# The Charging System of the Lower Cambro-Ordovician Gas Reservoirs of North Oman

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A new 3-dimentional maturity model of the top Huqf source rocks was constructed using the latest mapped seismic horizons, well data, and geochemical data. The model highlights several maturity provinces with distinctive HC gas expulsion histories. Several migration scenarios were used to model the current distribution of Haima gas accumulations. These scenarios capture the reconstruction of both the Ara Salt and the impact of deep seated fault systems.

An integrated charge model is provided; aiming to explain Haima gas types and distribution. Modelling suggests two distinctive charge pulses took place across the Ghaba Salt Basin: a mid-to-upper Palaeozoic ‘wet' gas charge and a later Mesozoic ‘dry' gas charge. Within the basin, the earlier ‘wet' charge was flushed from the lower Haima Amin/Miqrat by a later ‘dry' gas charge, but is preserved and is generally retained in the Barik reservoirs. The effectiveness of the regional al Bashair seal and the timing of activation of intra-Haima faults and trap formation are critical elements determining the mixing of dry and wet gas of trapped gas in this region. On the western flank of the basin, the al Bashair seal thins providing opportunity for gas mixing in the Haima reservoirs on the basin flanks. In the Fahud Salt Basin, a lower thermal maturity profile suggests a more recent ‘wet' gas charge. A causal link between charge timing (coupled with migration pathways) and the preservation potential of primary porosity of the clastic Haima reservoirs has been identified.