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AND SAFETY COMMISSION**

SUBMISSION TO

**Parliament of Australia
House of Representatives
Standing Committee on
Communications, Transport and the Arts**

**INQUIRY INTO MANAGING FATIGUE IN
TRANSPORT**

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Table of Contents

Table of Contents	i
Introduction	1
1. NOHSC Research and Projects	2
1.1 Statistics.....	2
1.1.1 Workers' Compensation Statistics.....	2
1.1.2 Work-related Fatalities 1989 to 1992.....	3
1.2 Relevant NOHSC Research Projects.....	4
1.3 National Solutions Projects in Road Transport	6
2. State and Territory OHS Agency Transport Industry Initiatives	9
2.1. Victorian WorkCover Authority	9
2.1.1 Transport Industry Safety Group	9
2.1.2 Victorian Work Related Fatalities Prevention Project	10
2.2 WorkSafe Western Australia.....	10
2.3 Northern Territory Work Health Authority	11
2.4 South Australia WorkCover Corporation.....	11
2.5 Queensland Division of Workplace Health and Safety.....	12
3. Other Relevant Australian and Overseas Initiatives	13
3.1 BHP Fatigue Management Program (Logistics Management)	13
3.2 Centre for Sleep Research, University of South Australia.....	13
3.3 Australian Medical Association	14
3.4 International Conference on Fatigue in Transportation (Fremantle, WA).....	14
3.5 International Research.....	14
4. Selected Key OHS Issues Identified for Consideration by the Inquiry	16
4.1 Treat Fatigue as One of a Range of OHS Hazards?.....	16
4.2 Co-operative Efforts across Portfolios and Involvement of Industry Players?	17
4.3 Need for a National OHS Approach?	17
4.4 Adequacy of Road Transport Driver Rest Facilities?	18
4.5 Adequacy of Statistics on the Impact of Fatigue?	18
Bibliography	19
Attachment 1 - Principles for a National Framework for OHS in Road Freight Transport.....	20
Attachment 2 - Full Transcript of Information for the Inquiry provided by Victorian WorkCover Authority	21
Part 1.....	21
Part 2 - Fatigue-related fatalities in the transport industry, Victoria, 1993/94 – 1996/97	22
Attachment 3 - Joint US/Canada Commercial Driver Fatigue Study Results	24

INTRODUCTION

1. This submission is provided to the House of Representatives Standing Committee on Communications, Transport and the Arts inquiry into managing fatigue in transport. The terms of reference for the inquiry were referred to the Committee by the Minister for Transport and Regional Services in May 1999.

2. The Terms of Reference are that, in relation to managing fatigue in transport, the Committee is to inquire into, and report on the following:

- (a) causes of, and contributing factors to, fatigue;
- (b) consequences of fatigue in air, sea, road and rail transport;
- (c) initiatives in transport addressing the causes and effects of fatigue; and
- (d) ways of achieving greater responsibility by individuals, companies and governments to reduce the problems related to fatigue in transport.

3. This submission focuses on identifying and drawing the Inquiry's attention to the reports, research findings, statistics and programs of activity that the National Occupational Health and Safety Commission (NOHSC) and its member organisations have funded or contributed to in some way that may be of relevance to the inquiry's terms of reference.

4. The final section in this submission draws together a range of key occupational health and safety (OHS) related issues that arise out of the work reported in this submission.

1. NOHSC RESEARCH AND PROJECTS

5. The information provided in this section is intended to bring to the Standing Committee's attention the range of NOHSC programs and projects (past and present) that have some relevance to the transport sector and which may assist the committee in its deliberations on fatigue.

1.1 Statistics

6. NOHSC collects, analyses and disseminates statistical information on OHS in Australia from a number of sources. The two main sources are data from State, Territory and Commonwealth jurisdictional workers compensation administrative systems and a fatalities collection derived from the records of State and Territory coroners' offices.

7. Workers' compensation statistics are published each year (excluding Victoria and the ACT due to differences in collection methods) in the *Compendium of Workers' Compensation Statistics, Australia*. A copy of the latest edition of the compendium, providing statistics for the 1996/97 financial year, is included with this submission.

8. NOHSC has conducted two studies of work-related traumatic fatalities covering the periods 1982-84 and 1989-92. The second study was released in December 1998 as *Work-related Traumatic Fatalities in Australia, 1989 to 1992*. A copy of the second study has been included with this submission.

9. Although there is considerable overlap between these two statistical sources as far as fatalities involving the transport industry are concerned, there is a significant difference in coverage. The fatalities data does not cover injury or non-traumatic deaths. The workers' compensation data does not cover all incidents related to the industry. This latter point is highlighted by comparing data on deaths from both sources. Of the working and community deaths identified in the fatalities study, for the transport and storage industries, 28.3% were not covered by either OHS or compensation agencies in their reported workers' compensation cases. The limitations of workers' compensation data are even more apparent for the 71.4% of transport industry deaths that occurred in motor vehicle accidents at work. Of these working deaths, 39.4% were not included in workers' compensation statistics reported by OHS and compensation agencies

1.1.1 Workers' Compensation Statistics

10. The Transport and Storage industry sector consistently records high frequency and incidence rates for new cases of compensable workplace injuries when compared to averages for all industries. Table 1 below uses 1996-97 data and compares the Transport and Storage Industry sub-sectors with similar data for All Industries and two other high risk industry groups, Mining and Manufacturing.

11. Incidence and frequency rates for the Road Transport and Air/Space Transport sub-sectors are significantly above the All Industries rates and are only slightly behind those for Mining and Manufacturing. For Road Transport, figures for fatal cases indicate a much higher than average incidence rate (0.29) compared to All Industries (0.05) and the figure is second highest, exceeded only by that for Mining (0.37).

12. While workers' compensation data does not identify fatigue-related incidents, the data does provide a measure of the size of the OHS problem in the industry and confirms the need for effective strategies to address the problem. It should also be emphasised that workers' compensation data does not reflect the true size of the OHS problem as the transport industry workforce includes self employed operators who are not covered by workers' compensation schemes.

