ANNEX A TO PP 2207AS

Concept for fatigue management standards for the Part 172 MOS

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Laydraft only and subject to change after consultation and during formal drafting.

Concept for proposed fatigue management standards	References	Explanation, comments and notes
CHAPTER 2 **Division 6 Fatigue management** **2.605 Fatigue management etc** (1) This Division: (a) is made for paragraph 172.P175 of CASR; and (b) prescribes the standards for the system for managing fatigue in the provision of the air traffic services.		Introductory text for proposed fatigue management standards
(2) In this Division: ***duty*** means any task that an operational person is required by an air traffic services provider to perform. ***Note:*** Tasks include those performed during time-in-position, administrative work and training.	***Annex 11: Duty.*** Any task that an air traffic controller is required by an air traffic services provider to perform. These tasks include those performed during time-in-position, administrative work and training.	Add definition for duty - in the context of fatigue management
duty period means a period of time which: (a) starts when an operational person is required by an ATS provider to report for or to commence a duty; and (b) ends when that person is free from all duties.	***Annex 11: Duty period.*** A period which starts when an air traffic controller is required by an air traffic services provider to report for or to commence a duty and ends when that person is free from all duties.	Add definition for duty period
fatigue means a physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety-related operational duties.	***Annex 11: Fatigue.*** A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety-related operational duties.	Add definition for fatigue
fatigue risk management system (or FRMS) means a data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles, knowledge and operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness.	***Annex 11: Fatigue risk management system (FRMS).*** A data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles, knowledge and operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness.	Add definition for Fatigue risk management system (or FRMS)
non-duty period means a continuous and defined period of time, subsequent to and/or prior to duty periods, during which the operational person is free of all duties.	***Annex 11: Non-duty period.*** A continuous and defined period of time, subsequent to and/or prior to duty periods, during which the air traffic controller is free of all duties.	Add definition for non-duty period
operational person means a person who: (a) carries out an air traffic control function or flight service function as regulated under Part 65 of CASR; or (b) according to a requirement under Part 65 of CASR — supervises another person carrying out an air traffic control function or flight service function.	***No equivalent***	Annex 11 identifies only air traffic controllers as needing a system for managing fatigue. However, Parts 65 and 172 of CASR regulate both air traffic controllers and flight service officers. CASA proposes that any requirement for a fatigue management would apply to both. Accordingly, CASA proposes the definition 'operational person' so that fatigue management requirements are applied to any part 65 regulated ATC or FSO. 'operational person' is a tentative descriptor for a person who

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		performs a Part 65 'function' as identified in subregulation 65.075(2) {an air traffic control function} or subregulation 65.130(2) {a flight service function}.
time-in-position means the period of time when an operational person is carrying out an air traffic control function or flight service function at an operational position.	***Annex 11: Time-in-position.*** The period of time when an air traffic controller is exercising the privileges of the air traffic controller's licence at an operational position.	Add definition for time-in-position
2.610 Standard for managing fatigue To meet the requirement of subregulation 172.P145 (1) of CASR, an ATS provider must have and put into effect a fatigue risk management system (FRMS) in accordance with subsection 2.625. **Note:** The FRMS requires approval from CASA.	***Annex 11*** 2.28.2 States shall require that the air traffic services provider, for the purposes of managing its fatigue-related safety risks, establish one of the following: a) air traffic controller schedules commensurate with the service(s) provided and in compliance with the prescriptive limitation regulations established by the State in accordance with 2.28.1 a); or b) an FRMS, in compliance with regulations established by the State in accordance with 2.28.1 b), for the provision of all air traffic control services; or c) an FRMS, in compliance with regulations established by the State in accordance with 2.28.1 b), for a defined part of its air traffic control services in conjunction with schedules in compliance with the prescriptive limitation regulations established by the State in accordance with 2.28.1 a) for the remainder of its air traffic control services.	Proposed standard required ATS providers to have an FRMS. As discussed in Section 3.1 of the Policy Proposal Document, CASA proposes only to provide for standards for an FRMS. The draft standards in this section closely match the standards specified in Appendix 6 to ICAO Annex 11, but with minor working changes to match the equivalent FRMS standards in Civil Aviation Order 48.1
2.615 – 2.620 reserved		Reserved section numbers
2.625 Requirements for a Fatigue Risk Management System (1) An ATS provider must apply to CASA for approval to implement the FRMS. The application must be in writing.	***Annex 11*** 2.28.4 Where an air traffic services provider implements an FRMS to manage fatigue-related safety risks in the provision of part or all of its air traffic control services in accordance with 2.28.2 b), the State shall: b) approve an FRMS, according to a documented process, that provides a level of safety acceptable to the State.	Implements Annex 11 2.28.4 b), specifically the requirement for the State to approve an ATS provider's FRMS.
