

RINGKASAN

PT. Sinar Terang Mandiri merupakan perusahaan kontraktor yang bergerak di bidang pertambangan bijih nikel laterit. PT. Sinar Terang Mandiri menggunakan sistem penambangan tambang terbuka (*surface mining*) dan metode *block mining*. Lokasi tambang terletak di Kalurahan Lelief Sawai, Kecamatan Weda Tengah, Kabupaten Halmahera Tengah, Provinsi Maluku Utara. PT. Sinar Terang Mandiri memiliki sasaran produksi sebesar 1.300.000 ton setiap bulan. Perusahaan belum memiliki rancangan teknis penambangan berupa rancangan kemajuan tambang, rancangan tempat penimbunan dan kebutuhan alat mekanis agar mencapai sasaran produksi perusahaan.

Metodologi penelitian meliputi studi pustaka untuk mencari referensi terkait topik yang telah diteliti. Kemudian pengambilan data primer dan sekunder, lalu data diolah dan dianalisis sehingga mendapatkan kesimpulan. Data primer yang diambil dalam penelitian ini yaitu data *cycle time* alat muat dan alat angkut. Data sekunder didapat dari data perusahaan meliputi data curah hujan, data cadangan nikel, sasaran produksi, rekomendasi geoteknik dan spesifikasi peralatan mekanis. Data tersebut nantinya akan dilakukan pengolahan data menggunakan metode blok dengan bantuan *software* Surpac 6.62 ©PT STM untuk merancang desain dan perhitungan cadangan dan *software* Minesched 2023 ©PT STM untuk *scheduling*. Selanjutnya data dianalisis menggunakan metode statistik untuk mengetahui tingkat keakuratan data tersebut.

Rancangan desain penambangan dibuat berdasarkan *pit limit*, didapatkan bijih nikel yang terbongkar pada bulan April sebesar 546.556 ton dan material timbunan sebesar 433.420 BCM, bulan Mei bijih nikel yang terbongkar sebesar 644.813 ton dan material timbunan sebesar 363.380 BCM, bulan Juni bijih nikel yang terbongkar sebesar 675.246 ton dan material timbunan sebesar 392.700 BCM. Jenis area timbunan menggunakan metode *valley fill* dan *terrace dump*, dengan kapasitas pada bulan April sebesar 456.165 BCM, bulan Mei sebesar 367.303 BCM dan bulan Juni sebesar 386.031 BCM. Jalan tambang dibuat untuk bisa dilalui oleh alat angkut *Articulated Dump Truck* (ADT) Bell B45E dengan lebar pada jala lurus sebesar 13 m untuk 2 jalur dan lebar jalan pada tikungan sebesar 21 m, jari-jari minimum sebesar 8,05 m, superelevasi sebesar 0,04 m/m. Kemiringan jalan angkut (*grade*) maksimum sebesar 10%. Alat mekanis yang digunakan yaitu alat gali-muat *backhoe* Hitachi Zaxis 470 sebanyak 8 unit, dengan alat angkut *Articulated Dump Truck* (ADT) Bell B45E sebanyak 23 unit.

SUMMARY

PT. Sinar Terang Mandiri is a contracting company engaged in laterite nickel ore mining. PT. Sinar Terang Mandiri uses an open-pit mining system (surface mining) and block mining methods. The mine location is located in Lelief Sawai Village, Central Weda District, Central Halmahera Regency, North Maluku Province. PT. Sinar Terang Mandiri has a production target of 1,300,000 tons/month. The company does not have a mining technical design in the form of a mine progress plan, a waste dump design, and the need for mechanical equipment to achieve the company's production targets.

The research methodology includes a literature study to find references related to the topic to be researched. Then primary and secondary data are taken, then the data is processed and analyzed so that a conclusion is obtained. The primary data taken in this study are cycle time data for loading equipment and transportation equipment. Secondary data obtained from company data includes rainfall data, nickel reserve data, production targets, geotechnical recommendations and mechanical equipment specifications. The data will later be processed using the block method with the help of Surpac 6.62 ©PT STM software to design backup designs and calculations and Minesched 2023 ©PT STM software for scheduling. Furthermore, the data was analyzed using statistical methods to determine the level of accuracy of the data.

The mining design design was made based on the pit limit, nickel ore was uncovered in April of 546,556 tons and waste of 433,420 BCM, in May nickel ore was uncovered of 644,813 tons and waste of 363,380 BCM, in June nickel ore was uncovered of 675,246 tons and waste was 392,700 BCM. 2. The type of stockpile area uses the valley fill and terrace dump methods, with a capacity of 456,165 BCM in April, 367,303 BCM in May and 386,031 BCM in June. The mining road was made to be passable by the Bell B45E Articulated Dump Truck (ADT) transportation equipment with a straight mesh width of 13 m for 2 lanes and a road width at the bend of 21 m, a minimum radius of 8.05 m, and a superelevation of 0.04 m/m. The maximum grade slope is 10%. The mechanical equipment used is 8 units of Hitachi Zaxis 470 backhoe excavators, with 23 units of Bell B45E Articulated Dump Truck (ADT).