



An integrated approach to the regulation of heavy vehicle driver fatigue

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Abstract

Prescriptive regulation of hours of service is the norm for control of fatigue in drivers of heavy vehicles in most developed countries. Since the initiation of prescriptive regulation, and particularly in recent years, understanding of the nature and causes of fatigue has grown. Little of this increased understanding has yet been embodied in regulatory approaches to the management of heavy vehicle driver fatigue.

The current regulatory situation in Australia is one of prescriptive regulation under road transport legislation in the 'populous' jurisdictions and Codes of Practice under occupational health and safety legislation in the 'remote' jurisdictions.

It is expected that the review will result in a recommendation of an integrated approach to the management of heavy vehicle driver fatigue. It is intended that this approach will be able to be applied consistently in all jurisdictions. The elements of this approach are:

- legislation setting out responsibilities of all parties in the road transport chain of responsibility
- flexible hours of service, based on sleep requirements, which may be included in legislation or guidance material
- a fatigue code of practice, which may be given status under road transport legislation and/or OH&S legislation
- other initiatives, including industry training, public education, infrastructure measures, industry codes and education of consignors and others in the transport chain.

The purpose of this paper is to explain the industry and regulatory environment in Australia, to discuss the process to be followed in the fatigue review and to set out the expected outcomes.

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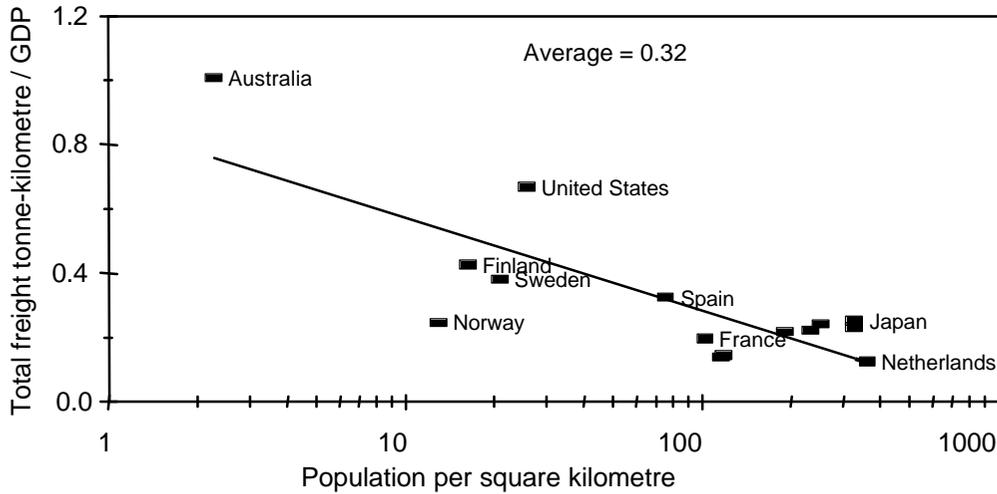
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Introduction

Road transport in australia

Due to its large size and low population density, Australia is highly dependent on road transport (see Figure 1).

Figure 1: Road freight movements, economic activity and population density by country



Source: McLean (1997)

Long distance freight is usually carried in semi-trailers, B-doubles or (in remote areas) double or triple road trains.

Figure 2: Australian long distance road freight vehicles

Vehicle Type		Maximum Gross Mass (tonnes)
Semi Trailer		45.5
B-Double		68.0
Double Road Train		85.7
Triple Road Train		125.2

Institutional arrangements

Australia is a federation, with a central (Commonwealth or Federal) government, six States (New South Wales, Victoria, Queensland, South Australia Western, Australian and Tasmania) and two Territories (Northern Territory and Australian Capital Territory). Constitutional power over road transport lies with the States¹, however there is strong recognition that the industry requires national regulation.

The limited success of earlier attempts at co-ordinated regulation, combined with an increasing realisation that fragmented regulation led to inefficiencies which impacted on Australia's international competitiveness, led to the creation of the National Road Transport Commission (NRTC) in 1992.²

The NRTC has six commissioners, a staff of 23 and an annual budget of \$A3.54 million (approximately \$US1.8 million). The function of the Commission is to make recommendations on the regulation of road transport to the Australian Transport Council (ATC), which comprises Commonwealth and State Transport Ministers. NRTC recommendations are generally expressed in the form of model legislation. If these recommendations are approved, each Minister is expected to ensure that the legislation is enacted and/or the agreed policy implemented.

The NRTC's objectives are improvements in road safety, improvements in transport efficiency and minimisation of the adverse environmental impacts of road transport.

The NRTC works with State and Commonwealth road authorities, the road transport industry and many other organisations to achieve these objectives.