(2) For an FRMS approval, an ATS provider's FRMS must include or address the matters specified in subsection 2.630. **Note:** Guidance for the development and implementation of an FRMS is available on the ICAO and CASA websites.	Mechanism for implementing Annex 11 2.28.2 b) an FRMS, in compliance with regulations established by the State in accordance with 2.28.1 b), for the provision of all air traffic control services; or	Implements Annex 11 2.28.2 b)
(3) An ATS provider must have processes to integrate FRMS functions with its other safety management functions.	***Annex 11*** 2.28.4 a) require the air traffic services provider to have processes to integrate FRMS functions with its other safety management functions; and ***CAO 48.1 Appendix 7*** 1.3 If the AOC holder has an SMS, a trial or full FRMS implementation approval will not be given unless CASA is satisfied that the FRMS is integrated with the SMS.	Implements Annex 11 2.28.4 a)
(4) Before CASA issues an FRMS approval, CASA must be satisfied that the ATS provider's FRMS: (a) addresses all the matters specified in subsection 2.630; and (b) specifies maximum duty periods and minimum non-duty periods suitable for baselining the measures of safety expected under the FRMS limits; and (c) is a safe, integrated, data-driven, system which will continuously and effectively monitor and manage fatigue-related safety risks using scientific principles and knowledge, and operational experience; and	***Annex 11*** 2.28.4 Where an air traffic services provider implements an FRMS to manage fatigue-related safety risks in the provision of part or all of its air traffic control services in accordance with 2.28.2 b), the State shall: b) approve an FRMS, according to a documented process, that provides a level of safety acceptable to the State. ***ICAO Doc 9966*** IDENTIFYING THE METHOD FOR ESTABLISHING THE BASELINE FOR THE EQUIVALENT LEVEL OF SAFETY In order to agree on meaningful SPIs, it is necessary to establish a baseline of safety. The baseline of safety is identified through fatigue-related metrics associated with the prescriptive limitation regulations under the service provider's SMS processes in specific operational circumstance (e.g.	Implements Annex 11 2.28.4 b), specifically that the FRMS, according to a documented process, provides a level of safety acceptable to the State. The specific details match the equivalent requirements of CAO 48.1 and the guidance in ICAO Doc 9966 The Manual for the Oversight of Fatigue Management Approaches, particularly in regards maximum duty periods and minimum non-duty periods suitable for baselining the measures of safety expected under the FRMS limits.

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(d) will enable the ATS provider to ensure that operational persons and other relevant personnel perform at levels of alertness sufficient to ensure the safety of operations.	average sleep obtained in a normal non-work period in relation to average alertness and performance at the end of the safety-related work period). The State and the service provider will need to agree to the method used by the service provider to demonstrate an equivalent level of safety for the proposed FRMS trial operation. This will allow comparison of baseline measures of safety to those expected under the proposed FRMS limits. Possible SPIs include the average sleep achieved in the 24 hours before top of descent (in the case of pilots) or average sleep achieved in the 24 hours before a work period (in the case of air traffic controllers). ***CAO 48.1 Appendix 7*** 1.5 Before CASA issues a full FRMS implementation approval, CASA must be satisfied that the AOC holder's FRMS: (a) comprises all the elements mentioned in subclause 1.2; and (b) is a safe, integrated, data-driven, system which will continuously and effectively monitor and manage fatigue-related safety risks using scientific principles and knowledge, and operational experience; and (c) will enable the AOC holder to ensure that FCMs and other relevant personnel perform at levels of alertness sufficient to ensure the safety of operations. … 3.2 The FRMS practical operating procedures must set out: (a) maximum values for each FCM for the following: (i) flight times; (ii) flight duty periods; (iii) duty periods; and (b) minimum values for each FCM off-duty periods. *Note The terms flight time, flight duty period, duty period and off-duty period are defined in this CAO.* 3.3 For subclause 3.2, the values for each FCM must be based on scientific principles and knowledge and subject to safety assurance processes.	
