NOTICE OF PROPOSED RULE MAKING

Fatigue Management for Flight Crew Members

Proposal to update
Civil Aviation Order (CAO) Part 48

This NPRM will be of interest to:
All holders of a flight crew licence and all Air Operator’s Certificate holders with respect to the flight crew members they employ.

Issued as part of the process of public consultation by CASA’s Standards Development Branch

Document NPRM 1202OS – May 2012

PROJECT NUMBER: OS 02/03
Foreword

This Notice of Proposed Rule Making (NPRM) is issued by the Civil Aviation Safety Authority (CASA) with a view to ensuring that Australian aviation safety requirements are current and appropriately address safety risks.

CASA’s policies require that the aviation safety regulations must:
- be necessary to address known or likely safety risks;
- provide for the most efficient allocation of industry and CASA resources;
- be clear and concise; and
- where appropriate, be aligned with international standards and drafted in outcome-based terms.

This NPRM relates to rules for the management of fatigue in flight crew members (FCMs). The proposal articulates a shared responsibility between individuals and operators, which is consistent with the philosophy of the International Civil Aviation Organization (ICAO). This NPRM also contains proposed prescriptive limitations for FCMs, as well as standards for fatigue risk management systems (FRMS). Accompanying the proposed regulatory standards is a proposed Civil Aviation Advisory Publication (CAAP) intended to provide guidance to individuals and operators in meeting their obligations.

Background

At present, CASA regulates flight and duty times for FCMs via CAO Part 48. This largely prescriptive legislation also permits operators to be exempt from its provisions (subject to CASA approval) via two alternative means:
- prescriptive limitations contained in Standard Industry Exemptions (SIEs) which are ‘class of operation’ specific; and
- safety case-based FRMS.

The emergent science on fatigue management within the last decade has shown that there is a need for regulatory bodies in transport industries, and operators, to become more aware of human performance limitations and to organise work practices so that the resultant operational safety risk is kept within acceptable boundaries. This issue is highlighted further as aircraft become more sophisticated, and may fly for longer periods, together with a growing trend towards shift work.

The project team, under the project Terms of Reference, was guided by several criteria during the early days of the standard’s design. The team felt that the need to maintain safety through managing human performance limitations and capabilities was significant; however, this needed to be balanced against the nature of the Australian aviation environment. An objective was to design an overall set of standards that would provide flexibility, together with limiting the need for exemptions, and be at least easily visible and accessible to operators and industry.

As a starting point, the ICAO amendments to Annex 6 Standards and Recommended Practices (SARPs) were considered, as well as an examination of how other regulators approached this task. Whilst these factors were taken into consideration, the team felt that even though the human element was likely to be substantially the same throughout the world, CASA needed to assess the risk that is contextually relevant to Australian aviation. For example, we needed to consider our geographical position time zones and aviation in our 24-hour society. We further considered the proportion of the industry (number of airlines/charter operators and others) and the problems identified with the existing rule-set.
It was determined that a graduated approach in the new regulatory standards was most appropriate. The first level refers to a very simple system that was somewhat restrictive (Tier 1). Next would be a broader prescriptive regime with operator and individual obligations (Tier 2). The final stage of complexity/maturity is where an operator would manage most fatigue risk through a FRMS (Tier 3).

The NPRM proposes a means by which an operator may use a FRMS. CASA supports ICAO’s guidance on FRMS and sees no reason to adopt a different approach to both system entry control and management. It was clear to the team that these data-driven systems require a significant effort by operators. This is so they meet the entry control requirements and integrate, where necessary, into an overall Safety Management System. It became clear that only well resourced, mature operators may be able to fulfill these requirements. The proposed standards however, ensure that FRMS will be available to all sections of the aviation community.

CASA examined Attachment A of ICAO Annex 6 – Part 1 about guidelines for prescriptive regulations, together with CAO Part 48 and the SIEs. We considered existing problems, and inflexibility with CAO Part 48 and the SIEs, and concluded that the SIEs would form a substantial part of the new regulatory standards, but on a foundation of new operator obligations including risk management, continuous improvement and training and assessment. We also reviewed the history of problem areas with FRMS approvals and the capacity for operators to deliver the needs illustrated within the SARP. We took into consideration past work conducted in 2008 on a draft NPRM and CAAP, taking the standards for Tier 1 largely from this. We then held industry consultation meetings to take into consideration any existing concerns industry had, along with comments on the team’s approach as the standards were developed.

Consistent with ICAO’s guidance, CASA’s view is to effectively manage fatigue and there is a fundamental need to go beyond prescription. CASA also proposes both operator and individual obligations, creating a shared responsibility (employee/employer) for managing fatigue. These obligations would form the foundation of the regulatory standards, are clearly defined, and supported by the draft CAAP.

The team believes it has resolved the issues associated with the problematic terminology and other issues involving cumulative duty limits associated with the current rules. Even though the SIEs may form a substantial part of the future standards, their divisions needed examination and we have developed an approach that takes into account contemporary fatigue science associated with transmeridian travel.