The Australian road transport industry

The dominant characteristic of the Australian road transport industry is its diversity. The industry is characterised by:

- a small number of large operators and a large number of small operators (approximately 70 per cent of hire and reward fleets consist of a single vehicle)
- a wide variety of operating environments: including urban, rural, remote and populous
- varied contractual relationships: including employees, prime contractors and sub-contractors
- many different transport tasks: with varying freight densities, varying degrees of time-sensitivity, varying value of product and variation between regular schedules and one-off movements

¹ For simplicity, I will use the term States to refer to States and Territories.

² The NRTC was created on an interim basis in September 1991 and formally in January 1992.

- a mix of ancillary transport (own business: approximately 80 per cent of the transport task) and hire and reward transport companies
- a wide variety of vehicle types

There is open entry to most sectors of the road transport industry (no operator licensing) and many operators are subject to high levels of competition. Levels of traditional (on-road) enforcement are usually low.

Current regulation of heavy vehicle driver fatigue³

The current regulatory situation in Australia is one of prescriptive regulation in most of the 'populous' jurisdictions and Codes of Practice in the 'remote' jurisdictions.

New South Wales, Victoria, Queensland and South Australia have implemented the 'national' provisions approved by Australian Transport Council in 1999. Tasmania has implemented most of the provisions, but has not implemented the log book requirements for long distance drivers. Australian Capital Territory has not yet implemented the national provisions.

Western Australia and Northern Territory have both implemented Codes of Practice under occupational health and safety (OH&S) legislation. These codes have been developed by transport agencies, in conjunction with the road transport industry. In both of these jurisdictions, there were previously no specific regulatory provisions applying to heavy vehicle driver fatigue.

The regulatory framework approved by ATC has removed the inconsistencies between States which had previously applied prescriptive regulation, introduced some flexibility and incorporated 'chain of responsibility' provisions.

The national provisions apply to vehicles of greater than 12 tonnes gross mass and have three components:

- a regulated driving hours (standard hours) regime
- a Transitional Fatigue Management Scheme (TFMS, not available to bus drivers and operators)
- provision for a full fatigue management scheme.

The standard hours regime is the default system: it applies to drivers/operators who are not covered by the transitional fatigue management or full fatigue management option.

The prescriptive regulations under this regime include:

- maximum of 12 hours of 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

³ Sections 2, 3.3 and 4 are based on Moore and Brooks, 2000.

- minimum rest break of 30 minutes (or 2x15 mins) in each period of 5 hrs 30 minutes
- minimum continuous rest break of 24 hours in each 7 day period (with a variation to cater for bus drivers on long tours)
- maximum hours of work of 72 in any 7 day period.

Drivers operating more than 100 kms from base are required to keep logbook records, though provision is made for electronic recording or auditable management records as alternatives to logbooks.

'Chain of responsibility' offences have been included, which place liability on employers, consigners or other parties who take action which leads to breaches of the provisions.

The Transitional Fatigue Management Scheme was designed to provide additional flexibility in return for the demonstration by drivers and operators of higher levels of responsibility in the management of fatigue. The scheme was also intended to legitimise a specific trip (Brisbane-Sydney) which requires 14 hours of driving, and which had previously been available under an enforcement moratorium. TFMS was intended as an interim measure; to be phased out when the framework for full fatigue management programs became available. It 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 2x24 hours continuous rest).

In essence, TFMS is a variant of the core regulated hours approach, whereas full Fatigue Management is a more radical departure. However, TFMS does add some elements of a more comprehensive fatigue management approach to the traditional regulatory core, with increased flexibility as an incentive.

Under the (full) Fatigue Management Scheme, operators with approved programs for managing driver fatigue will be exempted from most driving hours regulations. This option is currently available only as a pilot program, with broader availability subject to results of an evaluation of the pilot.

Apart from the full Fatigue Management approach, the national provisions (including TFMS) were designed as an incremental reform: they were intended to achieve a greater degree of consistency between jurisdictions which applied a prescriptive approach, better compliance with the regulatory limits, some gains in flexibility, and some incentive to adopt a more pro-active approach to fatigue prevention. There was no suggestion that the regulated hours provisions had taken full account of current understanding of fatigue causation.

In terms of approaches to fatigue prevention, there is a great deal of similarity between the full Fatigue Management approach and the Code of Practice approach developed in Western Australia. The main difference between the two systems is in the mechanisms used to ensure compliance and quality control: the Fatigue Management Scheme requires formal approval of an operator's program by the relevant transport agency, which also conducts audits of implementation. Sanctions for inadequate implementation can include withdrawal of program approval. Under a Code of Practice, operators do not need to seek program approval 'up front', but non-compliance with the code may leave the operator open to legal sanctions under OH&S legislation.

