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ATM Fatigue Management in Africa

Thursday 22 July 2021 12:00 – 14:30 CAT





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Annex 11 to the Convention on International Civil Aviation

Air Traffic Services

Air Traffic Control Service Flight Information Service Alerting Service

Fifteenth Edition, July 2018



This edition supersedes, on 8 November 2018, all previous editions of Annex 11.

For information regarding the applicability of the Standards and Recommended Practices, see Foreword.

INTERNATIONAL CIVIL AVIATION ORGANIZATION



Section 2.28 Fatigue Management

- 2.28.1 States shall establish regulations for the purpose of <u>managing fatigue</u> in the provision of air traffic control services. These regulations shall be based upon <u>scientific principles, knowledge and</u> <u>operational experience</u>, with the aim of ensuring that air traffic controllers perform at an adequate level of alertness
- To that aim, States shall establish:
 - a) regulations that **prescribe scheduling limits** in accordance with Appendix 5; and
 - b) where authorizing air traffic services providers to use a <u>fatigue risk management system</u> (FRMS) to manage fatigue, FRMS regulations in accordance with Appendix 6



APPENDIX 5. PRESCRIPTIVE FATIGUE MANAGEMENT REGULATIONS

States shall establish prescriptive limitation regulations that take into account acute and cumulative fatigue, circadian factors and the type of work being undertaken. These regulations shall identify:

- a) the maximum:
 - number of hours in any duty period;
 - number of consecutive work days;
 - number of hours worked in a defined period; and
 - time-in-position;

b) the minimum:

- duration of non-duty periods;
- number of non-duty days required in a defined period; and
- duration of breaks between periods of time-in-position in a duty period.

Note.— Guidance on the development and implementation of prescriptive fatigue management regulations is contained in the Manual for the Oversight of Fatigue Management Approaches (Doc 9966)



APPENDIX 6. FATIGUE RISK MANAGEMENT SYSTEM (FRMS) REQUIREMENTS

States shall require that an FRMS contain, at a minimum:

- 1) FRMS policy and documentation
 - i. FRMS policy
 - ii. FRMS documentation
- 2) Fatigue risk management processes
 - i. Identification of fatigue-related hazards
 - ii. Fatigue-related risk assessment
 - iii. Risk mitigation
- 3) FRMS safety assurance processes
- 4) FRMS promotion processes

Note.— Guidance on the development and implementation of prescriptive fatigue management regulations is contained in the Manual for the Oversight of Fatigue Management Approaches (Doc 9966)



Doc 9966

Manual for the Oversight of Fatigue Management Approaches

Second Edition, Version 2 (Revised), 2020



Approved by and published under the authority of the Secretary General.

INTERNATIONAL CIVIL AVIATION ORGANIZATION



OVERSIGHT OF FATIGUE MANAGEMENT APPROACHES (9966)

The **second edition**, published in **2016**, represented a substantial expansion of fatigue risk management topics to include:

- Updated guidance related to implementation of fatigue management approaches based on experience gained in airline operations;
- Information previously contained in Annex 6, Part I, Attachment A - Guidance Material for Development of Prescriptive Fatigue Management Regulations;
- Information to support Amendment 50 to Annex 11 Air Traffic Services regarding the implementation of prescriptive duty limitation regulations for air traffic controllers and the implementation of <u>fatigue</u> risk management systems (FRMS); and
- Information to support existing fatigue management Standards in Annex 6 — Operation of Aircraft, Part II — International General Aviation — Aeroplanes.



OVERSIGHT OF FATIGUE MANAGEMENT APPROACHES (9966)

The Manual for the Oversight of Fatigue Management Approaches (Doc. 9966)







Fatigue Management in general

Chapter 1

Introduction to Fatigue Management

Chapter 2

The Scientific Principles for Fatigue Management

Chapter 3

Operational Knowledge and Experience

Appendix A

Fatigue Management SARPs and their Intent

Appendix H

Bio-mathematical Models

Appendix I

Evaluating the Contribution of Fatigue to Safety Events

The Prescriptive Approach

Chapter 4

The Prescriptive Approach

Appendix C

Prescriptive Limitation Parameters (Flight and Cabin Crew)

Appendix D

Prescriptive Limitation Parameters (ATCs)

Appendix E

Prescriptive Limitation Parameters (XXX) Space held for future guidance

Appendix F

Prescriptive Limitation Parameters (YYY) Space held for future guidance

Appendix J

Recommended Fatigue Training Topics

Approach Chapter 5 **FRMS: Necessary Components** Chapter 6 **FRMS: Implementation** Appendix B Measurement Tools Appendix G Example FSAG Terms of Reference Appendix J **Recommended Fatigue Training** Topics Appendix K **Example FRMS Evaluation Form**

The FRMS







Fatigue Management Guide for Air Traffic Service Providers

First Edition, 2016



Fatigue Management Guide for ATS Providers

CANS

The Fatigue Management Guide for Air Traffic Service (ATS) Providers is one in a suite of manuals related to fatigue management. Developed specifically for <u>ATS</u> <u>Providers</u>, this manual presents information on managing fatigue risks using both a <u>prescriptive</u> approach to fatigue management and <u>FRMS</u>.