FRMS change management procedures (5) For this subsection, a ***significant change*** means: (a) any increase to the maximum duty periods that baseline the ATS provider's FRMS; and (b) any decrease to the minimum non-duty periods that baseline the provider's FRMS and (c) any other change to any element of the FRMS that does not maintain or improve, or is not likely to maintain or improve, aviation safety. (6) The FRMS change management procedures must: (a) meet the requirements of this subsection; and (b) clearly indicate how the ATS provider will amend, change or modify any element of the FRMS consistently with the requirements of this subsection.	***CAO 48.1 Appendix*** 7 FRMS change management procedures 7.1 For this clause, a ***significant change*** means: (a) any increase to the values required under paragraph 3.2 (a); and (b) any decrease to the values required under paragraph 3.2 (b); and (c) any other change to any element of the FRMS that does not maintain or improve, or is not likely to maintain or improve, aviation safety. 7.2 The FRMS change management procedures must: (a) meet the requirements of this clause; and (b) clearly indicate how the AOC holder will amend, change or modify any element of the FRMS consistently with the requirements of this clause. 7.3 The change management procedures set out in this clause apply to: (a) an AOC holder with a trial FRMS implementation approval; and	Proposes change management requirements for FRMS as provided in CAO 48.1

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(7) After issuing an FRMS approval, CASA may, in writing, direct an ATS provider to amend, change or modify the FRMS (including practices and documents), and the ATS provider must comply within the time specified by CASA in the direction. ***Note 1*** A failure to comply may result in revocation of the FRMS approval. ***Note 2*** CASA's power to direct changes to an FRMS is an emergency power for safety purposes only. It does not relieve any approval holder of their own obligation to improve the performance of their FRMS where this is safe and practicable. (8) The ATS provider must not make a significant change to any element of the FRMS unless an application to make the change is approved in writing by CASA. (9) An application for approval of a significant change must: (a) be in writing; and (b) set out the change; and (c) be accompanied by a copy of the part of the ATS provider's exposition affected by the change, clearly identifying the change. (10) An ATS provider must not make a change to the FRMS that is not a significant change unless the ATS provider has: (a) amended its exposition to reflect the change; and (b) given CASA written notice of the change and a copy of the amended part of the exposition clearly identifying the change.	(b) an AOC holder with a full FRMS implementation approval. 7.4 After issuing an FRMS implementation approval, CASA may, in writing, direct an AOC holder to amend, change or modify the FRMS (including practices and documents), and the AOC holder must comply within the time specified by CASA in the direction. Note 1 A failure to comply may result in revocation of the FRMS implementation approval. Note 2 CASA's power to direct changes to an FRMS is an emergency power for safety purposes only. It does not relieve any approval holder of their own obligation to improve the performance of their FRMS where this is safe and practicable. 7.5 The AOC holder must not make a significant change to any element of the FRMS unless an application to make the change is approved in writing by CASA. 7.6 An application for approval of a significant change must: (a) be in writing; and (b) set out the change; and (c) be accompanied by a copy of the part of the AOC holder's FRMS documentation affected by the change, clearly identifying the change. 7.7 A change to the FRMS that is not a significant change must be: (a) made in accordance with the FRMS change management procedures; and b) notified in writing to CASA within the following period after the change is made: (i) 7 days; (ii) either: (A) if an AOC holder's approved SMS amendment process under Part 82 of the CAOs has a different CASA notification period for SMS amendments — the period specified in the process; or (B) if an AOC holder's exposition change process under the Regulations has a different CASA notification period for non-significant changes — the period specified in the process.	
FRMS approval (11) CASA may, on written application, issue an ATS provider with an FRMS approval, if CASA is satisfied that each element of the ATS provider's FRMS: (a) complies with and meets the requirements, attributes and characteristics of an FRMS under this regulation; and (b) is capable of delivering: (i) identified safety outcomes; and (ii) fatigue-risk data and reports; and (iii) continuous improvement in the delivery of safety outcomes.	***CAO 48.1 Appendix 7*** 8.1 CASA may, on written application, issue an AOC holder with a trial FRMS implementation approval for up to 24 months, if CASA is satisfied that each element of the AOC holder's FRMS: (a) complies with and meets the requirements, attributes and characteristics of an FRMS under this Appendix; and (b) is capable of delivering: (i) identified safety outcomes; and (ii) fatigue-risk data and reports; and (iii) continuous improvement in the delivery of safety outcomes.	
