ADVANCED FATIGUE MANAGEMENT: IS IT REALLY AN ADVANCE?
Ann Williamson
University of New South Wales
email: a.williamson@unsw.edu.au, web: www.aviation.unsw.edu.au

INTRODUCTION
Around 12 months ago road safety in Australia took the bold step of revising working hours regulations for long distance road transport. The step was bold because apart from some small changes, these regulations predated the Second World War and because the new regulations took a novel, alternative compliance approach, focusing on fatigue management rather than regulating hours.

This new approach involves three tiers of regulation that differ in the extent of specification of rules: the Standard option specifies rules for work and rest, the Basic Fatigue Management option involves more flexibility around specified rules and the Advanced Fatigue Management (AFM) option allows operators to specify their own working hours in the context of their safety management system. To be permitted to adopt the AFM option, operators/companies must be National Heavy Vehicle Accreditation System accredited and comply with ten AFM standards relating to scheduling, rostering, operating limits, readiness for duty, health, management practices, workplace conditions, fatigue knowledge and awareness, responsibilities, records and documentation and internal review and some specified outer operational limits. The work-rest schedules at the heart of the AFM option must be reviewed by an accredited Fatigue Expert and accredited on a case-by-case basis by a Fatigue Authorities Panel established by the regulator in each state. The objective of this paper is to review the issues inherent in the AFM approach and the evidence for operating limits that will ensure fatigue and safety are managed.

THE FOUNDATIONS OF THE NATIONAL HEAVY VEHICLE DRIVER FATIGUE LAW
Implementation of the AFM approach must be based on three foundations that underlie the new regulations. For the AFM approach to be successful, these must be acknowledged and understood by all parties. These foundations are:
• The stated objective of the new Road Transport Regulations in NSW and other states is the management of heavy vehicle driver fatigue. If this objective is to be achieved then it is obvious that no work-rest schedules implemented for heavy vehicle drivers, including under AFM, should result in higher fatigue risk than occurred in the previous working hours regime. Otherwise, what would be the point of the new regulations?
• The Standard hours option must be the benchmark for fatigue management under the new regulations. This option includes a number of changes that highlight the importance of sufficient opportunity for rest, especially night rest, limiting maximum continuous hours of work and the need for sufficient breaks during work time. These changes were based on research evidence of the effects of fatigue. A National Transport Commission report summarized the research evidence that was the basis of the revised working hours regulations. For example, it is well-known that crash risk for truck drivers increases significantly from around 12 hours work. The importance of night rest is also very well understood as is the need to ensure opportunity for sufficient unbroken rest. Any AFM proposals for work schedules that extend the limits for work or reduce available rest must include countermeasures that will control the increased fatigue risk to levels at least similar to that experienced by drivers operating under Standard hours.
• Implementation of an auditable safety management system is an insufficient countermeasure for the increased fatigue risks permitted under AFM. The most effective countermeasure to increased fatigue risk due to operational schedules that might be permitted under AFM is longer and more strategically placed rest/sleep opportunity.

ISSUES
Clearly, the new National Heavy Vehicle Driver Fatigue regulations are a novel approach which presents a good opportunity to improve fatigue management in the industry. The inclusion of the AFM option provides the opportunity to add the flexibility to marry operational needs with good fatigue risk management. For AFM to be successful, however, there are a number of requirements that must be met. These include the following:
• We must have an educated road transport industry. Implementation of alternative fatigue management approaches like AFM requires all parties in the Chain of Responsibility to understand how fatigue influences road safety and how fatigue management requires a balance between work and rest. This includes everyone in the transport chain: operator/company managers, drivers, freight forwardeers and receivers as well as regulators.
• All players in the industry must acknowledge the importance of fatigue for road safety and be motivated to make this their primary priority. Again this requires everyone in the transport chain. It means putting fatigue management ahead of competing influences like operational demands, remuneration demands and regulatory pragmatism.
• Proposals for AFM need to clearly differentiate the normal and outer limits of their AFM schedules. Normal operating limits are the hours of work/rest that drivers will do on most work shifts. Often these will not differ much from Standard or perhaps BFM hours. The Outer operating limits of the schedule are intended to allow for infrequent and unplanned contingencies which mean drivers work for longer or...
ACHIEVING A WORK-REST BALANCE IN AFM

The preceding discussion focused on the general principles for ensuring that AFM work/rest schedules achieve fatigue management (and AFM proposals are successful). How can this be achieved in practice?

The new work/rest limits in Standard hours will have obvious impact on some road transport operations. In particular, operations that require longer continuous working hours or mostly night work including early starts will be incompatible with the new default regulations and make AFM a potential solution. There are a range of options for designing alternative work/rest schedules that would satisfy the requirements of an AFM. The following describes some of the solutions that could be adopted.

1. Longer continuous working hours in 24 hours
   Where the transport task requires longer than the 12 hour Standard hours limit and the BFM option is not suitable due to its night work restrictions, the AFM option is appropriate. There are a number of potential ways this could be achieved. Normal operating limits of 14 hours could be balanced by longer rest periods for sleep opportunity between shifts (say 10 hours), limiting the number of 14 hour shifts that occur during the night period, changing the start and end times for these longer shifts so that the final four to five hours of the shift do not occur during the 2 to 6am period (the circadian low point) and/or allowing more than one 24 hour continuous rest period in seven days. Periods longer than 14 hours (15 hours outside NSW and Victoria) that reach AFM Outer limits would be only justified as a non-scheduled occurrence and would need an even greater amount of rest and/or restriction on the time of day when it could occur.

2. More nights per week.
   Where operations require five or more nights of work in seven days, the AFM is likely to be suitable since Standard hours requires at least four nights of rest in 14 days and BFM is more restrictive on night work as it allows longer continuous work periods. An AFM for normal operating limits of five or six nights work per week could be achieved by increasing the available sleep opportunity between night shifts (say to 12 hours), increasing the number of 24 hour continuous breaks during 14 days (say to four, especially in pairs of 24 hour periods) to allow a longer period for recovery of accumulated fatigue and/or shortening night shifts from 12 hours to 8 hour continuous shifts. The Outer limit of two night rests in 14 days, again would be only justified as an emergency or irregular contingency and would require more rest to compensate for the increased fatigue risk.

3. Early starts
   Standard hours and BFM may not be suitable for operations that require early morning starts that occur during the defined night period between 22:00 and 0:00. An AFM under these circumstances could balance the increased fatigue risk due to less sleep time available before early morning starts by longer breaks between shifts, ensuring that there is opportunity for at least seven continuous hours of sleep as close to the start of the early morning shift as possible. The closer the start of the early shift to the middle of the night period, the more fatigue risk. This means that shifts that start before 05:00hrs will require more compensatory rest opportunity than those starting between 05:00 and 08:00hrs.

CONCLUSIONS

The new Fatigue Risk Management regulation, and in particular the AFM option, is a great opportunity to move the fatigue problem for the long distance road transport to a new level of sophistication that balances operational needs and fatigue management. The first year of implementation of the regulation has highlighted a number of issues which are discussed in this paper. These issues must be addressed if we are to see this bold new approach meet its potential. The issues must be addressed as quickly as possible to ensure that we achieve our aim of improving fatigue management in long distance road transport and by doing so improve safety of truck drivers and the traveling public.

REFERENCES
1. Road Transport (General) Regulation 2005.