Review of regulatory approach

Background

The shortcomings of prescriptive approaches to the regulation of heavy vehicle driver fatigue are well known. The prescriptive approach takes little or no account of circumstances (type of load, nature of terrain, emergencies, proximity to destination) and encourages a focus by drivers and operators on hours of driving and work, rather than the factors which lead to fatigue.

The policy approved in 1998 was not seen as the ultimate goal, merely a necessary step in the achievement of greater flexibility in the longer term.

The current situation in Australia is that the populous States have implemented the national prescriptive approach and the remote States have implemented Codes of Practice under OH&S legislation. In addition, OH&S agencies in other States are taking an increasing interest in workplace fatigue, including in the road transport industry. Thus there is the potential for inconsistencies between States basing regulation on road transport and OH&S provisions, and for States with road transport regulation, there is potential for inconsistent enforcement between two sets of regulatory agencies.

Process

A review of the regulatory approach to heavy vehicle driver fatigue was initiated by the NRTC in 2000. The review comprises a set of projects, many of which are undertaken by other agencies. The projects included in the review are described briefly in Attachment A.

Issues

The starting point for the review is:

- a recognition that, for many operators, the prescriptive approach may not achieve optimal safety or productivity outcomes
- the need for consistency in regulation, both between OH&S and road transport States, and between OH&S and road transport agencies within each State

- a recognition that more is known about fatigue than was the case when the prescriptive approach was first developed. In particular, it is now generally accepted that the major factors which must be taken into account are:
 - the need for adequate sleep
 - time of day effects
 - time on task.

Major issues which must be addressed in the review include:

- ***Night driving***

Whilst most fatigue experts argue that night driving is associated with higher risk of fatigue-related crashes, it is likely that constraints would come at high productivity costs. In addition, safety implications may be difficult to assess in view of possible adverse consequences of increasing the proportion of heavy vehicles mixing with light vehicles during the day.

- ***Record-keeping***

The primary form of record-keeping for long-distance drivers in Australia is logbooks. The possibility of an increased role for operator records and for electronic record-keeping will be considered.

- ***Flexibility***

Increased flexibility may provide the opportunity for simultaneous improvements in both safety and productivity. This must be balanced against increased complexity and the need of much of the industry for certainty and simplicity

- ***Consistency of road transport and OH&S***

As there is an increasing focus of OH&S agencies on road transport operations, it is important to align both regulatory approaches and enforcement practices.

- ***Coverage***

Road transport regulations in Australia currently apply to trucks of over 12 tonnes Gross Vehicle Mass (the international breakpoint for heavy vehicles) and buses carrying at least nine persons. Some have argued that lighter vehicles should be included within the regulations.

- ***Chain of responsibility***

Chain of responsibility provisions will be enhanced by specifying activities in the road transport chain, and the responsibilities and offences associated with each activity. An issue is to what degree onus should be imposed on other participants in the road transport chain. One issue which is frequently raised is that delays in loading and unloading is a

major contributor to driver fatigue. The responsibilities of parties who control loading and unloading will be considered.

Approach⁴

A comprehensive approach to heavy vehicle driver fatigue has to be flexible, broad in coverage of issues and able to address a wide range of targets. It must be recognised that regulation can only form part of the solution. Behaviour change will also result from increased awareness of fatigue by the road transport industry and its customers.

A model will be investigated which comprises a combination of legislation, codes of practice, education and training, and other initiatives.

- **Legislation**

It is expected that legislation will provide a framework for a range of schemes, from 'base prescription', through a number of flexibility options (probably only one or two), to full fatigue management. Each form of prescription will be designed to be consistent with OH&S 'duty of care' requirements but may not be sufficiently comprehensive to fully satisfy those requirements. Movement along the flexibility spectrum would involve higher degrees of operator and driver responsibility and may require electronic record keeping. Legislation will include 'chain of responsibility' provisions to target all in the transport chain who undertake actions leading to unsafe fatigue practices (subject to some form of 'reasonable steps' defence).

In jurisdictions which relied solely on OH&S legislation to regulate heavy vehicle driver fatigue, elements of this tiered approach might be built into relevant codes of practice, or separate Regulations under OH&S legislation could be developed.

- **Fatigue Codes of Practice**

Codes of practice could provide guidance on meeting requirements set out in legislation. A single code of practice could cover drivers and transport operators. Separate codes could be developed for others in the transport chain (eg, consignors and/or those responsible for loading and unloading). These codes could be given status by being referenced in road transport legislation or OH&S legislation. Compliance with road transport legislation or OH&S legislation, combined with adherence to the appropriate code of practice, would ensure compliance with both road transport and OH&S requirements.

A jurisdiction without specific road transport legislation on driver fatigue would include some elements of that legislation in the code of practice. The codes of practice should be consistent in all jurisdictions (ie, identical but for different coverage in jurisdictions using the OH&S approach).