Expiry, suspension, revocation, surrender of FRMS approval (12) An FRMS approval stops having effect if:	***CAO 48.1 Appendix 7*** 10.1 An FRMS implementation approval stops having effect if: (a) it expires, or it is suspended or revoked in writing by CASA; or	Given that an FRMS has an approval mechanism, it is logical there be a mechanism for withdrawing that approval. This proposal matches the equivalent mechanism in CAO 48.1

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(a) it expires, or it is suspended or revoked in writing by CASA; or (b) the ATS provider tells CASA in writing that the provider wants to surrender the approval.	(b) the AOC holder tells CASA in writing that the holder wants to surrender the approval.	
(13) CASA may revoke or suspend an approval if: (a) the ATS provider does not comply with the requirements of this Part for implementation or use of an FRMS; or (b) CASA considers that continued implementation or use of the FRMS would adversely affect aviation safety; or (c) for a revocation only — CASA wishes to reissue the approval in a varied form.	***CAO 48.1 Appendix 7*** 10.3 CASA may revoke or suspend an approval if: (a) the AOC holder does not comply with the requirements of this CAO for implementation or use of an FRMS; or (b) CASA considers that continued implementation or use of the FRMS would adversely affect aviation safety; or (c) the AOC holder refuses CASA reasonable access to any information or records produced under or for the FRMS which CASA requests in writing for the purpose of assessing the effectiveness and safety of the FRMS; or (d) for a revocation only — CASA wishes to reissue the approval in a varied form.	Given that an FRMS has an approval mechanism, it is logical there be a mechanism for withdrawing that approval. This proposal matches the equivalent mechanism in CAO 48.1
2.630 Standards for FRMS (1) For paragraph 2.625 (2), an ATS Provider's FRMS must, as a minimum, include and address all matters in this subsection. *Note 1* Significant changes to an FRMS require CASA approval. See subsection 2.625 (5) thru (10). *Note 2* Guidance for the development and implementation of an FRMS is available on the ICAO and CASA websites.	Machinery	Machinery provision
(2) An ATS provider's FRMS must have the following elements: (a) FRMS policy and documentation; (b) Fatigue hazard identification, risk assessment and mitigation procedures; (c) FRMS safety assurance processes; (d) FRMS promotion processes.	***Annex 11 Appendix 6*** 1.1.1 The air traffic services provider shall define its FRMS policy, with all elements of the FRMS clearly identified.	Implements Annex 11 Appendix 6, 1.1.1
FRMS policy and documentation (3) For subparagraph (2) (a), an ATS provider's FRMS policy must: (a) define the scope of FRMS operations; and	***Annex 11 Appendix 6*** 1.1.2 The policy shall: a) define the scope of FRMS operations; ***CAO 48.1 Appendix 7*** 2.2 The policy must require that all operations to which the FRMS applies be clearly defined in the operations manual.	Implements Annex 11 Appendix 6, 1.1.2
(b) make it clear that while primary responsibility for the FRMS lies with the ATS provider, its effective implementation requires shared responsibility by management, operational persons, and other relevant personnel; and	***Annex 11 Appendix 6*** 1.1.2 The policy shall: b) reflect the shared responsibility of management, air traffic controllers, and other involved personnel; ***CAO 48.1 Appendix 7*** 2.3 The policy must: (a) make it clear that while primary responsibility for the FRMS lies with the AOC holder, its effective implementation requires shared responsibility by management, FCMs, and other relevant personnel; and	Implements Annex 11 Appendix 6, 1.1.2 using the wording of CAO 48.1
(c) clearly indicate the safety objectives of the FRMS; and	***Annex 11 Appendix 6*** 1.1.2 The policy shall: c) clearly state the safety objectives of the FRMS; ***CAO 48.1 Appendix 7*** 2.3 The policy must: (b) clearly indicate the safety objectives of the FRMS; and	Implements Annex 11 Appendix 6, 1.1.2 using the wording of CAO 48.1

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(d) be approved in writing by the accountable manager; and	***Annex 11 Appendix 6*** 1.1.2 The policy shall: d) be signed by the accountable executive of the organization; ***CAO 48.1 Appendix 7*** 2.3 The policy must: (c) be approved in writing by the Chief Executive Officer; and	Implements Annex 11 Appendix 6, 1.1.2 using the wording of CAO 48.1
