In 1989 and 1995, two oil fields were discovered in South Oman in Athel ‘Silicilyte’ reservoirs, comprising Proterozoic to Early Cambrian chert slabs encased in Ara salt. The reservoir units have good porosity but very low permeability and only flow light oil if massively frac’ed. When discovered it was thought that the chert layers might be present throughout the region but with limited drilling success in the 1990’s it became clear that the reservoir was more restricted in occurrence. A plethora of possible models exist for the origin of the chert and, therefore, it’s distribution.

The play requires that a porous slab of laminated chert be encased in salt, charged with light oil and that overpressure is maintained. The permeability must be sufficient to maintain long-term flow after frac’ing. These constraints together with the reservoir, seal and charge distribution maps help define the play sweet spot. In order to identify and evaluate likely prospects, high quality 3D seismic is needed and an extensive seismic acquisition, reprocessing and analysis program is in progress in PDO’s Block 6. Re-mapping and prospect analysis is being used to update the lead and prospect portfolio and help de-risk the play. The play-based approach provides a balanced geological and geophysical de-risking scheme with the intent of providing drill worthy opportunities by 2011. This paper presents a new reservoir distribution model based on integration of previous work, regional well and seismic data analysis, study of global chert analogues and outcrops in Oman.
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