

Area AB Lapangan Karenina terletak di Sub-cekungan Tidung, Cekungan Tarakan, Kalimantan Utara yang terletak sekitar 40 km di selatan Pulau Nunukan. Lapangan Karenina merupakan lapangan tua yang sudah dieksploitasi sejak tahun 1977 dan perlu dievaluasi lebih lanjut untuk menemukan titik potensial lainnya yang dapat dilakukan pengeboran. Evaluasi lebih lanjut dilakukan melalui pengamatan terhadap fasies dan lingkungan pengendapan yang kemudian ditampilkan dalam bentuk model geologi 3D. Pemodelan 3 dimensi dilakukan karena dalam pemodelan dapat dilakukan persebaran data pada titik yang tidak memiliki data sumur, yang disebarakan dengan metode geostatistika. Model dihasilkan dalam bentuk 3D juga untuk mempermudah perencanaan pengeboran dan anggaran biaya kedepannya. Data yang diamati berupa data batuan inti setebal 40 ft dalam sumur JKA-15, 5 data cutting, data seismik 3D, dan 22 data log sumur. Berdasarkan pengamatan batuan inti dan cutting, diketahui bahwa litologi yang terdapat pada daerah penelitian berupa batuserpih, batulanau, batupasir berukuran butir sangat halus – halus dan mengandung material karbon. Data log Gamma Ray digunakan untuk melakukan analisis elektrofasis, kemudian berdasarkan data – data tersebut diketahui bahwa lingkungan pengendapan daerah penelitian berada pada tide dominated delta dan memiliki tiga fasies yaitu distributary mouth bar, tidal distributary channel, dan intertidal flat. Fasies tersebut ditampilkan persebarannya dalam bentuk model 3D dengan mengkombinasikan data analisis elektrofasis serta seismik 3D. Pemodelan menggunakan metode analisis variogram dengan algoritma Truncated Gaussian Simulation. Hasil pemodelan menunjukkan persebaran fasies dengan geometri sand bar cenderung elongate barat ke timur dengan lingkungan pengendapan tide-dominated delta dan sublingkungan diantara intertidal – subtidal.

Kata kunci: Formasi Tabul, pemodelan fasies, analisis variogram, truncated gaussian simulation, tide-dominated delta

AB Area Karenina Field is located in Tidung Sub-basin, Tarakan Basin, North Borneo. Located about 40 km south from Nunukan Island, Karenina Field is an old oil field that has been exploited since 1977 and need further evaluation to find other potential spots to be drilled. The further evaluation was done by observing facies and depositional environment which was then displayed in the form of geological three-dimensional model. 3D modeling was done because with modeling, it could disperse data on spots that has no well data, which was scattered with geostatistics method. The 3D model purpose are also to help with the drilling and cost planning in the future. The observed data were core data with 40 ft thickness in well JKA-15, 5 cutting data, 3D seismic data and 22 well logs data. Based on observations of core and cutting, the lithology of the research area are shale, siltstone, very fine – fine grain sandstone with carbon-containing material. Gamma Ray log was used to perform electrofacies analysis, then based on those data, it was discovered that the depositional environment area of research is the tide dominated delta which has three facies, that are distributary mouth bar, tidal distributary channel, and intertidal flats. Those facies was then displayed in the form of 3D model, by combining electrofacies analysis data with 3D seismic data. The method used was variogram based modeling using Truncated Gaussian Simulation algorithm. The result of the modeling showed that the distribution of facies with elongate sand bars was developed from west to east with tide-dominated delta depositional environment and subenvironment between intertidal - subtidal.

Keywords: *Tabul Formation, facies modeling, variogram analysis, truncated gaussian simulation, tide-dominated delta*