ABSTRAK

MODEL KUALITAS LAPISAN BATUBARA BERBASIS *GAMMA RAY LOG* DAN *DENSITY LOG* DI FORMASI BALIKPAPAN BAGIAN BAWAH, KECAMATAN LOA JANAN, KABUPATEN KUTAI KARTANEGARA, KALIMANTAN TIMUR

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Model kualitas lapisan batubara merupakan representasi kondisi kualitas lapisan berdasarkan data *gamma ray log* dan *density log,* ditunjang dengan hasil analisis dari data uji laboratorium. Mengetahui kualitas lapisan batubara digunakan untuk spesifikasi dan keekonomian lapisan batubara. *Gamma ray log* dan *density log* digunakan sebagai dasar untuk mengetahui kualitas lapisan batubara, selain itu juga ditentukan dengan analisis uji laboratorium. Penelitian ini dilakukan untuk mengetahui kualitas lapisan batubara di Formasi Balikpapan bagian bawah, Kecamatan Loa Janan, Kabupaten Kutai Kartanegara, Kalimantan Timur dan mampu merepresentasikannya dalam model.

Penelitian ini menggunakan metode geofisika *well logging* berupa *gamma ray log* dan *density log,* terdiri atas 13 data *logging* dan 40 titik *touch coring*. Data laboratorium yang digunakan yaitu *calorific value, total sulphure, total moisture, ash content, volatile matter,* dan *fixed carbon.* Keterkaitan antarparameter penentu kualitas diketahui melalui grafik *scatterplot bivariants.* Penelitian ini mampu menghasil interpretasi litologi di lokasi penelitian, kemudian dilakukan korelasi secara *on strike* dan *cross strike* yang disajikan bersama hasil analisis uji laboratorium. Model 3D dalam penelitian ini digunakan untuk mengetahui persebaran kualitas lapisan batubara.

Keterkaitan antarparameter kualitas lapisan batubara dapat diketahui berdasarkan koefisien korelasi (r) yang berasal dari koefisien determinasi (R^2). Kualitas lapisan batubara di Formasi Balikpapan bagian bawah sangat bervariasi yang dipengaruhi oleh kodisi geologi lokal daerah penelitian. Pada bagian Baratlaut kualitas lapisan batubara dapat dikatakan lebih baik jika dibandingkan dengan bagian Timurlaut. Model 3D dalam penelitian ini menggambarkan persebaran nilai *calorific value* di lokasi penelitian. Di lokasi penelitian terdapat *splitting* yang mempengaruhi kualitas lapisan batubara dan menandakan lingkungan pengendapan berupa *upper delta plain.*

Kata kunci: kualitas, model, uji laboratorium, *well logging.*

ABSTRACT

COAL SEAM QUALITY MODEL BASED ON GAMMA RAY LOG AND DENSITY LOG IN THE BOTTOM BALIKPAPAN FORMATION, LOA JANAN DISTRICT, KUTAI KARTANEGARA REGENCY , EAST KALIMANTAN

The coal seam quality model is a representation of the layer quality conditions based on gamma ray log and density log data, supported by analysis results from laboratory test data. Knowing the quality of the coal layer is used for the specifications and economic avalue of the coal seam. Gamma ray log and density log are used as the basis for determining the quality of the coal seam, supported by laboratory test data. This research used to determine the quality of coal seams in the lower Balikpapan Formation, Loa Janan District, Kutai Kartanegara Regency, East Kalimantan and represented in a model.

This research use geophysical well logging methods that is gamma ray logs and density logs, consist of 13 logging datas and 40 touch coring points. The laboratory data used calorific value, total sulfur, total moisture, ash content, volatile matter, and fixed carbon. The linkages of the determinants of quality is known through the bivariants scatterplot chart. This study useful to produce a lithology interpretation at the study site, then on strike and cross strike correlation was carried out which was presented along with the results of laboratory test analysis. The 3D model in this study is used to determine the distribution of coal seam quality.

The linkages of quality parameters of the coal seam can be seen based on the correlation coefficient (r) derived from the coefficient of determination (R^2). The quality of the coal seams in the lower Balikpapan Formation varies greatly, which is influenced by the local geological conditions of the study area. In the Northwest, the quality of coal seams are better than the Northeast side. The 3D model in this study, describes the distribution of calorific value in the research location. At the research location, there is splitting that affects the quality of the coal seam and indicates the depositional environment such as the upper delta plain.

Keywords*: quality, model, laboratory test, well logging.*