We adapted various elements, from the United States Federal Aviation Administration, European Aviation Safety Agency (EASA), United Kingdom Civil Aviation Authority (UK CAA) and Hong Kong Civil Aviation Department (HK CAD) rules. For example, we drew on their basic approaches to acclimatisation and flight crew augmentation. It was not felt appropriate to simply emulate another State’s rule-set and responders to this NPRM should resist the tendency to select single components of the proposal, comparing them to an overseas rule, and comment on these without consideration to the whole of the CASA approach.

**Proposed Changes in a Page**

The time-conscious reader will obtain a quick appreciation of this NPRM through the Proposed Changes in a Page (NPRM Section 2).

A text synopsis of the proposed changes is provided as background (NPRM Section 3).

If you require complete information about the proposed changes, refer to the proposed regulatory standards and proposed CAAP in the Annexes to this NPRM.
How you can help us

CASA is responsible under the *Civil Aviation Act 1988*, amongst other functions, for developing and promulgating appropriate, clear and concise aviation safety standards. In the performance of this function and the exercise of its powers, CASA must, where appropriate, consult with government, commercial, industrial, consumer and other relevant bodies and organisations.

*Civil Aviation Act 1988 Paragraph 9(1)(c) and Section 16*

To ensure clear and relevant safety standards, we need the benefit of your knowledge as an aviator, aviation consumer and/or provider of related products and services by completing the Response Form (in this NPRM or online) and returning it to CASA by 12 June 2012.

Implementation Schedule

It is expected that the proposed regulatory standards will be promulgated as a new CAO Part 48, replacing the current Order.

It is anticipated that a phased implementation and transition arrangement will take place once the standards are drafted and finalised.

I would like to thank you for expressing interest in this proposal and emphasise that no rule changes will be undertaken until all NPRM responses and submissions received by the closing date 12 June 2012 have been considered.

Peter Boyd
Executive Manager
Standards Division
1 May 2012
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   ★ YOU CAN RESPOND ONLINE OR BY FAX, POST OR E-MAIL ★

A web-based online response form is offered as an alternative to the printed form in this NPRM. Online submission is the preferred method of sending your comments to CASA. If you are connected to the Internet, type casa.gov.au/newrules/ors into your web browser and follow the links for this NPRM.

Annex A – Proposed Amendments to the Civil Aviation Regulations (CAR 1988) ................................................................. A1
Annex B – Proposed Regulatory Standards for Fatigue Management for Flight Crew Members ............................................. B1
Annex C – Proposed Civil Aviation Advisory Publication – CAAP 48-1(0) – Fatigue Management for Flight Crew Members .............................................................. C1
### Acronyms

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<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>AOC</td>
<td>Air Operator’s Certificate</td>
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<tr>
<td>CAAP</td>
<td>Civil Aviation Advisory Publication</td>
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<td>CAO</td>
<td>Civil Aviation Order</td>
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<td>CASA</td>
<td>Civil Aviation Safety Authority</td>
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<td>CASR</td>
<td>Civil Aviation Safety Regulations 1998</td>
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<td>FCM</td>
<td>Flight Crew Member</td>
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<td>FDP</td>
<td>Flight Duty Period</td>
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<td>FRMS</td>
<td>Fatigue Risk Management System</td>
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<tr>
<td>HK CAD</td>
<td>Hong Kong Civil Aviation Department</td>
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<td>ICAO</td>
<td>International Civil Aviation Organization</td>
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<td>NFRM</td>
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<td>NPRM</td>
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<td>OH&amp;S</td>
<td>Occupational Health &amp; Safety</td>
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<td>SARP</td>
<td>Standards and Recommended Practices</td>
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<td>SCC</td>
<td>Standards Consultative Committee</td>
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<td>SIE</td>
<td>Standard Industry Exemption</td>
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<td>UK CAA</td>
<td>United Kingdom Civil Aviation Authority</td>
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<tr>
<td>WOCL</td>
<td>Window of Circadian Low</td>
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1. **The Consultation Process**

1.1 CASA is committed to working cooperatively with the aviation industry to maintain and enhance aviation safety. The Standards Consultative Committee (SCC) is a joint industry/CASA forum that brings together CASA staff and representatives from a diverse range of aviation industry organisations to involve the aviation industry formally during the development phase of regulatory proposals. CASA and industry experts work together in SCC Sub-committees and project teams to develop regulatory material (both new regulations and amendments) and advisory material related to the regulations.

1.2 The organisations and people involved in the development and formulation of the proposals contained in this NPRM include the following CASA and industry representatives:

**Industry**
- Airborne Law Enforcement Association
- Australian Airline Pilots’ Association
- Australian and International Pilots Association
- Australian Business Aircraft Association
- Australian Federation of Air Pilots
- Cobham Aviation Services
- Flight Training Adelaide
- Heli West
- Jetstar Airways
- Qantas Airways
- Qantaslink
- Virgin Australia Airlines

**CASA**
- Bill Cox – Project Leader
- Nick Strange – Standards Project Coordinator
- Ian Banks – Section Head, Human Factors
- Dr Selina Fothergill – Human Performance Specialist
- Grant Howard – CASA Operations

**What will CASA do with your comments?**

1.3 At the end of the response period for public comments, all submissions will be analysed, evaluated and considered. Subsequent to the closing date for comments, a Notice of Final Rule Making (NFRM) including a Summary of Responses will be prepared and made publicly available in conjunction with the making of the Final Rule.

