ABSTRAK

Minyak dan gas bumi merupakan salah satu sumber daya alam yang dimiliki Indonesia dan kebutuhan masyarakat akan sumber daya alam tersebut semakin meningkat. Untuk memenuhi kebutuhan tersebut, perlu dilakukan peningkatan kegiatan eksplorasi dan produksi, salah satunya dalam bentuk penelitian. Penelitian dilakukan pada salah satu lapangan operasi PT Pertamina Hulu Energi *Offshore Northwest Java* (ONWJ), yaitu Lapangan Arizona. Lapangan ini termasuk kedalam Cekungan Jawa Barat Utara, tepatnya pada Formasi Main Cibulakan Atas.

Analisis fasies dan lingkungan pengendapan dilakukan dengan pemetaan bawah bawah permukaan yang mengintegrasikan data batuan inti, data *well log*, data *completion log*, dan data seismik inversi. Hal ini dilakukan guna mengetahui variasi litologi, lingkungan pengendapan, asosiasi fasies, serta geometri dan arah distribusi pada daerah penelitian. Selanjutnya dapat diketahui lapisan yang prospek sebagai reservoar hidrokarbon.

Daerah penelitian memiliki variasi litologi berupa batulanau masif, batulanau lentikuler, batupasir flaser, batupasir masif, dan batupasir karbonatan. Dari variasi litologi tersebut dilakukan klasifikasi berupa fasies *sandridge* yang dapat dikelompokkan menjadi asosiasi fasies berupa fasies embrionik, fasies akresi, dan fasies *abandonment*. Terdapat 2 reservoar yang dilakukan pemodelan fasies menggunakan metode *Truncated Gaussian Simulation* (TGS) pada interval parasikuen-10 dan parasikuen-7. Lingkungan pengendapan dari penelitian yang dilakukan merupakan daerah laut dangkal (*shallow marine*) pada bagian *upper shoreface-offshore* dengan arah pengendapan relatif utara-selatan.

Kata Kunci : *Asosiasi Fasies, Cekungan Jawa Barat Utara, Fasies Sandridge, Formasi Cibulakan Atas, Pemodelan Fasies, Truncated Gaussian Simulation.*

ABSTRACT

Oil and natural gas are one of the natural resources that Indonesia has and the public's need for these natural resources is increasing. To meet these needs, exploration and production activities need to be increased, one of which is in the form of research. The research was carried out at one of the operational fields of PT Pertamina Hulu Energi Offshore Northwest Java (ONWJ), namely the Arizona Field. This field is included in the North West Java Basin, specifically the Main Upper Cibulakan Formation.

Facies and depositional environment analysis was carried out using subsurface mapping which integrated core data, well log data, completion log data and seismic inversion data. This was done to determine variations in lithology, depositional environment, facies associations, as well as geometry and distribution direction in the study area. Next, we can identify layers that have prospects as hydrocarbon reservoirs.

The research area has variations in lithology in the form of massive siltstone, lenticular siltstone, flaser sandstone, massive sandstone and carbonate sandstone. From these lithological variations, classification is carried out in the form of sandridge facies which can be grouped into facies associations in the form of embryonic facies, accretionary facies and abandonment facies. There are 2 reservoirs where facies modeling was carried out using the Truncated Gaussian Simulation (TGS) method at parasequence-10 and parasequence-7 intervals. The depositional environment from the research carried out is a shallow marine area in the upper shoreface-offshore with a relatively north-south direction of deposition.

Keyword : *Facies Association, North West Java Basin, Sandridge Facies, Upper Cibulakan Formation, Facies, Facies Modelling, Truncated Gaussian Simulation.*