(e) be accessible to all relevant areas and levels of the organisation in a way that indicates the ATS provider's specific endorsement of the policy; and	***Annex 11 Appendix 6*** 1.1.2 The policy shall: e) be communicated, with visible endorsement, to all the relevant areas and levels of the organization; ***CAO 48.1 Appendix 7*** 2.3 The policy must: (d) be accessible to all relevant areas and levels of the organisation in a way that indicates the AOC holder's specific endorsement of the policy; and	Implements Annex 11 Appendix 6, 1.1.2 using the wording of CAO 48.1
(f) declare management commitment to: (i) effective safety reporting; and (ii) provision of adequate resources for the FRMS; and (iii) continuous improvement of the FRMS; and	***Annex 11 Appendix 6*** 1.1.2 The policy shall: f) declare management commitment to effective safety reporting; g) declare management commitment to the provision of adequate resources for the FRMS; h) declare management commitment to continuous improvement of the FRMS; ***CAO 48.1 Appendix 7*** 2.3 The policy must: (e) declare management commitment to: (i) effective safety reporting; and (ii) provision of adequate resources for the FRMS; and (iii) continuous improvement of the FRMS; and	Implements Annex 11 Appendix 6, 1.1.2 using the wording of CAO 48.1
(g) require that clear lines of accountability are identified for management, operational persons, and all other relevant personnel; and	***Annex 11 Appendix 6*** 1.1.2 The policy shall: i) require that clear lines of accountability for management, air traffic controllers, and all other involved personnel are identified; and ***CAO 48.1 Appendix 7*** 2.3 The policy must: (f) require that clear lines of accountability are identified for management, FCMs, and all other relevant personnel; and	Implements Annex 11 Appendix 6, 1.1.2 using the wording of CAO 48.1
(h) require periodic reviews to ensure the policy remains relevant and appropriate.	***Annex 11 Appendix 6*** 1.1.2 The policy shall: j) require periodic reviews to ensure it remains relevant and appropriate. ***CAO 48.1 Appendix 7*** 2.3 The policy must: (g) require periodic reviews to ensure the policy remains relevant and appropriate.	Implements Annex 11 Appendix 6, 1.1.2 using the wording of CAO 48.1
(4) For subparagraph (2) (a), an ATS provider's FRMS must be supported by the following documentation, namely, up-to-date identification, description and records of the following: (a) FRMS policy and objectives;	***Annex 11 Appendix 6*** 1.2 An air traffic services provider shall develop and keep current FRMS documentation that describes and records: a) FRMS policy and objectives;	Implements Annex 11 Appendix 6, 1.2 using the wording of CAO 48.1
(b) FRMS processes and procedures;	***Annex 11 Appendix 6*** 1.2 An air traffic services provider shall develop and keep current FRMS documentation that describes and records: b) FRMS processes and procedures;	Implements Annex 11 Appendix 6, 1.2 using the wording of CAO 48.1
(c) the personnel accountabilities, responsibilities and authorities for effective implementation of the FRMS, including the person in an ATS provider's organisation who is appointed by the accountable	***Annex 11 Appendix 6*** 1.2 An air traffic services provider shall develop and keep current FRMS documentation that describes and records:	subparagraph (c) expands on the Annex 11 equivalent standard by specifically mentioning personnel accountabilities must specifically address the accountabilities of the person

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manager to be responsible for the day-to-day implementation, management and continuing effectiveness of the ATS provider's FRMS;	c) accountabilities, responsibilities and authorities for these processes and procedures; ***CAO 48.1 Appendix 7*** 2.5 In addition to the requirements under subclause 2.4, and the relevant limits and procedures contained in the operations manual in accordance with this CAO, the FRMS must also be supported by the following documentation, namely, up-to-date identification, description and records of the following: (a) the personnel accountabilities, responsibilities and authorities for effective implementation of the FRMS, including the FRMS Manager;	appointed by the ATS provider to manage the provider's FRMS. The expanded requirement is consistent with CAO 48.1 ***FRMS Manager*** in CAO 48.1 means the person in an AOC holder's organisation who is appointed by the Chief Executive Officer to be responsible for the day-to-day implementation, management and continuing effectiveness of the AOC holder's FRMS.
