

The Impact of Fractures in the History Matching of Ahmadi Tight Reservoir in Bahrain Field

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ABSTRACT

Ahmadi is a cretaceous shallow reservoir that belongs to the Wasia group. It consists of two reservoir units named AA and AB separated by an argillaceous limestone unit. The matrix permeability of these two units is very low ranging between 0.01 to 10 mD. Despite the low matrix permeability, some remarkable production rates were obtained from Ahmadi due to the significant contribution from secondary reservoir permeability.

Ahmadi secondary permeability is dominated by fractures which have been seen clearly in image logs. The existence of fractures adds some complexity to the reservoir simulation of Ahmadi; this presentation demonstrates three different approaches adopted to achieve fluids history match. These are: single porosity with seismic attributes enhancement, dual porosity dual permeability (DPDP) and virtual fracture network modelling. Each one of these methods has its advantages and disadvantages which will be discussed in the presentation.