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A Khuff Reservoir Giant Field 3-D Geological Model Integrating an Uncertainty Approach

The Khuff carbonate platform was exposed to early and late dolomitisation and anhydrite cementation, leading to difference in reservoir behaviour. The main uncertainties are the linked to the understanding of the diagenetic processes, needed in order to better define the vertical and lateral heterogeneities within the reservoir. A full field 3-D geological model of a giant gas field is generated, based on the main heterogeneities of this complex carbonate reservoir. This 3-D model building is mainly controlled by both sedimentological and diagenetic detailed and integrated studies. Those studies mainly based on sequence analysis which helps to better define the main reservoir units and to understand and locate the dolomitisation processes, leading to best quality reservoir facies. The sequence analysis on core and logs gives rules to reservoir facies and petrophysics distribution .The 3-D petrophysical modelling is done from the reservoir facies repartition, which are described in terms of environmental deposits and reservoir characteristics. An uncertainty quantified approach is held all along the process of reservoir characterisation and 3-D petrophysical modelling