(d) the mechanisms for ongoing involvement in fatigue risk management of management, operational persons, and all other relevant personnel;	***Annex 11 Appendix 6*** 1.2 An air traffic services provider shall develop and keep current FRMS documentation that describes and records: d) mechanisms for ongoing involvement of management, air traffic controllers, and all other involved personnel;	Implements Annex 11 Appendix 6, 1.2 using the wording of CAO 48.1
(e) the FRMS training programs, training requirements and records of attendance at training;	***Annex 11 Appendix 6*** 1.2 An air traffic services provider shall develop and keep current FRMS documentation that describes and records: e) FRMS training programmes, training requirements and attendance records;	Implements Annex 11 Appendix 6, 1.2 using the wording of CAO 48.1
(f) scheduled and actual duty and non-duty periods and break periods between periods of time-in-position in a duty period with significant deviations and reasons for deviations noted;	***Annex 11 Appendix 6*** 1.2 An air traffic services provider shall develop and keep current FRMS documentation that describes and records: f) scheduled and actual duty and non-duty periods and break periods between periods of time-in-position in a duty period with significant deviations and reasons for deviations noted; and *Note.— Significant deviations are described in the* Manual for the Oversight of Fatigue Management Approaches *(Doc 9966).*	Implements Annex 11 Appendix 6, 1.2 using the wording of CAO 48.1
(g) the FRMS outputs, including findings from collected data, and recommendations and actions taken.	***Annex 11 Appendix 6*** 1.2 An air traffic services provider shall develop and keep current FRMS documentation that describes and records: g) FRMS outputs including findings from collected data, recommendations, and actions taken.	Implements Annex 11 Appendix 6, 1.2 using the wording of CAO 48.1
FRMS hazard identification (5) For subparagraph (2) (b), the FRMS hazard identification procedures must include the following processes for fatigue-related hazard identification: (a) the predictive process; (b) the proactive process; (c) the reactive process.	***Annex 11 Appendix 6*** 2.1 An air traffic services provider shall develop and maintain three fundamental and documented processes for fatigue hazard identification: ***CAO 48.1 Appendix 7*** 4.1 FRMS hazard identification procedures must be based on the following processes for fatigue-related hazard identification: (a) the predictive process; (b) the proactive process; (c) the reactive process.	Implements Annex 11 Appendix 6, 2.1 using the wording of CAO 48.1
(6) For subparagraph (5) (a), the predictive process must be capable of identifying fatigue-related hazards by examining operational person scheduling and taking into account the following: (a) factors known to affect sleep; (b) factors known to affect fatigue; (c) the effects of the factors mentioned in paragraphs (a) and (b) on performance. *Note* Methods of examination may include, but are not limited to:	***Annex 11 Appendix 6*** 2.1.1 *Predictive*. The predictive process shall identify fatigue hazards by examining air traffic controller scheduling and taking into account factors known to affect sleep and fatigue and their effects on performance. Methods of examination may include, but are not limited to: a) air traffic services or industry operational experience and data collected on similar types of operations or from other industries with shift work or 24-hour operations; b) evidence-based scheduling practices; and c) bio-mathematical models.	Implements Annex 11 Appendix 6, 2.1.1 using the wording of CAO 48.1

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(a) air traffic services or industry operational experience and data collected on similar types of operations or from other industries with shift work or 24-hour operations; (b) evidence-based scheduling practices; and (c) bio-mathematical models.	***CAO 48.1 Appendix 7*** 4.2 The predictive process must be capable of identifying fatigue-related hazards by examining FCM scheduling and taking into account the following: (a) factors known to affect sleep; (b) factors known to affect fatigue; (c) the effects of the factors mentioned in paragraphs (a) and (b) on FCM performance.	
(7) For subparagraph (5) (b), the proactive process must be capable of identifying fatigue-related hazards within current air traffic services operations. *Note* Methods of examination may include, but are not limited to: (a) self-reporting of fatigue risks; (b) fatigue surveys; (c) relevant operational person performance data; (d) available safety databases and scientific studies; (e) tracking and analysis of differences in planned and actual worked times; (f) observations during normal operations or special evaluations; and (g) self-assessment of the suitability of fatigue risk mitigations, where such mitigations have been utilised.	***Annex 11 Appendix 6*** 2.1.2 *Proactive*. The proactive process shall identify fatigue hazards within current air traffic services operations. Methods of examination may include, but are not limited to: a) self-reporting of fatigue risks; b) fatigue surveys; c) relevant air traffic controller performance data; d) available safety databases and scientific studies; e) tracking and analysis of differences in planned and actual worked times; and f) observations during normal operations or special evaluations. ***CAO 48.1 Appendix 7*** 4.3 The proactive process must be capable of identifying fatigue-related hazards within current flight operations. Subpara (g) of the note is a CASA ATM standards proposal based on experience with overseeing Airservices FRMS. It seeks to ensure that the proactive process also includes assessing fatigue risk mitigations for their effectiveness and suitability.	Proposed Clause (8) is based on Annex 11 Appendix 6 para 2.1.2, but uses the wording of CAO 48.1. However, subpara (g) is an additional CASA proposal intended to ensure that the proactive process also includes assessing fatigue risk mitigations for their effectiveness and suitability.
