

# **Exploitation of Yemen Masila Block secondary horizons: Saar and Lower Qishn Formations, Tawila Field**

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## **ABSTRACT**

Oil was discovered on the Masila block in 1991 with first commercial oil production starting in 1994. Most of the oil production originates from the Early Cretaceous Upper Qishn Formation. The Tawila field is the largest of the 15 existing fields on the Masila block. It is located on an isolated fault block structure within the NW-SE Sayun - al Masila Basin. Over the past two years a greater emphasis on deeper secondary targets resulted in an addition of 11,000 bopd. The Saar to Lower Qishn interval represents a transition from a post-rift shallow carbonate shelf to syn-rift tide-dominated quartzose estuarine channels.

Porosity creation from dolomitization and subaerial exposure are key requirements for reservoir development in the Saar Formation. A mud supported rudist floatstone biostrome forms a significant reservoir facies due to the creation of secondary micro and macro scale moldic and vuggy porosity related to an overlying exposure event. Associated tidal flat dolomite reservoirs have excellent porosity (20-25%) within an intercrystalline fine-grained sucrosic matrix. The reservoir is also enhanced by subsequent dissolution of remaining allochems forming abundant molds.

Lower Qishn reservoir sands are deposited within a series of narrow linear channels. Fining upward reservoir sands dissect adjacent exposed tidal flat muds. Evidence for a brackish tidally influenced environment includes coarse channel lag deposits, double mud drapes, inclined heterolithic stratification, moderate bioturbation, and syneresis cracks. Excellent fluid communication within the Lower Qishn reservoirs has been demonstrated with abundant pressure data and production response from pressure maintenance.