1.4 CASA is required to register each comment and submission received, but will not individually acknowledge a response unless specifically requested. However, the names of contributors will be published in the subsequent NFRM, except where CASA is specifically requested not to do so.
2. Proposed Changes in a Page

<table>
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<tr>
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<th>EXISTING AUSTRALIAN LEGISLATION</th>
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<td>ICAO Annex 6</td>
<td>CAO Part 48</td>
<td>Objectives</td>
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<tr>
<td>EASA CRD 2010-014*</td>
<td>Standard Industry Exemptions</td>
<td>• Put forward new regulatory standards, based on scientific principles and knowledge, for the management of fatigue in FCMs.</td>
</tr>
<tr>
<td>UK CAP 371</td>
<td>FRMS</td>
<td>• Provide standards for the development and implementation of FRMS.</td>
</tr>
<tr>
<td>HK CAD 371</td>
<td>CAAP 48-1</td>
<td>• Provide guidance material for individuals and operators in meeting their obligations under the new regulatory standards.</td>
</tr>
<tr>
<td>FAR Parts 117, 119 and 121</td>
<td>Toolkit &amp; other resources</td>
<td></td>
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<tr>
<td>*Draft rule</td>
<td></td>
<td>* To be confirmed</td>
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**Objectives**
- Put forward new regulatory standards, based on scientific principles and knowledge, for the management of fatigue in FCMs.
- Provide standards for the development and implementation of FRMS.
- Provide guidance material for individuals and operators in meeting their obligations under the new regulatory standards.

**Key Proposed Changes**
- Changes to the terminology and definitions used relating to fatigue management for FCMs.
- Provide a basic set of limitations (Appendix A to the regulatory standards), aimed at relatively simple operators without the need for additional risk management obligations.
- The inclusion of specific requirements, or obligations, for operators, including additional risk management obligations for operators choosing to operate in accordance with Appendices B to G of the regulatory standards.
- Make provision for a FRMS in lieu of prescriptive limitation in accordance with the standards in Appendix H to the regulatory standards.
- Make it an obligation that a FCM employed by an operator must utilise off-duty periods to obtain an amount of sleep sufficient to support the appropriate and safe discharge of their duties during the FCM’s next rostered flight duty period (FDP) or standby time.
- Make it an obligation that a FCM employed by an operator in an augmented crew operation must utilise in-flight rest opportunities to adequately manage their alertness level for the remaining portion of the FDP.
- Make it an obligation that a FCM employed by an operator must disclose to the operator any reasonably foreseeable factor which may affect the individual’s ability to meet the operator’s fatigue management policies and limitations.
- The adjustment of FDP and flight time limitations.
- The adjustment of off-duty period requirements.
- A method for the determination of acclimatisation.
3. Synopsis of Change Proposals

3.1 Purpose and background of this NPRM

3.1.1 This NPRM introduces, and invites consultation on, proposed new regulatory standards relating to fatigue management for FCMs.

3.1.2 A significant amendment has been developed and CASA is seeking input as to whether the proposal is appropriate.

3.1.3 The consultation process will allow CASA to “fine tune” the standards to ensure a positive safety outcome, whilst also being confident it meets the needs of industry within the legislative safety framework.

3.1.4 There is now general acceptance within the transport industry as a whole that fatigue is both a safety issue and a workplace hazard. All Australian states and territories have Occupational Health & Safety (OH&S) legislation that places specific responsibilities on both employers and employees to manage operational risks, including fatigue. Failure to meet these responsibilities attracts significant penalties. Under current OH&S provisions, it is recognised that prescriptive hours of service rules alone may not be adequate to manage operational fatigue risks.

3.1.5 Since the establishment of the current rules about flight crew flight time limits, more advanced methods of fatigue management have become available.

3.1.6 The emergent science on fatigue management within the last decade has shown that there is a need for regulatory bodies in transport industries, and operators, to become more aware of human performance limitations and to organise work practices so that the resultant operational safety risk is kept within acceptable boundaries. This issue is highlighted further as aircraft become more sophisticated and may fly for longer periods together with a growing trend towards shift work.

3.1.7 CASA has long understood this, and as a result of the Parliamentary review ‘Beyond The Midnight Oil: Managing Fatigue In The Transport Industry’ in 2000, and other triggers over time, it offered alternatives including the implementation of FRMS in lieu of prescriptive limitations, to operators as a means of exemption to CAO Part 48.

3.1.8 At present, CASA regulates flight and duty times for FCMs via CAO Part 48. This largely prescriptive legislation also permits operators to be exempt from its provisions (subject to CASA approval) via two alternative means:
   - prescriptive limitations contained in SIEs which are ‘class of operation’ specific; and
   - safety case-based FRMS.

3.1.9 Part 137 of the Civil Aviation Safety Regulations 1998 (CASRs) also prescribes flight and duty limitations and rest requirements for aerial application operations in aeroplanes.

