
Integrated Fracture Characterisation and Modeling in Carbonate Fields Using Novel Modeling Software and Sandbox Models

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A large proportion of Petroleum Development Oman (PDO) future production resides in fractured reservoirs. In order to support the development of these volumes, a strong element of fracture characterisation and modelling has been included within a number of subsurface studies. The key enabler for these studies is the software technology, SVS (Simple Visualisation Software), developed by the Carbonate Development Team (CDT), in Shell EP-Research. PDO has not only taken a lead role in software implementation but is also steering the ongoing development of SVS according to the needs of active field studies. Currently, SVS is applied to the three themes of Oman's fractured reservoirs: (1) slightly fractured containing light oil (2) medium/highly fractured containing light oil and (3) highly fractured containing medium-heavy oil. The key pillar of the SVS workflow is a detailed fracture characterisation which leads to the elaboration of a series of conceptual models which capture the range of the subsurface uncertainties. Once the conceptual models have been developed, these can be transformed into discrete fracture models with attached attributes (such as permeability anisotropy, fracture spacing etc). These models may be transformed into reservoir simulation properties as per study requirements. This paper has for main objective to illustrate the SVS workflow with particular emphasis on the borehole image analysis and the use of a web based sandbox model database, to help constrain the fault geometries and the structural understanding of the fields.
