# A Full-Field Model of the Khuff Reservoir over the North Dome Field

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The Permo-Triassic Upper Khuff carbonates form the reservoir of the North Dome Field (among world's largest offshore gas field). They are characterized by a complex depositional facies distribution and strong diagenetic overprint, generating fine-scale reservoir heterogeneities, which impact strongly the dynamic behavior of the field.

In order to conceptually best represent the reservoir heterogeneities, logtypes are defined, each with distinct static (porosity and NTG) and dynamic (permeability and capillary pressure) reservoir characteristics. The logtypes are propagated in the 3D geological model using: 1) Depositional trend maps per sequence, integrating core descriptions, well log correlations, isopachs per logtype and the regional knowledge of the Khuff reservoir. 2) Variograms with varying azimuths and ranges depending on the logtype and the position within the sequence stratigraphic framework. 3) Logtype probability maps using the depositional trend maps for guidance.

The result is a full field geological fine-gridded model which integrates all inputs from the sedimentological, diagenetic and stratigraphic models. The model encompasses the Khuff reservoir heterogeneities, both the petrophysical and dynamic characteristics.

The geological model is then upscaled vertically and horizontally. Vertical upscaling is made such as to best capture the fluid composition variations, vertical barriers, and distinct reservoir drains. Although the resulting reservoir model has to be refined whenever new data is available (wells, 3D seismic, production already existing and anticipated…), it allows to simulate gas production, CGR, and up to a certain extent H2S evolution, anywhere on the North Dome field.

(Abstract pending on Company's authorisation)