WORK-RELATED FATIGUE
SUMMARY OF RECENT REGULATORY DEVELOPMENTS
2006

Australian Government
Australian Safety and Compensation Council

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Executive Summary

1. As stated in the Work-Related Fatigue Research Summary Paper, there has been significant development in responses to fatigue management for the period January 2005 to July 2006, particularly in the context of regulation. Regulatory responses have occurred mainly in the transport and health sectors. Consequently, this paper has been developed to augment the research summary paper.

2. Table 1 below is an "At a Glance" matrix on the major regulatory developments on work-related fatigue in Australia.

Table 1: Australian Fatigue Regulatory Developments "At a Glance"

	Legislation (Acts &/or Regs)	Code of Practice (Binding)	Guidelines	All Industries	Transport Industry	Other Industries
National Transport Commission Heavy Vehicle Driver Fatigue Reform	*				*	
National Transport Commission Rail Safety Reform	*				*	
Australian Maritime Safety Authority			*			*
Civil Aviation Safety Authority	*					*
Air Services Australia			*			*
NSW Long Distance Truck Driver Fatigue	*		*		*	
WA Working Hours		* (N)		*		
WA Fatigue Management in the Commercial Vehicle Sector	*	* (N)			*	
WA Fatigue Management in the Mining Industry			*			*
QLD Fatigue Management			*	*		
VIC Healthbreak program			*		*	
VIC Fatigue Management in the Forestry Industry			*			*
TAS Forest Safety Code		*				*
NT Road Transport Fatigue Management		*			*	
Australian Medical Association Hours of work, shiftwork and rostering for hospital doctors		* (N)				*

 # It should be noted that the matrix does not include all guidance materials which contain fatigue as an issue, from either government or industry, such as the 2002 Officewise guidance from Comcare or the 2004 Work Design, Fatigue and Sleep Booklet from the Minerals Council of Australia.
(N) is a non-binding Code of Practice.

Scope

3. This paper covers a range of fatigue regulatory issues, including:
   - Recent Australian jurisdictional activities
     - Road and rail transport
     - Maritime and air safety
   - OHS jurisdictions
   - Recent International jurisdictional activities
     - Transport
     - Health services and other high risk sectors and
     - Other industries

Key Messages

Key Messages covered in this paper

Transport has been the major focus of activity in Australia and many of the initiatives are the culmination of reforms developed in response to the Commonwealth's 2000 *Burning the Midnight Oil* Report.

New South Wales, Western Australia, Queensland and Victoria have been active in the fatigue regulatory arena during 2005-06.

Developments in the regulation of work-related fatigue have mainly focused on the restriction of hours of work, particularly in transport and healthcare. However there is increasing interest in the use of fatigue management programs in supplementing prescriptive hours of work regulations.

Recent Australian Jurisdictional Activities

4. Transport has been the focus of activity in Australia and many of the initiatives are the culmination of reforms developed in response to the 2000 *Burning the Midnight Oil Report*. In particular, heavy vehicle road transport and rail transport have been the focus of recent reform.

5. These developments are summarised in the following section and are presented in Tables 1, 2 and 4 of the Appendix. In aviation, working time limitations were introduced for pilots in December 2004 and work to evaluate the effectiveness of fatigue management strategies has been completed in maritime operations.

National Transport Commission (NTC) - Road Transport

6. The National Transport Commission (NTC) is an independent statutory body that provides policy advice to the federal, state and

territory governments, with the aim of developing a consistent national approach for land transport.

7. Reforms in fatigue management in road transport during 2005 and 2006 focused on implementing the chain of responsibility regulation. The chain of responsibility refers to all parties who influence the hours of work through scheduling, queuing and loading practices. The regulations also include changes to driving hours, which place more emphasis on opportunities for rest and sleep. These will have three components:

- a standard hours option – a default option that prescribes minimum rest and maximum working hours
- a basic fatigue management option that allows additional working hours while imposing increased fatigue management and compliance responsibilities on operators; and
- an advanced fatigue management option that allows more flexible working hours based on risk management, alternative compliance and quality assurance approaches.

8. Operators must adhere to agreed standards and operating limits in return for greater flexibility defined by the regulatory agency, based on the operator's specific fatigue risks and management system.

9. Specific areas of road transport policy relating to heavy vehicle driver fatigue remained under consultation in early 2006. Policy papers on the use of work diaries, record keeping, the design and location of rest areas and the use of napping strategies are in preparation. The NTC released the draft Guidelines for Managing Heavy Vehicle Driver Fatigue for a period of public comment until September 2006.

10. The Guidelines are intended to assist affected parties to prepare for the implementation of the reform and are based on the draft Code of Practice for Heavy Vehicle Drivers prepared by NTC in 2004. The draft Regulations will be available for public comment in August-September 2006 and it is expected that a final package will be sent to the Australian Transport Council for endorsement in December 2006.

11. If the proposal is successful, the Council of Australian Governments has agreed that all jurisdictions will implement the model law or show equivalence within 12 months.

National Transport Commission (NTC) - Rail Transport

12. The National Transport Commission released The Rail Safety (Reform) Bill Exposure Draft for public comment on 20 October 2005. This draft bill adopts a safety management systems approach consistent with occupational health and safety legislation. In particular, the Bill includes general duties with the obligation to reduce risks as far as reasonably practicable. Part 3 Clause 341 requires fatigue management programs to be implemented for rail safety workers. Rail safety workers

are those who engage in rail safety work, defined as driving, despatching or controlling the movement of rolling stock; signalling and communications involving the movement of rolling stock; and the design, construction, repair, maintenance and inspection of rolling stock.