⁴ This section is based on Moore and Brooks, 2000

- **Other initiatives**

Other initiatives may be required to enable a comprehensive approach to the management of heavy vehicle driver fatigue. These include: public education, infrastructure measures, industry codes and education of consignors and others in the transport chain. Education and training requirements for members of the road transport industry could be referenced in legislation or codes of practice.

One outcome of the review may be to allow drivers and operators a choice between:

- a tight prescriptive approach, based on the current base scheme of 14 hours of work in any 24 hour period, or 72 hours of work in a seven day period
- a flexibility option, based on two-day averaging but with similar weekly or fortnightly limits
 - this option may require non-paper based record keeping, eg electronic logbooks or auditable management records
- full fatigue management, for operators requiring greater flexibility and who are prepared to demonstrate high levels of control over factors affecting fatigue.

The tight prescriptive approach and the flexibility option would take into account the design principles of the Fatigue Expert Group.

Concluding observations

In the Australian review of fatigue policy, consideration is being given to allowing transport operators the choice between a range of options, ranging from tight prescription to full flexibility. These options would be supported by a fatigue code and other guidance and educational material. Legislative requirements could be imposed through either road transport or OH&S legislation.

Application of this model would enable:

- simplicity and certainty for operators choosing the “base prescription” option
- flexibility options with enhanced driver and operator responsibilities, combined with electronic record-keeping
- full flexibility for a limited number of operators
- consistency of all options with OH&S requirements
- increased emphasis on chain of responsibility
- more emphasis on codes of practice and training for drivers, operators and others in the transport chain

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- greater consistency between jurisdictions basing their regulatory approach on road transport law and those relying entirely on OH&S provisions.

References

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Moore, B. and C. Brooks 2000, *Heavy Vehicle Driver Fatigue: A Policy Adviser's Perspective*, Fourth International Conference on Fatigue and Transportation: Coping with the 24 Hour Society, Fremantle, March

National Road Transport Commission 2001, *Heavy Vehicle Driver Fatigue: Review of Regulatory Approach – Discussion Paper*, National Road Transport Commission, September (available at www.nrtc.gov.au)

Attachment A

Heavy Vehicle Driver Fatigue: Review of Regulatory Approach

Outline

Objective

Improvements in road safety and transport productivity through the development and implementation of policies and practices to assist in the management of fatigue in drivers of heavy vehicles.

Background

Prescriptive hours of driving and work have been implemented in Queensland, New South Wales, Victoria and South Australia. 'Chain of responsibility' provisions have been implemented in Queensland, New South Wales and South Australia. Tasmania has implemented driving hours provisions but not record keeping requirements.

Western Australia and Northern Territory have adopted the approach of endorsing codes of practice for implementation under occupational health and safety (OH&S) legislation.

OH&S agencies are taking a greater interest in road transport, particularly due to concerns over fatigue.

Discussion

The intention of the Commission in developing the initial national driving hours regulations was to achieve consistency in prescriptive regulations in the jurisdictions taking this approach. Additional flexibility was provided and chain of responsibility provisions included. The hours adopted were generally based on existing limits, rather than research evidence.

Current prescriptive hours of driving and work are inflexible and may not lead to effective fatigue management. They encourage a focus on hours of driving, rather than trip preparation, time of driving and quantity and quality of rest, which are the most critical causal factors of driver fatigue. In addition, they may not be fully consistent with OH&S requirements. For example, fatigue experts would query the safety impacts of working 14 hours per night for 10 consecutive nights, as permitted under TFMS, or 12 hours per night for 6 consecutive nights permitted under the base regime.

Most enforcement efforts are still directed to drivers, with some attention being directed towards operators. To date, little enforcement emphasis has been placed on other parties in the logistics chain.

Implementation of the national prescriptive regulations has indicated that they may contain flaws and internal inconsistencies. These will be reviewed and corrected. Chain of responsibility provisions will be reviewed for effectiveness and possible extension.

The revised regulatory approach will take into account recent safety research and be consistent with OH&S requirements. Recent experience in Western Australia and the Northern Territory in the implementation of Codes of Practice will be drawn upon.

A more comprehensive approach to the management of heavy vehicle driver fatigue requires consideration of a wide range of factors, including provision of rest areas, advice to drivers on napping and provision to drivers and managers of fatigue training in fatigue prevention and management.

Structure of Review

The review will comprise a number of separate projects, most of which have been included in the Third Heavy Vehicle Reform Package. The review will be managed by NRTC's Director - Strategy (Barry Moore). Commonwealth Department of Transport and Regional Services (DoTRS) has provided specific funding for this project. Road agencies have indicated that they will accept responsibility for some projects: Driver Specific Monitoring Devices pilot (Transport South Australia - TSA); Fatigue Management Trial (Queensland Transport - QT); Napping Strategies (VicRoads); TFMS Review (QT). Contributions will be sought from other road agencies, OH&S authorities and training agencies.

