ABSTRAK

STUDI FASIES LINGKUNGAN PENGENDAPAN DAN PEMODELAN FASIES "ZONA - A" BERDASARKAN DATA LAPANGAN "AJI" PADA FORMASI NGRAYONG CEKUNGAN JAWA TIMUR UTARA

Cekungan Jawa Timur Utara merupakan salah satu cekungan hidrokarbon produktif di Indonesia yang memiliki potensi untuk dilakukan pengembangan. Analisis bawah permukaan secara komprehensif perlu dilakukan untuk mengkaji kembali fasies dan lingkungan pengendapan yang berkembang serta implikasinya terhadap persebaran *reservoir* berdasarkan kontrol fasies dan karakteristik propertinya yang kemudian divisualisasikan dalam suatu permodelan *reservoir* geologi. Salah satu wilayah yang memiliki prospek untuk dilakukan pengembangan adalah Lapangan "AJI", Formasi Ngrayong yang terdiri dari lima data sumur dengan suksesi *deviated.* Daerah penelitian berada di Lapangan "AJI" yang merupakan wilayah operasi PT Pertamina EP Cepu Zona 11 dan termasuk kedalam Cekungan Jawa Timur Utara. Pada penelitian ini dilakukan analisis pada 5 titik sumur yaitu KAR-01, KAR-02, KAR-04, KAR-16, dan KAR-25 yang tersebar pada Lapangan "AJI". Berdasarkan hasil analisis dengan menggunakan data *mudlog* dan *wireline log* maka didapatkan litologi berupa batupasir dan batuserpih. Metode yang digunakan adalah analisis data sumur seperti analisis litologi, analisis *marker* sikuen stratigrafi, analisis *system tract*, analisis elektrofasies, dan analisis fasies lingkungan pengendapan. Analisis inilah yang kemudian menghasilkan peta pola persebaran fasies. Hasil analisis didapatkan litologi berupa batupasir dan batuserpih dengan system tract yang ditemukan berupa transgressive system tract dan highstand system tract. Berdasarkan analisis elektrofasies didapatkan pola *cylindrical shaped* elektrofasies yang dihasilkan oleh litologi berupa sedimen tebal dan seragam seperti litologi batupasir tebal, bentuk pola ini menggambarkan lingkungan pengendapan Mid-Fan dengan fasies *channelled portion of suprafan lobes*. Funnel shaped Menunjukkan pola litologi mengkasar ke atas pola elektrofasies ini menggambarkan lingkungan pengendapan Mid-Fan dengan fasies *channelled-smooth Portion of suprafan lobes*. Bell shaped menunjukkan pola litologi menghalus ke atas, pola elektrofasies ini menggambarkan lingkungan pengendapan Mid-Fan dengan fasies *channelled-smooth portion of suprafan lobes*. Seratted shaped memiliki pola elektrofasies yang menyerupai gigi hiu merupakan hasil dari proses agradasi, terjadi karena badai, bentuk pola ini menggambarkan lingkungan pengendapan Mid-Fan dengan fasies *Smooth Portion of Suprafan Lobes*. Lingkungan pengendapan pada daerah penelitian yaitu *deepwater submarine system.*

Kata Kunci : Cekungan Jawa Timur Utara, Formasi Ngrayong, Permodelan Fasies, Sikuen Stratigrafi.

ABSTRACT

STUDY OF FACIES OF THE DEPOSITIONAL ENVIRONMENT AND MODELING OF "ZONE - A" FASIES BASED ON "AJI" FIELD DATA IN THE NGRAYONG FORMATION OF NORTH EAST JAVA BASIN

The North East Java Basin is one of the productive hydrocarbon basins in Indonesia that has the potential for development. Comprehensive subsurface analysis is needed to review the facies and depositional environment that are developing and their implications for reservoir distribution based on facies control and property characteristics which are then visualized in a geological reservoir model. One of the areas that has prospects for development is the "AJI" Field, Ngrayong Formation which consists of five well data with deviated succession. The research area is in the "AJI" Field which is the operational area of PT Pertamina EP Cepu Zone 11 and is included in the North East Java Basin. In this study, analysis was carried out at 5 well points, namely KAR-01, KAR-02, KAR-04, KAR-16, and KAR-25 which are spread across the "AJI" Field. Based on the results of the analysis using mudlog and wireline log data, the lithology was obtained in the form of sandstone and shale. The method used is well data analysis such as lithology analysis, stratigraphic sequence marker analysis, system tract analysis, electrofacies analysis, and depositional environment facies analysis. This analysis then produces a map of facies distribution patterns. The results of the analysis obtained lithology in the form of sandstone and shale with system tracts found in the form of transgressive system tracts and highstand system tracts. Based on the electrofacies analysis, a cylindrical shaped electrofacies pattern was obtained which was produced by lithology in the form of thick and uniform sediments such as thick sandstone lithology, this pattern shape describes the Mid-Fan depositional environment with channelled portion of suprafan lobes facies. Funnel shaped Indicates a coarsening upward lithology pattern, this electrofacies pattern describes the Mid-Fan depositional environment with channelled-smooth Portion of suprafan lobes facies. Bell shaped indicates a smoothing upward lithology pattern, this electrofacies pattern describes the Mid-Fan depositional environment with channelled-smooth portion of suprafan lobes facies. Seratted shaped has an electrofacies pattern that resembles shark teeth or is often called saw teeth is the result of the aggradation process, occurs due to storms, this pattern shape describes the Mid-Fan deposition environment with the Smooth Portion of Suprafan Lobes facies. The deposition environment in the research area is the deepwater submarine system..

Keywords : North East Java Basin, Ngrayong Formation, Facies Modeling, Stratigraphic Sequence.