13. Programs developed to manage fatigue in rail safety workers must include provisions for safe hours of work and periods between work to provide rest opportunities. The requirements also specify that the conditions of work must be consistent with achieving the requirements of the regulations relating to fatigue; for example shift scheduling and patterns of work must be designed to minimise the accumulation and impact of fatigue.

Maritime Safety

14. The Australian Maritime Safety Authority (AMSA) is the Federal government agency responsible for the delivery of safety services to the Australian maritime industry. During 2005, AMSA continued efforts to improve the management of fatigue in line with the International Maritime Organisation conventions, in particular the Standards of Training, Certification and Watchkeeping for Seafarers. AMSA continued to address risks arising from the work of the Great Barrier Reef coastal pilots. Pilotage in this zone is considered high risk work due to the potential consequences for the environment should pilots make errors.

15. A study conducted for AMSA by Ferguson, Lamond and Dawson (2005) at the Centre for Sleep Research at the University of SA extended on previous reviews that examined the work practices of pilots (1998) and assessed the risk of fatigue in piloting work on the Great Barrier Reef (1999).[1] This study arose from a number of changes that had an impact on pilotage in the Great Barrier Reef Marine Park, including modification of the pilotage route. The primary aim of the study was to determine whether current controls were effective given these changes.

16. The study found that the work schedule provided adequate sleep opportunities and that pilots obtained reasonable amounts of sleep, both prior to boarding a ship and during extended pilotage tasks. The data collected in this study suggest that fatigue due to inadequate sleep is not likely to be a significant issue in this population. However, the study recommended that a full fatigue risk management system be implemented, consisting of 4 key elements – policy and supporting procedures, a training program, risk mitigation strategies, audit and continuous improvement processes.

17. The study also recommended that practical training programs be implemented with pilots. Such training programs should deliver more than general interest ‘fatigue awareness’ training. Ferguson et al stated

[1] Both of these studies are available at http://www.amsa.gov.au.

that much of the training provided in Australia focuses on ensuring that employees optimise their use of sleep opportunity, though there has been little focus on organisational responsibilities to provide adequate sleep opportunity, for example, through roster design and work organisation.

18. The model proposed in the AMSA study suggests that effective fatigue management involves acting on fatigue related behaviours and symptoms to reduce the risk of these resulting in fatigue-related errors or incidents. The model also recommends that a monitoring and review process be established to double check systems to ensure that a lapse by a fatigue affected individual does not translate into an adverse outcome. Incident and error investigation are also necessary to ensure that organisations have the opportunity to learn from lapses and further strengthen higher levels of control.

Air Safety

19. The Australian Civil Aviation Safety Authority (CASA) implemented new general flight time limitations under Civil Aviation Orders (CAO), Part 48, in December 2004. Those orders applied to aerial work, charter and regular public transport service operations. CAO 48 is prescriptive with little flexibility, so CASA has continued work to develop standard exemptions under CAO 48 and to use fatigue risk management systems to provide a degree of flexibility, particularly for smaller operators. The CASA fatigue risk management system requirements are based on the Australian/New Zealand Standard AS/NZ 4360:2004 Risk Management. The proposed CASA fatigue risk management system consists of two key elements: where the likelihood of becoming fatigued while operating is determined and treated; and the risk from operating in a fatigued state is determined and treated.

20. In the aviation industry, fatigue management is considered as a process where fatigue in an aircrew or other workers is managed, so that it does not become a source of potential harm. This policy originates from the International Civil Aviation Order Annex 6, which states: The State of the Operator shall establish regulations specifying the limitations applicable to the flight time and flight duty periods for flight crew members. These regulations shall also make provision for adequate rest periods and shall be such as to ensure that fatigue occurring either in a flight or successive flights or accumulated over a period of time due to these and other tasks, does not endanger the safety of a flight.

21. Air Services Australia (ASA) is a government owned corporation that provides air traffic control management and related airside services to the aviation industry. Air Services Australia has addressed fatigue in three groups of high risk shiftworking workers (air traffic control, technical services and rescue and firefighting staff). A fatigue risk management system was implemented in 2005 for air traffic services

personnel. The system is based on the Australian/New Zealand Standard AS/NZ 4360:2004 Risk Management. CASA, the regulator has no requirements at present for regulating fatigue in air traffic services personnel; however the system implemented is consistent with the fatigue management models being considered by CASA[2].

The Australian Medical Association

22. In January 2005, the Australian Medical Association (AMA) re-released the National Code of Practice – Hours of Work, Shiftwork and Rostering for Hospital Doctors, originally released in 2001. Following further consultation and review of the Safe Hours survey data collected in 2001, the guidelines were re-released, without significant alteration to the requirements for rostering and fatigue management. The AMA intends to run a further Safe Hours survey in 2006 to follow up the original survey delivered in 2001. The survey will be delivered on-line in 2006 and will target hospital doctors of all grades, specialities and locations.

Occupational Health and Safety Jurisdictions

New South Wales

23. WorkCover NSW introduced the *Occupational Health and Safety Amendment (Long Distance Truck Driver Fatigue) Regulation 2005* to reduce fatigue amongst long haul truck drivers. The Regulation defines 'long distance' as a journey of more than 500 kilometres. The distance is calculated based on a single journey, or a series of journeys that may consist of more than one delivery of freight. It includes the distance travelled to pick up and return to base after a delivery. A heavy truck is defined as a motor vehicle with gross vehicle mass (GVM) over 4.5 tonnes, or a motor vehicle forming part of a combination, if the total of the GVMs in the combination is over 4.5 tonnes.

