

**Title :** Heavy Vehicle Driver Fatigue – Review of Regulatory Approach

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## **SUMMARY**

The flaws and internal inconsistencies of national prescriptive regulations have become apparent:

- They encourage focus on hours of driving, rather than trip preparation and quantity and quality of rest;
- Current prescriptive hours of driving and work are inflexible and may not lead to effective fatigue management; and
- They may not be fully consistent with Occupational Health and Safety requirements.

Consequently, the National Road Transport Commission has initiated a review of the regulatory approach to the management of fatigue in drivers of heavy vehicles. The foundations of this national policy review are heavily dependent upon the research and evaluation projects undertaken by experts in sleep, shiftwork and human performance.

A more flexible prescriptive regime (including provision for full fatigue management) in jurisdictions currently subject to prescriptive regimes, supplemented by a Code of Practice, is to be considered. This could allow greater consistency with jurisdictions that have implemented Codes of Practice under occupational health and safety legislation, and lead to reductions in fatigue related crashes involving heavy vehicle drivers.

## **PRESCRIPTIVE DRIVING HOURS - BACKGROUND**

National legislative provisions for hours of driving and work by drivers of heavy vehicles were initially developed by the Commission as a way of achieving consistency in the jurisdictions which had been using a prescriptive approach. The prescriptive approach is based on the premise that the regulation is effective in limiting driving or working periods and that these limitations are effective in reducing fatigue and hence fatigue-related crashes. The regulations involve limitations on hours of driving and work as well as requirements for minimum rest breaks. The attributes that are regulated include working periods, driving periods, long rest periods and short rest periods. These regulations, which allow little flexibility, have been implemented fairly consistently in Queensland, New South Wales, Victoria and South Australia. Enforcement is done through logbooks, with the primary responsibility resting with the driver.

The national provisions include limited flexibility and “Chain of Responsibility” provisions. Under chain of responsibility, all parties in the transport chain that influence safety outcomes may be held legally liable.

The other States and Territories have adopted alternative approaches. Tasmania has implemented driving hours provisions but not record keeping requirements. Western Australia and the Northern Territory have adopted the approach of endorsing codes of practice for implementation under occupational health and safety legislation. The Australian Capital Territory has no specific provisions regulating hours of driving and work.

## **REGULATORY FRAMEWORK**

The regulatory framework approved by ATC applies to vehicle of greater than 12 tonnes gross mass and has 3 components:

1. A regulated driving hours (standard hours) regime
2. A transitional fatigue management scheme (TFMS)
3. Provision for a full fatigue management scheme.

## **PRESCRIPTIVE REGULATIONS**

The prescriptive regulations under the standard hours regime include:

- Maximum of 12 hours driving and 14 hours of work (including driving) in any 24 hour period
- Minimum continuous rest break of 6 hours in any 24 hour period
- Minimum rest break of 30 minutes (or 2 x 15 mins) in each period of 5 hours 30 minutes
- Maximum hours of work of 72 in any 7 day period.
- Continuous rest break of 24 hours in any 7-day period.

## **TRANSITIONAL FATIGUE MANAGEMENT SCHEME (TFMS)**

The transitional fatigue management scheme provides some relaxation of the limits in the core regulated driving hours regime, in exchange for implementation of auditable processes relating to driver fatigue management training, health and rostering.

The major flexibility offered under the TFMS is:

- 14 hours of driving or work per day
- the cycle can be operated over a 14 day period (ie. in any 14 day period: 144 hours maximum driving or work and 2 x 24 hours continuous periods of rest).

The TFMS is a variant of the core regulated hours approach. It adds elements of a comprehensive fatigue management approach to the traditional regulatory core, with increased flexibility as an incentive.

## **FULL FATIGUE MANAGEMENT SCHEME**

Under the Fatigue Management Scheme, operators with approved programs for managing fatigue are exempted from most driving hours regulations. This option is available only as a pilot program (managed by Queensland Transport as a national lead agency), with broader availability subject to results of an evaluation of the pilot.

Apart from the full FMP approach, the national provisions (including TFMS) were designed as an incremental reform. They were intended to achieve;

- a greater degree of consistency between jurisdictions that applied a prescriptive approach;
- better compliance with the regulatory limits;
- chain of responsibility;
- some gains in flexibility; and
- some incentive to adopt a more pro-active approach to fatigue prevention.

However, there was no suggestion that the regulated hours provisions had taken full account of current understanding of fatigue causation.

## **FLAWS WITH THE REGULATORY APPROACH**

The hours adopted for the prescriptive regulations were generally based on existing limits rather than research evidence. Furthermore, prescriptive regulation of hours of service:

- are inflexible;
- encourage exclusive focus on hours of driving and work rather than on other aspects of fatigue causation such as trip preparation and quantity and quality of rest;
- may not lead to effective fatigue management;
- involve cumbersome record-keeping requirements;
- focus on drivers, rather than other responsible parties in the transport chain;
- are difficult to enforce; and
- the levels of compliance are low.

In addition, these regulations may not be fully consistent with Occupational Health and Safety requirements. Consequently, a review of the regulatory approach to the management of fatigue in drivers of heavy vehicles has been initiated by the NRTC.

