

## **Non-Conventional Seals in Northern Oman, Examples from the Lekhwair High**

**Lee Watts<sup>1</sup>, Kester Harris, Mohamed Azzazi, Said Balushi, Shaikha Qassabi, and Petrus Duindam**

<sup>1</sup>PDO

### **Abstract**

This paper will discuss the hydrocarbon distribution in the Shuai'ba reservoirs across the Lekhwair High. The hydrocarbons are sealed by the Nahr Umr (Cretaceous) and in some areas by a thin Shammar Shale which lies above the base tertiary unconformity. In places, there is oil present in the overburden which matches the Shuai'ba oil geochemically and is interpreted to have leaked through these thin shales. Sinkholes were formed in these areas and are present in the overburden, which terminate at the top Dammam (Oligocene). Post-Dammam, the reservoirs were tilted to the northeast over a period of approximately 30m.a. Hydrocarbon distribution in the Upper Shuai'ba reservoirs does not match the present day structure and cannot easily be explained. The preferred interpretation is that the oil distribution is controlled by a large palaeo-trap which has been tilted over 30m.a. In 2015, many exploration and appraisal wells were drilled across the area and seem to confirm the hydrocarbon distribution is controlled by the palaeo-structure.