

ABSTRAK

ESTIMASI SUMBERDAYA BATUBARA MENGGUNAKAN METODE *CIRCULAR* PADA SUB BLOK JONGKANG BAGIAN UTARA, KALIMANTAN TIMUR

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Batubara merupakan salah satu sumberdaya energi yang berperan penting dalam mendukung kebutuhan industri dan perekonomian nasional, sehingga estimasi sumberdaya yang akurat dan sesuai standar diperlukan sebagai dasar perencanaan tambang dan pengambilan keputusan dalam pengelolaan sumberdaya. Penelitian ini dilakukan pada Sub Blok Jongkang bagian utara, Kabupaten Kutai Kartanegara, Kalimantan Timur, dengan tujuan mengestimasi sumberdaya batubara menggunakan metode *circular* serta mengevaluasi prospek keterdapatannya secara teknis dan ekonomis. Metode penelitian meliputi analisis kondisi geologi daerah penelitian, pemodelan geometri lapisan batubara, penentuan kompleksitas geologi, pembuatan poligon sumberdaya menggunakan metode *circular*, serta uji prospek beralasan melalui analisis *Break Even Stripping Ratio* (BESR) dan pembuatan *pit shell*. Daerah penelitian termasuk dalam Formasi Balikpapan, Cekungan Kutai, yang tersusun atas batupasir, batulempung, dan sisipan batubara dengan kontrol geologi berupa struktur lipatan yang memengaruhi kontinuitas lapisan batubara. Hasil pemodelan menunjukkan kontinuitas *seam* yang relatif baik dan daerah penelitian termasuk dalam kategori kompleksitas geologi sederhana. Analisis uji prospek beralasan menghasilkan nilai BESR sebesar 27,85 pada harga batubara sebesar USD 90,47 \$/ton yang kemudian diintegrasikan untuk membentuk *pit shell*. Hasil tersebut menunjukkan bahwa area di dalam *pit shell* memiliki potensi untuk dikembangkan lebih lanjut secara teknis dan ekonomis. Berdasarkan hasil estimasi diperoleh sumberdaya tereka sebesar 8.192.044 ton, sumberdaya tertunjuk sebesar 12.450.637 ton, dan sumberdaya terukur sebesar 33.977.611 ton. *Seam* B3 merupakan *seam* paling prospektif dengan kontribusi tonase terbesar pada kategori terukur sebesar 9.720.399 ton dan rata-rata nilai CVAR sebesar 5.018 kcal/kg.

Kata kunci: Batubara, Estimasi sumberdaya batubara, Metode *circular*, *Pit shell*, Sub Blok Jongkang

ABSTRACT

COAL RESOURCE ESTIMATION USING THE CIRCULAR METHOD IN THE NORTHERN JONGKANG SUB-BLOCK, EAST KALIMANTAN

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Coal is one of the primary energy resources that plays an important role in supporting industrial activities and the national economy. Therefore, accurate and standardized coal resource estimation is essential as a basis for mine planning and decision-making in resource management. This study was conducted in the northern part of the Jongkang Sub-Block, Kutai Kartanegara Regency, East Kalimantan, with the objectives of estimating coal resources using the circular method and evaluating the reasonable prospects of coal occurrence from both technical and economic perspectives. The research methods included geological analysis of the study area, coal seam geometry modeling, geological complexity classification, resource polygon construction using the circular method, and reasonable prospects assessment through Break Even Stripping Ratio (BESR) analysis and pit shell generation. The study area is located within the Balikpapan Formation of the Kutai Basin, which consists of sandstone, claystone, and interbedded coal seams, with fold structures acting as the primary geological control affecting coal seam continuity. The modeling results indicate relatively good coal seam continuity, and the study area is classified as having simple geological complexity. The reasonable prospects assessment yielded a BESR value of 27.85 based on a coal price of USD 90.47/ton, which was subsequently integrated into the pit shell design. The results indicate that the area enclosed within the pit shell has the potential for further development from both technical and economic perspectives. The estimated coal resources consist of 8,192,044 tonnes of Inferred Resources, 12,450,637 tonnes of Indicated Resources, and 33,977,611 tonnes of Measured Resources. Seam B3 is identified as the most prospective coal seam, contributing the largest measured resource of 9,720,399 tonnes with an average CVAR of 5,018 kcal/kg.

Keywords: Coal, Coal Resource Estimation, Circular Method, Pit Shell, Jongkang Sub-Block.