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Enhancing unconventional gas reservoirs characterization

Mohamed Omran, Tharwat Hassane and Attia Attia BUE, Egypt

nconventional reservoirs can add huge amounts of additional energy to our world resources bases like organic shale in terms of shale gas, shale oil, tight gas and coal-bed methane. These reservoirs can transform the world global energy market through advances in reservoir characterization, drilling, and completion technologies. Reservoir characterization and properties have great influences on the exploration and development processes, it is not through a single discipline that can provide a fulfill description of the reservoir characteristics especially for unconventional reservoirs. Moreover, unconventional sources can be defined by their difference of intrinsic of their geological sittings, origins, and tapping mechanisms, thus having different methodologies for exploration, production, and development methods. Therefore, it is very important to well express and identify the necessary parameters for unconventional characterization of these reservoirs for defining reservoir rock and fluid properties in terms of total organic carbon content, gas adsorption, level of maturity, original fluids in place, and etc. The results showed that Upper Safa formation can be considered as shale gas unconventional resource play that consists mainly of kaolinite clay and other mixed clay types. Geochemical pyrolysis analysis is used to confirm the presents of kerogen type III as a shale gas potential reservoir. Interpretation analysis has been used also to confirm the presence of hydrocarbon potential in shale reservoirs depend on the readings that indicating most of shale play. Moreover, brittleness ratio average value equals to 50% brittleness. Integration between results of TOC (Total Organic Carbon) from both of geochemical and petrophysical analysis methods within the same range. However, TOC results which are obtained within the ranges of very good petroleum potential according to Rock Eval pyrolysis from 2% to 4% TOC. Some petrophysical analysis methods for determination of TOC results are applicable to Upper Safa formation as Schmoker, Modified Schmoker, NMR, and Uranium TOC.



Fig: Logs analysis Techlog outputs

Recent Publications

1. M A F Omran and Attia Attia (2018) New approach for unconventional reservoirs rock typing characterization: Egyptian unconventional gas reservoirs. Petro. Chem. Indus. Intern. 1(1):1-7.

Biography

Mohamed Omran pursued his Bachelor's Degree in Petroleum Engineering and Gas Technology from the British University in Egypt (BUE), Egypt. He received a scholarship for his Master of Petroleum Engineering Degree program at Norwegian University of Science and Technology (NTNU) in August 2018. He has participated in SPE ADIPEC University Program in Abu Dhabi, UAE (November 8-11, 2016) as a Research Presenter, besides being a Poster Presenter at the 58th SPWLA Annual Symposium, Oklahoma City, USA (June 17-21, 2017) and has been a Speaker at the 3rd World Congress on Petroleum Engineering and Natural Gas Recovery, Sydney, Australia. He has worked on two graduation projects: research project concerning establishing new empirical and developing existing correlations for enhancing more accurate unconventional gas reservoirs characterization and design project concerning development of a software for well test analysis of unconventional gas reservoirs.

midoheros@yahoo.com

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