The potential strength of the full FMP or Code of Practice approaches to fatigue prevention is that they provide a framework within which the wide range of factors relevant to fatigue can be addressed. They also offer the potential for gains in both safety and productivity based upon a system of tradeoffs. For example, “pushing the envelope” on one important parameter of fatigue management (such as the length of a single shift), may be compensated by changes to other factors that affect fatigue outcomes.

### **REGULATORY AIMS**

The aim of fatigue policy is to achieve safety outcomes required by the community while enabling maximum productivity in the road transport industry.

Requirements of good policy in the regulatory approach to management of heavy vehicle driver fatigue are:

- it should encourage management of the key determinants of fatigue
- it should target all those responsible for practices which result in unsafe outcomes
- it should provide confidence to operators that they are complying. This is of greatest importance for smaller operators who are less likely to have the resources to develop complex compliance systems
- it should be applicable in the full range of circumstances in which road transport operations are undertaken
- it should not impose excessive compliance costs on transport operators
- it should enable cost-effective enforcement.

In a federal system of government, it is highly desirable that consistent requirements be applied. This ensures that operators who are regarded as complying in one jurisdiction are not found to be in breach elsewhere. It is intended that the regulators review would lead to convergence between the requirements that apply in “regulated” (where regulation is undertaken through road transport law), and “unregulated” (where the approach is based on occupational health and safety provisions) jurisdictions.

### **CURRENT RESEARCH**

There is no doubt that fatigue is a significant contributor to heavy vehicle crashes, although estimates of the importance of fatigue as a cause of crashes vary markedly. Estimates in Australia suggest that fatigue is a contributing factor in between 3 percent and 42 percent of truck crashes (Pearson & Ogden 1991). Factors recognised as significant in the causation/prevention of fatigue include trip preparation / fitness for duty, health and lifestyle, work environment (eg. noise, vibration, heat, adequacy of sleeper berths) and individual differences in tolerance to fatigue.

It is essential that heavy vehicle driver fatigue policies be based upon the results of Australian and international research. The national policy review will draw on research and evaluation projects undertaken by other agencies. A list of projects included in the review is set out below.

**TABLE : HEAVY VEHICLE DRIVER FATIGUE: REVIEW OF REGULATORY APPROACH**

<b>Project</b>	<b>Funded by</b>	<b>Personnel / Organisation</b>	<b>Status</b>
Driver & Operator Surveys	ATSB	Williamson & Feyer	In progress
Safety Improvements in Prescribed Driving Hours	Austrorads	Mabbott & Newman (ARRB)	In progress
DSMD Pilot	TSA / DoTRS	TSA	In progress
Fatigue Management Practices in Regulated & Unregulated Areas	ATSB	Williamson & Feyer	In progress
Fatigue Detection & Prediction Technologies	NRTC	Hartley, Horberry, Mabbott & Krueger	Complete
Technical Expert Group: Options	ATSB / LTSA / NRTC	Dawson, Feyer, Gander, Hartley, Haworth, Williamson, Baas, Nolan	In progress
Napping Strategy	VicRoads	Swann (VicRoads)	In progress
Technical Review of Driving Hours Regulations	NRTC	Driving Hours Implementation Group	In progress
Fatigue Management Training for Drivers and Operational Staff	Unfunded		Not started
Review of TFMS	QT / NRTC	QT	In progress
Fatigue Management Pilot Scheme	QT	QT / ATA	In progress
Development of National Guidelines for the Provision of Rest Areas	DoTRS	Tziotis & Newman (ARRB)	Not started
Fatigue Code of Practice	Unfunded		Not started

**Driver and Operator Surveys**

This project involves comparisons of national surveys of long distance road transport drivers regarding fatigue and its effects on driving. The first survey was conducted in 1991 and results from this were compared to a later survey conducted in 1998. The second survey examined the extent of changes in awareness and experiences of fatigue while driving in the long distance road transport industry.

The second survey provided an update on driver views of fatigue, how they manage it and their views of how it is managed by the industry and by government. It also provided insights into some of the pressures on drivers that can promote or reduce driver fatigue. Overall, an important contribution to an understanding of the factors that will make the most difference in managing fatigue in the long distance road transport industry has resulted from this project.

**Safety Improvements in Prescribed Driving Hours**

This research examined whether greater road safety benefits could be delivered through a more flexible approach to restrictions on driving hours, without adding unwarranted costs to road transport services.

It was found that there was considerable merit in utilising a flexible approach to regulated daily driving limits and recommendations were made regarding further studies into the issues surrounding reduced night driving. The fact that there would be problems with the enforcement of either a flexible approach to prescribed limits or the use of weighted systems for differentiating between night and day driving was also pointed out in the report.

**Driver Specific Monitoring Devices (DSMD) Pilot**

Due to the fact that current prescriptive hours of driving and work are inflexible as far as record keeping is concerned, industry has requested the use of driving records generated by vehicle monitoring equipment. The monitoring equipment attached to the vehicle will store data of the vehicle's operation that can be downloaded onto a data storage smart key/card specific to the driver to show driving time by the specific driver.

