

Regional Review of Natih Truncation Play in North Oman

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ABSTRACT

The Natih truncation play is located in North Oman around the Lekhwair High. Late Cretaceous uplift of the Lekhwair High resulted in the Natih Formation being progressively eroded by the Base Paleogene (Tertiary) unconformity and overlain by Shammar shales. The truncation pattern of multiple Natih carbonate reservoir/seal pairs (Natih A-G), combined with Shammar shale as Natih top seal, creates laterally repeating truncation trapping geometries in a halo around the central Lekhwair High. A recent discovery in the Natih E in 2015 promoted a re-evaluation of the Natih Truncation play and places it in a regional context to evaluate the remaining portfolio. This study has reviewed the Natih Truncation play in term of basin development, source rock distribution, charge migration path and reservoir variability, using all available data within PDO and from literature. The study revealed that the Lekhwair High has been a charge focus area since the end of Late Cretaceous Alpine 1 tectonic event resulting in hydrocarbon being trapped in palaeo structures in Shuaiba and Natih reservoirs. Recent Oligocene tilting (Alpine 2) altered these structures and induced limited re-migration. In term of reservoir, Natih A to E units all show a NE to SW trend, from platform to basin and it is most pronounced in Natih E where an intra-platform basin developed in the SW. Consequently, the most prospective area for this play is where the pre- Oligocene tilting palaeo traps were located and had access to a source rock kitchen. The main palaeo traps were located on the eastern margin of the study area within good reservoir facies and direct access to Natih B and Nafun kitchen to the East. The western margin, however, is much more challenged due to an unproven Jurassic kitchen to the South of the Lekhwair High, fewer paleo structures and poorer reservoir development.