GEOLOGI DAN PERHITUNGAN SUMBERDAYA DENGAN PEMODELAN LAPISAN BATUBARA BERDASARKAN METODE *CIRCULAR* PADA DAERAH TENAIK, KECAMATAN DAMAI, KABUPATEN KUTAI BARAT, PROVINSI KALIMANTAN TIMUR

ABSTRAK

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Daerah penelitian berada pada daerah Tenaik, Kecamatan Damai, Kabupaten Kutai Barat, Kalimantan Timur. Secara fisiografi lokasi penelitian termasuk ke dalam Cekungan Kutai dengan formasi pembawa batubara yaitu Formasi Pulubalang yang berumur Miosen Tengah. Penelitian ini bertujuan untuk mengetahui kondisi geologi yang mencakup geomorfologi, stratigrafi, dan struktur geologi daerah penelitian, serta mengetahui sumberdaya batubara dengan pemodelan lapisan batubara. Metode penelitian yang digunakan berupa pangamatan geologi permukaan dan pengolahan data pemboran. Pengolahan dalam penelitian ini mencakup analisis petrografi, analisis mikropaleontologi, analisis stre ografis, korelasi struktur, korelasi stratigrafi, pemodelan batubara, dan perhitungan sumberdaya.

Geomorfologi daerah penelitian dibagi menjadi 5 satuan bentuk lahan yang mencakup Lembah Homoklin (S1), Perbukitan Homoklin (S2), Lereng Homoklin (S3), Tubuh Sungai (F1), dan Gosong Sungai (F2) serta pola pengaliran yang berkembang pada daerah penelitian adalah *trellis* dan *subdendritic.* Secara stratigrafi lokasi penelitian termasuk dalam satuan batulempung Pulubalang yang berumur Miosen Tengah. Lingkungan pengendapan satuan batulempung Pulubalang termasuk kedalam fasies *The Muddy Sand* yang merupakan peciri dari lingkungan pengendapan *Lower Delta Plain*. Satuan batuan ini juga diendapkan pada sublingkungan *channel, levee, splay* dan *swamp* yang merupakan penciri dari lingkungan *Transitional Lower Delta Plain*. Struktur geologi yang berkembang pada daerah penelitian berupa struktur homoklin, sesar, dan kekar.

Dalam perhitungan sumberdaya batubara pada penelitian ini menggunakan metode *circular* sesuai dengan radius SNI 5015:2019 serta dengan pemodelan lapisan batubara terdiri dari seam 4500 – 8100. Sehingga didapat nilai estimasi sumberdaya di Daerah Tenaik sebesar 6,45 juta tons batubara (Terukur), 4,16 juta tons batubara (Tertunjuk), 1,17 juta tons batubara (Tereka) dengan total keseluruhan sumberdaya didaerah penelitian sebesar 11,77 juta tons. Dengan kualitas batubara rata rata berdasarkan pembobotan nilai tonase nilai kualitas batubara di daerah penelitian memiliki nilai *Relatif Density* (ad) 1,36, *Relatif Density* (*insitu*) 1,33, *Total Moisture* (ar) 23,96%, *Inherent Moisture* (ad) 17,52%, *Volatile Metter* (ad) 39,21%, *Ash* (ad) 10,68%, *Fix Carbon* (ad) 32,58%, *Total Sulfur* (ad) 0,32%, dan *Calorific Value* (ad) 5141Kcal/kg.

Kata Kunci : Batubara, *Circular*, Geologi, Sumberdaya

GEOLOGY AND RESOURCE CALCULATION USING COAL SEAM MODELING BASED ON THE CIRCULAR METHOD IN THE TENAIK REGION, DAMAI DISTRICT, WEST KUTAI REGENCY, EAST KALIMANTAN PROVINCE

ABSTRACT

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The research area is in the Tenaik region, Damai District, West Kutai Regency, East Kalimantan. Physiographically, the research location is included in the Kutai Basin with a coal-bearing formation, namely the Pulubalang Formation, which is Middle Miocene in age. This research aims to determine geological conditions including geomorphology, stratigraphy and geological structure of the research area, as well as determine coal resources by modeling coal seams. The research methods used are surface geological observations and drilling data processing. Processing in this research includes petrographic analysis, micropaleontological analysis, strerongraphic analysis, structural correlation, stratigraphic correlation, coal modeling, and resource calculations.

The geomorphology of the research area is divided into 5 landform units which include Homocline Valley (S1), Homocline Hills (S2), Homocline Slopes (S3), River Body (F1), and River Gosong (F2) and the drainage patterns that develop in the research area are trellis and subdendritic. Stratigraphically, the research location is included in the Pulubalang mudstone unit of Middle Miocene age. The depositional environment of the Pulubalang mudstone unit is included in the Muddy Sand facies which is characteristic of the Lower Delta Plain depositional environment. This rock unit was also deposited in the channel, levee, splay and swamp sub-environments which are characteristic of the Transitional Lower Delta Plain environment. The geological structures that develop in the research area are homocline structures, faults and joints.

In calculating coal resources in this research, the circular method was used in accordance with the radius of SNI 5015:2019 and by modeling coal seams consisting of seams 4500 - 8100. So the estimated resource value in the Tenaik Region was 6.45 million tons of coal (Measured), 4, 16 million tons of coal (Indicated), 1.17 million tons of coal (Inferred) with a total resource in the research area of 11.77 million tons. With the average coal quality based on weighting the tonnage value, the coal quality value in the research area has a Relative Density (ad) value of 1.36, Relative Density (insitu) 1.33, Total Moisture (ar) 23.96%, Inherent Moisture (ad) 17.52%, Volatile Metter (ad) 39.21%, Ash (ad) 10.68%, Fixed Carbon (ad) 32.58%, Total Sulfur (ad) 0.32%, and Calorific Value (ad) 5141Kcal/kg.

Keywords: *Coal, Circular, Geology, Resources*