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HEURISTIC RULE-BASED TRUCK DISPATCHING SYSTEMS IN OPEN PIT MINES

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ABSTRACT

In this study, the existing truck dispatching criteria currently available are reviewed and their definitions, primary considerations and basic characteristics are presented. Small example problems are given for two shovel operations. Comparisons are made among the basic heuristic polices commonly applied in open pit mines.

Keywords: Heuristics, Truck Dispatch, Open Pit Mining, Haulage Systems

AÇIK-OCAK İŞLETMELERİNDE HÜRİSTİK TABANLI KAMYON SEVK SİSTEMLERİ

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ÖZET

Bu çalışma da, mevcut olan Hüristik kamyon sevk kriterleri incelenmiştir. Bu temel hüristik kriterlerin tanımları yapılmış ve ana özellikleri verilmiştir. İki ekskavatörlü küçük bir örnek problem sunulmuştur. Açık ocak işletmelerinde kullanımlarım alanları karşılaştırılmıştır.

Anahtar Kelimeler : Hüristik Kurallar, Kamyon Sevk Sistemi, Açık Ocak Madenciliği, Taşıma Sistemi

1. INTRODUCTION

A heuristic procedure or algorithm can be defined as a relatively simple formula or procedure applied to solve a problem. In mathematical terms, heuristic algorithm in most cases can solve a problem, but cannot guarantee an optimal solution. In general, heuristic procedures consider only current objectives without consideration of future events or long-term planning goals. Often, the solutions of heuristic procedures are based on local (i.e. individual elements and short time) optimization. The dispatching algorithms based on heuristic rules are easier to
implement and do not require much computation when making dispatching decisions in real-time. Typically, all heuristic rules are applied one-truck-at-a-time. That is, current truck assignment decision is made with indifference to the assignment of other trucks that will be made in the near future. Also, most heuristic rules ignore essential constraints or secondary goals of system operation such as maintaining product grade requirements by balancing production ratios among available loading sites.