24. The regulation requires the risk of harm from fatigue to the driver's health and safety to be assessed, eliminated or controlled. This duty applies to employers or head carriers to the extent that they have control over the activities that contribute to that risk. The regulation places responsibilities on employers, head carriers and large consignors and consignees (including their agents and persons acting on their behalf who enter into a contract with a self-employed carrier for the transportation of freight long distance by means of a heavy truck); to assess and manage the risk of harm from fatigue. This includes implementing fatigue management plans for drivers and self-employed carriers who are directly contracted to consignors.

[2] Air Services Australia, Fatigue Risk Management System Manager, personal communication 9 March 2006.

25. In recognition of the influence that consignors and consignees have on driving timetables, those with more than 200 employees in industries such as retailing, manufacturing, wholesaling and transport services, will also have a responsibility to ensure that they do not impose unreasonable timelines for freight deliveries. Where consignors or consignees enter into a contract with an employer of drivers or a head carrier, they must confirm that a driver fatigue management plan is in place and that the delivery time is reasonable. In determining whether the delivery time is reasonable, the time allocated for travel, loading, unloading and queuing, must be considered.

26. The regulation took effect from 1 March 2006. It applies to the transport of freight in NSW and to the protection of drivers (employees) where a journey takes place within NSW. WorkCover NSW has developed a guide, Driver Fatigue Management, A Guide to Managing Driver Fatigue in the Long Haul Trucking Industry (February 2006) and a series of fact sheets to support the implementation of the Regulation.

27. WorkCover NSW have also produced material on Minimising fatigue in the health, aged care and allied industries in 1997, which provides information on managing fatigue in these industries which operate 24 hours a day, seven days a week.

Western Australia

28. WorkSafe WA released a Code of Practice on Working Hours in July 2006. The Code was developed in response to recommendations from the 2003 Extended Working Hours Review.

29. The Code provides guidance on applying the principles of risk management to fatigue across all industries, including mining operations. It is based on risk management principles that are supplemented by prescriptive guide points for a range of fatigue risk factors (for example, average working hours, travel time and rest breaks). It includes guidance on fly in, fly out arrangements, reflecting the unique requirements of mining and remote working environments. It is intended that the Code of Practice will be used as a foundation for developing industry codes which translate the requirements of the Code into industry specific outcomes.

30. The release of the Code has been accompanied by an education campaign to raise awareness of responsibilities, under the general duty of care and risk management legislation, to address fatigue where it may be a risk at the workplace.

31. WorkSafe WA also produced a Code of Practice on Fatigue Management for Commercial Vehicle Drivers in 2004. Additionally, the Mines Occupational Safety and Health Advisory Board (MOSHAB) released a guideline The Fatigue Management for the WA Mining Industry in 2001.

Queensland

32. Workplace Health and Safety Queensland introduced the Fatigue Management Guide in 2005, which provides guidance on minimising the harmful effects of fatigue using risk management principles. The guide provides information applicable to all industries where long hours and shiftwork are likely to increase the risk of fatigue.

33. The Queensland Government held a Road Safety Summit in February 2006, which included a forum on managing fatigue risks in the road transport industry. Stronger penalties are being considered for those who exceed driving hours; including those in the chain of responsibility (drivers and other operators, from consignors to customers), who impose unreasonable delivery times.

Victoria

34. The Healthbreak program was introduced in 2003 and aimed to improve driver health and reduce the adverse effects of fatigue in road transport workers. The results of the program were released during 2005, showing that the program has provided over 1900 transport workers with free health assessments since 2003. To date, medical conditions including hypertension, obesity, diabetes and the reported effects of chronic fatigue have been identified in about one-third of the workers assessed[3]. In early 2006, WorkSafe Victoria announced additional funding to extend the program.

Northern Territory

35. In 2001, NT WorkSafe introduced a Code of Practice on Road Transport Fatigue Management, which provides operators with a basic set of key principles they should apply in the management of fatigue in the workplace.

Recent International Jurisdictional Activities – Transport

36. International developments in fatigue management also had a focus on transport. Many agencies implemented hours of service regulations to impose working hours limitations; particularly in road transport in the USA, Canada, the UK and Sweden. Significant reforms have occurred in rail safety in the UK, where fatigue is addressed as part of Safety Critical Work. Regulatory reform is also underway in the maritime industry, with the release of a proposed Maritime Labour Convention, which specifies maximum hours of work or minimum hours of rest. A summary of road transport reforms is provided in the Appendix at Table 2 and international rail reforms at Table 3.

[3] Reported in the Occupational Health and Safety Daily News , e-News, Tuesday 28 February 2006.

Canada - Road Transport

37. The Government of Canada gazetted changes under the Motor Vehicle Transport Act, 1987 Commercial Vehicle Drivers Hours of Service Regulations on 15 November 2005. The regulations place responsibilities on motor carriers, shippers, consignees and drivers to ensure that drivers do not drive if their faculties are impaired to the point where it is unsafe for the driver to drive; or driving is likely to jeopardise the safety or health of the public, the driver or the employees of the motor carrier.

