IP HUMAN factors no 8
safety information bulletins
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OVERVIEW: *This Safety information bulletin summarises key aspects of using sleep contracts to manage fatigue risk, and is based on IP Research Report 'Viability of using sleep contracts as a control measure in fatigue management[1]. Dr Alexandra Holmes (Clockwork Consultants Ltd. http://www.clockworkconsultants.com) – co-author of that report – explains.*
A sleep contract is a negotiated and agreed framework for managing fatigue on a day-to-day basis that is integrated into an organisation's existing Safety Management System (SMS). A sleep contract provides a formal documented structure for 1) identifying and reporting fatigue risk, 2) the immediate response to fatigue reports and 3) how reports of fatigue risk will be recorded, reviewed and addressed on an ongoing and long-term basis. The document makes it clear that employees and management are jointly responsible for fatigue risk management and states the responsibilities/accountabilities of each party. By recording day-to-day occurrences of fatigue a sleep contract enables an organisation to know its actual fatigue risk and make informed decisions about fatigue risk management.

using sleep contracts to manage fatigue risk

The primary control used to limit fatigue risk are Hours of Work (HoW) restrictions. Whilst providing consistent, unambiguous guidelines for management and employees, there is increasing recognition that, in isolation, HoW restrictions do not offer adequate protection for employers or employees[2].

Restrictions on work hours cannot provide comprehensive protection because they are generally based on broad assumptions and predictions about how much fatigue will accumulate, or be experienced by employees when working a particular schedule. HoW restrictions do not address actual or day-to-day fatigue risk.

Sleep contracts – a negotiated framework for reporting and responding to fatigue

For a sleep contract to be meaningful the content must be agreed through a process of consultation and negotiation involving management, employees and safety professionals. The contract must provide all groups with a tool that they are conformable and confident to use.

When an individual reports fatigue to their supervisor, a sleep contract requires that both parties respond in a formal, structured manner and manage the immediate and long-term risk. For example, the sleep contract could require that:

- The employee is provided with an opportunity and suitable environment to obtain a nap
- The source of fatigue (if known) is discussed
- Both parties commit to a course of action that will address the associated risk for the remainder of the shift and - where relevant - on an ongoing basis
- Where the source of fatigue is organisational, for example the result of excessive rostered work hours, the contract formally sets out how the organisation should respond.

Incorporating a sleep contract into a Safety Management System

For a sleep contract to be most effective its impact on key performance indicators (KPIs), safety outcomes and the behaviour of individuals, whether managers or employees, should be supported, measured, and reported. It is therefore recommended that a sleep contract is integrated into the organisation's existing SMS.

Within the context of an SMS a sleep contract also acts as a mechanism for collecting data on how well an organisation is managing fatigue risk.

What is a sleep contract?

"…an internal company document that reduces fatigue risk by providing a negotiated framework for identifying, reporting and responding to fatigue risk. The document makes it clear that both employees and employers are responsible for the management of fatigue and states the responsibilities/ accountabilities of each party."

For further information see IP *Research Report: Viability of using sleep contracts as a control measure in fatigue management*[1].

In order to manage fatigue, or any safety risk within an SMS, an organisation needs to identify:

- The defences or controls that are in place to prevent incidents
- The contributory factors that can compromise those defences.

Within an SMS, the factors that contribute to incidents occur at three different levels: the organisational, local workplace and individual level (Figure 1). Examples of contributory factors that should be considered in an SMS with regard to fatigue are:

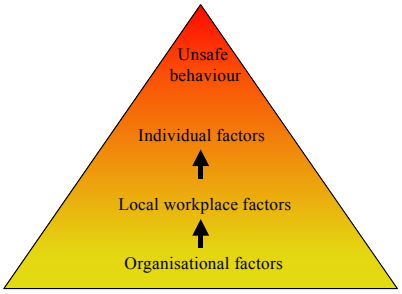

Figure 1 – Factors that contribute to incidents

- Organisational contributory factors – inadequate HoW restrictions, poor shift schedule design, no formal mechanism for employees and management to report fatigue and no ongoing assessment of the operation's fatigue risk
- Local workplace contributory factors – excessive workload or overtime, lack of consideration of commute distances/times, seasonality, on-call, environmental temperature, access to food and water and type of work
- Individual contributory factors – health, age, social and family obligations, disturbed sleep, sleep disorders, reduced sleep opportunity, commute distances/times and experience.

Within an SMS, the role of a sleep contract is twofold:

- It is a tool for monitoring fatigue and the state of controls and contributory factors
- It provides a negotiated framework for reporting and responding to fatigue.

The systematic assessment of the information collected by sleep contracts enables an organisation to identify the specific sources of its fatigue risk. Trend analysis of this information, for example across specific shift patterns, times of day, departments, can enable an organisation to identify fatigue 'hot spots' and apply the necessary controls in a proactive manner.

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A review of current industry experience of sleep contracts

The concept of a sleep contract is in its infancy and only three companies within the petroleum and allied industries were identified as having developed such a contract.

