Does Oil Emplacement Stop Diagenesis and Porosity Loss in Deeply Buried Sandstone Reservoirs?

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This study looked at the controversy of either oil emplacement stop diagenetic activities especially quartz- cementation by replacing pore water thereby preserving porosity in deeply buried reservoirs or not. A total of 181 thin sections made from core samples and well log data of 8 wells from upper Jurassic reservoirs in Tambar and Ula fields, offshore Norway were used. Detailed petrography XRD and fluid inclusion in quartz cement have been studied. This study shows that porosity is higher in the oil leg than water leg. There is no significant difference in the amount of quartz cement between oil leg and water leg. Significant amount of petroleum inclusion is seen in quartz cement which is likely to have developed when the reservoir is saturated with hydrocarbon. Porosity preservation in these fields is controlled by complex factors which include early microcrystalline quartz and chlorite coating which characterized the high porosity and low quartz cement units. This knowledge is relevant for estimating reserves and designing production strategies.