38. The regulations place prescriptive limits on driving hours. The maximum daily driving time for commercial drivers has reduced from 16 to 13 hours in a 24 hour period. The minimum off duty time has increased from 8 to 10 hours, providing greater opportunity for drivers to rest. The new requirements will reduce daily on duty time from 16 to 14 hours. The minimum rest period for team drivers who use a vehicle equipped with a sleeper berth has been extended from 2 to 4 continuous hours. The new regulation allows two available work/rest cycles: a maximum 70 hour cycle over 7 days or a maximum 120 hour cycle over 14 days. Drivers are required to maintain records of hours in a log book or by using an electronic recording device. The regulations will take effect from 1 January 2007.

Sweden - Road Transport

39. Sweden also introduced specific requirements to manage fatigue in transport under its occupational health and safety legislation. The Swedish Work Environment Authority released an amendment to the Work Environment Act (Certain Road Transport Work (2005:395)). The amendment is based on the European Union Directive 2002/15/EC on the organisation of working time of persons performing mobile road transport activities (March 2002). The Directive makes specific provisions on hours of work to ensure the safety of transport and the health and safety of the persons involved. The scope of the directive covers only mobile workers employed by transport businesses and excludes self-employed drivers. The amendment requires employers to limit the duration of periods of night work and to maintain records where the maximum average working week of mobile workers is exceeded (over 48 hours). Employers are responsible for maintaining records of the working time of mobile workers and must provide copies to mobile workers on request.

40. The requirements for working time are prescriptive. The average weekly working time may not exceed 48 hours. The maximum weekly working time may be extended to 60 hours, only if an average of 48 hours a week is not exceeded, over a four month period. Where a worker has different employers, the mobile worker must provide an account of the time worked for another employer in writing. Mobile workers must not work more than 6 consecutive hours without a break. If working hours are between 6 and 9 hours, that break must be at least 30 minutes

and at least of 45 minutes if the working hours total more than 9 hours. If night work is performed, the daily working time must not exceed 10 hours in each 24 hour period.

US Federal Road Transport

41. The US Department of Transportation Federal Motor Carrier Safety Administration Hours of Service Regulations (2005) (49 CFR Part 395) were revised in August 2005 and took effect from 1 October 2005. These regulations apply to property carrying commercial motor vehicle (CMV) drivers. A transitional period for compliance and enforcement was in place between 1 October 2005 and 31 December 2005. The Hours of Service Rules allow a driver to drive a maximum of 11 hours after 10 consecutive hours off duty, though a driver may not drive beyond the 14th hour after coming on duty. Also, a driver may not drive longer than 60 out of 70 hours on duty over 7 out of 8 consecutive days. A driver may restart a 7/8 consecutive day period after taking 34 or more consecutive hours off duty. The 2005 changes address arrangements for drivers using two up arrangements with sleeping berths. These drivers must take at least 8 consecutive hours in the sleeper berth, plus 2 consecutive hours either in the sleeper berth, off duty, or any combination of the two.

42. A new short haul provision was included for drivers of property carrying CMVs which do not require a commercial licence and operate within a 150 mile air radius of their normal work reporting location. Short haul drivers may drive a maximum of 11 hours after coming on duty following a period of 10 or more consecutive hours off duty and are required to keep records.

43. The Federal Motor Carrier Safety Administration also undertakes research to support their regulatory functions. A project to pilot and test the effectiveness of fatigue management technologies was completed, examining the current federally mandated hours of service in both Canada and the United States. The study experimentally determined how truck drivers reacted to a number of fatigue management technologies. In particular, the study assessed whether the technologies would improve the alertness and fatigue awareness of commercial drivers by providing them with information about sleep need, drowsiness and feedback on driver performance.

44. The technologies collected objective information on four domains – 1) driver sleep need, 2) driver alertness, 3) driver lane tracking and 4) reducing the physical work required to control vehicle stability during driving. Of the combined fatigue management technologies, drivers rated the driver lane tracking device as the most effective in warning them of increasing drowsiness. Overall, participant drivers were positive toward the use of fatigue management technologies in general and felt that if they could be further improved to prevent obstruction in the cab and to

improve the alerting function, they would be of benefit in helping manage fatigue and alertness.

US Federal Rail Transport

45. The US Department of Transportation Federal Railroad Administration targeted fatigue in their Action Plan for Addressing Critical Railroad Safety Issues (released in May 2005). Fatigue issues have been identified from National Transportation Safety Board investigations as being a significant factor in rail incidents attributed to human factors. A fatigue model is being validated to assist in more precisely determining the role of fatigue in human factors related incidents. It will also inform improved crew scheduling by evaluating the potential for fatigue in current crew management practices. It is anticipated that a human factors rule will be introduced by September 2006.

46. The Federal Railroad Administration also conducts research projects to support their regulatory role. Several projects due for completion in 2005 addressed fatigue. These included the role of workload and fatigue in one-person remote operations in industrial settings; maintenance of way safety and the development of fatigue management tools in rail operations (based on models developed by the University of South Australia).

UK Rail Transport Safety Reforms

47. During 2004, consultative proposals were released on significant reforms to the regulation of rail safety in the United Kingdom. The reforms have been consolidated under the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS). The ROGS consolidate existing national provisions and aim to provide a consistent and coherent approach to safety regulation across the whole rail industry. The ROGS also implement outstanding recommendations from the Cullen Inquiry on safety critical work, which initially included a draft Approved Code of Practice on Managing Risks from Fatigue in Workers Undertaking Safety Critical Work. The key changes included a shift in emphasis from the review of paper based management systems to monitoring the actual delivery of safety outcomes. Hence all operators are now required to have a safety management system in place, which must include mechanisms to identify and control risks from fatigue.

