GEOLOGI DAN STUDI KORELASI LAPISAN BATUBARA BERDASARKAN *WELL LOGGING* DAERAH MEKAR JADI DAN SEKITARNYA, KECAMATAN SUNGAI LILIN, KABUPATEN MUSI BANYUASIN, SUMATERA SELATAN

SARI

Batubara merupakan salah satu energi yang sangat dibutuhkan pada saat ini, keberadaan batubara dapat mengurangi bahan bakar dengan penggunaan minyak bumi. Indonesia termasuk salah satu negara dengan cadangan batubara yang cukup besar di dunia, khususnya pulau Sumatera dan Kalimantan. Geofisika *Well Logging* merupakan salah satu metode geofisika yang digunakan untuk mengukur besaran-besaran fisik batuan reservoir yang memberikan informasi bawah permukaan. Meliputi karakteristik litologi, ketebalan lapisan, kandungan fluida, korelasi struktur, dan kontinuitas batuan dari lubang bor. Daerah penelitian berada pada daerah Mekar Jadi dan Sekitarnya, kecamatan Sungai Lilin, kabupaten Musi Banyuasin, provinsi Sumatera Selatan. Maksud dari penelitian untuk mengetahui kondisi geologi daerah penelitian, karakteristik litologi batuan penyusun, korelasikan lapisan batubara, dan menghitung nilai indeks gamma ray serta nilai densitas lapisan batubara berdasarkan data *logging*. Metode yang digunakan berupa pemboran bawah permukaan, pengambilan data *logging*, serta pengambilan sampel batuan. Sedangkan analisis penelitian berupa analisis petrografi, dan analisis data *logging*. Geomorfologi daerah penelitian tersusun dari satu satuan yaitu Satuan Dataran Denudasional (D5). Stratigrafi daerah penelitian dari tua ke muda tersusun atas 3 satuan batuan yaitu satuan perselingan batupasir-batulempung sisipan batubara, satuan perselingan batulempung-batulanau sisipan batubara dan Satuan Endapan Aluvial. Pada daerah penelitian, berdasarkan data *logging* dan *cutting* menunjukkan adanya beberapa litologi penyusun di daerah penelitian, seperti batupasir, batulanau, batulempung, batulempung karbonan, dan batubara. Berdasarkan persamaan litologi dan ketebalan yang hampir sama dan dari hasil *Elektrofasies* menunjukkan adanya kesamaan 7 *Seam* batubara dari 5 sumur bor pada daerh penelitian. Korelasi *Seam* A terdiri dari lapisan A1, B1, C7, dan D8, korelasi *Seam* B terdiri dari lapisan A2, B2, C8, dan D9, *Seam* C terdiri dari lapisan D1 dan E1, *Seam* D terdiri dari lapisan C2, D4 dan E2, *Seam* E terdiri dari lapisan C3, D5 dan E4, *Seam* F terdiri dari lapisan C4, D6 dan E5, dan *Seam* G terdiri dari lapisan C5, D7 dan E6. Berdasarkan perhitungan *indeks gamma ray* dan densitas, dari hasil 5 *logging* sumur pada daerah penelitian didapatkan *gamma ray* tertinggi sebesar 0,56 cps dan yang terendah sebesar 0,38 cps. Sementara densitas tertinggi pada daerah penelitian sebesar 3,49 cps dan terendah sebesar 1,1 cps.

Kata kunci: Batubara, *logging*, *Gamma Ray*, Densitas, Mekar Jadi

GEOLOGY AND STUDY OF CORRELATION OF COAL *SEAM*S BASED ON WELL *LOGGING* IN MEKAR JADI, DISTRICT MUSI BANYUASIN, PROVINCE SOUTH SUMATERA

Abstract

Coal is one of the energy that is important at this time, the presence of coal can reduce fuel by used petroleum. Indonesia is one of the countries with significant coal reserves in the world, especially Sumatra and Kalimantan. Well *Logging* Geophysics is one of the geophysical methods used to measure the physical quantities of reservoir rocks that provide subsurface information. Includes lithology characteristics, layer thickness, fluid content, structural correlation, and rock continuity from the borehole. The research area is in the Mekar Jadi and surrounding areas, Sungai Lilin sub-district, Musi Banyuasin district, South Sumatra province. The purpose of the study is to determine the geological conditions of the study area, the characteristics of the constituent lithology, the correlation of the coal *Seam*, and calculate the gamma ray index value and the value of coal *Seam* density based on data *logging*. The method used is in the form of subsurface drilling, data *logging* retrieval, and rock sampling. While the research analysis is in the form of petrographic analysis, and data *logging* analysis. The geomorphology of the research area is composed of one unit, namely the Denudational Plain Unit (D5). The stratigraphy of the research area from old to young is composed of 3 rock units, namely sandstone-claystone unit inserts of coal, claystone-siltstone unit insert of coal and Aluvial Unit. In the study area, based on *logging* and cutting data shows the presence of several constituent lithologies in the study area. Such as sandstones, siltstone, claystone, carbonate claystone, and coal. Based on lithology equations and almost the same thickness and from electrophyte results, there were similarities of 7 coal *Seam*s from 5 drill wells in the study area. *Seam* A correlation consists of layers A1, B1, C7, and D8, *Seam* B correlation consists of layers A2, B2, C8, and D9, *Seam* C consists of layers D1 and E1, *Seam* D consists of layers C2, D4 and E2, *Seam* E consists of layers C3, D5 and E4, *Seam* F consists of layers C4, D6 and E5, and *Seam* G consists of layers C5, D7 and E6. Based on the calculation of gamma ray index and density, from the results of 5 well *logging* in the study area the highest gamma ray was 0,56 cps and the lowest was 0,38 cps. While the highest density in the study area was 3.49 cps and the lowest was 1.1 cps.

Keywords: Coal, *logging*, Gamma Ray, Density, Mekar Jadi