

Research Brief



Fatigue and shiftwork for freight locomotive drivers and contract trackworkers

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Background

As a direct consequence of the Clapham Inquiry, the rail industry adopted what became known as the 'Hidden Limits' on working time which were included in Appendix A of Railway Group Standard GH/RT 4004¹. The limits were generic and reflected what was achievable in operational terms at the time, based on expert opinion and agreed good practice.

Although industry continues to work to the 'Hidden Limits' there remains no guarantee that workers will not continue to experience fatigue. Fatigue risk is influenced by many job, organisational, and individual factors. The 'Hidden Limits' are also generic, in that they are not specific to any particular group of safety critical workers. This prompted RSSB to conduct an earlier study of fatigue and the patterns of work of drivers within the passenger train operating (TOC) community. The findings led RSSB to draft guidance designed to compliment the Office of Rail Regulation's (ORR) nine-stage approach² to managing the risk of fatigue in safety critical workers. The RSSB guidance included proposed alternative working limits and good practice to help duty holders comply with the Railways and Other Guided Transport Systems (Safety) Regulations (2006).

The current study was commissioned to research similar issues within the freight operating company (FOC) and infrastructure maintenance contractor (IMC) communities. These two groups differ in their working practices and environment from those of passenger TOC drivers. For example, there is a greater physical component to many of the tasks in the infrastructure community, most activities are undertaken outdoors, and there may be long periods spent travelling to and from work. In both the FOC and IMC communities there is a greater requirement to work at night.

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- 1 Group Standard GH/RT4004 has since been withdrawn and replaced by the Railways and Other Guided Transport Systems (Safety) Regulations (2006)
 - 2 Managing fatigue in safety critical work - Railways and Other Guided Transport Systems (Safety) Regulations. July 2006. Office of Rail Regulation. (www.rail-reg.gov.uk/upload/pdf/293.pdf)

Understanding the contribution of these factors to fatigue, in addition to more well established issues such as shift length, the number of consecutive shifts, and reduced rest periods, will ensure the risks of fatigue are also effectively managed within these communities.

Aims of the study

The current study focussed on the FOC driver and IMC communities, the four principal objectives of which were to:

- 1 Investigate the factors that contribute to the onset of fatigue.
- 2 Examine the current worker and company management of fatigue.
- 3 Evaluate the effects of fatigue on work quality and quantity, accidents and incidents.
- 4 Highlight current industry concerns, and propose fatigue mitigation strategies.

Method

The study contained the following elements:

- Literature review - a review of the relevant scientific literature and information and reports on fatigue specifically of interest to the rail community, covering the period 2004-2007 (ie since the TOC driver study in 2004).
- Company visits (October 2007 - November 2007) - visits to two freight and five infrastructure companies to obtain background information.
- Focus groups (February 2008 - May 2008) - nine focus groups, involving staff from four companies (one freight, three infrastructure).
- Freight questionnaire - a questionnaire covering a wide range of topics relating to fatigue and work practices, health and well-being, was distributed in September 2008 to 3001 drivers and shunters from the four companies who agreed to participate. A total of 312 were returned (response rate of 12%).
- IMC questionnaire - a similar questionnaire to the freight questionnaire was distributed in September 2008 to 4227 infrastructure workers from 24 different companies. There were 568 returns (response rate of 13.2%), just under 10% of which were from agency staff.
- Freight Sleep and Duty diary - a diary distributed in September 2008 to the freight drivers, along with the questionnaire, in which they were asked to complete details of their work pattern, fatigue and sleep covering 28 work days. A total of 102 were returned (response rate of 3.4%).

- IMC Sleep and Duty diary - a similar diary to that used within the freight driver community was distributed in September 2008 to the infrastructure workers. A total of 105 were returned (response rate of 2.5%).
- Data analysis - the FOC and IMC questionnaire and diary data was collated and analysed during the period January - June 2009.
- SPAD analysis - SPAD (signals passed at danger) data, relating to IMC, FOC, and TOC events between January 2003 and December 2007, were analysed to investigate correlations between factors related to the timing and pattern of work. TOC data was included in the analysis to enable direct comparison with the results from the FOCs and IMCs.

Staff working for Network Rail were not included in the study although Network Rail has been kept informed of progress.

Deliverables

The project deliverables released to industry include:

- This research brief.
- A presentation for stakeholders on the study findings.
- A detailed report covering the findings and recommendations from the research, together with supporting appendices explaining the results from the individual elements of the study.

Next steps

A number of findings have been established and shared with the industry at several seminars and at meetings of Operations Focus Group and Safety Policy Group. This will allow for integration into the industry's knowledge base and management systems.

An updated version of the draft *Fatigue Management Good Practice Guide*, currently in preparation, will also be published by RSSB.

Contact

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