48. The requirements for fatigue are included in Part 4 of the ROGS: Safety Critical Work. Specific regulations have been included because not all rail workers are governed by a safety management system, for example maintenance contractors. The inclusion of safety critical work in the ROGS makes the fatigue management requirements a National Safety Rule. Safety Critical Work includes voluntary work, so the Heritage Sector is now subject to these regulations. The regulations list a series of tasks defined as safety critical work. These tasks include driving,

despatching, signalling, installation of components and maintenance operations; and ensuring the safety of persons working on the track. A worker may only carry out safety critical work if the controller has ensured that the person has been assessed as fit and competent to undertake that work.

49. Fatigue is specifically addressed under Regulation 25. The controller of safety critical work has a duty to ensure as far as is reasonably practicable, that a safety critical worker does not work when so fatigued (or liable to become so) that the workers' own health and safety or that of other persons on the transport system is significantly affected. The approach to managing fatigue has shifted from counting the hours of work to systematically managing the risks of fatigue. The new requirements recognise that fatigue is not only influenced by hours but also by work patterns, the work environment, the nature of tasks performed, travelling time and social and domestic factors.

50. The European Working Time Regulations were considered insufficient to prevent safety critical workers from working when so fatigued that they could endanger safety. The proposed Approved Code of Practice for managing fatigue adopts a systematic risk management approach. It is anticipated that the Regulations will be proclaimed during 2006 and it is likely that the proposed Approved Code of Practice on fatigue management may be implemented as supporting guidance[4].

Maritime Transport

51. The International Labour Organisation (ILO) released a proposed consolidated Maritime Labour Convention in February 2006. The purpose of the proposed Convention is to secure conditions of "decent work" for seafarers; for example, minimum age for work aboard ships, hours of work and occupational health and safety protection. The proposed Convention acknowledges that maritime work has become more stressful and complex, having an impact on the health, safety and security of workers. The proposed Convention has three different but related parts: articles, regulations, and a code, which consists of mandatory standards and non-mandatory guidelines.

52. Regulation 2.3 of the proposed Convention on Hours of Work and Rest has been modified to ensure that work hours are regulated and that maximum hours of work or minimum hours of rest are established, consistent with the provisions of the Code. These provisions require that hours of work and rest be determined taking into account the danger posed by seafarers' fatigue, especially those whose duties involve navigational safety and the safe and secure operation of the ship (Standard A2.3 (4)).

[4] Personal Communication, Chief Human Factors Team, Rail Safety Standards Board, UK, by email on 10 March 2006

53. The Standard prescribes limits on the hours of work or rest. Maximum hours of work shall not exceed 14 hours in any one 24 hour period; and 72 hours in any 7 day period (Standard A2.3 (5)). Conversely, minimum hours of rest have been prescribed as ten hours in any 24 hour period and 77 hours in any 7 day period. The hours of rest may be divided into no more than two periods, one of which shall be at least six hours in length and the interval between consecutive periods of rest shall not exceed 14 hours.

The International Transport Workers' Federation

54. The International Transport Workers' Federation held an international week of action between 10 and 16 October 2005, endorsed by the International Labour Organisation (ILO). Fatigue was a key issue targeted during the week, in the campaign "Fatigue Kills". The campaign aimed to improve the safety of roads, increase the number of secure rest places and reduce overtime to minimise fatigue[5].

55. Coinciding with the International Labour Organisation (ILO) support of the ITF Global Week of Action, the ILO released a working paper titled *The Issues of Fatigue and Working Time in the Road Transport Sector* (2005). This sectoral paper was commissioned to examine the links between fatigue and work time. The paper cites driver fatigue as being implicated in 30-40% of road fatalities. Time of day is known to be a significant factor in crashes involving commercial drivers.

56. A European Transport Safety Council report cited in the sectoral paper found that the occurrence of crash incidents is ten times higher in the early morning hours than day time levels. A Commercial Driver Fatigue Study done in the US in 1996 is also quoted. It found that time of day was a much better predictor of decreased driving performance than hours of driving (time on task) or cumulative number of trips made.

57. The ILO sectoral paper indicated that the ILO Hours of Work and Rest Periods (Road Transport) Convention, 1979 (No. 153) is currently being considered for revision. As of August 2005, only eight ILO member states had ratified it. It provides for a maximum daily driving time of 9 hours, a maximum weekly driving time of 48 hours and a minimum daily rest period of 8 hours.

UK Road Transport

58. The European Directive on working time in the road transport sector came into effect in 2005 and was adopted in the UK as the Road Transport (Working Time) Regulations, 2005. A further two Commission

[5] Further information is available on the International Transport Workers' Federation News on Line

proposals to revise the 20 year old driving time rules and improve the quality and quantity of minimum enforcement levels are close to agreement. The checking of driving time, work and rest periods will be improved by the obligatory installation of digital tachographs in all new vehicles. Similar to Sweden, the current working time rules allow a driver to work up to 60 hours in any one week but that over a four month period, one month should average 48 hours work time per week. The driving time limits are nine hours daily and 90 hours fortnightly. The daily rest period is at least 11 hours.