Table 1: New Workers' Compensation Cases 1996/97 (excluding VIC and ACT)

Industry	Number (New Cases)	Incidence Rate (No. per 1,000 wage & salary earners)		Frequency Rate (No. per million hours worked)
		All Cases	Fatal Cases	
All Industries	121,666	22.86	0.05	12.90
Mining	3,416	42.69	0.37	19.48
Manufacturing	282,289	39.81	0.07	20.35
Transport & Storage	9,494	37.56	0.18	18.73
Road Transport	4,462	44.62	0.29	21.01
Rail Transport	1,080	24.99	n.a.	12.87
Water Transport	102	10.55	0.00	5.54
Air & Space Transport	1,356	39.92	n.a.	21.60
Other Transport	338	n.a.	n.a.	n.a.
Services to Transport	1,167	24.41	n.a.	12.55
Storage	988	64.76	n.a.	33.42

1.1.2 Work-related Fatalities 1989 to 1992

13. The Work-related Fatalities study for 1989-1992 identified the Transport and Storage industry as the industry grouping with the highest number of deaths for any industry, i.e. 370 over the study period. The industry sector also has the third highest death rate of 23 persons per 100,000 persons employed per year (behind the Forestry (92.8) and Fishing (86.2) industries) compared to the All Industry figure of 5.5 persons per year. This rate for Transport and Storage was 13% higher than that recorded in the previous study for the years 1982 to 1984 indicating that, on the surface at least, the OHS performance of the industry was not improving. It should also be noted that nearly all of the 370 Transport and Storage industry deaths occurred in the Transport sub-sectors (i.e. not the Storage sub-sector).

14. From an occupational perspective, of the 370 deaths in Transport and Storage, 42 were commercial pilots and 308 were truck drivers. Commercial pilots had the highest death rate for all occupations of 197 and truck driver fatalities were well above the average with a death rate of 41. Other high risk occupations included fishermen/women at 117, forestry occupations at 116, drilling plant operators at 72, mining labourers at 66 and ship's pilots and deckhands at 54 per 100,000 persons employed per year. Once again, this compares with the All Industries average of 5.5.

15. In addition to the 370 deaths of working persons in the Transport and Storage Sector, there were a total of 541 work road deaths. Work-road deaths are fatalities suffered by working persons that occurred on a public road.

16. The majority of work-road deaths involved the road transport industry. Of the vehicles involved (the vehicle in which the fatally injured worker was travelling or

which struck the fatally injured worker) in work-road deaths, 35.1% were semi-trailers (“prime movers”), 11.3% were trucks and 0.9% were buses.

17. The study identified a combination of high speed, lack of sleep, night driving and, sometimes, alcohol and/or drugs as common characteristics of fatal motor vehicle accidents involving long distance truck drivers.

18. The study also sheds some light on the impact of the road transport industry on public safety by analysing “road bystander” deaths. Road bystanders were described as persons who were not working but who received fatal injuries in a motor vehicle accident on a public road (or on some form of public transport) in which a working vehicle was involved and was considered ‘at fault’ in the accident.

19. People working in road transport caused a significant number of road bystander deaths. Of the persons who were operating the working vehicle at the time of the incident, 68.5% were employed in the road transport industry and 62.4% were truck drivers. Therefore, the vast majority of persons operating the working vehicle were professional drivers.

20. As a follow-up study, an analysis of fatigue as a factor in these work-related fatalities is to be undertaken by NOHSC research staff, despite the difficulties involved in isolating fatigue as a factor.

21. The Victorian WorkCover Authority has undertaken analysis of work-related fatalities in Victoria between 1993/94 and 1996/97. Details from this research can be found in Section 2.1 below and **Attachment 2**.

1.2 Relevant NOHSC Research Projects

22. Research into fatigue, hours of work and shiftwork has been conducted by NOHSC or (partially) funded through NOHSC research and development grants over many years. Two of the foremost academic experts in the field, Anne Williamson and Ann-Marie Feyer, are former NOHSC Office employees. Their research is internationally recognised and they have a long-standing and continuing involvement with the National Road Transport Commission’s Fatigue Management Program.

23. As part of their research at NOHSC, they published a series of reports for the project *A Study of Strategies to Combat Fatigue in the Road Transport Industry (1990-94)*. This study, funded by the Federal Office of Road Safety (FORS), investigated how fatigue was currently managed in the industry, and gathered industry’s views on other strategies that could be introduced to improve fatigue management. Stage 1 investigated strategies that would be effective and practicable in reducing driver fatigue¹ and Stage 2 evaluated drivers undertaking long trips under different operational conditions² and two-up driving³. Copies of these reports may be obtained from FORS.

¹ Feyer A-M, Williamson A, Friswell R and Leslie D (1992) Strategies to Combat Fatigue in the Long Distance Road Transport Industry; Stage 1: The Industry Perspective, FORS

² Feyer A-M, Williamson A, Friswell R and Leslie D (1994) Strategies to Combat Fatigue in the Long Distance Road Transport Industry; Stage 2: Evaluation of Alternative Work Practices, FORS

³ Feyer A-M, Williamson A, Friswell R and Leslie D (1995) Strategies to Combat Fatigue in the Long Distance Road Transport Industry; Stage 2: Evaluation of Two-up Operations, FORS

24. Williamson and Feyer also published a paper, based on data from the first NOHSC fatalities study (1982-1984), analysing relationships between accidents and the time of day⁴. Their results suggested that, based on the proportion of people at work at this time, the proportion of work-related fatalities occurring at night was more than double that occurring during the day. A copy of this paper is held in the NOHSC library.

25. In 1997, Dr Claire Mayhew of NOHSC and Professor Michael Quinlan of the University of New South Wales, partly funded under a NOHSC Research Grant, conducted research into trucking accidents and the use of subcontractors in road transport⁵. They found evidence for regarding fatigue as a major health risk and an endemic OHS problem for long haul transport workers. Surveys of drivers undertaken as part of their research indicated that long haul drivers defined fatigue and long working hours as problems, even though they may have never suffered from an occupational injury or illness. Mayhew and Quinlan found that fatigue problems were worse for self-employed (subcontract) drivers, principally because of the economic pressures upon them and their longer hours of labour. Copies of this report may be purchased from the University of NSW.

