

Significant Influences of Paleogeographic and Sedimentation Study with Sequence Stratigraphic Method on Petroleum System of Telisa Formation, Central Sumatera Basin

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Telisa formation is one of Neogene Formation which can be probable reservoir in Central Sumatera Basin, because in several age of sedimentation indicated relative sea level fall phase resulting fluvial influx in several area. Therefore studies about sedimentation pattern and paleogeographic in this area are really needed.

The aim of these studies is to interpret distribution of Telisa Formation and to make geological model of Telisa Formation. This studies used 48 well log data which consisted of Gamma Ray and Resistivity log data. Moreover these studies also used 12 biostratigraphic well data from around 1.725 km² PT. Chevron Pasific Indonesia operation area.

Well log data has been correlated in 5 stratigraphic correlation cross sections in North-South orientation and in West-East orientation. Beside that biostratigraphic data can be used for make geometrical and paleogeographic basin model in Middle Miocene. Correlation used Galloway sequences stratigraphic theory using Maximum Flooding Surface as stratigraphic marker.

Based on the correlation Telisa Formation has been divided into 2 major sequences namely Sequence I and Sequence II. Each Sequence has 2 System Tract, such as Transgressive System Tract (TST) and Highstand System Tract (HST). According to biostratigraphic data, depositional environment of TST interval in Sequence I is located from intertidal to Outer Neritic, meanwhile depositional environment of HST interval in Sequence I is located from intertidal to middle neritic. Otherwise in depositional environment of TST interval in Sequence 2 is located from inner neritic to outer neritic and depositional environment of HST interval in Sequence II is located from inner neritic to middle neritic.

In analyzing electrofacies which is integrated with depositional environment from biostratigraphic data, TST interval in Sequence I have 5 facies, namely tidal distributary channel, tidal bar, sand flat, pro delta, and marsh facies, so depositional environment in this interval is Tidal dominated estuary. Otherwise HST interval also have same facies as previous interval.

TST interval in Sequence II have 5 facies, namely tidal distributary channel, tidal bar, sand flat, pro delta, and marsh facies, so depositional environment in this interval is Tidal dominated estuary. Facies distribution would impact all Petroleum System in Central Sumatera Basin.