Issues

Issues to be considered in future policy development include:

- the extent of the problem
- results of recent research on circadian rhythms (time-of-day effects) and sleep/rest needs
- the desirability of greater operator flexibility within safety constraints
- the Western Australian approach of a Code of Practice applied under OH&S legislation
- the application of a broader range of sanctions to responsible parties
- consistency between transport and OH&S requirements.

It is likely that proposals for evaluation will involve:

- a flexible range of options from basic prescription to full Fatigue Management
- all options consistent with the 'duty of care' requirements of OH&S legislation
- more widespread use of electronic record keeping, possibly as a pre-requisite for increased flexibility.

One possibility would be to maintain a more flexible prescriptive regime (including provision for full Fatigue Management) in jurisdictions currently subject to prescriptive regimes, supplemented by a Code of Practice. This could allow greater consistency with jurisdictions which have implemented Codes of Practice under OH&S legislation.

Process

Research Base

The review of approaches to heavy vehicle driver fatigue must be based on current research, which emphasises the importance of time-of-day effects (Circadian rhythms), followed by sleep and time on task. Australian research to refine the application of these findings is continuing.

Industry Input

Extensive industry input will be sought early in the review. This is likely to be in the form of focus groups organised by industry groups, including road transport associations and the Transport Workers Union.

Reference Group

A Reference Group has been formed to oversee the review of road transport fatigue regulation and to provide advice to the NRTC. OH&S agencies have begun to express a stronger interest in this area and will be consulted in the development of revised policy. The Reference Group includes representatives from road authorities, road transport industry, OH&S agencies, road users and police.

Work Program

The proposed work program involves parallel development and implementation of some elements in order to speed the outcome.

Heavy Vehicle Driver Fatigue – Review of Regulatory Approach

(Shaded projects have been completed)

Project	Agency	Date
Research		
Driver and Operator Surveys (reports) Funded: ATSB	Williamson & Feyer/ATSB/NRTC	August 2001/ October 2001
<p>A survey of long distance drivers and operators was undertaken in mid-1998, prior to implementation of the national policy. The driver survey examined the operating and fatigue management practices of 1000 long distance drivers. In addition, a survey of operators was undertaken.</p> <p>The project has been undertaken by Ann Williamson (University of New South Wales), Anne-Marie Feyer (University of Otago) and others, with funding from ATSB and management by NRTC.</p> <p>These surveys will enable comparisons with the 1992 WorkSafe driver survey (also undertaken by Williamson and Feyer) and the more recent Western Australian surveys undertaken by Hartley, Mabbott and Arnold.</p>		
Safety Improvements in Prescribed Driving Hours (report) Funded: Austroads	Austroads/ARRB/NRTC	Feb 2001
<p>The purpose of this project was to investigate potential productivity and safety impacts of additional flexibility within a prescriptive approach to regulation of hours of service. The project was based on literature surveys, examination of crash data and industry focus groups.</p> <p>The project was undertaken by Nick Mabbott and Shannon Newman of ARRB TR. This is an Austroads project, which has been managed by NRTC. The final report is currently with Austroads Council for consideration.</p>		
Driver Specific Monitoring Device (DSMD) Pilot	NRTC/TSA	Early 2002
<p>This project has initiated by NRTC to test and revise the draft business rules for the operation of DSMDs (electronic logbooks). TSA is lead agent for the project. It is expected that final Administration Guideline will be submitted to Australian Transport Council in November 2001. DSMDs could be implemented under existing legislative provisions, prior to finalisation of the Fatigue Review.</p>		

Fatigue Management Practices in Regulated and Unregulated Areas (report) Funded: ATSB	Williamson/ Feyer/ATSB/ NRTC	July 2001
<p>The aim of this project is to make a comparison of the fatigue management practices undertaken by operators under prescriptive regulation with operators not subject to prescriptive regulation.</p> <p>The project is being undertaken by Ann Williamson and Anne-Marie Feyer, with funding provided by ATSB and project management by NRTC. Stage 1 of the project is a pilot study. Funding for Stage 2 will depend on the results of Stage 1.</p>		
Fatigue Detection and Prediction Technologies (report) Funded: NRTC	Hartley et al/NRTC	Sept 2000 (NRTC website)
<p>The purpose of this report is to assess the status of available and proposed fatigue detection and prediction and consider their suitability as a fatigue management tool.</p> <p>The report was prepared by Laurence Hartley and Tim Horberry (Murdoch University), Nick Mabbott (ARRB and Murdoch) and Gerry Krueger (Krueger Ergonomic Consultants, US), with funding and management by NRTC. Release of the report is imminent.</p>		
<i>Policy development</i>		
Endorsement of Project Brief for policy review		April 2000
<p>The Heavy Vehicle Driver Fatigue – Review of Regulatory Approach was endorsed at the meeting of Transport Chief Executives in April 2000. Most elements of the Review were included in the Third Heavy Vehicle Reform Package, which was endorsed by Australian Transport Council in May 2000.</p> <p>The Review was also discussed at the NRTC’s Industry Advisory Group and Bus Industry Advisory Group meetings in April and October 2000.</p>		
Formation of Reference Group	NRTC	Oct 2000
First meeting 19 October 2000		