Recent International Jurisdictional Activities - Health Services and Other High Risk Sectors

59. Fatigue in health services has been recognised as a key risk to both workers and clients. The initiatives introduced to address fatigue in Australian, United Kingdom and United States hospitals have focused on applying limitations to the hours of work, particularly for interns, resident medical officers and trainee doctors. The potential impact of fatigue on the effectiveness of learning and training has also been raised in Australia, the UK and the US, as a secondary issue that has the potential to adversely impact on the effectiveness of health service delivery. The regulation of working hours has been also been reviewed in US nuclear facilities, under amendments proposed by the Nuclear Regulatory Commission.

United Kingdom Department of Health

60. In August 2005, the UK Department of Health published a report on the Hospital at Night project. This project provided a model of shift patterns and staffing mix to assist the National Health Service to respond to the European Working Time Directive (WTD). The Directive was extended to apply to doctors from August 2004, although the provisions will be phased in with a maximum hours requirement reducing from 58 hours in 2004 to 48 hours in 2009. The WTD provides for daily rest periods of 11 consecutive hours per 24 hours. Workers are entitled to a break after 6 hours of work. The duration of the break is to be established in collective agreements. A weekly rest period of 24 hours plus the 11 hours between duty periods also applies. The Directive also provides for a minimum of 4 weeks paid leave per year.

61. In the case of junior doctors, the UK has derogated from the minimum daily rest requirements set out by the WTD. Junior doctors are entitled to ‘compensatory’ rest equivalent to that which is lost when the ideal daily rate is not achieved. The Hospital at Night project reports on the implementation of a model of work arrangements to meet compliance with the WTD. The model required a shift from providing out-of-hours cover defined by professional demarcation and grade, to cover defined by competency. Key elements of the model included the use of multi-

disciplinary teams, multi-specialist handovers, extended nursing roles and re-allocation of non-urgent work from night hours.

62. The report details evaluations from four acute hospital sites across England that piloted the scheme in 2003. The report concluded that patient care was improved through better prioritisation and tasking. There were no adverse effects identified on doctors training or on the achievement of national performance targets in relation to accident and emergency waiting times, cancelled operations or in-patient waiting times.

The American Medical Association

63. In early 2005, the American Medical Association (AMA) conducted a survey of medical students and residents on duty hours. The survey was conducted in response to guidelines implemented in 2003 by the Accreditation Council for Graduate Medical Education, to limit resident duty hours to 80 hours per week and restrict the on-call schedule to every third night.

64. The survey examined the effect of the ACGME guidelines on medical students and residents work hour experiences during their most recently completed rotation. A total of 2136 members completed the survey. Residents (44%) and medical students (39%) stated they experienced periods of prolonged sleep deprivation at least once per week. Half of the residents and 45% of the medical students stated that fatigue had a negative effect on the quality of patient care they delivered. Sixty nine percent 69%) of residents and 66% of medical students stated that fatigue has had a negative effect on the quality of their learning. Twenty nine percent of residents and 26% of medical students reported that sleep deprivation put them at risk of physical danger. Of those reporting the risk of danger, 82% of those residents and 77% of the medical students reported that they had a motor vehicle accident or near miss because of sleep deprivation or fatigue during their last rotation.

65. The results of the AMA survey indicate that the Guidelines have not had a significant effect on reducing the effects of fatigue.

Other industries:

The USA Nuclear Regulatory Commission

66. Following public concerns raised in the aftermath of the September 2001 terrorist attacks in the US, heightened security measures increased the working demands on nuclear facilities workers. The USA Nuclear Regulatory Commission recognised the risks to the public and workers, from the effects of fatigue due to extended hours of work. During the last quarter of 2005, the Nuclear Regulatory Commission consulted extensively on proposed provisions under the 10 CFR Part 26 Rules which

strengthen requirements for drug testing and fatigue management for workers in protected areas of nuclear power plants.

67. The proposed rule would apply to all currently operating nuclear plants and plants applying to be licensed in the future. The proposed rule codifies individual work hour limits derived from the NRC's policy on fatigue that was first published in 1982. The proposed amendments prescribe working hours for some workers of no more than 16 hours in a 24 hour period, 26 hours in a 48 hour period and 72 hours in a week. Minimum break periods have also been established with at least 10 hours between shifts, a 24 hour break each week and a 48 hour break every two week period.

68. The public comment process raised a number of substantial comments, mainly related to working hours limits. The Commission is currently developing proposed resolutions for further consultation. It is anticipated that the final rule will be available for Commission consideration in first quarter of 2007.

The International Labour Organisation (ILO)

69. The International Labour Office released the *Hours of Work – Fixed or Flexible?* 2005 report by an expert committee that reviewed the hours of work conventions, Hours of Work (Industry) Convention, 1919 (No. 1) and the Hours of Work (Commerce and Offices) Convention, 1930 (No. 30). The Hours of Work Conventions are based on the principles that "human life does not consist of work alone but that all human beings should be protected from undue physical and mental fatigue and be given opportunities for recreation, social and family life".

70. The report recommended that the two Conventions be integrated into one instrument that contains provisions for weekly rest and annual leave with pay. To address the requirements of the modern world of work, the report recommended that both working time and non-working time issues be addressed. The development of a unified instrument would require consideration and review of provisions in other existing conventions examining hours of work and rest.

71. The Committee further recommended that any new instrument include additional elements to ensure that working hours do not undermine the health and safety of workers; allow a fair balance between work and family lives; do not result in a reduction of the protections existing in current instruments and that more flexible working arrangements are made possible.