3.1.10 CASA has afforded exemptions to provide for FRMS to some 90 operators. These include airlines, charter, EMS, flying school (and other aerial work operators) and balloon operators. CASA has also regularly provided information, via its Safety Promotion section, about the hazards associated with fatigue and also presented additional information at various group forums and seminars.
3.1.11 During the last two years, a significant body of guidance material has been developed in conjunction with world recognised experts in fatigue management which will be relevant to the Australian aviation community. This is in the final stages of development and will be available to industry shortly.

3.1.12 More recently, ICAO has developed an amendment to Annex 6 SARPs to incorporate changes to the fatigue management provisions. This amendment describes management of fatigue risk for flight crew and cabin crew, with reference to other involved personnel. The amendment was approved in June 2011, and came into effect in December 2011.

3.1.13 CASA’s Standards Development Project OS 02/03 has been registered for some time, but was placed on hold pending approval of the ICAO SARP material. The project was re-established and a project team formed in August 2011. During the course of the Standards Development Project, CASA has developed, in conjunction with advice from selected industry representatives, proposed regulatory standards which not only offers operator flexibility, but also addresses key fatigue management issues which have emerged over recent years.

3.1.14 The proposed regulatory standards in this NPRM prescribe the operating rules that would apply to the management of fatigue for FCMs, including Air Operator’s Certificate (AOC) holders with respect to the FCMs they employ. The possibility of prescriptive limitations for other aviation personnel, such as cabin crew members will be subject to supplementary NPRM(s).

3.2 Reasons for change

3.2.1 In response to the significant need for shift work, concomitant with the greater understanding of a systemic approach to fatigue management and sleep science, changes to the relevant standards have now become necessary. ICAO has recognised this for some time and has developed an amendment to Annex 6 which came into effect in December 2011. CASA has considered the SARPs developed by ICAO in the development of the proposed changes.

3.2.2 The need to improve FRMS standards, and the specific provision for such in current legislation, has been seen as necessary so that operators may transition to such a regime. The proposed regulatory standards contained in this NPRM will provide a means for operators to consider developing and implementing a FRMS.

3.3 Objective(s)

3.3.1 Put forward new regulatory standards, based on scientific principles and knowledge, for the management of fatigue in FCMs.

3.3.2 Provide standards for the development and implementation of FRMS.

3.3.3 Provide guidance material for individuals and operators in meeting their obligations under the new regulatory standards.

3.4 Discussion of the rationale for the proposal

3.4.1 The proposal is presented in the form of proposed regulatory standards (at Annex B to this NPRM), outlining the intent of CASA’s position with regards to fatigue management for FCMs. The proposed regulatory standards apply to the holders of a flight crew licence (regardless of whether they are employed by an operator or not), and AOC holders with respect to the FCMs employed by it. There are a number of Appendices which are included in the proposed regulatory standards, which contain prescriptive rules that are ‘class of operation’ specific.
It also includes ‘Appendix H’ which sets out the standards for FRMS, available to operators in lieu of the prescriptive requirements for FCMs.

3.4.2 There are a variety of new or revised requirements contained in the proposal. These requirements have stemmed from the evaluation of research, experience and international practices. The current applicability and relevance of SIE parts were examined resulting in a rationalisation of different classifications of operations, such as the removal of international and domestic specific parts.

3.4.3 The main differences between the regime currently in place in Australia, and the proposed system, are discussed in this section. Most of the significant changes discussed focus on those changes applicable to public transport service operators.

**Changes to terminology**

3.4.4 The proposal puts forward minor changes to the terminology and definitions used in relation to fatigue management in FCMs. These changes would necessitate amendments to the *Civil Aviation Regulations 1988* (CARs), and these proposed amendments are attached at Annex A to this NPRM.

**Operator and individual obligations**

3.4.5 The obligations on operators and individuals have been expanded to clearly indicate the responsibilities they share for fatigue management. The obligations are also intended to make the operator/individual recognise and manage the practical limitations of the regulatory standards which, taking into account operational and individual differences, may not prevent excessive fatigue risk in day-to-day operations.

3.4.6 These proposed obligations are not unique to Australia. Other regulators, such as the EASA, HK CAD, UK CAA, place similar requirements on operators and FCMs.

**Adjusted flight duty period and flight time limits**

3.4.7 CASA conducted a risk-based approach towards recognising those existing methods and limits within the SIEs that, in the light of current scientific knowledge, became a risk which CASA was not well placed to manage through prescription alone. This approach suggested making prescriptive adjustments in light of operations which are impacted on by flights conducted during the window of circadian low (WOCL) and Transmeridional travel.

3.4.8 It was decided that the increased fatigue risk associated with certain types of operations such as ultra-long range operations (generally those with flights in excess of 16 hours) would require the fatigue risk to be managed better by a collaborative approach between the operator, FCMs and CASA, through an approved FRMS.
3.4.9 Generally, the FDP limits put forward by CASA take a conservative approach, based on research regarding increased fatigue risk when conducting work over 12 continuous hours, combined with extended periods of wakefulness (Goode, 2003\(^1\); Spencer & Robertson, 1999\(^2\)).