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<p>Fatigue Expert Group: Options (report) Funded: ATSB/LTSA/NRTC</p>	<p>ATSB /LTS A (NZ)/NRTC</p>	<p>Feb 2001 (NRTC website)</p>
<p>The purpose of this project is to present the views of fatigue experts on options to be considered in the Fatigue Review. The report will be released as an information paper and will be an input into the discussion paper for the Fatigue Review. The fatigue experts on the group are: Laurence Hartley (Murdoch University), Drew Dawson (University of South Australia), Narelle Haworth (Monash University Accident Research Centre), Ann Williamson (University of NSW), Anne-Marie Feyer (University of Otago) and Phillipa Gander (University of Dunedin). An industry “reality check” has been provided by Darren Nolan (Nolan’s Transport) and Peter Baas (TERNZ). The group has been chaired by Barry Moore (NRTC), with Chris Foley (LTSA) and Chris Brooks (ATSB) present as observers.</p>		
<p>Discussion paper on regulatory options</p>	<p>NRTC</p>	<p>Sept 2001 (NRTC website)</p>
<p>A discussion paper will cover:</p> <ul style="list-style-type: none"> • background information (size and structure of the industry, operating conditions, etc) • data on the fatigue problem in road transport • survey of research on safety impacts of fatigue • reasons for considering regulation • possible forms of regulation • options to be considered. <p>The discussion paper will be released for comment (two months) and comments will be tabulated.</p> <p>The discussion paper will be prepared by a consultant working to NRTC.</p>		
<p>Regulatory Impact Statement (RIS)</p>	<p>NRTC</p>	<p>late 2002</p>
<p>A Regulatory Impact Statement is required (by the Council of Australian Governments) for all proposals to Ministerial Councils. Similar requirements apply in most jurisdictions and under the NRTC Act. The purpose of a RIS is to ensure that regulation is required, is carefully evaluated from a broad perspective and is appropriate to the problem.</p> <p>Regulatory Impact Statements for Australian Transport Council are assessed by the Commonwealth Office of Regulation Review.</p> <p>The RIS will be prepared by a consultant working to NRTC</p>		

<p>Napping guidelines (recommended guidelines for drivers) Funded: VicRoads</p>	<p>VicRoads</p>	<p>late 2001</p>
<p>This project will involve a survey of research on napping as a fatigue management technique. On the basis of these findings, guidelines will be prepared to assist drivers to use napping to manage fatigue. The project will include an international peer review of the survey findings and industry input into practical solutions.</p> <p>The output of the review will be a video for use by drivers.</p>		
<p>Technical review of Driving Hours Regulations</p>	<p>NRTC</p>	<p>late 2001</p>
<p>This has been an ongoing project since the implementation of the national provisions in 1998. The work has been undertaken by the Driving Hours Implementation Group, led by NRTC. Priority will now be placed on legislative amendments required for the technical “fix ups” to existing legislation. Following that, the group will consider technical issues for which resolution is required for the Fatigue Review.</p>		
<p>Review of training requirements for drivers and operators</p>	<p>TDT ITAB</p>	<p>mid 2001</p>
<p>Training in fatigue management is currently required for drivers and operational staff under TFMS and under the WA Code of Practice. The TFMS training package has not been reviewed since its inception in 1997. The purpose of this project will be to review both the content and the method of delivery of this training. Under the Fatigue Review, consideration will be given to what road transport personnel should be required to undertake fatigue management training.</p>		
<p>Review of Transitional Fatigue Management Scheme (proposals for administrative and legislative change)</p>	<p>Queensland Transport</p>	<p>late 2001</p>
<p>The Transitional Fatigue Management Scheme was implemented as an interim scheme, to be discontinued on the wide availability of the full Fatigue Management Scheme, which was expected within 12 months of implementation of TFMS. An early review of TFMS was agreed to by Ministers in the original policy package for driving hours.</p> <p>TFMS has now been in operation for over two years and a review of its operation is required. This review will be limited to consideration of the effectiveness and impact of TFMS. The appropriateness of the extended periods of service available under TFMS will be considered in the broader Fatigue Review.</p> <p>Queensland Transport will act as lead agency for the TFMS review, operating with a national steering committee. A detailed Project Plan will be agreed between NRTC and QT.</p>		