Legal Rulings

72. WorkSafe WA obtained the first conviction under the 2003 fatigue management regulations governing commercial vehicle drivers, for the

failure to put in place a fatigue management plan. A transport company failed to comply with an inspector's notices requiring a fatigue management plan to be implemented within four months. The company failed to comply with a further notice granting an extension of an additional four months[6]. The company was also prosecuted for failure to ensure that its drivers were medically fit for driving work.

73. In March 2006, a Canberra based transport company pleaded guilty to breaches under the Victorian OHS Act[7]. The company failed to provide and maintain a safe work environment and failed to ensure that people other than employees were not exposed to risks to their health and safety as a result of the company's work. The company allowed a fatigued driver to work. The driver was subsequently involved in a crash in country Victoria, in which four people were killed. The company was fined $65 000 for failing to provide a safe work environment and a further $65 000 for failing to protect the public under the OHS Act.

Consultation and Collaboration

74. In preparing this paper, a range of Australian OHS jurisdictional representatives and road transport authority representatives were consulted on current developments and compliance activity. Additional consultation and information was obtained through personal communication with the UK Rail Regulation Standards Board, the USA Nuclear Regulatory Commission and the Swedish Work Environment Authority.

Conclusion

75. Developments in the regulation of work-related fatigue have mainly focused on the restriction of hours of work, particularly in transport and healthcare. However there is increasing interest in the use of fatigue management programs in supplementing prescriptive hours of work regulations.

[6] Government of Western Australia v. Thornett Nominees Pty Ltd T/A Global Transport Logistics, Sept 2005

[7] Reported in the Occupational Health and Safety Daily News e-News, Friday 17 March 2006

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Table 2 – Summary of Reforms in Road Transport

Reform	Jurisdiction	Effective Date	Scope	Working Hours	Rest Provisions	Management System Requirements	Records	Comment
National Transport Commission (NTC)	Australian States & Territories	Anticipated in 2007	Chain of responsibility[8]	Maximum hours in a 3 tier approach. See table 2 for specific details	Minimum hours	Basic option - additional working hours + increased fatigue management + compliance responsibility for operators. Advanced option -flexible working hours based on risk management, alternative compliance & quality assurance integrated into business management – proposed outer limits	Work diary system, audit records. All records to be retained for 3 years.	

[8] Chain of Responsibility refers to all parties in the supply chain, including drivers, operators, consignors, consignees, schedulers, loaders and customers.

Reform	Jurisdiction	Effective Date	Scope	Working Hours	Rest Provisions	Management System Requirements	Records	Comment
Occupational Health & Safety Amendment (Long Distance Truck Driver Fatigue)	WorkCover Authority NSW	1 March 2006	Long haul drivers on journeys of >500 km in vehicles of >4.5 tonne GVM. Chain of responsibility – consignors or consignees with > 200 employees.	None specified – determined by risk assessment – to consider time of day, time required for task performance	None specified – determined by risk assessment which must consider rest breaks	Fatigue management plans for drivers and self employed drivers contracted directly to consignors	Fatigue management plans, contracts, trip schedules, rosters, risk assessments and rosters which must be retained for 5 years	
Motor Vehicle Transport Act, 1987 Commercial Vehicle Drivers Hours of Service Regulations	Canada – Road Transport Authorities	Proclaimed 15 November 2005, to take effect from 1 January 2007	Chain of responsibility	13 driving hours in 24 hours and 14 duty hours in 24 hours	Two up drivers – 4 continuous hours in a sleeper berth		Required to keep drivers records of hours in log book or electronic recording device	

Reform	Jurisdiction	Effective Date	Scope	Working Hours	Rest Provisions	Management System Requirements	Records	Comment
The Work Environment Act (*Certain Road Transport Work Amendments 2005:395)*	Sweden – Work Environment Authority	July 2005	Covers only mobile workers employed by transport businesses and excludes self employed drivers (applies in 2009)	Average weekly working time may not exceed 48 hours. Maximum weekly working time may be extended to 60 hours, only if over 4 months an average of 48 hours per week is not exceeded. A worker performing night work may not exceed 10 hours working time during any 24 hour period	Mobile workers must not work > 6 consecutive hours without a break. If working hours are between 6 & 9 hours, that break must be at least 30 minutes and at least 45 minutes if the working hours total > 9 hours. For night work, the daily working time must not exceed 10 hrs in each 24 hr period.		Employers are required to maintain records where maximum hours are exceeded.	Based on the European Directive 2002/15/EC –Working Time of Persons Performing Mobile Road Transport Activities (March 2002). Similar requirements adopted in UK

Reform	Jurisdiction	Effective Date	Scope	Working Hours	Rest Provisions	Management System Requirements	Records	Comment
Hours of Service Regulations (2005)(49 CFR Part 395)	The US Department of Transportation, Federal Motor Carrier Safety Administration	1 October 2005	Drivers of property carrying commercial motor vehicles	Maximum 11 hours driving after 10 consecutive hours off duty	8 consecutive hours in a sleeper berth plus 2 consecutive hours either in a sleeper berth, off duty or any combination		Required to keep records of duty status (RODS) eg. logbook	Driving is prohibited after being on duty 60 hours in 7 consecutive days or 70b hours in 8 consecutive days. The 7/8 period can restart anytime a driver has 34 consecutive hours off duty.
Hours of Service Regulations (2005)(49 CFR Part 395)	The US Department of Transportation, Federal Motor Carrier Safety Administration	1 October 2005	Short haul operations where no commercial licence is required and operate within 150 air mile radius of base	11 hours maximum following 10 hours of duty. May not drive after 14th hour on duty 5 days per week or after the 16th hour on duty 2 days per week		Employers to maintain accurate time records for a 6 month period showing the time the duty period began, ended and the total hours duty on each day		

