ABSTRAK

KAJIAN PRODUKTIVITAS PERALATAN UTAMA PADA PERANCANGAN *SEQUENCE* PENAMBANGAN DAN TIMBUNAN BATUBARA DI KALIMANTAN SELATAN

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PT XYZ merupakan perusahaan pertambangan batubara yang beroperasi di Kabupaten Tanah Bumbu, Provinsi Kalimantan Selatan. Pada kondisi aktual di PT XYZ masih ditemukan permasalahan berupa tingginya nilai *stripping ratio* (SR) pada rancangan *sequence* penambangan periode Februari hingga April 2026. Nilai *stripping ratio* pada rancangan PT XYZ pada bulan Februari, Maret, dan April masih berada di atas 6, sedangkan sisa cadangan berdasarkan EoM (*End of Month*) Januari menunjukkan nilai *stripping ratio* sebesar 4,25. Sehingga diperlukan penelitian untuk merancang *sequence* penambangan dengan SR kurang dari 6, rancangan timbunan, serta perhitungan jumlah kebutuhan alat angkut. Pada penelitian ini. metodologi penelitian meliputi studi literatur, observasi lapangan, pengambilan data primer dan sekunder, serta pengolahan data menggunakan metode kuantitatif untuk mendapatkan parameter teknis penambangan, seperti produktivitas alat mekanis, kapasitas produksi alat gali-muat, geometri permuka kerja, dan geometri jalan. Selanjutnya dilakukan perhitungan kebutuhan alat angkut, sedangkan jumlah alat gali-muat disesuaikan dengan ketersediaan alat di perusahaan. Berdasarkan parameter tersebut, dilakukan perancangan *sequence* penambangan dan timbunan Februari hingga April 2026 menggunakan perangkat lunak MineScape 2023 (Lisensi UPNVYK) dengan target nilai *stripping ratio* di bawah 6. Hasil rancangan menunjukkan nilai SR Februari sebesar 5,97 dengan volume *overburden* 1.542.158,18 BCM dan tonase batubara 258.368,22 ton, bulan Maret sebesar 4,94 dengan volume *overburden* 1.317.679,04 BCM dan tonase batubara 266.854,21 ton, serta bulan April sebesar 4,88 dengan volume *overburden* 1.471.917,61 BCM dan tonase batubara 301.789,55 ton. Rancangan timbunan dibagi menjadi dua area, yaitu IPD Atas dan IPD Bawah, dengan kapasitas Februari masing-masing sebesar 1.528.584,71 BCM dan 514.062,13 BCM, bulan Maret sebesar 1.247.837,14 BCM dan 636.492,53 BCM, serta bulan April sebesar 1.026.047,49 BCM dan 972.884,33 BCM.

Kata kunci: Perancangan, Produktivitas, *Sequence*, *Stripping Ratio*

ABSTRACT

STUDY OF MAIN EQUIPMENT PRODUCTIVITY IN COAL MINING SEQUENCE AND WASTE DUMP DESIGN IN SOUTH KALIMANTAN

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PT XYZ is a coal mining company operating in Tanah Bumbu Regency, South Kalimantan Province, Indonesia. Under the existing mining plan, a significant issue was identified in the form of a high stripping ratio (SR) in the mining sequence design for the period of February to April 2026. The stripping ratio values in the company's design for February, March, and April exceeded 6, whereas the remaining reserves based on the End of Month (EoM) January data indicated a stripping ratio of 4.25. Therefore, a study was required to develop a mining sequence design with an SR of less than 6, design a waste dump, and determine the required number of haul trucks.The research methodology consisted of a literature review, field observations, primary and secondary data collection, and quantitative data analysis to obtain mining technical parameters, including equipment productivity, excavator production capacity, working bench geometry, and haul road geometry. Subsequently, the haul truck requirements were calculated, while the number of loading equipment units was adjusted according to the equipment availability at the company. Based on these parameters, the mining sequence and waste dump designs for February to April 2026 were developed using MineScape 2023 software (UPNVYK License), targeting a stripping ratio below 6. The results showed that the stripping ratio for February was 5.97, with an overburden volume of 1,542,158.18 BCM and coal production of 258,368.22 tonnes. In March, the stripping ratio was 4.94, with an overburden volume of 1,317,679.04 BCM and coal production of 266,854.21 tonnes. In April, the stripping ratio was 4.88, with an overburden volume of 1,471,917.61 BCM and coal production of 301,789.55 tonnes. The waste dump design was divided into two areas, namely Upper IPD and Lower IPD. In February, the capacities of Upper IPD and Lower IPD were 1,528,584.71 BCM and 514,062.13 BCM, respectively. In March, the capacities were 1,247,837.14 BCM and 636,492.53 BCM, respectively, while in April, the capacities were 1,026,047.49 BCM and 972,884.33 BCM, respectively.

Keywords: Design, Productivity, Sequence, Stripping Ratio