Agreed Administrative Guidelines for the use of DSMDs as alternatives to driver logbooks for record keeping will be the output of this project.

### **Fatigue Management Practices in Regulated and Unregulated Areas**

The aim of the project was to identify and compare operating practices, including fatigue management practices and road safety outcomes in regulated and unregulated zones, and to document effective practices and strategies identified.

Identifying effective fatigue management practices in either zone, which may be transferable or applicable in the other zone was the underlying objective of this project.

### **Fatigue Detection and Prediction Technologies**

This report reviews different operator centred fatigue detection technologies that fall into four groups:

1. Readiness-to-perform and fitness-for-duty technologies
2. Mathematical models of alertness dynamics joined with ambulatory technologies
3. Vehicle-based performance technologies
4. In-vehicle, on-line, operator status monitoring technologies

In conclusion, this report states that the use of fatigue management programs, better education of drivers and society as a whole regarding the danger of fatigue, greater use of engineering countermeasures and more research into the nature and consequences of fatigue amongst drivers are critical. The report found that many of the technologies are first generation, and there may be benefits in combining technologies to provide a more powerful assessment of fatigue.

The authors suggest that large scale, industry wide databases incorporating information from the fatigue technologies, shiftwork rosters and risk assessments will be critical to the further development and ultimate validation of the technologies.

### **Technical Expert Group: Options for Regulatory Approach to Fatigue in Drivers of Heavy Vehicles in Australia and New Zealand**

This project involved the establishment of a technical expert group who would develop options for the medium term development of prescriptive hours of driving and work in the road transport industry.

The purpose of the project was to produce a consensus report on options for the development of regulatory approaches to management of fatigue in drivers of heavy vehicles.

### **Napping Strategy**

Research has pointed to the benefits of napping as a fatigue management technique. This project will involve the preparation of guidelines and educational/promotional material for drivers outlining the benefits of napping and appropriate forms of napping for drivers.

### **Technical Review of Driving Hours Regulations**

A review of current legislative provisions to identify weaknesses and propose revisions is the basis for this project.

### **Fatigue Management Training for Drivers and Operational Staff**

An increased understanding of fatigue causation and effective fatigue management practices by drivers and management staff (who influence driving practices) provides an important mechanism for combating fatigue. Fatigue management training for road transport in Australia was developed several years ago and should be reviewed. The purpose of this project is to improve road safety outcomes by increasing levels of understanding of fatigue causation and fatigue management by both drivers of commercial vehicles and relevant operational staff.

### **Transitional Fatigue Management Scheme (TFMS) Evaluation**

The TFMS was implemented in late 1998 and early 1999 to provide more flexibility in prescriptive regulations. This review of the TFMS will look into employer accountability for compliance, take-up rates for registration, effectiveness of training courses and whether safety standards have been maintained.

### **Fatigue Management Pilot Scheme**

The aim of the Fatigue Management Program is to develop and evaluate a model that will allow industry and government to better manage heavy vehicle driver fatigue under alternative compliance arrangements.

The pilot program is being conducted in two phases. The first phase involves development and testing of the FMP standards and accreditation requirements, and evaluation tools. The second phase involves the evaluation of the FMP using pilot operators.

### **Development of National Guidelines for the Provision of Rest Areas**

This project will examine current road agency guidelines and practices on the provision of rest areas and propose modifications necessary to cater for the needs of drivers of heavy vehicles in non-urban areas. Recent work undertaken by the Commonwealth (for National Highways) and State and Territory road agencies would be drawn upon.

The outcome of this project, which will be undertaken in 2 stages, will be a set of nationally agreed guidelines assisting with the ways in which frequency, location and facilities for rest areas for heavy vehicle drivers can be assessed.

### **Fatigue Code of Practice**

The purpose of this project is to reach national agreement on a code of practice for the health and safety of heavy vehicle drivers. The national code will require endorsement under legislative provisions for both road transport and occupational health and safety.

### **IMPORTANCE OF RESEARCH IN POLICY MAKING**

The NRTC plays a leadership role in developing national road transport reforms for approval by Australia's Transport Ministers and implementation by States, Territories and the Commonwealth. Close work with a wide range of stakeholders, including industry, governments, road agencies, other road users, enforcement authorities, environmental agencies and others is essential in the Commission's development of these reforms.

The process through which the Commission must go in implementing reforms starts with a research base. As the results of research become available, the Commission is able to develop proposals and discussion papers that are released for evaluation and consultation. These proposals are further refined and once again put out for evaluation and consultation. Legislation and delivery tools are developed which the Australian Transport Council then votes upon. If the proposal is approved, States and Territories are expected to implement.

This often long and exhaustive process would be fruitless if the fundamentals for these reforms weren't based upon extensive research - research that gauges stakeholders' needs within the road transport industry.

### **REFERENCES**

MOORE B & BROOKS C, *Heavy Vehicle Driver Fatigue: A Policy Advisers' Perspective*, March 2000

HARTLEY I, HORBERRY T & MABBOTT N, *Review of Existing Fatigue Detection and Prediction Technologies*, September 2000