3.4.10 Proposed limitations on FDPs were based on the position of the FDP in relation to the WOCL, the potential for extended wakefulness periods and fatigue research on increased error rates and impaired hazard perception associated with longer duty periods. Greater levels of specificity for FDP limitations in public transport services, particularly in relation to time-of-start, were introduced to allow for the retention of more generous FDP limits at optimum times of the day. This greater level of specificity resulted in the FDP limitations being more sensitive to differences in an individual’s state of acclimatisation.

3.4.11 Determining the FDP roster limit in complex multi-crew operations now requires consideration of the FCM’s state of acclimatisation. This consideration is required due to the determination of a maximum FDP by start time which is only meaningful if those start times are aligned with the individual’s internal body clock or WOCL (i.e. if they are acclimatised). Research is not clear on the expected rate of acclimatisation for different amounts of time zone change (Klein, et al, 1972\(^3\); Roach, et al, 2002\(^4\)). The rate of adaptation, and consequent elimination of jet lag symptoms, is dependent on the number of time zones crossed and the recency of the time zone transition. Indications are that for most individuals the rate of adaptation is somewhere between one hour of time zone change per 24 hours in the new time zone for Easterly travel, and one and a half hours per day for Westerly travel; and an adjustment that halves the amount that the individual’s body clock differs from the time zone that the FCM is attempting to become acclimatised in, every 48 hours (Samel & Gander, 1991\(^5\); Klein & Wegmann, 1980\(^6\)). Research indicates that being not acclimatised to a location impacts negatively on both the propensity for sleep and the quality of sleep obtained. This means that off-duty periods need to be increased to compensate for the reduced quality of sleep obtained and subsequent FDP limits need to be constrained due to the difficulty in identifying the time of the individuals WOCL and the times of likely maximum alertness.

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3.4.12 The augmented crew limits were developed in part utilising research (Simons & Spencer, 20077) specifically addressing:

- the likely amount of in-flight sleep for a given period of access to in-flight rest facilities;
- the average recovery value of in-flight sleep;
- the impact of different standards of in-flight rest facilities on sleep quality; and
- the impact of being not acclimatised on the quality of in-flight sleep.

3.4.13 One of the concerns was research that indicated flight crew were on average awake for six hours prior to commencement of augmented crew operations. This had the potential to result in extended periods since last sleep in suitable sleeping accommodation. In order to manage this factor augmented FDP limits were specified based on start time with morning start times less likely to result in extended wakeful periods prior to commencement of the FDP.

3.4.14 The approach to FDP extensions has been more clearly defined. Extensions to a commenced FDP are only allowed in an unforeseen operational circumstance which is discussed in the CAAP at Annex C to this NPRM as being an exceptional event meaning that it should not occur in more than five percent of similarly rostered FDPs. The decision about whether to extend has been specified as requiring the discretion of the pilot-in-command, taking into account the fatigue state of the crew.

3.4.15 There is a new provision addressing the requirements for determining the FDP when delaying the reporting time on the day of operations. This clause is designed to manage the potential fatigue risk associated with a change to reporting time that may impact on the assumed prior sleep and the expected period of wakefulness associated with different FDP limits.

**Adjusted off-duty period requirements**

3.4.16 In accordance with accepted science, the approach to off-duty periods was to create an opportunity for recovery sleep of at least eight hours, with this dependent upon the nature of the previous FDP, whether the FCM is acclimatised at the end of the preceding FDP (i.e. start of the off-duty period), and whether or not the off-duty period occurs at home base.

3.4.17 The minimum off-duty period at home base was increased to 12 hours to allow for the predicted increased commute time and social obligations there.

3.4.18 The minimum off-duty periods are also dependent on whether the FCM is acclimatised at the start of the off-duty period. This is because, where a FCM is in an unknown state of acclimatisation, it is likely that the quality of sleep is poor, relative to being in an acclimatised state. Therefore, when a FCM is in an unknown state of acclimatisation, the minimum off-duty period following a FDP is increased.

3.4.19 The conditions under which the minimum off-duty period may be reduced to nine hours away from home base have been changed to require eight hours sleep opportunity, a reduction in the next maximum allowable FDP, and a requirement for the subsequent off-duty period to be a minimum of 12 hours.

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3.4.20 Where a minimum off-duty period has been calculated to be greater than 14 hours it can be reduced to 14 hours under certain conditions in order to allow a FCM to have a suitable period for sleep recovery and then commence an FDP still acclimatised to the last location where they were acclimatised. For example, this provision allows a FCM to return to their home base in a relatively acclimatised state before commencing a minimum 36 hour off-duty period. This figure of 14 hours is an increase from the previous limit of 12 hours based on research that indicated the likelihood of poorer sleep quality away from home base after multiple time zone changes.

3.4.21 To take into account the increased likelihood for poorer quality recovery sleep following travel in an easterly direction the minimum off-duty periods are one hour longer than for travel in a westerly direction.