Reform	Jurisdiction	Effective Date	Scope	Working Hours	Rest Provisions	Management System Requirements	Records	Comment
Road Working Time Regulations UK (2005)	UK Department for Transport	23 March 2005	Mobile workers who drive goods or passenger carrying commercial vehicles in Great Britain, excluding the self employed	Working time shall not exceed 60 hours per week or in any reference period, not exceed an average of 48 hours for each week. A worker performing night work may not exceed 10 hours working time during any 24 hour period	Minimum of 11 hours between shifts. A break of 30 mins must be taken after 6 hours duty. Where working time exceeds 9 hours, the break must be a minimum of 45 minutes. Separate breaks may be taken and a break must not be less than 15 minutes duration.	Employers have a general duty to protect health and safety at work and ensure rest periods and night work hours are complied with in the case of each worker.	Employers must advise workers of working time provisions. Drivers must provide hours of work records to all employers for whom driving is performed. Records must identify duty status and be retained for 2 years.	Based on European Directive on Working Time in Road Transport (2002). Similar to the amendments adopted in Sweden.

Table 3 – International Reforms in Rail Regulation

Reform	Jurisdiction	Effective Date	Scope	Working Hours	Rest Provisions	Management System requirements	Records	Comment
Railway and Other Guided Transport Systems (Safety) (ROGS) Reforms (2006). Fatigue addressed under Part 4, Regulation 25	UK Rail Safety Standards Board (RSSB)	1 April 2006	Whole rail industry Fatigue requirements particularly relate to Safety Critical Work	No more than 12 hours to be worked per turn of duty. No more than 72 hours to be worked per calendar week	Min rest period of 12 hrs between turns of duty. Maybe reduced to 8 hrs at weekly shift changeover. No more than 13 turns of duty in any 14 day period[9]	Requires all operators to have a safety management system and specific provisions to identify and control risks for fatigue		The reforms consolidate administrative requirements and rail safety regulation transferred to the RSSB from the HSE
US Department of Transportation Federal Railroad Rail Programs (Safety) – Hours of Service (Ch. 211)	US Department of Transportation Federal Railroad Administration	Proposals for release in Sept 2006	Rail operatives – drivers, signals and dispatchers	12 consecutive hrs on duty. Dispatchers maximum of 9 hrs duty in 24 hr period where 2 shifts in place or total of 12 hrs during 24 hr period where one shift in place.	Minimum 8 consecutive hours off duty during the 24 hours prior to duty. If duty period of 12 hours, minimum 10 consecutive hours rest.			Current hrs provisions have been in place since 1994, Fatigue now recognised as a key factor in incidents attributed to human factors with a rule being prepared.

Table 4 – Summary of Requirements in the Proposed Australian Road Transport (Heavy Vehicle Driver Fatigue) Reforms

Reform	Scope	Time (in any period of…..)	Work (maximum time)	Rest	Comment
Proposed Standard Hours	Solo Drivers	5 hrs & 30 mins	5 hrs & 15 mins	15 mins	Work is counted in 15 min periods
		8 hrs	7 hrs & 30 mins	30 mins eg. 2 x 15 mins	
		11 hrs	10 hrs	60 mins, in combinations of no less than 15 min blocks	
		24 hours	12 hours in total	12 hours, must include min of 7 hrs continuous rest	Rest is counted as a minimum of 15 min periods. Non work of < 15 mins does not count as rest
		7 days (168 hours)	72 hrs in total	96 hrs, must include 1 x 24 hrs continuous rest	
		14 days (336 hrs)	144 hrs in total	192 hrs, must include at least 2 x 24 hrs continuous rest and 4 night rests, 2 being consecutive	Night rest is 7 hrs rest between 10 pm & 08 am
Proposed Basic Fatigue Management	Solo Drivers	6 hrs 15 mins	6 hrs	15 mins	
		9 hrs	8 hrs 30 mins	30 mins	
		12 hrs	11 hrs	60 mins	
		24 hrs	14 hrs in total	10 hrs, including	

Reform	Scope	Time (in any period of…..)	Work (maximum time)	Rest	Comment
				minimum 7 hrs continuous rest	
		7 days (168 hrs)	36 long and night hrs in combination	1 x night rest if 36 hrs limit exceeded	1'long' or 'night' hr is any hr worked above 12 in 24 and any full/part hr worked 12.00-6.00 am
		14 days (336 hrs)	144 hrs. Maximum 84 hrs in any 7 days but must not exceed 144 hrs in any 14 day period	192 hrs. Must include at least 2x24 hrs continuous rest with 1x24 hr continuous rest after 84 hrs work. 4 nights rest, two of which must be consecutive	
Advanced Fatigue Management			Maximum hrs work in 24 hr period: 16 hrs (note 15 hrs in Vic & NSW (accreditation). Maximum work in 14 days is 154 hrs with no more than 84 hrs before a continuous period of 24hrs free of work (legislation). Maximum work in 28 days: 288 hours (legislation)	Minimum continuous break is 6 hrs in any 24 hr period (legislation). Minimum continuous 24 hr periods free of work: four periods in 28 days (legislation). Min opportunity for night sleep: two periods in 14 days (accreditation).	Outer limits cannot be exceeded under any circumstances