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<p>Fatigue Management Pilot Scheme (model legislation, business rules, guidelines for drivers and operators)</p>	<p>QT/ATA</p>	<p>mid 2002</p>	
<p>The Fatigue Management Pilot Scheme has been developed by Queensland Transport and the Australian Trucking Association, under a national Steering Committee.</p> <p>Phase 2 pilots are currently operating. The results of the pilots will be assessed and this will provide the basis for an evaluation to support the policy proposal to be made to Australian Transport Council. Legislative provision for the full Fatigue Management Scheme will be made in the Fatigue Review.</p>			
<p>Provision of Rest Areas</p>	<p>Funded: DoTRS</p>	<p>NRTC</p>	<p>mid 2001</p>
<p>The purpose of this project is to develop national guidelines for roadside rest areas for drivers of heavy vehicles. The funding provided to date will allow the development of a set of national guidelines based on a review of existing guidelines. The national guidelines could be used to assist decision making by road authorities when considering expenditure on roadside rest areas.</p> <p>ARRB Transport Research is the preferred consultant for this project and has developed a draft proposal.</p>			
<p>Fatigue Code of Practice</p>	<p>Funded: OH&S agencies</p>	<p>NRTC</p>	<p>Early 2002</p>
<p>A Fatigue Code of Practice could be an effective guide to fatigue management practices by both drivers and road transport operators. The Code could be used a guide to meeting both road transport and OH&S regulatory requirements and may be given status under both road transport and OH&S legislative provisions.</p> <p>The Code would be developed with broad input from drivers, operators, road authorities, OH&S agencies and safety experts. It is desirable that a single code be adopted nationally.</p> <p>A single Code could be used cover the operators of consignors, receivers and others in the transport chain, or separate codes could be developed and given status.</p> <p>Workplace Relations Ministers have approved funding to NRTC. This funding will be used for this project.</p>			

Attachment B

Fatigue Expert Group: Options for Regulatory Approach to Fatigue in Drivers of Heavy Vehicles in Australia and New Zealand February 2001

SUMMARY

Concern about the cost and impact of fatigue in the road transport industry and the effectiveness and relevance of traditional driving hours regulation has made this report of the fatigue expert group especially timely.

The Parliaments of both Australia and New Zealand consider fatigue in the road transport industry important enough to establish committees of inquiry into issues and possible solutions.

In February 2000 the National Road Transport Commission of Australia, the Australian Transport Safety Bureau and the New Zealand Land Transport Safety Authority jointly sponsored the establishment of a fatigue expert group to develop options for the medium term development of prescriptive hours of driving and work in the road transport industry.

The fatigue expert group comprised leading Australian and New Zealand experts in sleep, shiftwork and road safety who collaborated with the participating agencies and industry representatives to construct a set of evidence-based design principles for regulatory options.

The fatigue expert group's approach

The framework proposed by the fatigue expert group needs to be supported by other mechanisms to promote fatigue management. These other mechanisms include education, information, training, road treatments, technological aids and financial incentives/sanctions through workers compensation, vehicle insurance and safety management regimes.

The management of driver fatigue is not a matter for operators and drivers alone and the fatigue expert group emphasised the requirements and practices of others in the transport supply chain. The chain of responsibility provisions in current road transport legislation is designed to highlight that on-road performance is closely related to the decisions made by customers, consignors and loaders.

There are significant incentives in the social and economic profile of the transport industry for scheduling, trip planning and consequent driver practices that increase fatigue related risks. Competitive pressures, payment systems, contracting arrangements and even the unintended consequences of the current driving hours regime combine to create an environment in which fatigue has become an accepted part of industry practice.

The expert group was conscious of the need to provide a flexible and practicable framework in which fatigue could be actively managed by all those who are part of the supply chain.

The model of fatigue used by the expert group was centred on three primary factors that contribute to, and explain driver fatigue:

- the need to ensure that drivers have adequate opportunities to sleep;
- the need to take account of the circadian biological clock, which dictates that drivers cannot work or sleep equally well at all times of the day and night;
- the need to address the fatiguing aspects of work demands, including the duration of work and the availability of breaks during work, which offer the opportunity for temporary recuperation from the effects of fatigue.

These factors are part of a more complex model for understanding fatigue. The core of this model is the need to provide adequate opportunities for restorative sleep and this is a fundamentally different orientation than prescribing limits to driving hours.

Principles for designing better regulations

On the basis of their own research and other national and international research the expert group identified five critical factors or principles that should be incorporated in any regulatory options. The factors are:

- ***Minimum sleep periods, the opportunity for sleep and time of day influences***

A minimum sleep period in a 24-hour period is required to maintain alertness and performance levels. Continuous and undisturbed sleep is of higher quality and more restorative. The group concluded that the minimum sleep requirement in a single 24-hour period is six consecutive hours of sleep (although the average required on a sustained basis is about seven to eight hours).

