Unconventional Opportunities with Masirah Bay Sand Formation in Oxy Oman's Block 53

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Abstract

Statement of Problem
The Masirah Bay Sand (part of the Neoproterozoic - Huqf Super Group) is one of the oldest oil-bearing reservoirs encountered by Oxy Oman within Block 53. This formation requires further technical work to realize its full potential".
The permeability of the reservoir is an order of magnitude lower than typical reservoirs operated by Oxy Oman, necessitating unconventional development methods to unlock its potential.

Study objectives and conclusions
An integrated Oxy Oman team conducted a study of the Masirah Bay Sand tight reservoir, which is also considered a source rock for many oil-producing fields in the region. An evaluation was completed integrating the geological, geophysical, petrophysical, and reservoir engineering data. The team concluded that the optimum method to unlock Masirah Bay Sand production is through hydraulic fracture stimulation completion techniques. Hydraulic fractures were recommended based on experience gained from Oxy's multiple unconventional tight oil reservoirs in the Permian Basin (USA), which have completions optimized over a number of years. For the Masirah Bay Sand, it was decided to drill a standalone vertical pilot hole within the main Thuleilat Field development area in order to gather a whole core for analysis and further reservoir characterization. The vertical well was then hydraulically fractured and tested over the Masirah Bay Sand interval.

Results and Benefits
The results of the hydraulically fractured vertical well confirmed that the Masirah Bay Sand reservoir is indeed oil-bearing. A successful 60-day production test utilizing a beam pump as the artificial lift method resulted in a follow-up study to model production from a horizontal well with multi-stage hydraulic fracture stimulation.