ABSTRAK

RANCANGAN *MINE SEQUENCE* DENGAN PENERAPAN *IN-PIT DUMP* UNTUK MENGURANGI *CYCLE TIME* PADA PENAMBANGAN BATUBARA DI PIT INM P5A PT KPC

Oleh
Muh Irfan Fadillah
NIM : 112210127
(Program Studi Sarjana Teknik Pertambangan)

PT Kaltim Prima Coal (KPC) adalah perusahaan pertambangan batubara dengan area konsesi batubara berlokasi di Kabupaten Kutai Timur, Provinsi Kalimantan Timur. Sistem penambangan yang dilakukan adalah tambang terbuka dengan metode *strip mine.* Pada saat penelitian dilakukan, target produksi yang direncanakan belum tercapai, sementara permasalahan lain yaitu jarak area kerja penambangan menuju area timbunan semakin jauh sehingga biaya operasional meningkat. Oleh karena itu, penelitian ini dilakukan untuk merancang *mine sequence* Pit Inul Middle P5A guna mencapai target produksi serta menerapkan *in-pit dump* dalam upaya mengurangi jarak pengangkutan. Berdasarkan hasil pengolahan data, kapasitas *in-pit dump* yang dirancang memiliki kapasitas sebesar 1.745.714 LCM. Kapasitas tersebut akan terpenuhi selama 3 bulan dengan beberapa pertimbangan teknis. Rancangan *mine sequence* pada penelitian ini dibuat untuk 3 bulan dari Desember 2025 – Februari 2026 dengan produksi batubara sebesar 463.489 ton serta pengupasan tanah penutup sebesar 3.798.483 BCM. Metode penelitian yang digunakan adalah metode kuantitatif, yang dilaksanakan melalui beberapa tahapan meliputi studi pustaka, observasi lapangan, serta pengumpulan data primer dan sekunder. Pengolahan data dibantu dengan perangkat lunak Geovia Minex untuk menyusun rancangan *mine sequence*. Berdasarkan hasil analisis, dibutuhkan 2 unit alat gali-muat tipe Hitachi EX3600 dan 1 unit Hitachi EX2500 untuk setiap bulannya serta 14 alat angkut pada bulan Desember, 15 unit pada bulan Januari, dan 15 unit pada bulan Februari. Selain itu, penerapan *in-pit dump* dapat mengurangi *cycle time* alat angkut sebesar 4,97 menit pada bulan Desember, 3,5 menit pada blan Januari, dan 5,5 menit pada bulan Februari.

Kata Kunci : *sequence, in-pit dump, EX3600, EX2500*

ABSTRACT

MINE SEQUENCE DESIGN WITH THE IMPLEMENTATION OF IN-PIT DUMP FOR CYCLE TIME REDUCING IN COAL MINING AT PIT INM P5A PT KPC

By
Muh Irfan Fadillah
NIM : 112210127
(*Mining Engineerign Undergraduated program*)

PT Kaltim Prima Coal (KPC) is a coal mining company with a concession area located in Kutai Timur Regency, East Kalimantan Province. The mining system used is open-pit mining with a strip mine method. At the time of the study, the planned production targets had not been achieved, while another issue was the increasing distance between the mining area and the dumping area, which led to higher operational costs. Therefore, this research was conducted to design the mine sequence for Pit Inul Middle P5A to meet the production targets and implement an in-pit dump system in an effort to reduce hauling distances. Based on the data processing results, the designed in-pit dump has a total capacity of 1,745,714 LCM, which will be utilized over three months considering several technical factors. The mine sequence design in this study was created for a three-month period from December 2025 to February 2026, targeting a total coal production of 463,489 tons and overburden removal of 3.798.483 BCM. The research used a quantitative method involving several stages including literature review, field observation, and collection of primary and secondary data. Data processing was supported by the Geovia Minex software to develop the mine sequence plan. Based on the analysis, it was found that two units of Hitachi EX3600 excavators and one unit of Hitachi EX2500 were required each month, along with 14 dump trucks in December, 15 units in January, and 15 units in February. Additionally, the implementation of the in-pit dump system was able to reduce the truck cycle time by 4.97 minutes in December, 3.5 minutes in January, and 5.5 minutes in February.

Keywords : *sequence, in-pit dump, EX3600, EX2500*