Republic of Yemen

Sana'a University
Faculty of Petroleum and Natural Resources

الجمهورية اليمنية

جـامعة صنعـاء
كليـــة البترول والموارد الطبيعية

A report on the discussion of the master's thesis submitted by the

researcher Mutahar Hussein Fadaq

On Monday, January 22, 2024, a public discussion was held at the Faculty of Petroleum and Natural Resources of the master's thesis submitted to the Department of Earth Sciences by the student Mutahar Hussein Fadaq, entitled "The presence of hydrocarbons in the post-salt layers of the Lower Cretaceous period in the Habban field, Block S2, Sabatayn Basin, Yemen" under the supervision of Dr. Adel Al-Matary. The discussion committee was composed of:

1. Prof. Dr. Abdul Karim Al-Subbary, Sana'a University, Chairman, internal examiner
2. Professor Adel Mohammad Al-Matary, Sana'a University, Supervisor, Member
3. Prof. Dr. Nabil Mohammad Al-Areeq, Dhamar University, external examiner, member

During which the student reviewed the most prominent results included in his study, and highlighted the study of oil shows and the evaluation of the rocks that were deposited after the salt layers of the Lower Cretaceous period as reservoir layers for oil and gas through the use of drilling data and well logs for a number of wells in the field and the extent of the oil potentiality of these formations that were deposited at this age. Abstract attached.

Hydrocarbon Occurrence in The Lower Cretaceous Post-Salt Stratigraphy in Habban Field, Block S2, Sab'atayn Basin, Yemen

ABSTRACT

This study seeks for new hydrocarbon potential opportunities in the lower Cretaceous post salt stratigraphy in Habban oilfield of Block S2, Sab'atayn basin -Yemen. Post-salt of lower Cretaceous formations of Nayfa, Sa'ar and Qishn have been main hydrocarbon source and reservoir rocks in the country's eastern province. To evaluate those formations, two scenarios have been proposed to explain formation's oil shows in 14 wells. In the 1st scenario, the oil shows, a key criterion, as well as recorded cutting lithology had been studied then combined with well logs data of GR+DT to discriminate the reservoir from source or seal rocks. In the 2nd scenario, 3D seismic sections of PSDM overlaid by Ant-tracking attribute with interpreted faults and surfaces were used to look for a link between pre-salt oil sources and post-salt oil shows. Furthermore, petroleum system elements were defined and failure mechanism of petroleum elements responsible for formation's disability to store and deliver hydrocarbon for all three formations were investigated. The result of 1st scenario showed absence of source lithology for all formations while absence of reservoir lithology for Sa'ar and Nayfa. The result of 2nd scenario is that; the predominant structural style is locally modified by salt tectonics. Apparently, all formations' oil was sourced from beneath the regional seal of Sab'atayn salt formation in places where salt thins or welds. Failure mechanisms ended up by finding that; charge and traps were missing in all formations. Yet, Sa'ar and Nayfa shared additional failure mechanism of a missing reservoir.

Key Words: Qishn; Sa'ar; Nayfa; Oil Shows; Post-salt; Sab'atayn basin; Block S2; Habban oilfield.

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