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Title **A Case Study on Redevelopment of a Giant Highly Fractured Carbonate Reservoir in Iran Based on Integrated Reservoir Characterization and 3D Modeling Studies**

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Abstract

This field is located within the Zagros fold belt in the South West Iran and is producing in highly fractured carbonate Asmari and Bangestan reservoirs.

It's a 70 km long anticline with about 50 billions barrels of initial oil in place and a small initial gas cap; initial oil column is 2000 m of 32 API crude with properties varying with depth. The field was discovered in 1937 and produced by natural depletion until 1977 when gas injection was initiated in the gas cap.

A total of 320 wells were drilled on the structure.

A full field reservoir study was conducted to propose a new Master Development Plan to maximize hydrocarbon recovery.

This paper presents:

The reservoir characterization mainly based on rock typing and its extension to uncored wells, on fracture characterization and modeling study and on the construction of a full field geostatistical fine grid model.

The reservoir simulations including phenomenological studies on sector models to determine the proper PVT model to use in the full field model and to quantify impact of fracture properties, matrix bloc sizes, diffusion, block to block interaction on reservoir performance and a full field simulation model with dual porosity media and improved black oil options.

Combination of drive mechanisms acting in this field such as gas gravity drainage, diffusion and convection were represented.

Various redevelopment options studied indicate that the overall oil recovery can be improved by gas injection pattern improvement and selected infill drilling with proper completion strategy.