26. David Arblaster and other staff of the Department of Community Medicine of the University of Adelaide were funded by NOHSC in 1996 to conduct a study titled *Strategies for Change in the Long Distance Trucking Industry*⁶. This study involved personal interviews with current and former drivers in South Australia and their partners and a smaller number of middle and upper level managers. The study found that scheduling practices and methods of payment within the industry were a barrier to effective OHS. Drivers reported they were commonly required to work to schedules that were difficult to meet without speeding or excessive hours of work. Nearly half the drivers took stimulants on most trips. Adequate sleeping quarters for drivers in depots and en route to destinations were often lacking. Drivers widely disregarded speeding and hours of driving laws. Few drivers received more than 6 consecutive hours of undisturbed sleep while on duty, and many drove after no more than 3 or 4 hours sleep in a 24-hour period. A copy of the report is held in the NOHSC library.

27. NOHSC has also funded through its grants schemes further research on shiftwork. These include two studies undertaken by Dr Drew Dawson and other staff of the Centre for Sleep Research at the University of South Australia, *Evaluation of a Field-based Approach to Assessing the Risk Associated with Shiftwork*⁷ and *Australian Railways Shiftwork and Workload Study*⁸. Information on the work being undertaken by the Centre can be found in Section 3 below. Copies of these reports are found on the Centre's Internet site at www.unisa.edu.au/sleep/main/tcsr_home.html

⁴ Williamson A and Feyer A-M (1995) Causes of accidents and time of day, *Work and Stress*, vol. 9, nos. 2/3, p158-164.

⁵ Mayhew C and Quinlan M (1997) *Trucking Tragedies: Why Occupational Health and Safety Outcomes are Worse for Subcontract Workers in the Road Transport Industry*, UNSW School of Industrial Relations and Organisational Behaviour, Working Paper Series

⁶ Arblaster D, Woodward A, Moller J (1996) *Occupational Health and Safety; Strategies for Change in the Long Distance Trucking Industry*, Worksafe Australia Research Grant Report.

⁷ Dawson D et al (1998) *Evaluation of a Field-based Approach to Assessing the Risk Associated with Shiftwork*, Centre for Sleep Research, University of South Australia.

⁸ Dawson D et al (1997) *Australian Railways Shiftwork and Workload Study*, Centre for Sleep Research, University of South Australia.

28. Dr Meredith Wallace of the Brain Behaviour Research Institute, La Trobe University and the company Health and Work Behaviour Management Consultants were also funded by NOHSC to conduct research into the OHS Implications of Shiftwork and Irregular Hours of Work. This report consisted of both *Guidelines for Managing Shiftwork* and *Review: The Effects of Shiftwork on Health*.⁹ These and other reports on shiftwork that Dr Wallace has published are obtainable from Work Behaviour Management Consultants, Ivanhoe East, Victoria. A copy of the Guidelines report is also held in NOHSC's library.

1.3 National Solutions Projects in Road Transport

29. In 1997 NOHSC embarked on a new strategic approach and initiated National Solutions Projects to identify practical preventative solutions in the workplace and, as a result, to facilitate prevention actions in the workplace.

30. As part of this drive, NOHSC evaluated several significant road transport prevention initiatives from different Commonwealth, state and territory jurisdictions. This work formed the project *Evaluation of Road Transport OHS Prevention Initiatives*. It involved identifying strategies and solutions that have improved OHS outcomes in road transport enterprises, evaluating their suitability for application nationally, particularly their potential application in small transport operations, and facilitating transfer of successful solutions to small operations. The work with the industry was then continued into another project for the 1998/99 financial year, titled *OHS into Road Transport*.

31. A folder, *Sharing Practical Solutions to OHS Problems*, containing a copy of the final report for the 1997/98 project, a project overview and abridged versions of five case studies associated with the project are included with this submission. The documentation may also be viewed on the NOHSC Internet site at www.worksafe.gov.au/worksafe/09/natsol/evalrd.htm

32. The first phase of work with the industry involved the collection and review of the publicly available industry and enterprise based OHS resources (e.g. industry strategies, specific OHS solutions) relevant to or being used in the industry, the publication of a description of these on the NOHSC internet site and an analysis of their contents. The resources analysed included the kit produced by Queensland Transport, for use in the National Road Transport Commission's *Fatigue Management Program Pilot*.

33. Case studies were conducted at five enterprises, looking at initiatives being undertaken that operators themselves felt led to improved OHS outcomes. The enterprises were selected through advice from a reference group and industry contacts. These case studies are outlined in detail in the final report, with abridged versions published separately. This documentation is found in the folder provided with this submission.

34. Nolan's Interstate Transport was selected for case study because of its role as one of the first companies invited by Queensland Transport to participate in the Fatigue Management Program pilot. The other four companies – Australia Post, Finemores,

⁹ Wallace M and Work Behaviour Management Consultants Pty Ltd (1998), OHS Implications of Shiftwork and Irregular Hours of Work, Worksafe Australia Development Grant Report.

Mayne Nickless Express and K&S Freighters - were also questioned on the fatigue management initiatives they had put in place, although this was not a major aspect of their case studies.

35. There have been no fatigue-related incidents since Nolan's Interstate Transport became involved in the Fatigue Management Program pilot. Several other positives arising out of the scheme were identified by the company. In devising the driving schedules for the scheme, the company found driver knowledge and assistance of vital importance, as was support from drivers' families. In return, driver involvement in the development of the schedules has meant that they have become more responsible and less likely to abuse the system. The scheme's flexibility also provides scope for operators to be strategic about the way they schedule work and rest rather than be rule-bound.

36. Factors identified as inhibiting the operation of the scheme at that point in time included the lack of adequate rest facilities on public highways with amenities where drivers can get a good sleep. Even recently designed facilities are said to have failed to take driver comfort into consideration. Another factor was the absence of a national driving hours regime that removed existing differences between jurisdictions.

37. Fatigue management practices identified in the other case studies included shuttle or staged systems, a two driver set-up, a 12-in-24 requirement (12 hours rest in every 24 hours) and a "truck to rail" system, whereby the truck drives onto a train at one location and straight off to a depot at its destination. The shuttle system is popular with drivers as it often allows them to return to home base and there is usually no loading or unloading required of drivers. It is popular with companies because it avoids excessive use of casual staff and makes it easier for the company to conform to state driving hours regulations. It also delivers productivity benefits in that it enables better utilisation of trucks.

38. This last observation about productivity was an important consideration. The OHS and risk management personnel from the companies who were interviewed indicated that safe work practices, including fatigue management initiatives, could only be justified if they could be interpreted in terms of financial benefit, cost reduction or productivity gain.

