Timing of Illite Authigenesis and Oil-Gas Charging Histories of Sandstone Reservoirs within the Tarim Basin, China

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The Tarim Basin, China, comprises several sandstone reservoirs. The oil and gas charging histories of the selected reservoirs will be discussed based on K-Ar dating of authigenic illites. The ages of authigenic illites of Lower Silurian bituminous sandstones in the Central uplift area range between 383 to 235 Ma, indicating that the Silurian ancient oil pools were formed during the late Caledonian-late Hercynian. The ages of authigenic illites of the Upper Devonian Donghe sandstones range between 264 to 231 Ma, indicating that the Donghe sandstone hydrocarbon accumulations were mainly formed in the late Hercynian. The ages of authigenic illites of the Lower Jurassic Yangxia Group sandstones in the Yinan-2 gas field, Kuqa depression, range between 28 to 24 Ma, indicating that oil and gas charging started within the Miocene.

The ages of authigenic illites of Lower Cretaceous sandstones in the Akemomu gas field, Kashi sag, Southwest depression, range between 23 to 19 Ma, indicating that there might be some ancient oil pools or migration of oil and gas within this area. The illites of Paleogene sandstones in the Dina 2 gas reservoir, Kuqa depression, have a mainly detrital origin and can not be used for studying the timing of oil and gas charging. The ages of authigenic illites of the underlying Cretaceous sandstones in Dina-201 well range between 25 to 15 Ma, indicating that oil-gas charging in this reservoir most probably started within the Miocene.