As illustrated by the following case studies, the content of a sleep contract will necessarily vary between organisations and in some cases between departments within a single organisation. However, all those that have implemented a sleep contract were positive about its effectiveness in reducing fatigue risk and reported that they had been well received by employees. It is valuable to note that all had:

- Incorporated the sleep contract into an existing SMS for addressing fatigue risk, known specifically as a fatigue management system (FMS)
- Provided training for employees and managers on how to manage fatigue risk at home and in the workplace
- Provided employees and managers with information on the content of the sleep contract and how it would be operated.

Case Study 1: Mining

An Australian mining operating company has had a sleep contract in place since 2004. The sleep contract is known as a 'fatigue management guidance form' and requires that:

- Individuals alert their immediate supervisor when they are fatigued or tired and unsafe to work
- The supervisor responds to instances where fatigue is identified using 'supervisor guidance notes'.

The fatigue management guidance notes are based around the flow chart shown in Figure 2 and provide a framework for identifying fatigue and making decisions about how this should be responded to. The notes assist the supervisor in managing isolated and repeated instances of fatigue and recording the actions taken.

The guidance notes are also supported by a list of strategies for the supervisor to consider implementing to reduce fatigue risk, such as providing a napping opportunity or assigning the employee to a task with relatively lower risk.

Case Study 2: Road transport

Nolan's Interstate Transport of Queensland, Australia has had an FMS in place since 1996. Although the FMS does not specifically include a documented sleep contract, it contains many of the key components of such a contract, including:

- A set of standards regarding how much sleep an employee must obtain prior to attending work
- A statement of the employees' responsibility to inform management when the standards are breached or they experience fatigue
- When an employee reports fatigue he/she is not required to work and a 'management system which manages the likely causes of fatigue' is activated
- No financial or other sanctions for reporting fatigue
- Providing counselling, where appropriate
- Recording in a database, instances where employees report being unfit for duty due to fatigue and evaluating periodically these data to inform management where to focus effort to further reduce fatigue risk.

Nolan's employs approximately 200 drivers and in a six month period, four drivers had informed the company that they were unfit to work due to fatigue. The company reported that, based on the results of company and industry accident statistics, the FMS has been effective in preventing fatigue-related incidents.

Essential components of an effective sleep contract

- Management commitment and support
- Existence of the sleep contract within an existing SMS
- A definition of what constitutes being 'too tired for duty' and how the employee and employer will respond when fatigue is reported
- Provision of training for employees to help them recognise and manage their fatigue
- Formal recording of fatigue reports, and the response to these
- Organisational culture should support employees in reporting fatigue and consider the various reasons that employees may be reluctant to do so
- Periodic analysis for 'hot spots' of the data collected by operating the sleep contract
- Where fatigue risk is identified the employer and employee must be committed to addressing this risk.

Other fatigue management resources

For further information about fatigue management resources for the petroleum and allied industries, see: http://www.energyinst.org.uk/humanfactors/fatigue. This includes: a facility to access the IP Research Report[1] on which this Safety information bulletin is based; information about HSE cross-industry guidance and sector-specific IP guidance; a link to the IP Human factors briefing note on fatigue; details about IP *Workshop on fatigue*.

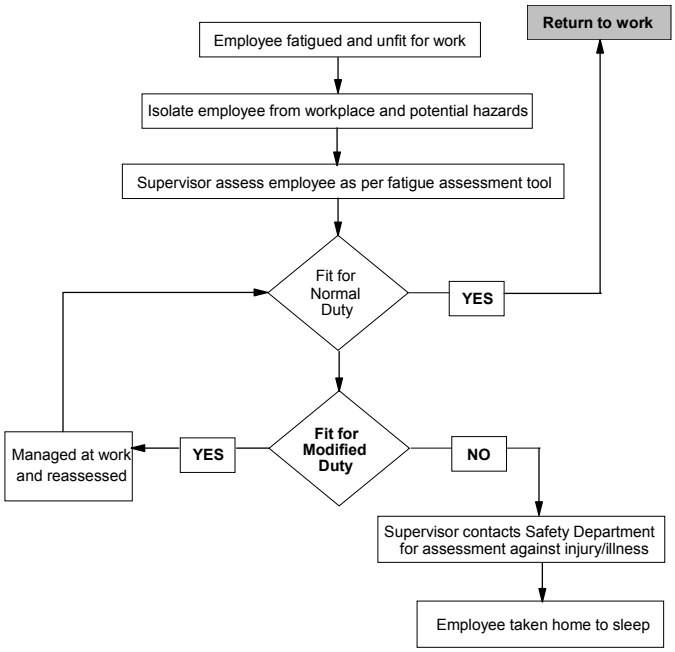

Figure 2 – The mining company's protocol for responding to reports of workplace fatigue

References and further information

1 IP *Research Report: Viability of using sleep contracts as a control measure in fatigue management*, Energy Institute, February 2006, ISBN 978 0 85293 455 5, see http://www.energyinst.org.uk/humanfactors/fatigue.

2 Dawson D., McCulloch K. and Baker A. (2001) *Extended working hours in Australia: Counting the costs*. Department of Industrial Relations.

For more information about sleep contracts and fatigue risk management contact Clockwork Consultants Ltd. (http://www.clockworkconsultants.com).