39. One of the principal outcomes of the 1997/98 NOHSC project was the recognition that there was scope for increased cooperation between road transport and OHS authorities and industry forums for developing effective programs for managing OHS risks within the industry. This finding led to a second stage of NOHSC investigation of OHS solutions for the road transport industry, to be undertaken in the 1998/99 financial year and titled *OHS into Road Transport*. The emphasis was placed on encouraging and facilitating cooperation between OHS agencies and industry key stakeholders.

40. A key strategy in progressing this was a workshop that brought representatives from nearly all state and territory OHS agencies together with a number of road transport industry players, to examine initiatives developed or under development. These were essentially initiatives that had a strong OHS emphasis. Those directly concerned with fatigue in transport included: BHP's Fatigue Management Program (Logistics Management); Worksafe Western Australia's then newly published *Fatigue Management for Commercial Vehicle Drivers (Code of Practice)*; the Victorian

Transport Industry Safety Group's video on fatigue. These initiatives and products are outlined more fully in the sections below.

41. The major outcome of the workshop was a recommendation that a “national framework” for OHS in the road freight sector be developed by the industry itself, facilitated by a national body, and with the involvement of the OHS agencies. This arose essentially from the recognition of the industry as a truly national one, with “moveable workplaces” that crossed jurisdiction boundaries and which should be subject to uniform or consistent regulations between jurisdictions. A set of principles for this national framework was identified. This is included as **Attachment 1** to this submission.

2. STATE AND TERRITORY OHS AGENCY TRANSPORT INDUSTRY INITIATIVES

42. State and territory OHS agencies adopt a systematic risk management approach in developing strategies and guidance material to address workplace safety. This involves risk identification, risk assessment and risk control. The emphasis is on employers having systems in place to manage the risks in their workplace. Fatigue is regarded as one of the hazards contributing to the OHS risks of transport operators. The duty of care requirements under performance-based OHS legislation are strong, yet flexible enough to cover all workplaces and to allow for a range of approaches to be taken to manage the risks.

43. In most states and territories the specific strategies to control fatigue in the road transport industry have had to take into consideration the driving hours legislation, developed by the National Road Transport Commission in concert with the transport agencies. They have not been developed as specific workplace safety measures under OHS legislation controlled by OHS or workers' compensation authorities. The exceptions are Western Australia and the Northern Territory where neither jurisdiction is party to the national driving hours scheme. In these jurisdictions responsibility for approving guidance material for the management of fatigue has been taken up by the OHS agency.

44. The following additional information has been provided by OHS agencies.

2.1. Victorian WorkCover Authority

45. For a full transcript of the information provided by VWA, see **Attachment 2**.

46. Victoria has been the most active of all the OHS jurisdictions in developing initiatives and programs to address OHS in the road transport industry. An example of this is the Trucksafe suite of products – video, manuals and booklets – developed to provide “best practice” OHS guidance to road transport operators. The state considers that it has a highly effective cross-portfolio approach to transport safety through the Transport Industry Safety Group. In addition, the Victorian WorkCover Authority (VWA) has analysed occupational fatalities data to identify fatigue-related incidents for the years 1993 to 1997. This has been carried out under the Work Related Fatalities Prevention Project (WRFPP), a joint project involving the VWA, the Victorian State Coroner's Office and VIOSH Australia, at the University of Ballarat. The principal finding was that fatigue was a factor in 37% of the deaths that occurred in the transport industry (see below).

2.1.1 Transport Industry Safety Group

47. The Transport Industry Safety Group (TISG) was established in Victoria in 1996 following a coronial inquiry into the death of a young boy hit by a truck. This group is dedicated to creating a safety culture in the road transport industry and has been making a concerted effort to address fatigue. It is comprised of the Victorian Road Transport Association, Transport Workers Union, VicRoads, Bus Association of Victoria, Monash University Accident Research Centre, Victoria Police and the Victorian WorkCover Authority. In 1997 the Group published a handbook titled *Transport Industry Guide to Meeting the OHS Duty of Care* and in 1998 produced a video addressing the issue of

fatigue and responsibility of transport operators. The Group also involves itself in developing and delivering community and school programs on road safety issues.

2.1.2 Victorian Work Related Fatalities Prevention Project

48. The VWA analysis of work fatality data for the years 1993/94 to 1996/97 identified 332 work-related fatalities in Victoria for the period. Of these, 77 (23%) deaths occurred in the transport industry. Fatigue was identified as a factor in 28 (37%) of the transport cases, which is 8% of all work-related fatalities for this period.

49. Of these 28 fatigue-related transport deaths, 16 (57%) were single vehicle truck incidents. The remaining incidents included:

- (a) 8 single vehicle car incidents
- (b) 2 multi-vehicle truck incidents
- (c) 1 truck/train interaction
- (d) 1 pedestrian/truck interaction

50. Factors identified that may have led to fatigue in these cases include:

- (a) Travelling long distances / time pressure to be at destination (5 cases)
- (b) Exceeding 'normal' work hours / changing shifts (4 cases)
- (c) Insufficient breaks in journey (1 case)
- (d) Insufficient sleep planned (1 case)
- (e) Unspecified driver fatigue / reasons for fatigue unknown (15 cases)

2.2 WorkSafe Western Australia

51. In 1998 a project team with wide representation drawn from industry, government and academia developed, under OHS legislation, a Code of Practice, *Fatigue Management for Commercial Vehicle Drivers : operating standards for work and rest in the Western Australian road transport industry*. Western Australian road transport operators have long been exempt from national driving hours regulations and logbook schemes. However, fatigue is recognised as an issue of concern. The need for the Code arose from research that indicated that 25% of fatal truck crashes in WA involved fatigue. Furthermore, in a major study on the road transport industry in WA conducted by Murdoch University in 1995, around 10% of drivers interviewed admitted experiencing significant problems with fatigue.

52. The state enjoys a reputation for fostering expertise in fatigue management and every two years hosts a Fatigue in Transportation conference in Fremantle. Professor Laurence Hartley, of Murdoch University's Institute for Research in Safety in Transport, and a member of the project team that developed the Code, is regarded internationally as an expert in the field.

