5260 Paleozoic Hydrocarbon Charge System of Abu Dhabi

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The lack of Paleozoic source data in Abu Dhabi, means that understanding the regional tectonics and the depositional trends of the SE Arabian plate, is essential to extrapolating source trends into Abu Dhabi. A wide range of literature and regional geochemical data was reviewed, to make the source inputs to the basin model. The goal of this evaluation is to understand the source distribution, its degree of maturity, and to identify the contributions of each source to the Paleozoic hydrocarbon system.

The integration of the Fluid Inclusion Volatile (FIV) analysis data indicated the presence of source rocks everywhere in the basin, although FIV does not predict the percentage of its richness.

The Silurian source rocks Basin modeling started by building an extensive database, which including the heat flow of the basin, the construction of stratigraphic and tectonic models, using lithological conductivity and source data. A series of secondary inputs such as water depths over time, Paleo-climate, heating events, and erosion estimates were added. A tectonic framework helps in judging the magnitude of the removed section during the erosional events was included. Also, the model was constructed to gain the timing of maturation, migration and the fill and spill migration mechanism in the basin. In addition to that the maturation modeling was calibrated against the measured and statistical data in order to get the best fit of the modeling and to render it more effective in predicting maturation boundaries.

Modeling of the structural growth history in conjunction with the hydrocarbon generation and migration in the area has shown that early growth and charge are significant conditions for the formation of economic hydrocarbon accumulations.

The basin modeling study concluded presence of active charge up to present day in the northern part of Offshore Abu Dhabi. Some onshore leads could have received secondary migration as a result of spill from paleo-structures especially in the northeastern onshore during Tertiary tilting.