

## **Petroleum Systems and Hydrocarbon Potential in Neogene Basins, Back Arc Region of Southwest Japan**

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**Takao Iwata** and Norifumi Morita. *Exploration Department, Teikoku Oil Co., Ltd, 31-10, Hatagaya 1-chome, Shibuya-ku, Tokyo, 151-0072, Japan, phone: +81 3-3466-1247, fax: +81 3-3468-3510, t\_iwata@teikokuoil.co.jp*

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In Japan, oil and natural gases are mainly produced from the Neogene back arc sedimentary basins located in Northeast Japan. Although there are also Neogene sedimentary basins called offshore Tsushima and San-in Basins developed in the back arc region of Southwest Japan, no oil and gas field has been found there so far. However, a new gas field was discovered in Korean side of the Tsushima Basin in 1998, and this discovery gave us the chance of re-evaluating the hydrocarbon potential in these basins.

6 wells have been drilled in Japanese side of the Tsushima Basin, and some gas shows were encountered (Minami, 1979). The basin has similar stratigraphy and tectonic evolution history to the hydrocarbon-bearing Neogene basins in Northeast Japan, and has many anticlines formed by inversion tectonics.

The Middle to Upper Miocene deep-sea mudstones have source rock potential in the offshore San-in Basin alike the hydrocarbon-bearing Neogene basins in Northeast Japan. On the other hand, since shallower slope to shelf environment was dominant during Middle to Late Miocene age in the Tsushima Basin, source rocks seem to be rich in gas-prone organic matters derived from land plants. These source rocks reach gas producing maturity level at about 3,000 meters of burial depth because of relatively high heat flow rate.

Since seismic amplitude anomalies are confirmed at Middle to Upper Miocene section on flanks or noses of prominent anticlines, stratigraphic traps seem to be promising as future exploration play.

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