53. The code was developed under the auspices of the WA Department of Transport, but was approved under the Occupational Safety and Health Act. Under that Act, transport operators are obliged to provide a safe system of work. The Code was designed to give specific guidance and to assist industry by providing standards for work and rest and a framework for developing a fatigue management system. The approach taken is the risk management system approach that is consistent with all OHS

legislation throughout Australia and involves hazard identification, risk assessment and risk reduction. To comply with the duty of care provisions under the Occupational Safety and Health Act, a company should have a documented fatigue management system in place, as this would demonstrate that it had a safe system of work.

54. WA considers that by taking a 'fix the problem, not the symptom' approach, the Code of Practice addresses the causes of fatigue and requires transport companies and drivers to ensure drivers are getting sufficient rest. Getting sufficient rest will also remove the need for stimulants.

55. The Code is considered by the WA OHS and Transport agencies to be more comprehensive than the system of prescribed hours of work and rest enforced in all other jurisdictions (except the Northern Territory, which also has a similar approach to WA). The Code is consistent with the Alternative Compliance Fatigue Management Program being developed by Queensland Transport and the operating standards are also claimed to be generally consistent with the standards contained in the Transitional Fatigue Management Scheme (TFMS) developed by the National Road Transport Commission.

2.3 Northern Territory Work Health Authority

56. The Northern Territory has taken a similar approach to Western Australia and in November 1998 brought out a *Road Transport Fatigue Management Code of Practice*. While acknowledging that the Territory does not have a significant problem with fatigue, NT industry and government agencies jointly developed the Code to ensure that the transport industry maintained its good safety record in fatigue management and that transport operators meet their duty of care obligations for providing a safe and healthy work environment.

57. The Code is performance-based in that the focus is on outcomes and not process. It provides practical detail on at least one way of achieving the outcome or level of performance set out in the NT Work Health Act and Regulations. It is not mandatory but has evidentiary status in that in court it could be used as a benchmark of what would be reasonably expected of an operator in the management of fatigue.

58. The various sections of the Code outline what fatigue is, the basic principles in managing fatigue and what should be considered in developing a fatigue management system for drivers.

2.4 South Australia WorkCover Corporation

59. In 1997 the South Australian WorkCover Corporation identified the road transport industry as a high-risk candidate for inclusion in its Safer Industries Strategy. Drivers in the industry in SA have a relatively high rate of injury at work. The hazards and risks identified in the industry include demanding and unpredictable work schedules; social isolation; irregular working hours leading to sleep loss; infrequent, heavy manual work; noise and vibration; and exposure to road crashes as witnesses or participants. Between 1992 and 1997 in SA, drivers recorded the highest number of occupational fatalities.

60. The approach adopted by the SA OHS authority is to involve the key industry players in the development of a strategic approach to all OHS hazards in the road freight transport sector, including fatigue.

61. A Road Freight Transport Industry OHS Committee has been established, with membership drawn from government and training agencies, employers, unions and employer associations. An OHS Strategic Plan for the industry has been drawn up and specific programs have been identified. One product that has been released, early in 1999, is a *Road Freight Transport Industry Guide to meeting the Occupational Health and Safety Duty of Care*. This guide is based essentially on the Victorian TISG's duty of care guide.

62. South Australian drivers work under the prescribed driving hours contained in the South Australian Commercial Motor Vehicles (Hours of Driving) Act, 1973. However, operators and drivers (except bus drivers) are now also able to participate in the Transitional Fatigue Management Scheme (TFMS), as part of the National Truck Driving Hours Regulations package. The new road freight industry Guide provides brief information on fatigue and sets out the basic requirements of both TFMS and the South Australian Act.

2.5 Queensland Division of Workplace Health and Safety

63. The Queensland Division of Workplace Health and Safety prepared, through its Transport and Storage Industry Workplace Health and Safety Committee, a manual for the industry titled *A Guide to Road Freight Transport*. Published in December 1994, the Guide focused on the health and safety of drivers and included information on the causes of fatigue, body clocks and tips for drivers on how to get enough sleep. Advice is also provided for managers and operators on work rostering and scheduling.

64. In 1995 the Queensland government established, through the provisions of the Workplace Health and Safety Act (1995), Industry Sector Standing Committees to provide information to the Workplace Health and Safety Board and the Minister. The Committee representing the transport industry is the Transport and Storage Sector Standing Committee. However, government initiatives in the area of fatigue and road transport are represented by Queensland Transport, the state transport authority, through its work on the National Road Transport Commission's Fatigue Management Pilot.

3. OTHER RELEVANT AUSTRALIAN AND OVERSEAS INITIATIVES

65. The information provided below covers Australian and international initiatives that may be of interest to the Committee that have come to the attention of the NOHSC Office. Once again, the information identified relates largely to road transport, reflecting the focus of NOHSC's recent work. As indicated in the NOHSC road transport projects outlined above, there are also likely to be a large number of approaches to effective fatigue control strategies being developed or trialled at the enterprise level (particularly in larger organisations).

3.1 BHP Fatigue Management Program (Logistics Management)

66. BHP Transport division has been developing a pilot project to extend the concept of fatigue management across the supply chain, to encompass suppliers and customers as well as the transport operators. It seeks to build on the work already undertaken to develop Fatigue Management Programs for transport operators under Alternative Compliance.

67. The project recognises that an estimated 60% of fatigue contributing factors are outside the direct control of transport operators. It proposes to extend the scope of FMP to include those other organisations along the supply chain that need to be aware of and manage the risk factors that contribute to truck driver fatigue.

68. It was intended that the Fatigue Management Program Logistics Management pilot would focus on the supply chain processes associated with the delivery of the product from its place of manufacture, through the transportation processes and ending with delivery into a customer's warehouse. This would capture fatigue risk factors associated with loading and unloading and route planning; such as, queue management, loading/unloading facilities, urgent or irregular orders and dispatches, loading/unloading delays, product non-availability, etc.

69. Chain of responsibility involves dealing with a whole range of other industry sectors involved in the supply and customer ends of the chain. These sectors are not the responsibility of Transport authorities. Tackling fatigue through strategies that focus on chain of responsibility will need the involvement of OHS authorities.

3.2 Centre for Sleep Research, University of South Australia

70. From their considerable research into hours of work, shiftwork and fatigue, the Centre has formed the opinion that prescriptive hours legislation should be dropped as an approach to fatigue management. They argue that hours-of-work regulation should cease to be a Department of Transport regulation and should be clearly re-stated as a singular OHS issue for which the employer and employee have shared responsibility. Work-related fatigue should be managed under global provisions of the current OH&S legislation directed toward managing 'identified workplace hazards'. From this perspective, each organisation for which fatigue is an identified hazard would be required to produce demonstrable process of risk management for fatigue in the same way as is required for hazardous chemicals or manual handling etc.

