

Exploring for Subtle Traps, Natih Formation, North Oman

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ABSTRACT

The Late Albian to Early Turonian Natih Formation in North Oman is a prolific hydrocarbon producing interval with source rock, seals and reservoir present. Depositionally, sequences of carbonate and shale of a few hundreds of meters in thickness were deposited in shallow inner shelf platform with local intrashelf basins accommodating organic-rich carbonates. Traditionally, production of the hydrocarbons from the Natih reservoirs has been restricted to conventional structural traps (e.g. Fahud Field) and truncation traps (e.g. Lekhwair High). The potential for further conceptual stratigraphic or subtle trap opportunities within this formation has been highlighted by explorers in the past. Recent Wide Azimuth (WAZ) seismic acquisition and processing advancements have been key enablers in Petroleum Development Oman (PDO) in the exploration of subtle traps in the Natih Formation in North Oman. A recent project in PDO exploration has targeted the delivery of a portfolio of Natih Subtle Traps by the broad themes of ‘getting more geology from seismic’, by ‘harvesting PDO’s best seismic’ and by focusing in proven play areas driven by a ‘play based understanding’. Elements of the workflow included:

- a) Understanding and correlating the regional and local maximum flooding surfaces of the Natih sequences from available well data
- b) Detailed mapping of the Top Natih-A and notably the incised channel systems in the topmost part of Natih-A, which were formed during Turonian uplift period and subsequently filled by transgressive deep marine of Fiqa shale.
- c) Understanding and mapping of the Natih-e clinof orm belts and their direction of progradation suggested different seismic facies

Inversion generated Acoustic Impedance data guided the sweet-spotting & delineation of the traps. This presentation will highlight how a fully integrated geoscience approach has produced a portfolio of Natih subtle trap opportunities for follow up drilling.