

New Field Scale Observations That Refine Current Structural-Stratigraphic Concepts in Oman

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ABSTRACT

The Late Mesozoic and Cenozoic structural evolution of Oman is now well established: maximum horizontal stress was orientated NW-SE during the Late Cretaceous and deformation was dominated by distributed strike-slip and normal faulting; in the late Cenozoic the stress field changed, the maximum horizontal stress was orientated NE-SW and some of the older Mesozoic structures were inverted. This is based upon and supported by numerous 'exploration scale' regional observations that have focused on the Cretaceous reservoirs of North Oman. At the smaller field development scale recent observations have been made on both new and vintage seismic data at all stratigraphic levels. These observations are helping to refine and expand the overall model of structural & geological understanding into the older Mesozoic, Palaeozoic and Pre-Cambrian.

In this talk we will highlight key recent observations from several spatially and temporally different field studies from South and North Oman. A particular focus will be on how pre-existing structures and stratigraphy have influenced later petroleum systems facets since the Pre-Cambrian. Examples will be shown from fields that include the Ara carbonate play, where pre-salt structure is interpreted as having controlled reservoir quality & development. The Ara carbonate play sits itself within extensive restricted Pre-Cambrian-Early Palaeozoic salt basins and other field examples will show how these basins have in turn been a key influence on the overlying early and late Mesozoic reservoirs and their reaction to the later Mesozoic and Tertiary tectonism. Finally, seismic evidence will be presented for an additional and localized Mesozoic none 'Alpine' tectonic event, allowing comparisons with other Middle Eastern countries.