71. The Centre argues for the creation of minimum standards and a draft code of practice, as has been done with other workplace hazards, to be drafted by a working

party comprising representation from the scientific community, industry and regulators and facilitated at the national level.

3.3 Australian Medical Association

72. In March 1999 the Federal Council of the Australian Medical Association (AMA) adopted the *National Code of Practice – Hours of Work, Shiftwork and Rostering for Hospital Doctors*. The Code had been developed through a wide consultative process and had taken into consideration the considerable amount of research undertaken into working hours and fatigue in the Australian road transport industry.

73. The Code is compatible and consistent with OHS legislation in each state and territory. It follows a risk management approach, providing practical guidance on how to eliminate or minimise risks arising from the hazards associated with shiftwork and extended working hours. It operates in the context of OHS legislation that sets out a general duty of care for employers to provide and maintain a safe and healthy workplace.

74. The Code is drafted within the framework of performance-based OHS law and enables flexibility and innovation in managing risks.

3.4 International Conference on Fatigue in Transportation (Fremantle, WA)

75. An international conference on fatigue in all modes of transport is held every two years in Fremantle, Western Australia. The 3rd conference, subtitled *Coping with the 24 Hour Society*, was held in 1998.¹⁰ The conference attracts leading scientists, practitioners, policy makers and industry representatives from Australia and overseas.

76. Papers focussed not only on road transport but maritime, air transport and military operations. One paper discussed the sleep management system developed by the United States Army as part of its ongoing research into sustaining performance during long, continuous hours of operations.

3.5 International Research

77. Extensive research has been conducted internationally on fatigue in transport, particularly within the United States, Europe and Canada. Again, much of this research has concentrated on long-haul road freight transport.

78. The United States Department of Transportation, Federal Highway Administration (FHWA), Office of Motor Carriers (OMC) has given driver fatigue a primary focus in four of its major program areas: research and technology, rulemaking, education/outreach, and enforcement/consultation. This has been driven by the 1995 FHWA-sponsored National Truck and Bus Safety Summit and other industry conferences identifying driver fatigue as the top-priority commercial motor vehicle safety issue.

79. Major research conducted by and/or on behalf of the FHWA include a Driver Fatigue and Alertness Study (DFAS), in conjunction with Transport Canada, the

¹⁰ Conference papers and additional papers have been published as *Managing Fatigue in Transportation: Proceedings of the 3rd Fatigue in Transportation Conference, Fremantle, Western Australia, 1998*.

Trucking Research Institute (TRI) of the American Trucking Associations (ATA) Foundation, three motor carriers, and other research and industry organisations. [For an outline of the outcomes of this study, see **Attachment 3**]. Other research has covered issues such as loading and unloading and its effects on fatigue; rest areas; Local/Short Haul Driver Fatigue Crash Data Analysis; Shipper Involvement in hours of service (HOS) Violations; Driver Work/Rest Cycles and Performance Modelling of HOS Alternatives; Scheduling Practices and their Influences on Driver Fatigue; Sleeper Berths and Driver Fatigue; sleep apnoea; alertness monitoring; driver fitness and health. Details of these studies can be found at the FHWA's Internet site at <http://mcregis.fhwa.dot.gov/fatigue.htm>

80. As part of its research and technology program, FHWA jointly sponsored with the ATA, the National Highway Traffic Safety Administration (NHTSA), the Association of American Railroads, the Federal Railroad Administration, and the National Transportation Safety Board (NTSB), an international conference on *Managing Fatigue In Transportation*.¹¹ This international, multi-modal conference addressed ways to improve transportation operator alertness and to lower crash risk. Expert speakers addressed a variety of topics related to the improvement of operator fatigue management, including improving sleep, monitoring operator alertness, alternative approaches to hours of service (HOS) regulation, and new methods and technologies in fatigue management.

¹¹ *Managing Fatigue in Transportation*, April 29-30, 1997, Tampa, Florida : International Conference Proceedings, American Trucking Associations Foundation

4. SELECTED KEY OHS ISSUES IDENTIFIED FOR CONSIDERATION BY THE INQUIRY

81. Based on its work and the examination of literature and initiatives, NOHSC Office believes that the following OHS-related issues would be worth consideration by the Inquiry.

4.1 Treat Fatigue as One of a Range of OHS Hazards?

82. All OHS authorities in Australia have moved away from a highly prescriptive approach to rule making on OHS issues to a performance-based approach. The driving force for this fundamental change in philosophy can be found in the findings and recommendations of the Robens report¹².

83. The prescriptive approach resulted in OHS rules being developed in a piecemeal fashion and in response to some process-specific or workplace-specific issue. Regulations specified the requirements for compliance, covering what needed to be done and how. Consequently, this approach tended towards mandating only one way to achieve an outcome.

84. The performance-based approach is characterised by a single, concise umbrella Act that states general duties of all parties, supported by a range of regulations. The regulations generally expand on the general duties and detail what needs to be done, but not how. Codes of practice are used to illustrate and give guidance on one acceptable method of complying with the Act and regulations.

85. Management of workplace OHS hazards under the performance based approach has followed a risk management approach, i.e. identification of hazard, analysis and control of risks. This approach is now being supplemented with a drive by governments and the OHS community to encourage all workplaces to adopt a more systematic approach to their management of all OHS risks in an integrated way. Organisations are encouraged to look at all their OHS risks so that this broader picture informs the development of specific strategies for individual hazards. This helps to minimise the potential for the development of effective controls for one hazard to lead to inappropriate consequences and increased OHS risks in other areas.

86. Within this regulatory framework, dealing with the OHS issue of fatigue in transport will involve assessing the extent to which fatigue needs to be separated out as a specific area for regulation. To the extent that it is treated separately and prescriptively, its profile as an issue to be managed will be raised. This will, however, need to be balanced by an assessment of the extent to which prescriptive approaches have proved inadequate in the past.

87. In this context the question of the extent to which codes of practice or related guidance materials can be effective would also be relevant. Codes of practice and guidance materials can provide the capacity to tailor information and identification of methods of compliance to specific industry sub-sectors.

