

ABSTRAK

RANCANGAN REKAYASA *MINE SEQUENCE* MENGUNAKAN METODE TRIANGULASI DAN *BATTERBLOCK* UNTUK MENCAPAI TARGET PRODUKSI PT CSMU JOBSITE LHL

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Penelitian pada periode September hingga Desember, target produksi PT Cipta Surya Manunggal Utama ditetapkan sebesar 1.556.025 BCM lapisan tanah penutup dan 401.000 ton batubara dengan jarak angkut maksimum 1.200 meter. Untuk mendukung pencapaian target tersebut, diperlukan penyusunan perencanaan dan rancangan teknis tambang yang meliputi perancangan kemajuan tambang bulanan, perancangan jalan angkut, penentuan area timbunan, serta estimasi kebutuhan alat mekanis yang disesuaikan dengan kondisi operasional. Oleh karena itu, penelitian ini bertujuan untuk menyusun rancangan rekayasa *mine sequence* di PT Cipta Surya Manunggal Utama sebagai upaya penyelesaian permasalahan perencanaan penambangan yang dihadapi perusahaan. Metode penelitian yang digunakan bersifat kuantitatif dengan pendekatan deskriptif dan analisis teknis, yang dilaksanakan melalui tahapan studi pustaka, observasi lapangan, serta pengumpulan data primer dan sekunder. Pengolahan dan analisis data dilakukan menggunakan perangkat lunak MineScape 5.7 untuk menyusun rancangan kemajuan tambang serta menghitung volume dan cadangan menggunakan metode *batterblock* dan triangulasi. Rancangan jalan angkut disusun sesuai kemajuan rekayasa penambangan. Kebutuhan alat gali-muat dan alat angkut selanjutnya ditentukan berdasarkan hasil perhitungan waktu edar terhadap target produksi bulanan. Kapasitas produksi direncanakan untuk dipenuhi dalam jangka waktu empat bulan dengan mempertimbangkan beberapa aspek teknis. Rancangan *mine sequence* pada penelitian ini disusun untuk periode September – Desember tahun 2025 dengan total produksi batubara sebesar 509.542 ton dan volume pengupasan lapisan tanah penutup sebesar 1.667.510 BCM. Selain itu, jumlah dan spesifikasi alat mekanis yang dibutuhkan dalam rancangan telah sesuai guna mendukung tercapainya sasaran produksi secara optimal.

Kata kunci: *disposal*, *mine sequence*, perencanaan tambang, *batterblock*, triangulasi, produksi batubara

ABSTRACT

Engineering Design of Mine Sequencing Using the Triangulation and BatterBlock Methods to Achieve Production Targets at PT

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During the September to December period, the production targets of PT Cipta Surya Manunggal Utama were set at 1,556,025 BCM of overburden and 401,000 tons of coal, with a maximum hauling distance of 1,200 meters. To support the achievement of these targets, the preparation of mine planning and technical design was required, including monthly mining advance design, haul road design, determination of disposal areas, and estimation of mechanical equipment requirements in accordance with operational conditions. Therefore, this research aimed to develop an engineering mine sequence design for PT Cipta Surya Manunggal Utama as an effort to address the mining planning problems faced by the company. The research method applied was quantitative with a descriptive and technical analysis approach, conducted through literature review, field observations, and the collection of primary and secondary data. Data processing and analysis were carried out using MineScape 5.7 software to develop the mining advance design and to calculate volumes and reserves using the batterblock and triangulation methods. The haul road design was prepared in accordance with the progression of the mining sequence engineering. The requirements for loading and hauling equipment were subsequently determined based on cycle time calculations relative to the monthly production targets. The production capacity was planned to be achieved within a four-month period by considering several technical aspects. The mine sequence design developed in this study covered the period from September to December 2025, with a total coal production of 509,542 tons and an overburden removal volume of 1,667,510 BCM. In addition, the number and specifications of the mechanical equipment required in the design were deemed appropriate to optimally support the achievement of the production targets.

Keywords: disposal, mine sequence, mine planning, batterblock, triangulation, coal production