



CLOCKWORK SOLUTIONS

CASE STUDY

Increasing Truck Fleet Life, Increases Mining Profits

INTRODUCTION

A new global marketplace is throwing the American mining industry into a challenging and difficult situation. Third-world countries with cheap labor and no environmental protection laws can operate at significantly lower cost than their American counterparts.



Traditionally, mining companies made enough money to upgrade their haul truck fleets routinely at convenient intervals. However, shrinking margins and increased competition are forcing these companies to take another look at how they spend money on their fleets. Maintenance had been a relatively low priority before, since new trucks were always on the horizon. Now, mine-site managers are reevaluating their maintenance policies in the hopes that they can double, or even triple the lives of the haul trucks.

ENTER CLOCKWORK

Clockwork analysts, experts in reliability, availability, and maintenance, and the developers of SPAR™ technology, undertook to show Kennecott how to increase truck life.

Each truck in the fleet has a number of different failure modes, component replacement schedules, and maintenance routines. When an event occurs (e.g., failure), the truck is placed into one of eight bays, if available, and personnel from a pool are assigned to the maintenance task.

Using SPAR™, Clockwork analysts constructed a detailed simulation model of the truck shop at the Kennecott Utah Copper Mine. The simulation tracked fleet availability, and bay and manpower utilization for the truck shop in order to quantify where management could affect the greatest increase in availability while holding down costs. Different scenarios included changing the number of bays, numbers of personnel, and maintenance frequency and duration.

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May 2001

Our study found that a primary maintenance routine was indeed decreasing the amount of unscheduled truck failures. However, the scheduled work time from this maintenance routine actually surpassed unscheduled work time were the routine not undertaken. The routine decreased fleet availability overall. Our model demonstrated that if the duration of the routine maintenance could be reduced, fleet availability would increase by nearly five percent.

The simulation also showed how to increase availability by placing a greater number of people on the third shift, which is typically understaffed. We showed how the increased tonnage that would be hauled outweighed the marginally higher pay grade for the shift by an order of magnitude.

WHY USE SPAR™?

Clockwork Group employs its proprietary SPAR™ predictive modeling technology and its extensive, multi-industry experience to reduce asset ownership cost by:

- determining the minimal capital investment required to achieve performance objectives;
- assessing and optimizing the operability of assets;
- identifying performance and cost drivers, and sources of risk;
- customizing support practices and resources to fit asset operating profile and age;
- quantifying the benefits of proposed improvements.

The flexible nature of SPAR™ enabled Clockwork personnel to go into the truck shop and model the intricacies and specific requirements and quirks of this particular site. They did not have to make the project fit into a pre-set structure. The problem defined the model, whereas with most other products, it works the other way around.

With SPAR™, we were able to model the system accurately. We could quantify the benefits of numerous scenarios resulting in practical, useful, and profitable recommendations to Kennecott.

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