¹² Safety and Health at Work: Report of the Committee 1970-72; Chairman Lord Robens (1972) HMSO.

4.2 Co-operative Efforts across Portfolios and Involvement of Industry Players?

88. Fatigue management in transport has significant cross-portfolio implications, particularly between transport and OHS authorities in relation to, on the one hand, laws and regulations to protect the public and, on the other, the OHS obligations and responsibilities to provide transport workers with safe and healthy work environments.

89. The recent NOHSC projects with the road freight sector clearly indicated a recognition by OHS authorities and key industry players of the need for greater co-operation between the key government bodies to help rationalise compliance obligations.

90. The Victorian Transport Industry Safety Group (TISG) provides a model of how government agencies representing the cross-section of portfolios concerned with transport and transport workers can co-operate with industry (unions and employers) to contribute to safety in the industry. There is scope for the establishment of similar bodies in other jurisdictions and for a sharing of approaches and ideas across jurisdictional boundaries.

91. There is scope also for further co-operation between agencies responsible for OHS and policy, and research centres, such as the University of Adelaide Centre for Sleep Research and Murdoch University's Institute for Research in Safety in Transport, to identify factors leading to fatigue and to develop better-targeted workplace initiatives.

92. In terms of delivering improved OHS outcomes, OHS authorities in Australia are increasingly aligning their service delivery towards an industry-specific focus. This approach has at its core the underlying assumption that for long-term continuous improvement in OHS performance to occur, industry must "own" their OHS problems and be active players in developing and implementing ways to address these problems. This also taps into the view that the workplace itself has most of the solutions to specific OHS problems in any workplace.

93. Industry specific OHS programs are in place or are being put in place in most OHS authorities, with the NSW, SA and Queensland OHS authority industry programs being good examples of the thrust of this initiative. The Transport Industry is a key industry sector in most of these programs. A variation on this approach is the broader range of portfolios involved in Victorian initiatives.

4.3 Need for a National OHS Approach?

94. Several researchers and agencies have argued for a national OHS approach to fatigue management in long distance road transport as an alternative to the present regime. Arguments are based partly on the fact that transport companies operate in what is truly a national industry and variations in regulations between jurisdictions are an issue. Cross border travel is a feature of the industry and consistency in application of "hours of service" regulations and fatigue management schemes is regarded as of paramount importance by the transport industry.

95. NOHSC's own work during 1998-99 with the road freight transport operators and OHS authorities at officer level supported the need for this industry sector to develop a

national framework for OHS and that this framework be developed by the industry players and facilitated by government.

4.4 Adequacy of Road Transport Driver Rest Facilities?

96. Drivers interviewed for the NOHSC solutions project case studies remarked on the inadequacy of existing driver rest facilities (a key factor in controlling fatigue). For example, even newly constructed facilities failed to provide enough shade for drivers on hot summer days. Larger companies have resorted to constructing their own facilities, such as “blackout” rooms and, in remote areas, motel-style accommodation. Transport departments and other government agencies involved in planning and constructing driver rest stations on public highways should give more consideration to the need to provide facilities that would guarantee drivers adequate, quality rest.

4.5 Adequacy of Statistics on the Impact of Fatigue?

97. Current statistical collections of occupational injury and disease are not effective for easily identifying fatigue as a factor or contributing factor. The most promising collection for providing better information on this issue is data on deaths that are recorded on the National Coronial Information System. This system is currently under development, and should be an important way of identifying fatigue as a factor in transport-related fatalities.

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ATTACHMENT 1 - PRINCIPLES FOR A NATIONAL FRAMEWORK FOR OHS IN ROAD FREIGHT TRANSPORT

(Developed at NOHSC funded National Workshop in December 1998 between OHS Authorities and Selected Key Industry Representatives)

1. The industry sector covered by the National Framework is referred to as “Road Freight”, but this is to be interpreted as including on-road transport, warehouses and depots and consignors’ and customers’ loading and unloading facilities.
2. The National Framework should cover all operators, both large and small, all travel distances (long haul, short haul, urban commercial fleets) and all sectors (e.g. livestock, fresh produce)
3. There should be a nationally uniform system, with mutual recognition across states and territories by OHS authorities.
4. The National Framework should emphasise coverage of duty of care and risk management.
5. The National Framework should be “owned” by industry. This implies development should have strong industry input and involvement.
6. NOHSC should facilitate the development of the framework and involve OHS agencies in the processes.
7. As far as is practicable, material already developed by OHS agencies and industry should be used as the basis for components of the framework. There is a great deal of valuable material already in existence; VIC Trucksafe, WA Fatigue Management Code of Practice.
8. Any national “standards” developed under the framework should be able to be integrated with accreditation schemes and be auditable.
9. Existing audit tools should be considered for measuring adherence to “standards”.
10. Template support material should be developed through stakeholder organisations, with the support of OHS agencies.
11. Support material should be simple to use, written in industry language and tailored to business size. Larger companies should be able to build onto a basic model where necessary.
12. The framework should include a chain of responsibility strategy for each jurisdiction. All sections of the chain (supplier/consignor, transporter, customer) should be covered.
13. Existing strategies/approaches should be incorporated into or used as models for aspects of the framework; e.g. SA Safer Industries, VECCI’s Transport and Distribution Strategy, VIC Transport Industry Group
14. The components of the framework should be implemented by industry, through a “one-on-one” approach where necessary.
15. *Incentives for involvement in the scheme should be considered in the development of the framework for attainment of specific standard; e.g. discounts on insurance levies.*