3.4.22 In order to reduce confusion, the cumulative limits for duty time now require 36 hours off-duty in any consecutive 168 hour period instead of seven days, and there is no longer an option for using eight nights. Additionally, a FDP cannot now be commenced if this requirement cannot be met at the rostered end of the FDP.

3.4.23 A table of the required off-duty periods has been incorporated to allow a FCM to become acclimatised to a new location prior to a subsequent FDP. Further guidance on acclimatisation is available in CAAP 48-1-(0) at Annex C to this NPRM.

**FRMS**

3.4.24 ICAO standards provide States with the option of allowing operators to implement a FRMS in lieu of prescriptive rules. The proposed standards for FRMS are predominately consistent with the standards and guidance material published by ICAO. ICAO, in association with the International Air Transport Association and the International Federation of Airline Pilots’ Associations, has published a FRMS Implementation Guide for Operators, which is available on the ICAO website at: http://www2.icao.int/en/FatigueManagement/Pages/FatigueManagementTools.aspx.

CASA encourages readers to consider this guide, which CASA endorses, in conjunction with the proposed regulatory standards.

3.4.25 The approval process which CASA will implement is to be consistent with the ICAO guide; and its associated guide, the FRMS Manual for Regulators (ICAO Doc 9966). CASA’s Air Operator Certification Manual will be updated to give effect to the process put forward by ICAO. In line with this, operators wishing to implement a FRMS will first need to develop policies, procedures and limitations for the system (based on collated data and scientific evidence) which will be subject to CASA examination and, where satisfied, CASA will issue an approval to implement the FRMS on a trial basis. During this trial, an operator will need to continue gathering data in order to demonstrate that the required safety outcomes of the FRMS are being achieved. At any point in time, where CASA determines that aviation safety warrants it, the trial may be terminated.

3.4.26 During the trial period it is expected that there will be a process of continued improvement which will require CASA assessment for each change. Once final approval has been given, any increase to FDP and flight time limits, any reduction in off-duty period limits or any change to cumulative duty/flight time limits, will require CASA approval. Operators need to have documented in their operations manual a change management process which includes a list of those items that require CASA approval prior to making changes.
3.5 **Change proposals**

3.5.1 Changes to the terminology and definitions used relating to fatigue management for FCMs.

3.5.2 Provide a basic set of limitations (Appendix A to the regulatory standards), aimed at relatively simple operators without the need for additional risk management obligations.

3.5.3 The inclusion of specific requirements, or obligations, for operators, including additional risk management obligations for operators choosing to operate in accordance with Appendices B to G of the regulatory standards.

3.5.4 Make provision for a FRMS in lieu of prescriptive limitation in accordance with the standards in Appendix H to the regulatory standards.

3.5.5 Make it an obligation that a FCM employed by an operator must utilise off-duty periods and adaptation periods to obtain an amount of sleep sufficient to support the appropriate and safe discharge of their duties during the FCM’s next rostered FDP or standby time.

3.5.6 Make it an obligation that a FCM employed by an operator in an augmented crew operation must utilise in-flight rest opportunities to adequately manage their alertness level for the remaining portion of the FDP.

3.5.7 Make it an obligation that a FCM employed by an operator must disclose to the operator any reasonably foreseeable factor which may affect the individual’s ability to meet the operator’s fatigue management policies and limitations.

3.5.8 The adjustment of FDP and flight time limitations.

3.5.9 The adjustment of off-duty period requirements.

3.5.10 A method for the determination of acclimatisation.

3.6 **Benefits and impacts**

3.6.1 This proposal would provide the following benefits:

- Provision of increased flexibility for operators through the proposed legislation.
- Provision of a set of individual and operator obligations so that all stakeholders understand their responsibilities.
- Create an approach to the management of fatigue-related risk that is guarding against transient and cumulative fatigue through scientific principles.
- Providing FCMs with an adequate rest opportunity to enable them to recover from fatigue before commencing the next FDP.
- Removal of the need for exemptions to CAO Part 48.
- Provide operators with an alternative to the prescriptive rules by permitting them to develop and operate to a FRMS (subject to CASA approval).
- Enhance aviation safety, specifically through the prevention of incidents and accidents that may be fatigue related.
- Enables compliance with ICAO Annex 6 SARPs.

3.6.2 Prior to the making of the proposed rules, an assessment of business compliance costs will be undertaken in accordance with the Office of Best Practice Regulation guidelines. If required, a Business Cost Calculator Report or Regulation Impact Statement will be prepared.
3.6.3 Respondents to the NPRM are requested to provide an indication of the anticipated impact these proposed changes may have on them. This will assist CASA in assessing the impact of the proposal.

3.7 Implementation and review

3.7.1 Following the NPRM consultation period, CASA will consider the responses received and make amendments to the proposal where it is determined that revisions are required.

3.7.2 It is expected that the proposed regulatory standards will be promulgated as a new CAO Part 48 replacing the current Order.

3.7.3 The applicability of these proposed regulatory standards are also intended to apply to operators under CASR Part 137 (Aerial application operations—Aeroplanes) which have flight and duty limitations and rest requirements contained in that rule-set. The standards developed for CASR Part 137 in regards to flight and duty limitations and rest requirements were not established with scientific rigour. This proposal, on the other hand, took scientific principles with regards to sleep and fatigue into account. As such it is proposed that the regulatory standards contained herein would apply to CASR Part 137 operators.

