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Gas biogenik merupakan salah satu sumber energi alternatif yang memiliki potensi cukup bagus dari sisi ekonomis maupun eksplorasi. Cekungan Sumatera Tengah adalah salah satu penghasil gas biogenik. Gas biogenik terdapat pada Formasi Petani dan telah terbukti menghasilkan beberapa lapangan produksi, namun belum banyak penelitian dan publikasi terkait gas biogenik Formasi Petani terutama pada Area X. Area X merupakan daerah penelitian yang terletak pada area milik PT. Chevron Pacific Indonesia, terdiri dari 6 lapangan dan 72 sumur. Penelitian pada Area X bertujuan untuk mengetahui lingkungan pengendapan serta kandungan dan persebaran gas biogenik Formasi Petani.

Data penelitian berupa data log dan data seismik 3D. Analisis yang dilakukan pada data sumur meliputi identifikasi Petani "A" dan "B", pembagian paket *sand*, korelasi *sand to sand*, elektrofases dan lingkungan pengendapan. Analisis data seismik meliputi *picking horizon* dan *fault*, peta struktur bawah permukaan, peta amplitudo, DHI dan AVO untuk mengidentifikasi dan mengetahui distribusi gas biogenik.

Formasi Petani Area X diinterpretasikan memiliki lingkungan pengendapan *barrier-island complexes* pada Petani "B" dan *tide-dominated delta* pada Petani "A". Struktur geologi berupa *thrust fault* dengan *trend* NW-SE pada bagian barat dan *normal fault* dengan *trend* NE-SW pada bagian selatan Area X. Analisis DHI berupa *bright spot* dan *flat spot* dengan tipe *through-over-peak (american zero phase)* serta analisis AVO tipe kelas III menunjukkan adanya kandungan gas biogenik pada anomali. Kandungan gas biogenik terdapat pada paket *sand* SB1, SB2 (pada fasies *tidal channel*) dan SB3 (pada fasies *offshore sand bar*). Tipe jebakan pada daerah penelitian berupa akibat jebakan stratigrafi (dominan) serta jebakan struktur.

Kata kunci : Gas biogenik, Formasi Petani, lingkungan pengendapan, DHI, AVO

Abstract

Biogenic Gas is one of alternative energy that has good potential both in economic and exploration. Central Sumatra Basin is one of them which produce it. Biogenic gas is produced from Petani Formation. Biogenic gas has a good potential for economic purpose and exploration as alternative resources. Even though Formasi Petani has produced biogenic gas in several fields, but there is just only a few of research and publication related to biogenic gas Petani Formation. Area X is one of the research location in Central Sumatra Basin that consist of 6 fields and 72 wells. Location of Area X is in the field that belongs to PT. Chevron Pacific Indonesia. The purpose of this research is to identify and determine distribution of biogenic gas Petani Formation and depositional environment.

Research data only consist of log data and seismic 3D. Log data analysis consist of log identification of Petani Formation based, sand to sand correlation, electrofacies analysis to determine depositional environment and as base data for seismic data analysis. Petani Formation in Area X divides into 5 packages of sands, there are SA1, (Petani "A"), SB1, SB2, SB3 & SB4 (Petani "B"). Correlation path divided into two, there are NW-SE and NE-SW to discover lateral distribution. Seismic data analysis consist of picking horizon and fault, subsurface structural map, amplitude map, DHI and AVO to identify and discover the distribution of biogenic gas.

Depositional environment of Petani Formation Area X is barrier-island complex in Petani "B" and tide-dominated delta in Petani "A". Structural geology in Area X are thrust fault with NW-SE trend on the west and normal fault with NE-SW trend on the south. Through-over-peak bright spot and flat spot (american zero phase) in DHI analysis and type III AVO is able to identify biogenic gas in anomaly amplitude. Biogenic gas contains in SB1, SB2 as sand ribbon and SB3 as sand ridge. Trap mechanism in research area is both of stratigraphical trap (dominant) and structural trap.

Keywords : *Biogenic Gas, Petani Formation, Depositional Environment, DHI, AVO*