

ABSTRAK

PEMODELAN GEOMETRI LAPISAN BATUBARA BERDASARKAN KARAKTERISTIK *GAMMA RAY LOG* DAN *DENSITY LOG* DI FORMASI BALIKPAPAN BAGIAN ATAS, DAERAH LOA JANAN, KABUPATEN KUTAI KARTANEGARA, PROVINSI KALIMANTAN TIMUR

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Penelitian mengenai lapisan batubara dilakukan dengan menggunakan 14 data *well logging* jenis *gamma ray log* dan *density log*, serta 20 data bor. Lokasi penelitian merupakan formasi pembawa batubara yang diendapkan pada lingkungan *upper delta plain-fluvial* dengan struktur utama berupa Antiklin Palaran dan sesar normal. Tujuan dari penelitian ini yaitu untuk menganalisis variasi geometri lapisan batubara yang berada di Formasi Balikpapan Bagian Atas, Daerah Loa Janan, Kutai Kartanegara, Kalimantan Timur.

Data hasil pengukuran di lapangan dilakukan pengolahan dan interpretasi untuk mengetahui variasi litologi, ketebalan dan kedalaman berdasarkan karakteristik data *well logging*. Tahap selanjutnya yaitu pembuatan model bawah permukaan dengan model 1D, 2D dan 3D untuk mengetahui konfigurasi bawah permukaan, kemudian dilakukan analisis variasi geometri lapisan batubara. Dalam aspek eskplorasi hingga penambangan, geometri lapisan batubara sangat penting diketahui karena berpengaruh terhadap perhitungan cadangan batubara hingga keekonomisan batubara.

Hasil penelitian dan analisis nilai *gamma ray* diperoleh 5 variasi litologi yaitu lapisan batubara 2,8-38 API, lapisan batupasir 11,6-38,5 API, lapisan batulanau 38,2-60 API, lapisan batulempung 73,7-101,4 API, dan *coaly shale* 63,47-114 API. Berdasarkan model geologi daerah penelitian, geometri lapisan batubara yang dapat dianalisis yaitu ketebalan (0,45 m-2,75 m), kemiringan (10^0 - 39^0), serta memiliki pola kemenerusan yang melampar dan melensa yang dipengaruhi adanya faktor *splitting*, *washout*, erosi dan ketidakkmenerusan.

Kata Kunci: Karakteristik *well logging*, model, geometri lapisan batubara.

ABSTRACT

MODELING OF COAL LAYER GEOMETRY BASED ON GAMMA RAY LOG AND DENSITY LOG CHARACTERISTICS IN UPPER BALIKPAPAN FORMATION, LOA JANAN AREA, KUTAI KARTANEGARA REGENCY, EAST KALIMANTAN

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The research about coal seam used 14 datas well logging type gamma ray log and density log, and 20 drill data. The research area location is contains of coal bearing formation, it's deposited in upper delta plain-fluvial environment with the main structure Antiklin Palaran and normal fault. The purpose of this research is to analyze geometry variations of coal seam located in the Upper Balikpapan Formation, Loa Janan Area, Kutai Kartanegara, East Kalimantan.

The measurement data in the field is processed and interpreted to determine the variation of litology, thickness and depth based on the characteristics of well-logging data. The next step is sub-surface modeling with 1D, 2D and 3D models to find out the sub-surface configuration, then analysis the geometry variations of coal seams. In terms of exploration to mining, the geometry of coal seams is very important because it affects the calculation of coal reserves to the economy of coal.

The results of the research are gammay ray analysis value that are known consist of 5 lithological variations, they are: coal with the values from 2.8 to 38 API, sandstone between 11.6 to 38.5 API, silistone from 38,2 to 60 API, claystone from 73,7 to 101,4 API, and coaly shale between 63,47 to 114 API. Based on the geological model of the research area, the geometry of coal layers that can be analyzed are thickness (0.45 m to 2.75 m), slope (10^0 to 39^0), and have a continuity pattern that is stretched and melted that are influenced by the splitting, washout, erosion and unsustainability.

Keywords: *Characteristics of well logging, model, coal layer geometry.*