

Evaluation of Miocene and Oligocene Reservoirs in the Malay-Tho Chu Basin, Offshore Southern Vietnam

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The Malay-Tho Chu Basin is a part of the Northeastern margin of the Malay Basin. It is situated in the Gulf of Thailand and has an area of about 106,650 km². In recent years, exploration activities in this area have provided interesting results regarding the hydrocarbon potential, especially the gas potential. The Oligocene syn-rift sequence consists of interbedded shales and sandstones formed in fluvio-lacustrine environments. The Miocene sequence consists of interbedded sandstones and shales with liptinitic coals deposited in fluvio-deltaic/coastal plain environments. Two units are considered as the principal source rocks in the area: Oligocene syn-rift shales and Lower Miocene coaly shales. An ongoing study is re-evaluating the great amount of geological, geophysical and drilling data. Formation evaluation has provided a good understanding of the reservoir quality and producibility and has identified potential pay zones, which is expected to minimize the need for expensive testing.

Using data of 11 wells, three major reservoirs in the Malay-Tho Chu Basin are identified. They comprise Oligocene, Lower Miocene and Middle Miocene sandstones. In general, sandstones in the basin have a high hydrocarbon potential and are in most places buried to less than 3700m. The Oligocene sandstones are 2 to 3m thick with shale volume of less than 20% and porosity of 13-18%. Net gross ratio ranges from 20 to 30%. The Lower Miocene sandstone beds are often 2 to 10m thick with 5 to 20% of shale volume, average porosity of 20-25% and occupy about 20% to 40% of gross thickness. These sandstone beds are main hydrocarbon bearing rocks in the basin. Middle Miocene sandstones are 1 to 5 meter thick and have shale volume of 20- 30%. The maximum NGR is 28%. Average porosity of sandstones ranges from 22% to 33%. Condensate and gas have been discovered in Oligocene and Miocene sandstones.