Geochemical characterization of the Permian series and associated oil indices in the Jeffara area: origin of hydrocrabon and 1D thermal maturity modeling

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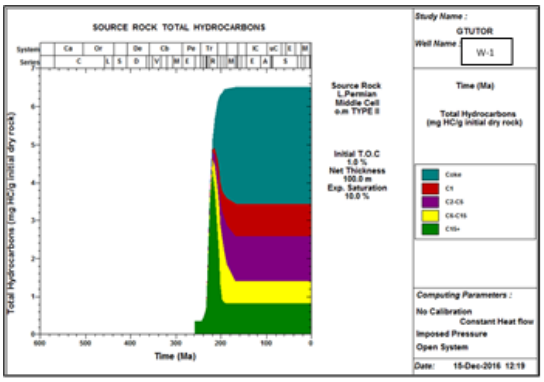
I. Abstract

Permian rock samples from two wells (W-1 and W-2) drilled in the Jeffara basin (Southern Tunisia) were analyzed using the Rock Eval pyrolysis (RE) and Gas chromatography coupled to Mass Spectrometry (GC/MS). Oil indices from the same series were also examined. The two objectives pursued through this study were: (i) First, to geochemically characterize the Permian series in order to determine their source rock potential (2) second, to identify the origin of hydrocarbons occurring in the Permian layers through oil-oil correlations and oil correlations to source rocks candidates (Permian, Azzel, Fegaguira, and Zoumit).

The attained results show that the lower part of the Permian series is rich in organic matter and may constitute a good source rock of "Oil and Gas prone" quality. The oil indices found in the top part of the Permian series were generated simultaneously by the Permian source rock and the Paleozoic source rock (Azzel and Fegaguira).

The 1D basin modeling results indicate that, overall, the hydrocarbon generation started since the Permian (240 Ma) while oil expulsion took place during the upper Triassic (230Ma).

II. Image:



Hydrocarbon generation History of Permian series in the well 1.

III. References:

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IV. Biography:

Miss Khawla Ouerghi is a Tunisian geologist. She received her geology bachelor degree in 2014 from the Faculty of Sciences of Bizerte.
In 2017, she defended her Master Sciences degree in Mineral resources: exploration and development. The project was carried out as a collaboration between the Faculty of Sciences of Tunis and the National Tunisian Oil Company (ETAP). The project was entitled “Geochemical evaluation of the Permian series and associated oil indices in the Jeffara area: Source rock characterization, origin of hydrocrabon and 1D thermal maturity modeling”. Currently, Miss khawla is doing her PhD in continuity with her master's subject.
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