

Rifting and petroleum potential: results of analysis of sedimentary basins of West Pacific mobil belt

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The subjects of investigation are the epicontinental Sea of Okhotsk and the South China Sea, interpreted as the submerged blocks of Asian continent reworked by mantle diapirism and rifting. At end Mesozoic the geodynamic setting of Asian passive margin gave way to the setting of active continental margin, manifested by the subduction of the Pacific plate beneath the continent in the Cenozoic.

The study of the Sea of Okhotsk and the South China Sea basin geodynamics enables to classify the related petroliferous and possibly petroliferous basins in the following way: cratogenic (Central Okhotsk), pericratonic (Pearl, East Vietnam), post-rift orogenic (Aniva, Makarov, Siam), rift (North Sakhalin, Shelekhov, Bilibin, Tinro, Mekong, Bac Bo), accretional (West Kamchatka, West Palawan), and pericontinental-back arc basins (North Kuril, Sarawak). The basins are filled with Upper Cretaceous and, for the most part, Cenozoic deposits, with maximum thicknesses amounting to 10-12 km in rift zones.

About 300 oil and gas fields have been discovered in the basins of the Sea of Okhotsk and South China Sea. Half of them, including the largest ones, were discovered in the rift zones. High HC generation potential within the rift zones is characteristic of not only marine and deltaic, but also lacustrine mudstones. Hydrocarbon migration in the rifts is limited by the linear structure. Tectonic contacts between the source rocks and reservoirs, resulting from syn- and post-sedimentary faulting, and unconformity surfaces provide additional migration pathways, including the migration into the older deposits and even into fractured basement rocks.