AP24

North Oman Structural Characterisation From Regional to Bore Hole Scale - Natih Formation

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SUMMARY

The production of some of the largest fields in Oman comes from the Natih Formation. The recovery from these reservoirs is largely by gas oil gravity drainage (GOGD), the success of which is a well connected fracture network. In order to support the development of these fields, fracture characterisation and modelling studies have been carried out. The key pillars of these study workflows are, on the geological side, a thorough understanding of the regional geology at all scales, and on the technology side, a well established integrated fracture characterization and modeling software SVS-Fracture Solutions, developed by the Carbonate Team, in Shell EP-Research.

We will first illustrate how the structural evolution of the field fits into the regional context. We will use seismic, outcrop and sandbox models to demonstrate the structural style and fault geometries at the field scale. We will then zoom on the well scale to illustrate how core and borehole image data, combined with the regional understanding and the dynamic behaviour of the field can be used to elaborate well constrained conceptual fracture models. In these models, the concept of fracture corridors and the definition of mechanical units and their impact on the fracture development are essential to the delivery of the final product, which will be used in the dynamic simulation world.

This paper illustrates the added value of a consistent structural characterisation (deformation history, fault and fractures geometries) approach to support the development strategy of a field. We place particular emphasis on demonstrating the impact of data integration at all scales as well as the use of analogues.