# ABSTRAK

## GEOLOGI DAN PERHITUNGAN CADANGAN BATUBARA *SEAM* T2 MENGGUNAKAN METODE *CROSS SECTION* GUNA OPTIMASI PIT PADA WIUP TEI, DERAH GUMPA DAN SEKITARNYA, BARITO TIMUR, KALIMANTAN TENGAH

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Daerah penelitian berlokasi di area PT Tibawan Energi Indonesia, Desa Gumpa, Kabupaten Barito Timur, Kalimantan Tengah, yang secara fisiografi termasuk dalam Cekungan Barito. Daerah penelitian termasuk kedalan Formasi Warukin. Penelitian ini berfokus pada perhitungan cadangan Seam T2 menggunakan metode cross section untuk optimasi PIT. Penelitian ini mengombinasikan tiga metode, yaitu pemetaan geologi meliputi observasi singkapan, pengukuran stratigrafi, analisis struktur, dan geomorfologi; pengolahan data bor dengan interpretasi log gamma ray dan densitas untuk analisis litologi dan ketebalan batubara; serta perhitungan cadangan metode cross section melalui pembagian penampang vertikal guna menentukan volume batubara.

Hasil penelitian menunjukkan daerah ini memiliki satuan bantuklahan Antropogenik (A1) dan Denudasional (D1) dengan kelerengan 0–66%. Tersusun atas satuan batulempung Warukin yang tersusun atas batulempung sisipan batupasir dan batubara. Terdapat fosil polen *Florschuetzia trilobata* dan *Florschuetzia levipoli* sebagai penciri umur geologi Miosen Awal – Akhir. Menurut keterdapatan fosil polen lainnya, satuan batuan ini terendapkan pada lingkungan *alluvial swamp.* Terdapat struktur geologi berupa kekar dengan arah tegasan barat laut – tenggara.

Hasil perhitungan *cross section,* didaptkan besar tonase batubara pada PIT SR 1.5 hingga PIT SR 3, adalah 1.420.759 ton, 1.721.258 ton, 1.612.350 ton, dan 1.77.615 ton. Nilai BESR 2.5 menjadi acuan ekonomis, dengan cadangan batubara tertinggi di Pit SR 3 (1.776.615 ton) namun Pit SR 1.5 paling optimum secara ekonomi (profit US$6.678.228) karena rasio overburden-batubara yang efisien (2.119.507 bcm dan 1.420.759 ton)

Kata kunci: Cadangan, *Cross Section,* Formasi Warukin

# *ABSTRACT*

## *GEOLOGY AND COAL RESERVE CALCULATION OF SEAM T2 USING CROSS SECTION METHOD FOR PIT OPTIMIZATION AT WIUP TEI, GUMPA AREA AND SURROUNDING, EAST BARITO, CENTRAL KALIMANTAN*

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*The study area is located within PT Tibawan Energi Indonesia's concession in Gumpa Village, East Barito Regency, Central Kalimantan, which physiographically belongs to the Barito Basin. The research area lies within the Warukin Formation. This study focuses on calculating reserves of Seam T2 using the cross-section method for pit optimization. The research combines geological mapping including outcrop observation, stratigraphic measurement, structural analysis, and geomorphological assessment with borehole data processing through gamma-ray and density log interpretation for lithological analysis and coal thickness determination, along with reserve calculation using the cross-section method by dividing vertical sections to determine coal volume.*

*The research results indicate that this area consists of Anthropogenic (A1) and Denudational (D1) landform units with slopes ranging from 0–66%. It is composed of the Warukin claystone unit, which includes interbedded claystone, sandstone, and coal layers. Fossil pollen such as Florschuetzia trilobata and Florschuetzia levipoli were identified, serving as age indicators for the Early to Late Miocene. Based on the presence of other fossil pollen, this rock unit was deposited in a alluvial swamp environment. The area also exhibits geological structures in the form of fractures with a northwest-southeast stress direction..*

*The cross-section calculation results show coal tonnages for PIT SR 1.5 to PIT SR 3 as follows: 1,420,759 tons, 1,721,258 tons, 1,612,350 tons, and 1,776,615 tons. With a BESR (Break-Even Stripping Ratio) of 2.5 as the economic threshold, the highest coal reserves are found in PIT SR 3 (1,776,615 tons). However, PIT SR 1.5 is the most economically optimal (profit of US$6,678,228) due to its efficient overburden-to-coal ratio (2,119,507 bcm vs. 1,420,759 tons).*

*Keywords: Cross Section, Reserves, Warukin Formation.*