

ABSTRAK

Geologi dan Peringkat Batubara Seam V Berdasarkan Reflektansi Vitrit di Daerah Tapin, Kalimantan Selatan

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Penelitian ini dilaksanakan di Desa Lokpaikat, Kecamatan Lokpaikat, Kabupaten Tapin, Provinsi Kalimantan Selatan. Latar belakang penelitian ini didasarkan pada pentingnya batubara sebagai sumber energi utama serta adanya fenomena percabangan (*splitting*) pada seam V Formasi Warukin yang berkembang menjadi seam V1, V2, dan V3. Penelitian ini bertujuan untuk mengkaji kondisi geologi daerah penelitian serta menentukan peringkat batubara seam V berdasarkan reflektansi vitrit dan keterkaitannya dengan karakteristik maseral. Metode yang digunakan meliputi pemetaan geologi lapangan untuk pengambilan data primer serta analisis laboratorium yang mencakup petrografi batuan, analisis stereografis, analisis palinologi, analisis proksimat, analisis nilai kalor, dan petrografi batubara. Hasil penelitian menunjukkan bahwa geomorfologi daerah penelitian terbagi menjadi tiga satuan bentuk lahan, yaitu lahan bukaan tambang (A1), kolam tambang (A2), dan bukit terdenudasi (D1). Secara stratigrafi, daerah penelitian tersusun atas satuan batulempung Warukin yang terdiri atas litologi batulempung sisipan batulempung karbonan, batupasir, batulanau, dan batubara, dengan ketebalan mencapai 687 meter dan berumur Miosen Tengah hingga Miosen Akhir. Sebaran lapisan batuan berarah barat daya - timur laut dengan jurus perlapisan N196°E - N205°E dan kemiringan 30° - 37° ke arah barat laut, serta diendapkan pada lingkungan *freshwater peat swamp* atau *transitional lower delta plain*. Struktur geologi yang berkembang berupa homoklin dan kekar dengan arah tegasan utama barat laut - tenggara. Karakteristik maseral menunjukkan bahwa seam V1 dan V2 didominasi oleh kelompok huminit, masing-masing sebesar 74% dan 72%, sedangkan seam V3 didominasi oleh kelompok liptinit sebesar 52%. Berdasarkan hasil pengukuran reflektansi vitrit maksimum ($R_v \max$), diperoleh nilai 0,225% pada seam V1, 0,239% pada seam V2, dan 0,253% pada seam V3. Ketiga seam tersebut termasuk dalam peringkat *lignite* berdasarkan klasifikasi ASTM D2798. Peningkatan nilai reflektansi dari seam V1 hingga seam V3 dikontrol oleh posisi stratigrafi masing-masing seam yang berkaitan dengan perbedaan kedalaman pengendapan serta peningkatan tekanan litostatik.

Kata kunci: Cekungan Barito, Formasi Warukin, *Splitting*, Reflektansi vitrit, *Lignite*.

ABSTRACT

Geology and Coal Rank in Seams V Based on Vitrinite Reflectance at Tapin, South Kalimantan

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This research was conducted in Lokpaikat Village, Lokpaikat District, Tapin Regency, South Kalimantan Province. The background of this research is based on the importance of coal as a primary energy source and the existence of splitting phenomena in seam V of the Warukin Formation which developed into seams V1, V2, and V3. This research aims to assess the geological conditions of the research area and determine the coal rank of seam V based on vitrinite reflectance and its relationship with maceral characteristics. The methods used include geological mapping for primary data collection and laboratory analysis including rock petrography, stereographic analysis, palynology analysis, proximate analysis, calorific value analysis, and coal petrography. The results of the research indicate that the geomorphology of the research area is divided into three landform units, namely mine opening land (A1), sump (A2), and denuded hill (D1). Stratigraphically, the research area is composed of Warukin mudstone units consisting of mudstone lithology intercalated with carbonaceous mudstone, sandstone, siltstone, and coal, with a thickness of up to 687 meters and is of Middle Miocene to Late Miocene age. The distribution of rock layers is trending southwest - northeast with a layering strike of N196°E - N205°E and a dip of 30° - 37° to the northwest, and deposited in a freshwater peat swamp or transitional lower delta plain environment. The geological structure that developed was a homocline and joint with the main stress direction of northwest - southeast. Maceral characteristics show that seams V1 and V2 are dominated by the huminite group, at 74% and 72% respectively, while seam V3 is dominated by the liptinite group at 52%. Based on the results of the maximum vitrinite reflectance (R_v max) measurements, the values obtained were 0.225% in seam V1, 0.239% in seam V2, and 0.253% in seam V3. These three seams are included in the lignite rank based on the ASTM D2798 classification. The increase in reflectance values from seam V1 to seam V3 is controlled by the stratigraphic position of each seam which is related to differences in deposition depth and increases in lithostatic pressure.

Keywords: *Barito Basin, Warukin Formation, Splitting, Vitrinite Reflectance, Lignite.*