Maarten Wiemer and Jerry Yu, Shell, Rijswijk, Netherlands

China’s Onshore Gas Resources: A Discussion of Reservoir Data from the Bohai, Ordos and Tarim Basins

China has a long and successful petroleum industry history, until recently based mainly on the production of oil. Although industrial use of gas in China is more than 2000 years old, new large scale gas infra-structural projects have been initiated in China, giving rise to a re-invigorated and very active upstream gas exploration and development scene. Against this economic back drop, understanding China’s onshore gas reservoir deliverability has a crucial business impact.

More than 5500 core plug data points accumulated during a series of field evaluation projects in three China onshore basins, i.e. Northern Bohai, Ordos and Tarim, give ample material for an interesting illustration of the interplay of geological controls on reservoir quality.

Tertiary Bohai reservoir sandstones show the impact of provenance, complex burial history and possibly late burial leaching. The Permo-Carboniferous reservoir sandstones from the Central Ordos Basin illustrate the impact of provenance, depositional facies and burial history. The Cretaceous reservoir sandstones from the northern Tarim however, seem to ignore the impact of deep burial. Although they were subjected to a complex tectonic history, they contradict the general perception of poor reservoir development in China’s land-locked basins.

Provenance and depositional facies, i.e. mineralogical and textural maturity, appear to have a dominant primary impact on reservoir potential. Climate and tectonic setting in turn control provenance and depositional facies. Tectonic setting, in the context of subsequent burial history, and diagenetic overprint impact these primary controls with variable result. Evaluating this dataset in a regional geological context gives some insight in predicting reservoir performance in China’s challenging subsurface.