(8) For subparagraph (5) (c), the reactive process must be capable of identifying the contribution of fatigue-related hazards to reports and events associated with potential negative safety consequences with a view to determining how the effects of fatigue could have been minimised. *Note* At a minimum, the process may be triggered by any of the following: (a) fatigue reports; (b) confidential reports; (c) audit reports; (d) incidents; and (e) self-assessment of the suitability of fatigue risk mitigations, where such mitigations have been utilised. Consultation note: Subpara (e) of the note seeks to ensure that the reactive process also includes assessing fatigue risk mitigations for their effectiveness and suitability.	***Annex 11 Appendix 6*** 2.1.3 *Reactive*. The reactive process shall identify the contribution of fatigue hazards to reports and events associated with potential negative safety consequences in order to determine how the impact of fatigue could have been minimized. At a minimum, the process may be triggered by any of the following: a) fatigue reports; b) confidential reports; c) audit reports; and d) incidents. ***CAO 48.1 Appendix 7*** 4.4 The reactive process must be capable of identifying the contribution of fatigue-related hazards to actual events that could have affected, or did affect, safety, with a view to determining how the effects of fatigue on each event could have been minimised.	Implements Annex 11 Appendix 6, 2.1.3 using the wording of CAO 48.1
(9) For subparagraph (2) (b), the FRMS risk assessment procedures must ensure that identified fatigue-related hazards are examined in relation to the following: (a) the relevant operational context and procedures in which the identified fatigue-related hazard arose; (b) the probability of the fatigue-related hazard arising in those circumstances; (c) the possible consequences of the fatigue-related hazard in those circumstances;	***Annex 11 Appendix 6*** 2.2.1 An air traffic services provider shall develop and implement risk assessment procedures that determine when the associated risks require mitigation. 2.2.2 The risk assessment procedures shall review identified fatigue hazards and link them to: a) operational processes; b) their probability; c) possible consequences; and	Implements Annex 11 Appendix 6, 2.2.1 and 2.2.2 using the wording of CAO 48.1

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(d) the effectiveness of existing safety procedures and controls.	d) the effectiveness of existing preventive controls and recovery measures. ***CAO 48.1 Appendix 7*** 4.6 For subclause 4.5, the FRMS risk assessment procedures must ensure that identified fatigue-related hazards are examined in relation to the following: (a) the relevant operational context and procedures in which the identified fatigue-related hazard arose; (b) the probability of the fatigue-related hazard arising in those circumstances; (c) the possible consequences of the fatigue-related hazard in those circumstances; (d) the effectiveness of existing safety procedures and controls.	
(10) For subparagraph (2) (b), the FRMS risk mitigation procedures for each fatigue-related hazard must be capable of: (a) selecting appropriate mitigation strategies for the hazard; and (b) implementing the selected mitigation strategies; and (c) monitoring the implementation and effectiveness of the strategies.	***Annex 11 Appendix 6*** 2.3 Risk mitigation An air traffic services provider shall develop and implement fatigue risk mitigation procedures that: a) select the appropriate mitigation strategies; b) implement the mitigation strategies; and c) monitor the strategies' implementation and effectiveness. ***CAO 48.1 Appendix 7*** 4.7 FRMS risk mitigation procedures for each fatigue-related hazards must be capable of: (a) selecting appropriate mitigation strategies for the hazard; and (b) implementing the selected mitigation strategies; and (c) monitoring the implementation and effectiveness of the strategies.	Implements Annex 11 Appendix 6, 2.3 using the wording of CAO 48.1
FRMS safety assurance (11) For subparagraph (2) (c), the FRMS safety assurance procedures must provide for: (a) continuous monitoring of the performance of the FRMS; (b) the analysis of fatigue-related trends; (c) measurements to validate the effectiveness of mitigation strategies. *Note* The sources of data may include, but are not limited to: (a) hazard reporting and investigations; (b) audits and surveys; and (c) reviews and fatigue studies (both internal and external).	***Annex 11 Appendix 6*** **3. FRMS safety assurance processes** The air traffic services provider shall develop and maintain FRMS safety assurance processes to: a) provide for continuous FRMS performance monitoring, analysis of trends, and measurement to validate the effectiveness of the fatigue safety risk controls. The sources of data may include, but are not limited to: 1) hazard reporting and investigations; 2) audits and surveys; and 3) reviews and fatigue studies (both internal and external); ***CAO 48.1 Appendix 7*** 5.1 FRMS safety assurance procedures must provide for: (a) continuous monitoring of the performance of the FRMS; (b) the analysis of fatigue-related trends; (c) measurements to validate the effectiveness of mitigation strategies.	Implements Annex 11 Appendix 6, 3 a) using the wording of CAO 48.1
(12) For subparagraph (2) (c), the FRMS safety assurance procedures must include a formal process for the management of changes to the FRMS arising from the following: (a) identification of changes in the operational environment that may affect FRMS;	***Annex 11 Appendix 6*** **3. FRMS safety assurance processes** The air traffic services provider shall develop and maintain FRMS safety assurance processes to: b) provide a formal process for the management of change. This shall include, but is not limited to:	Implements Annex 11 Appendix 6, 3 b) using the wording of CAO 48.1

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(b) identification of changes within the ATS provider's organisation that may affect FRMS; (c) consideration of available tools which could be used to maintain or improve FRMS performance prior to implementing changes.	1) identification of changes in the operational environment that may affect the FRMS; 2) identification of changes within the organization that may affect the FRMS; and 3) consideration of available tools which could be used to maintain or improve FRMS performance prior to implementing changes; and ***CAO 48.1 Appendix 7*** 5.2 FRMS safety assurance procedures must include a formal process for the management of changes to the FRMS arising from the following: (a) identification of changes in the operational environment that may affect FRMS; (b) identification of changes within the AOC holder's organisation that may affect FRMS.	