3.7.4 It is anticipated that a phased implementation and transition arrangement will take place once the standards are drafted and finalised:

- Phase 1: This phase will see the standards which provide a means for FRMS implementation (Appendix H to the regulatory standards) to be made and become effective immediately, within the current CAO Part 48. This will allow operators to commence developing a FRMS and seek CASA approval.
- Phase 2: It is proposed that the other standards put forward in this NPRM (the operator and individual obligations, as well as Appendices A to G of the regulatory standards) will be made concurrently with Phase 1, but these will not come into effect until 12 months after rulemaking. The old CAO Part 48 will be replaced at this time.

Transitional arrangements

3.7.5 It is proposed that the transitional arrangements for operators will depend on how they are presently regulated.

3.7.6 For operators regulated by CAO Part 48 at present (without exemption), these (old) rules will continue to apply until the rules in Phase 2 come into effect (12 months after rulemaking). These operators will also be able to:

- transition to the new prescriptive rules prior to their effective date, by way of exemption from the old CAO Part 48 (this will include the relevant new operator obligations); or
- develop and implement a FRMS in accordance with the rules made in Phase 1.

Note: Operators not presently regulated under a SIE may not apply for a SIE after the making of the new rules.

3.7.7 For operators presently regulated under a SIE, these exemptions will only apply until the new rules come into effect. If a SIE is to expire prior to the effective date of the new rules, a renewal will only apply up until the effective date of the new rules.
3.7.8 For operators presently with an approved FRMS to manage flight crew fatigue, this approval will remain in place for 12 months from the date the new rules are made. During this time, operators must ensure that their FRMS is in compliance with the new rules made in Phase 1. A trial phase for the FRMS will still be required, after which the operator may seek final approval.

3.7.9 In any case, operators should be aware that operational changes, including amendments to their operations manual in accordance with regulation 215 of the CARs, will more than likely be required. This transition should be acted upon early to ensure compliance with the new rules when they come into effect.

3.7.10 Further standards for other sectors of the aviation industry, such as cabin crew, will be the subject to further NPRM(s).

3.7.11 The monitoring and review of the new rules would be conducted on an ongoing basis during the implementation/transition phase. Thereafter, following the commencement of the rules, monitoring and review would be conducted on an as required basis under Government guidelines.
**NPRM Response Form**

**FATIGUE MANAGEMENT FOR FLIGHT CREW MEMBERS – PROPOSAL TO UPDATE CAO PART 48**

Please complete your response by 12 June 2012 and return it by one of the following means:

**Online (preferred method)**  casa.gov.au/newrules/ors

**Fax**  1800 653 897 (free call)

**Post (no stamp required)**
CASA Standards Development Branch
Reply Paid 2005
Canberra ACT 2601, Australia

**E-mail**  nprm1202os@casa.gov.au

*A web-based online response form is offered as an alternative to the printed form in this NPRM. Online submission is the preferred method of sending your comments to CASA. If you are connected to the Internet, type casa.gov.au/newrules/ors into your web browser and follow the links for this NPRM.*

**Your Details**

Please provide relevant information below and indicate your acceptance or otherwise of the proposal presented in this Notice of Proposed Rule Making by ticking [✓] the appropriate boxes.

Your name: __________________________________________ ARN* (if known): ______________________

Organisation: __________________________________________ ARN* (if known): ______________________

*Aviation Reference Number, usually your CASA-issued licence or certificate number

Address: __________________________________________

________________________________________

________________________________________

Your telephone number (optional): ____________________ (to enable the Project Leader to contact you as necessary)

Do you consent to have your name published as a respondent to this NPRM?  YES [ ] NO [ ]

Signed: ……………………………………...   Date: ……………………

**How are you responding to this questionnaire/proposal, i.e. whose views are represented in your response?**

- [ ] Private individual
- [ ] Aviation industry body/association
- [ ] Staff association/union
- [ ] Government agency/authority/department/council
- [ ] Aviation business owner/service provider
- [ ] Other

**Please advise your main involvement in aviation:**

- [ ] Passenger/public consumer of aviation services
- [ ] Air crew for passenger-carrying activities
- [ ] Air crew for non-passenger-carrying activities
- [ ] Ground support for passenger-carrying activities
- [ ] Ground support for non-passenger carrying activities
- [ ] Other (specify below*, e.g. parachutist)

* Details: __________________________________________

**Are you satisfied with CASA’s consultation on this issue?**

- [ ] Very satisfied
- [ ] Satisfied
- [ ] No opinion
- [ ] Dissatisfied
- [ ] Very dissatisfied
Key Change Proposals (refer to NPRM Section 3)

CASA invites you to advise your comments on the subject matter proposed in this NPRM by indicating your preference by ticking [✓] the appropriate box and commenting below:

