ABSTRAK

PENENTUAN ZONA PERSEBARAN DAN KARAKTERISASI RESERVOAR BATUPASIR MENGGUNAKAN INVERSI *MODEL BASED*, *MULTI LAYER FEED FORWARD NEURAL NETWORK*, DAN SEISMIK ATRIBUT (*ROOT MEAN SQUARE*, *SWEETNESS*, *ENVELOPE*) PADA LAPANGAN "N" CEKUNGAN SUMATERA UTARA

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Cekungan Sumatera Utara memiliki karakteristik cekungan yang sangat kompleks. Dengan produksi lebih dari 100 tahun, Cekungan Sumatera Utara adalah salah satu cekungan sedimen paling produktif di Indonesia. Interpretasi kuantitatif mengenai detail suatu reservoar hidrokarbon pada lapangan "N" Cekungan Sumatera Utara dapat dijadikan sebagai referensi pengembangan lapangan reservoar dan meningkatkan produksinya.

Penelitian ini bertujuan untuk mengetahui persebaran dan karakterisasi reservoar *sandstone* pada lapangan "N", serta penentuan zona *interest* hidrokarbon sebagai lokasi sumur pengembangan selanjutnya berdasarkan analisa seismik inversi *model based*, multiatribut *multi-layer feed forward neural network* (MLFN), dan seismik atribut (*root mean square*, *sweetness*, *envelope*). Penenlitian ini akan berfokus pada Formasi Keutapang, Lapangan "N" Cekungan Sumatera Utara.

Berdasarkan analisis data *log*, seismik inversi *model based*, multiatribut, dan seismik atribut didapatkan bahwa persebaran reservoar *sandstone* Formasi Keutapang memiliki respon berupa *low gamma ray*, *low density*, *high acoustic impedance*, dan *high amplitude* dengan arah persebaran berasal dari barat daya menuju arah timur laut. Serta memiliki 3 zona *interest* hidrokarbon yang berdekatan dengan sumur ekplorasi NZ-C dan pada struktural tinggian bagian selatan wilayah penelitian yang dibatasi struktur patahan yang menjadi jalur migrasi fluida hidrokarbon.

Kata kunci : Inversi *Model Based*, Multi Atribut MLFN, Reservoar *Sandstone*, Seismik Atribut.

ABSTRACT

DETERMINATION OF DISTRIBUTION ZONE AND CHARACTERIZATION OF SANDSTONE RESERVOIR USING INVERSION MODEL BASED, MULTI LAYER FEED FORWARD NEURAL NETWORK, AND SEISMIC ATTRIBUTES (ROOT MEAN SQUARE, SWEETNESS, ENVELOPE) IN "N" FIELD NORTH SUMATRA BASIN

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The North Sumatra Basin has very complex basin characteristics. With more than 100 years of production, the North Sumatra Basin is one of the most productive sedimentary basin in Indonesia. Quantitative interpretation of the details of a hydrocarbon reservoir in the "N" field of the North Sumatra Basin can be used as a reference for developing reservoir fields and increasing production.

This study aims to determine the distribution and characterization of the sandstone reservoir in the "N" field, as well as to determine the hydrocarbon interest zone as the location of further development wells based on inversion model based, multi attribute multi-layer feed forward neural network (MLFN), and attribute seismic (root mean square, sweetness, envelope). This research will focus on the Keutapang Formation, Field "N" North Sumatra Basin.

Based on the analysis of log data, seismic inversion model-based, multi-attribute, and attribute seismic, it is found that the distribution of the Keutapang Formation sandstone reservoir has a response in the form of low gamma ray, low density, high acoustic impedance, and high amplitude with the direction of the distribution coming from southwest to northeast. As well as having 3 zones of hydrocarbon interest adjacent to the NZ-C exploration well and in the structural elevation of the southern part of the study area which is limited by a fault structure which is the migration path of hydrocarbon fluids.

Keywords : *Model Based Inversion, Multi Attribute MLFN, Sandstone Reservoir, Seismic Attributes*