**ATTACHMENT 2 - FULL TRANSCRIPT OF INFORMATION FOR THE INQUIRY PROVIDED
BY VICTORIAN WORKCOVER AUTHORITY**

Part 1

1. Fatigue can be regarded as a function of the physical and mental demands of the work, work systems (defined as the set of arrangements for shift duration, shift roster design, rest breaks during shifts, days off) and individual factors.
2. The increasing level of casual employment, changing attitudes to work, the greater flexibility allowed for working arrangements in awards and Enterprise Bargaining Agreements and the continual emphasis on workplace productivity has resulted in an extremely wide variety of work systems in Australian workplaces. In many workplaces these systems have been developed and put into place without properly considering the effects on employee fatigue, health, safety, well being and job performance.
3. To ensure maximum impact of any strategy to address fatigue it is critical that the industry and other relevant stakeholders have ownership and are consulted in both the development and implementation of the strategy. The Transport Industry Safety Group in Victoria includes critical stakeholders of the road transport industry.
4. The Transport Industry Safety Group was established in Victoria in 1996 following a coronial inquiry into the death of a young boy hit by a truck. This group is dedicated to creating a safety culture in the road transport industry and has been making a concerted effort to address fatigue. This group is comprised of the Victorian Road Transport Association, Transport Workers Union, VicRoads, Bus Association of Victoria, Monash University Accident Research Centre, Victoria Police and the Victorian WorkCover Authority. A copy of the Terms of Reference of the Inquiry is being sent to the members of the Transport Industry Safety Group.
5. As part of the Victorian Work Related Fatalities Prevention Project fatalities in the transport industry where fatigue may have been a contributory factor have been identified (see Part 2 for details).
6. While recognising the importance of fatigue in the transport area there are many other industries where fatigue is an important issue. An analysis of available research and data is necessary to determine the extent of the problem in different industries and to determine the priority areas to target. Once the priority areas are identified a strategy for intervention should be targeted at one or two of these areas and piloted before rolling out to other industries.
7. Fatigue is a workplace hazard that requires further consideration by Australian workplaces and regulatory authorities. However, extensive research has been conducted in this area and before any further research is conducted it would be beneficial to clarify what is already known including the factors leading to fatigue and the sectors of the industry at most risk. This would then enable the identification of gaps where further research was required.
8. Some of the issues associated with fatigue in workplaces that need to be investigated in terms of available knowledge and considered for future research are:

- (a) The relationships and interactions between fatigue, work demands, work systems and individual factors;
- (b) Where are the fatigue-related problems in Australia?: type of industries, sizes of workplaces, type of occupations, type of work, geographical variation;
- (c) How prevalent are these problems? What is their spread and distribution?
- (d) What is the nature of these problems and what are their effects on health, safety, well being, productivity and performance?
- (e) How are fatigue related problems best managed? What are the options? Look at existing initiatives nationally (e.g. recent AMA Code of Practice: hours of work, shiftwork and rostering for hospital doctors) and internationally;
- (f) What are the roles, responsibilities and obligations of the stakeholders including regulatory bodies?
- (g) What could/should be done in the short-term e.g. next 1-2 years?
- (h) What could/should be done in the medium to long term e.g. 3-5 years?

9. Once the nature and extent of the problem has been identified, a national strategy to address the problem of fatigue should be developed in consultation with critical stakeholders in the relevant industries. The Victorian WorkCover Authority would be willing to contribute to the development and implementation of such a strategy.

Part 2 - Fatigue-related fatalities in the transport industry, Victoria, 1993/94 – 1996/97

10. The following data has been provided by the Work Related Fatalities Prevention Project (WRFPP), a joint project involving the Victorian WorkCover Authority, the Victorian State Coroner's Office and VIOSH Australia, University of Ballarat. Work related cases were extracted from the State Coroner's Office database, the WorkCover compensation database and the WorkCover inspection database for the 1993/94 to 1996/97 financial years.

11. Cases in the WorkCover road transport industry classification which are either clearly fatigue related, or in which fatigue has been mentioned explicitly in the findings handed down by a Victorian coroner have been identified.

12. There were 332 work-related fatalities in Victoria between 1993/94 and 1996/97. Of these, 77 (23%) deaths occurred in the transport industry. Fatigue was identified as a factor in 28 (37%) of the transport cases which is 8% of all work-related fatalities for this period.

13. Of these 28 fatigue-related transport deaths, 16 (57%) were single vehicle truck incidents. The remaining incidents included:

- (a) 8 single vehicle car incidents
- (b) 2 multi-vehicle truck incidents
- (c) 1 truck/train interaction
- (d) 1 pedestrian/truck interaction

14. Factors that may have led to fatigue in these cases include:

- (a) Travelling long distances / time pressure to be at destination (5 cases)

- (b) Exceeding 'normal' work hours / changing shifts (4 cases)
- (c) Insufficient breaks in journey (1 case)
- (d) Insufficient sleep planned (1 case)
- (e) Unspecified driver fatigue / reasons for fatigue unknown (15 cases)

15. More details on individual cases can be provided if required.

**ATTACHMENT 3 - JOINT US/CANADA COMMERCIAL DRIVER FATIGUE STUDY
RESULTS**

1. This was the most comprehensive operational study of fatigue in the trucking industry ever undertaken and has generated the most extensive database available today. Some of the key findings of the study are:

- (a) Drowsiness during driving is much more a function of time of day (circadian rhythm) effects than duration of driving time and cumulative number of days, based on the amount of daily driver sleep and the four to five days of driving observed in this study.
- (b) Little or no operationally significant differences in driver drowsiness and performance were identified between the daytime 10-hour U.S. and the 13-hour Canadian schedules during daytime driving for the various measures used.
- (c) Drowsiness was much greater during nighttime (22:00-06:00) driving than during daytime driving. (An eight-fold increase in drowsiness was indicated by face video recordings.)
- (d) Drivers were poor judges of their own levels of fatigue and generally rated themselves more alert than they were. Their self-ratings tended to reflect duration of driving and cumulative number of trips, but not measured performance.
- (e) Some drivers in this study did not manage their off-duty time to obtain an adequate amount of sleep, even when there was ample opportunity for sleep.
- (f) The sleep shortfall (relative to their reported ideal) was greatest for those drivers who were required to sleep during the daytime.

2. The results of the study can be assessed as follows:

- (a) There is no quick fix and no single solution to the fatigue problem.
- (b) Sleep is the principal countermeasure to fatigue and all drivers need to ensure they obtain adequate sleep. Drivers must also be afforded the opportunity to obtain adequate sleep.
- (c) Eight hours off between duty periods might not provide enough time to obtain adequate sleep and take care of personal needs when, as reported by the drivers in this study, 7.2 hours on average is their ideal sleep time.
- (d) Changes in the hours of service regulations are needed, but they alone will not solve the fatigue problem.
- (e) Much can be done to address driver fatigue, such as an innovative regulatory framework, education, scheduling practices, and fatigue management programs for drivers, carriers and shippers.
- (f) Continued research is needed, especially addressing effective fatigue countermeasures.
- (g) Partnerships among government, industry, drivers, the scientific community and shippers are needed to develop effective solutions to the commercial driver fatigue problem.