Work Breaks and Rest Periods

Research Team

Carmel Bofinger, MISHC
Sharyn Cobbin, MISHC
David Cliff, MISHC
Tim Horberry, Monash University Accident Research Centre.

Research Objectives

This project was designed to develop and apply a model to examine work breaks and rest periods in mining operations that leads to ensuring the benefits associated with work breaks are optimised. It complements much of the work that has been completed in examining shift rosters.

Background

Generally, scientific research on this topic has only proposed break schedules for very specific, repetitive tasks. As such this previous work cannot be directly applied to determine optimal rest patterns in the majority of mining tasks.

Project Methodology

The Work Effectiveness Model (WEM) was developed using information collected during the project to allow evaluation of the effectiveness and efficiencies of current work practices (Figure 2). The WEM involved establishing the baseline of safe operation and the NORM of operations on site ie how work is actually performed rather than what is required in procedures. Once this NORM was determined, the cost and likelihood of variations to the NORM was assessed and the resulting work effectiveness outlined.

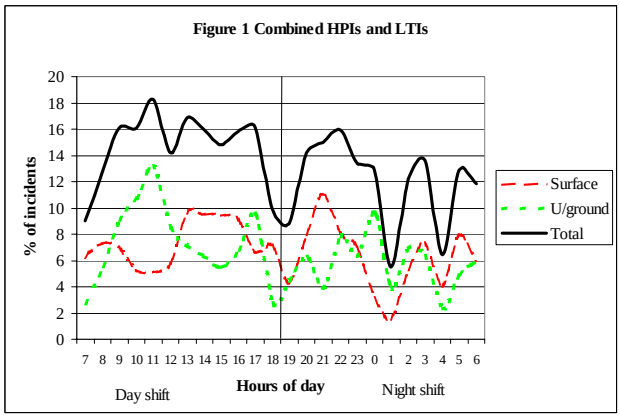
The project used the high fatigue risk task of haul truck driving to apply and refine the WEM. Detailed interviews were completed with 59 haul truck drivers and 596 surface operators completed a questionnaire about work breaks and rest periods.

The factors affecting the NORM fall under physical demands, mental demands, work environment and skills base. These factors also influence the fatigue associated with work.

Unfortunately fatigue is not easy to quantify and it is also not easy to quantify the costs to a site of factors affecting the NORM that may cause undue fatigue. Only outcomes leading to accidents, incidents or potential damage are generally reported and it is difficult to determine the influence of fatigue.

Results

The results of the analysis of the lost time injury (LTI) and high potential incident (HPI) data showed that it was not possible to determine any pattern associated with shift length or break scheduling (Figure 1), however, from analysis of the causes of high potential incidents relating to human factors, it was found that approximately 20% of such incidents might be influenced by work breaks.



The results of the project indicated that current work break times and durations are generally adequate for managing the fatigue associated with haul truck driving. There was good recognition of the need to consider the working conditions and work environment with regard to operating effectively and efficiently but there was limited formal recognition of the physical and mental demands of the tasks in the written procedures.

Allowing operators some control over precise break timing would be valuable, however, breaks should not be excessively delayed.

The large number of variables that were identified that affect the effectiveness of breaks and the time suitable to work on a single task limited the potential for any definitive or prescriptive guidelines to be developed.