(13) For subparagraph (2) (c), the FRMS safety assurance procedures must provide for the continuous improvement of the FRMS, by including the following: (a) the elimination or modification of preventive controls and recovery measures that: (i) have had unintended negative consequences; or (ii) are no longer required because of changes in the ATS provider's operational or organisational environment; (b) routine evaluations of facilities, equipment, documentation and procedures; (c) the determination of the need to introduce new processes and procedures to mitigate emerging fatigue-related risks.	***Annex 11 Appendix 6*** **3. FRMS safety assurance processes** The air traffic services provider shall develop and maintain FRMS safety assurance processes to: c) provide for the continuous improvement of the FRMS. This shall include, but is not limited to: 1) the elimination and/or modification of preventive controls and recovery measures that have had unintended consequences or that are no longer needed due to changes in the operational or organizational environment; 2) routine evaluations of facilities, equipment, documentation and procedures; and 3) the determination of the need to introduce new processes and procedures to mitigate emerging fatigue-related risks. ***CAO 48.1 Appendix 7*** 5.4 FRMS safety assurance procedures must provide for the continuous improvement of the FRMS, by including the following: (a) the elimination or modification of fatigue-related risk controls that: (i) have had unintended negative consequences; or (ii) are no longer required because of changes in the AOC holder's operational or organisational environment; (b) routine evaluations of facilities, equipment, documentation and procedures to determine their implications for fatigue-related risk management and control; (c) identification of emerging fatigue-related risks to allow the introduction of new procedures and procedures to mitigate such risks.	Implements Annex 11 Appendix 6, 3 c) using the wording of CAO 48.1
FRMS safety promotion procedures (14) For subparagraph (2) (d), the FRMS safety promotion procedures must include the following: (a) training programs for management, operational persons, and all other relevant personnel to ensure competency levels commensurate with the role and responsibility of the involved personnel under the FRMS; (b) an effective FRMS communication plan that: (i) explains all elements of the FRMS to all stakeholders; and	***Annex 11 Appendix 6*** **4. FRMS promotion processes** FRMS promotion processes support the ongoing development of the FRMS, the continuous improvement of its overall performance, and attainment of optimum safety levels. The following shall be established and implemented by the air traffic service provider as part of its FRMS: a) training programmes to ensure competency commensurate with the roles and responsibilities of management, air traffic controllers, and all other involved personnel under the planned FRMS; and b) an effective FRMS communication plan that:	Implements Annex 11 Appendix 6, 4 using the wording of CAO 48.1

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(ii) describes the communication channels which they must use to gather, disseminate and apply FRMS-related information.	1) explains FRMS policies, procedures and responsibilities to all relevant stakeholders; and 2) describes communication channels used to gather and disseminate FRMS-related information. ***CAO 48.1 Appendix 7*** 6.2 For subclause 6.1, FRMS safety promotion procedures must include the following: (a) training programs for management, FCMs, and all other relevant personnel to ensure competency levels commensurate with the role and responsibility of the person under the FRMS; (b) an effective FRMS communication plan that: (i) explains all elements of the FRMS to management, FCMs, and all other relevant personnel; and (ii) describes the communication channels which they must use to gather, disseminate and apply FRMS-related information.	