QUAN Honghui, ZHANG Zhang, LI Shuabao, ZHANG Zhenjie and HUANG Lei, 2015. A Re-recognition of Hydrocarbon Accumulation Regularity in the Middle-late Stage of Reservoir Development: a Case Study from NB35-2 Oilfield in Bohai Bay Basin. *Acta Geologica Sinica* (English Edition), 89(supp.): 210.

A Re-recognition of Hydrocarbon Accumulation Regularity in the Middle-late Stage of Reservoir Development: a Case Study from NB35-2 Oilfield in Bohai Bay Basin

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According to the contradiction between production and geologic cognition in NB35-2 Oilfield, Bohai Bay Basin, palaeogeomorphology, depositional feature and reservoir forming model have been re-analyzed, as well as the resource potential. In order to study the petroleum geology of NB35-2 oilfield, various kinds of information, such as seismic data, well logging data, drilling cores and production performance data are well analyzed.

The study shows that the characteristics of oil accumulation is "position controlled by palaeogeomorphology, reservoir controlled by sedimentation, oil controlled byhydrocarbon migration and accumulation", that is to say (1) petroleum migration and accumulation were controlled by palaeogeomorphology of buried hill in NB35-2 block, which, is different from previousresearch result that the reservoirs were restricted by lithology rather than structure. (2) Braided river sedimentary facies are predominant in the Guantao Formation. The reservoir mainly distributes in superimposed linked areas of main stream channels, the space distribution of sandbody controls the secondary accumulation and distribution of oil and gas to some extent. (3)The hydrocarbon accumulation pattern of NB35-2 oilfield is characterized by "oil migration and accumulation controlled by faults"and "the deep accumulation and the shallow regulation". Boundary fault and unconformities plays the role of "resource network" in the process of hydrocarbon accumulation to accumulate crude oil in Guantao Formation. Because of a strong movement of the secondary fault, part of crude oil was regulated to Minghuazhen Formation and formed secondary oil pools later. Boundary faultand the secondary fault are key factors to control the oil migration and accumulation.

The resource potential in the Guantao Formation may be three times higher than before. On the basis of the studies discussed in this paper, the team has observed that the application has helped to:

- Increase the number of development wells to drain the hydrocarbons.
- Identify optimal reservoir target location selection and well planning.
- Reduce overall subsurface-associated risks.

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