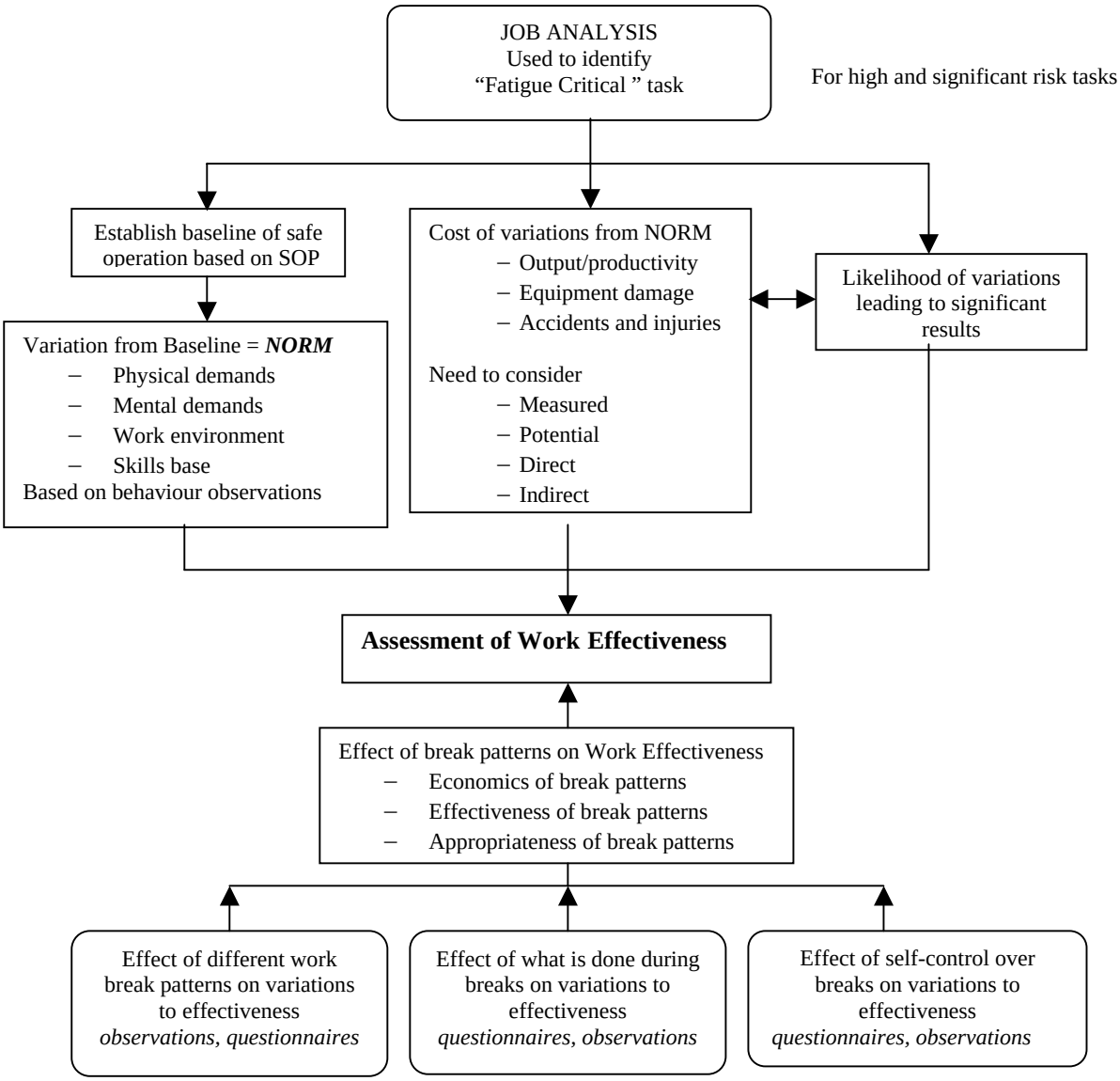


Figure 2
Work Effectiveness Model

Conclusions

Perhaps due to the focus on fatigue in the mining and other industries in recent years, there was good understanding and application of processes to manage fatigue applied by individuals. This focus on fatigue management may also have led to the absence of any clearly identifiable impacts of work break patterns on quantifiable and reported outcomes. Continuing education and publicity about the effectiveness of regular breaks is strongly recommended.

Overall it was concluded that the methods and framework outlined by the WEM can be valuable to help assess the adequacy of work break patterns associated with a variety of mining tasks. It is recommended that the WEM be used to assess other mining tasks and the results used to optimise break arrangements.

Further information about this project can be obtained from Ms Carmel Bofinger, Minerals Industry Safety and Health Centre (MISHC) at The University of Queensland.

Ph 07 3346 9749
Fax 07 3365 8361
Email c.bofinger@mishc.uq.edu.au

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

MISHC