The group then considered the length of break that would enable the six-hour minimum which is necessarily longer than the six-hour sleep minimum period. Breaks need to take account of the activities of daily living including preparation for sleep and return to work. The impact of the circadian biological clock is critical in determining appropriate breaks in which sleep opportunity is possible. The group recommended the minimum sleep opportunity per 24 hours should be sufficient to allow for six consecutive hours of sleep.

- ***The cumulative nature of fatigue and sleep loss***

Minimum sleep opportunities have to be considered over longer periods because of the cumulative nature of sleep loss and fatigue. The expert group agreed that the six hour minimum sleep requirement is adequate on one day, but not sufficient on an ongoing basis.

Recovery sleep after an accumulated sleep debt is usually deeper and more efficient, and the lost hours of sleep do not need to be recovered hour-for-hour. Repaying the debt, to restore normal waking function, usually requires two nights of unrestricted sleep.

As a consequence the group recommended that schedules should permit two nights of unrestricted sleep on a regular basis (preferably weekly) to provide drivers with the opportunity to recuperate from the effects of accumulating sleep debt.

- ***Night work***

Driving at night was considered an important factor for the expert group as it brings together the elements that generate fatigue risks. Working at night produces an elevated risk of fatigue-related impairment, because it combines the daily low point in performance capacity with the greatest likelihood of inadequate sleep.

The group concluded that the combination of risk factors associated with night driving should be recognised by ensuring that the length of breaks to enable sleep following night work are suitable and that opportunities for night sleep are available in a seven-day period. Additionally the group proposed a limitation to the number of hours (a limit of 18 hours) that could be driven in the 0000-0600 period after which two nights of unrestricted sleep should be available.

- ***Duration of working time***

The expert group concluded that a “safe” threshold for daily working time on a sustained basis will vary according to other factors like time of day, but the upper limit is in the 12-14 hours zone. There was evidence that longer trips could be undertaken on a one-off basis but that repeated long trips rapidly escalated fatigue risk factors. Whilst the group believed flexibility for these longer trips should be provided they needed to ensure that long trips were not combined with risks associated with night driving and circadian low points.

To underpin this short term flexibility, the expert group recommended that any one-off long trips involving over 12 hours work should not extend into the 0000-0600 period and that during a seven-day period there should be no more than 70 hours of working time.

- ***Short breaks within working time***

The final factor noted by the expert group was making short breaks available as countermeasures to fatigue and the boredom and monotony associated with some driving tasks. These short breaks were not substitutes for the breaks to enable opportunity for minimum continuous sleep.

Short breaks allow fatigue countermeasures like food, coffee and short naps to be utilised. The expert group agreed that breaks should be taken

on a needs basis and that this discretion should be balanced by greater attention in scheduling to account for rest breaks.

The expert group recommended that in a one-day period the driver should take non-work breaks equal to 10% of the total working time; these breaks should be taken at the discretion of the driver but they should not be accumulated to form long breaks. As a minimum, short rest breaks should include a non-work break of 15 minutes after every five hours work.

A less flexible means of achieving non-work breaks equal to 10 per cent of total working time would be to require a 30 minute non-work break to be taken after every 5 hours of work.

Current driving hours regulations do not meet evidence based critical factors

The expert group's evidence-based critical factors are similar to those identified by expert panels in the United States and Canada and when applied to assess the current prescriptive driving hours regime highlight deficiencies including:

- The maximum working (including driving) period in a day does not accommodate circadian patterns (time of day factors);
- The minimum rest periods do not account for cumulative fatigue issues and the variable length of break required for adequate sleep opportunity at different times of the day;
- The minimum rest periods do not accommodate the opportunity for night sleep;
- The short rest breaks are arbitrary and do not allow breaks to be taken when they may be of most benefit.

The expert group's recommendations present challenges for industry and regulators

The expert group's primary focus was on the scientific basis for any regulatory options but it was cognizant of operational, social and economic cost-benefit and compliance dimensions. It gave consideration to a range of factors like journey completion issues, queuing and slotting, availability of rest stations, cost burdens and ease of enforcement.

It was recognised that some of the proposals may create challenges for current operational practices but the expert group was equally clear that improvement and reduced risk is dependent on some of those practices changing to accommodate the state of knowledge about fatigue. The need for change is not limited to the driving task but must encompass the supply chain.

These design principles should be considered in developing prescriptive traditional driving hours regulation or other options such as performance based regulations and codes of practice. To illustrate how the design principles could be applied, an indicative model was prepared by the expert group. The expert group saw this as one way of progressing the better management of fatigue but anticipated there would be other ways of putting the principles into practice.

Moore

Whilst the process of developing regulatory options involves robust examination of many factors and inevitable pragmatic compromises, the design principles set out in this report are considered fundamental to improved outcomes.