

## **Syn-Rift Lacustrine Axial Delta Reservoir Quality and Its Distribution: New Insight from Sumpur Delta in Singkarak Lake, West Sumatra, Indonesia**

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### **Abstract**

Paleogene syn-rift lacustrine deposits in western Indonesia basins have been recognized as one of the potential reservoirs. Central Sumatra Basin for instance, lacustrine reservoirs have been explored and produced sporadically even though the understanding of its reservoirs both geometry and quality are still inadequate. Similarly, this lack of understanding occurs in Ombilin Basin that has promising exploration target in syn-rift deposit. It is believed that the syn-rift lacustrine reservoirs in both basins will play as important role in further opportunities.

Lake Singkarak, which is situated in West Sumatra, is known as a pull-apart basin in Indonesia that is filled by syn-rift deposits. This basin setting will provide significant information and facts in understanding lacustrine syn-rift reservoirs that will be improved in subsurface analysis in Central Sumatra, Ombilin, and/or other petroleum basins. In addition, Lake Singkarak deposit has been considered holding possible hydrocarbon potential for exploration target. Numerous regional study of Lake Singkarak has been conducted since 1961. The most recent study provided sedimentology facies model, which are alluvial fan, braided river, meandering river, fan delta, shoreline, lacustrine delta, shallow lacustrine, and shelf-slope lacustrine facies. These facies have constructed a fundamental regional understanding of Lake Singkarak syn-rift system. However, detailed analysis on reservoir geometry and quality are unexplored. In order to obtain deep understanding how each reservoir facies distribute in such lacustrine delta or more commonly known as axial fluvial delta environment, detail analysis on modern system in this particular environment have been performed.

Axial fluvial delta will be represented by Sumpur Delta, which is located in the northern part of Lake Singkarak. Sumpur Axial Fluvial Delta (SAFD) is created in the fault-tip area and parallel to the fault. The fault activities led distinctively of accommodation space or basin geometry and sediment-filling in Sumpur Axial Fluvial Delta system.