

ABSTRAK

PERANCANGAN DAN PENJADWALAN PENAMBANGAN NIKEL LATERIT DI PT HILLCONJAYA SAKTI *JOBSITE PT INDRABAkti MUSTIKA*

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Perencanaan dan penjadwalan penambangan pada tambang terbuka nikel laterit memerlukan integrasi antara desain pit, kemajuan penambangan, serta kesiapan alat mekanis agar target produksi dapat tercapai secara efektif dan efisien. Karakteristik endapan yang tidak homogen serta kondisi topografi yang kompleks di lokasi penelitian menuntut penerapan metode *selective mining* dan perancangan teknis yang akurat. Penelitian ini bertujuan untuk merancang kemajuan penambangan serta menentukan kebutuhan alat mekanis di *Pit Kolaka 3* dan *Pit Silae* pada lokasi penelitian selama periode Oktober hingga Desember 2025.

Metode penelitian dilakukan melalui pengolahan data topografi, geologi, dan *block model* menggunakan perangkat lunak SURPAC[©] untuk menghasilkan desain *pit*, *mine sequence*, serta estimasi volume bijih dan material pengotor berdasarkan *cut off grade* 1,1% Ni. Selanjutnya dilakukan perhitungan produktivitas alat gali-muat dan alat angkut berdasarkan waktu siklus, kapasitas alat, dan efisiensi kerja guna menentukan jumlah alat mekanis yang optimal dalam memenuhi target produksi bulanan.

Hasil penelitian menunjukkan bahwa rancangan kemajuan penambangan yang disusun dengan mempertimbangkan kemenerusan bijih nikel di masing-masing pit penambangan yang direncanakan, dimana didapatkan desain yang mampu mendukung ketercapaian target produksi triwulanan dengan konfigurasi alat mekanis yang mencukupi dan seimbang. Alat mekanis yang digunakan meliputi, 8 alat gali-muat, 25 alat angkut, 6 alat penggusur, 2 alat perata, 6 alat pemadat, dan 2 alat penyiraman.

Kata kunci: Armada, Desain Tambang, Nikel Laterit, Penjadwalan, Perencanaan

ABSTRACT

MINE DESIGN AND SCHEDULING PLAN OF LATERITE NICKEL MINING AT PT HILLCONJAYA SAKTI, PT INDRABAKTI MUSTIKA JOBSITE

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Mine planning and production scheduling in laterite nickel open-pit mining require the integration of pit design, mining sequence, and equipment readiness to ensure production targets are achieved effectively and efficiently. The heterogeneous characteristics of laterite deposits and complex topographic conditions at the study area demand the application of selective mining methods and accurate technical design. This study aims to design the mining sequence and determine the mechanical equipment requirements at Pit Kolaka 3 and Pit Silae, at the research location, during the period of October to December 2025.

The research method involved processing topographic, geological, and block model data using SURPAC[®] software to generate pit design, mining sequence, and estimates of ore and waste volumes based on a 1.1% Ni cut-off grade. Furthermore, the productivity of loading and hauling equipment was calculated based on cycle time, equipment capacity, and work efficiency to determine the optimal number of equipment units required to meet monthly production targets.

The results show that the designed mining sequence based on ore continuity, the planned design are capable of supporting the achievement of quarterly production targets with a sufficient and balanced configuration of mechanical equipment. The mechanical equipment that are used in this plan is 8 excavators, 25 dump truck, 6 bulldozers, 2 motor graders, 6 vibratory compactors, and 2 water trucks.

Keywords: *Fleet, Laterite Nickel, Mine Design, Planning, Scheduling*