

SARI

STUDI GEOLOGI, PERHITUNGAN CADANGAN HIDROKARBON DAN PEMODELAN RESERVOIR BERDASARKAN DATA SEISMIC 3D, LAPANGAN KAPRASIDA, FORMASI KEUTAPANG, CEKUNGAN SUMATERA UTARA

Oleh:
Faishal Mahdy

Lapangan Kaprasida secara administratif terletak di Provinsi Aceh, Cekungan Sumatera Utara dengan luas 30 km². Lapangan ini terletak pada antiklin asimetris yang berasosiasi dengan struktur sesar normal berorientasi timur laut –barat daya akibat periode deformasi kompresi. Reservoir pada Lapangan Kaprasida adalah Formasi Keutapang dengan fokus penelitian pada interval lapisan batupasir Z-600. Penelitian ini bertujuan untuk memahami kondisi geologi lapangan penelitian, menentukan karakteristik reservoir seperti fasies pengendapan, distribusi dan property reservoir, serta prospek hidrokarbon pada reservoir Z-600. Data yang digunakan terdiri dari data seismik 3D, deskripsi batuan inti, data *wireline log*, data petrofisik. Metode yang digunakan adalah analisis *wireline log*, analisis *core* dan *cutting*, analisis biostratigrafi, analisis seismik, dan perhitungan cadangan. Reservoir Z-600 Formasi Keutapang pada Lapangan Kaprasida diendapkan pada lingkungan delta yaitu *distributary mouth bar* dengan arah pengendapan barat laut-tenggara. Berdasarkan pemodelan property reservoir daerah penelitian memiliki nilai rata – rata porositas efektif 16%, saturasi air 0,33 dengan permeabilitas rata-rata 251 mD dan *net to gross* senilai 0,9. Estimasi total volumetrik hidrokarbon pada Lapangan Kaprasida sebesar 133.000 MSTB.

Kata kunci : Cekungan Sumatera Utara, Formasi Keutapang, object modelling, pemodelan reservoir

ABSTRACT

GEOLOGY STUDY, HYDROCARBON RESERVES ESTIMATION AND RESERVOIR MODELLING BASED ON 3D SEISMIC, KAPRASIDA FIELD, KEUTAPANG FORMATION, NORTH SUMATRA BASIN

**Written by:
Faishal Mahdy**

Kaprasida Field administratively is located in Aceh Province and part of North Sumatra Basin encompassing an area of 30 km². Kaprasida Field is located in asymmetrical anticline which associate with normal fault with northeast-southwest trend as result of compression stage. Reservoir of Kaprasida Field is Keutapang Formation with study focus at sandstone interval Z-600. The main purpose of this study are to know geological condition of Kaprasida Field to determine reservoir characteristic such as depositional facies, reservoir properties and distribution, and hydrocarbon prospect of sandstone interval Z-600. The data used in this study consists of 3D seismic, core description, wireline log, and petrophysic. Several methods that have been used are wireline analysis, core and cutting analysis, biostratigraphy analysis, seismic analysis and hydrocarbon volumetric estimation. Z-600 resevoir Keutpang Formation was deposited in delta which is distributary mouth bar with northwest-southeast sedimentation trend. Based on reservoir property modelling the research interval has average reservoir porosity is about 16%, water saturation 0,33 with average permeability 251 mD and net to gross is about 0,9. The total hydrocarbon volumetric estimation on Kaprasida Field is 133.000 MSTB.

Kata kunci : North Sumatra Basin, Keutapang Formation, object modelling, reservoir modelling