and establish correlation with crude oils naturally produced in both places; close to the evaluated stratigraphic section and, in oil fields located in the Eastern foothills. A set of original-unmixed oil-like samples were obtained from outcrop samples by simulating generation-expulsion processes at laboratory-scale using hydrous pyrolysis. In addition, Crude oils from Bolivar-1 well located on the Eastern Cordillera axis and 3 additional wells placed along its Eastern foothills were characterized using GC and GC-MS techniques.

Strong biodegradation was detected in the sample from Bolivar-1 well, due mainly to the depth at which reservoir rocks are positioned in this area (very shallow); in that sense, saturates biomarkers were useful to establish positive correlation between pyrolyzed fluids recovered after each hydrous pyrolysis experience and the sample from Bolivar-1 well, confirming that generation, expulsion and migration processes took place from this marine organic facies; nevertheless, negative correlation was established regarding samples from Eastern foothills, which suggest that marine organic facies responsible for oil accumulations in the Eastern Cordillera, would have changed dramatically towards foothills areas since, anomalously high contribution of terrestrial organic matter (land plants) is deduced from biomarkers ratios such as Pr/Phy (higher than 2), C<sub>29</sub> higher than C<sub>27</sub> and C<sub>28</sub> Steranes and Oleanane indexes close to 1.