**Key Proposal 1: Changes to the terminology and definitions used relating to fatigue management for FCMs**

[ ] proposal is acceptable without change  
[ ] changes would improve it, but it is acceptable (please provide details below)  
[ ] changes would make it acceptable (please provide details below)  
[ ] not acceptable under any circumstances

Comments or suggested changes (including an estimate of additional costs/impacts if applicable): 

---

**Key Proposal 2: Provide a basic set of limitations (Appendix A to the regulatory standards), aimed at relatively simple operators without the need for additional risk management obligations**

[ ] proposal is acceptable without change  
[ ] changes would improve it, but it is acceptable (please provide details below)  
[ ] changes would make it acceptable (please provide details below)  
[ ] not acceptable under any circumstances

Comments or suggested changes (including an estimate of additional costs/impacts if applicable): 

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**Key Proposal 3: The inclusion of specific requirements, or obligations, for operators, including additional risk management obligations for operators choosing to operate in accordance with Appendices B to G of the regulatory standards**

[ ] proposal is acceptable without change  
[ ] changes would improve it, but it is acceptable (please provide details below)  
[ ] changes would make it acceptable (please provide details below)  
[ ] not acceptable under any circumstances

Comments or suggested changes (including an estimate of additional costs/impacts if applicable): 

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**Key Proposal 4: Make provision for a FRMS in lieu of prescriptive limitation in accordance with the standards in Appendix H to the regulatory standards**

[ ] proposal is acceptable without change  
[ ] changes would improve it, but it is acceptable (please provide details below)  
[ ] changes would make it acceptable (please provide details below)  
[ ] not acceptable under any circumstances

Comments or suggested changes (including an estimate of additional costs/impacts if applicable): 

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Key Proposal 5: Make it an obligation that a FCM employed by an operator must utilise off-duty periods and adaptation periods to obtain an amount of sleep sufficient to support the appropriate and safe discharge of their duties during the FCM’s next rostered FDP or standby time

[ ] proposal is acceptable without change
[ ] changes would improve it, but it is acceptable (please provide details below)
[ ] changes would make it acceptable (please provide details below)
[ ] not acceptable under any circumstances

Comments or suggested changes (including an estimate of additional costs/impacts if applicable): __________
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Key Proposal 6: Make it an obligation that a FCM employed by an operator in an augmented crew operation must utilise in-flight rest opportunities to adequately manage their alertness level for the remaining portion of the FDP

[ ] proposal is acceptable without change
[ ] changes would improve it, but it is acceptable (please provide details below)
[ ] changes would make it acceptable (please provide details below)
[ ] not acceptable under any circumstances

Comments or suggested changes (including an estimate of additional costs/impacts if applicable): __________
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Key Proposal 7: Make it an obligation that a FCM employed by an operator must disclose to the operator any reasonably foreseeable factor which may affect the individual’s ability to meet the operator’s fatigue management policies and limitations

[ ] proposal is acceptable without change
[ ] changes would improve it, but it is acceptable (please provide details below)
[ ] changes would make it acceptable (please provide details below)
[ ] not acceptable under any circumstances

Comments or suggested changes (including an estimate of additional costs/impacts if applicable): __________
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Key Proposal 8: The adjustment of FDP and flight time limitations

[ ] proposal is acceptable without change
[ ] changes would improve it, but it is acceptable (please provide details below)
[ ] changes would make it acceptable (please provide details below)
[ ] not acceptable under any circumstances

Comments or suggested changes (including an estimate of additional costs/impacts if applicable): __________
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Key Proposal 9: The adjustment of off-duty period requirements
[ ] proposal is acceptable without change
[ ] changes would improve it, but it is acceptable (please provide details below)
[ ] changes would make it acceptable (please provide details below)
[ ] not acceptable under any circumstances
Comments or suggested changes (including an estimate of additional costs/impacts if applicable): 
__________________________________________________________________________________
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Key Proposal 10: A method for the determination of acclimatisation
[ ] proposal is acceptable without change
[ ] changes would improve it, but it is acceptable (please provide details below)
[ ] changes would make it acceptable (please provide details below)
[ ] not acceptable under any circumstances
Comments or suggested changes (including an estimate of additional costs/impacts if applicable): 
__________________________________________________________________________________
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General and Specific Comments

*Your response to the proposed regulatory standards (Annex B):*

Having read the proposed regulatory standards for fatigue management for flight crew members (Annex B), are there specific issues that you wish to see addressed? Please indicate by specifying the relevant reference, any change to that proposal you believe will add value to the regulatory standards, and a short explanation of your reason for proposing the change.

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Your response to the draft CAAP 48-1 (Annex C):

CASA proposes to issue a CAAP for the proposed regulatory standards. The CAAP will inform parties affected by the regulatory standards of relevant recommended procedures and provide some explanatory material. Having read draft CAAP 48-1(0) (Annex C), are there specific issues that you wish to see addressed? Please indicate by specifying the relevant paragraph number from the draft CAAP, any change to that paragraph you believe will add value to the CAAP, and a short explanation of your reason for proposing the change.

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Thank you

Your response ensures balanced consideration by CASA of the interests of the industry and consumers.
Additional information is available from:

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E-mail bill.cox@casa.gov.au

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