This document is designed to be read in association with the *ICAO Manual for the Oversight of Fatigue Management Approaches (Doc. 9966).*



FATIGUE MANAGEMENT IN GENERAL

CHAPTER 1

Introduction to Fatigue Management

CHAPTER 2

The Scientific Principles for Fatigue Management

CHAPTER 3

Operational Knowledge and Experience

APPENDIX A

Fatigue Management SARPs and their Intent

THE PRESCRIPTIVE APPROACH

CHAPTER 4 The Prescriptive Approach

APPENDIX D Recommended Fatigue Training Topics

THE FRMS

CHAPTER 5

FRMS: Operational Components

CHAPTER 6

FRMS: Organizational Components

CHAPTER 7

FRMS: Implementation

APPENDIX B

Measuring ATC Fatigue

APPENDIX C Procedures for Naps Taken During Work Periods

APPENDIX D Recommended Fatigue Training Topics

APPENDIX E Example of FRM Processes

> APPENDIX F Examples of SPIs

APPENDIX G Examples of FRMS Safety Assurance Processes

THANK YOU



SHAPING OUR FUTURE SKIES





Ms. Lydia Hambour

Regulatory Engagement Lead AirServices Australia 22 July 2021



CANSO - ATM FATIGUE MANAGEMENT IN AFRICA ARRSERVICES FRNS

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HOW MUCH SLEEP DID YOU GET LAST NIGHT?





WHY IS IT IMPORTANT?

CONSEQUENCES

- Slowed reaction times
- Loss of situational awareness
- Impaired decision making
- Trouble concentrating



OUR STARTING PRINCIPLE

SLEEP IS CRITICAL

Quantity

- 8-hr sleep opportunity is critical
- Time off \neq sleep opportunity
- Cumulative sleep debt requires additional time for full recovery
- It is difficult to make big changes to sleep times quickly

Quality

- Sleep quality is degraded during daylight hours
- Interruptions lead to degraded sleep quality
- Lifestyle can impact sleep quality



OUR ENVIRONMENT





OUR APPROACH - PROCESS

OVERVIEW



Education and promotion



Shared accountability



Strategic roster design



Tactical roster management





EDUCATION & PROMOTION

REGULAR MESSAGING airservices MSREVIEW **Z**_z Working at Nigh GETTING PLENTY OF SLEEP FORE YOUR NIGHT SHIFT 6.6 HRS LED NAPPING 4 HRS 00:05 05:17 BASICS OF SUCESSFUL • 5.9. 7.2 HOURS Fatigue Risk Management Awareness 0 for Quintiq end-users FOR STAFF airservices

SHARED RESPONSIBILITY

FATIGUE RISK MANAGEMENT IS A SHARED RESPONSIBILITY

Organisation

- Design appropriate work schedule
- Educate employees on fatigue, the risks and management strategies
- Provide a supportive environment for reporting fatigue hazards
- Be adaptable

Employee

- Prioritise sleep
- Use sleep education and knowledge to manage fatigue risk
- Report fatigue hazards
- Ensure fitness for duty, or report accordingly



STRATEGIC ROSTERING



Based on scientific principles, operational knowledge, employee sleep and performance data, and ongoing assurance information



AND THEN THE REAL WORLD INTERVENES...



TACTICAL RISK MANAGEMENT





TACTICAL RISK MANAGEMENT









CONTINUOUS IMPROVEMENT

LESSONS LEARNT

- Be willing to change based on the data
- Sometimes mitigations can have unintended consequences
- Bring stakeholders along on the journey
- Technological solutions help support complex operating environment
- Commitment from senior leadership is key
- Communicate why and listen to feedback let data tell the story
- Incremental improvements to support operational readiness





THANK YOU

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PANEL DISCUSSION











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PANEL DISCUSSION





QUESTIONS AND ANSWERS





Mr. William Amoako

Safety, Standards & Quality Assurance Manager

Ghana CAA



International Standards and Recommended Practices









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Fatigue Management Guide for Air Traffic Service Providers

First Edition, 2016





FATIGUE MANAGEMENT PRESCRIPTIVE & FRMS

 In managing fatigue, <u>prescriptive</u> approach or <u>fatigue risk</u> management system (FRMS) could be used.

For Prescriptive:

- States shall establish regulations for <u>managing fatigue</u> in ATC based upon <u>scientific principles, knowledge and operational</u> <u>experience</u>, to ensure that air traffic controllers perform at an adequate level of **alertness.**
- It shall establish prescriptive limitation, ie maximum and minimum duty and non-duty periods considering acute and cumulative fatigue, circadian factors



PRESCRIPTIVE & FRMS

FRMS

- 1) FRMS policy and documentation
 - i. FRMS policy
 - ii. FRMS documentation
- 2) Fatigue risk management processes
 - i. Identification of fatigue-related hazards
 - ii. Fatigue-related risk assessment
 - iii. Risk mitigation
- 3) FRMS safety assurance processes
- 4) FRMS promotion processes



Research

Quality of Sleep

- Research shows on average adults need 7-8 hours of sleep per night
- Both **quantity** and **quality** of sleep are critical

- 30% of adult population sleep deprived (<6hrs sleep per night)
- Sleep quality is degraded during daylight hours and Interruptions
- Lifestyle can impact sleep quality



Effects

Sleep deprivation can have catastrophic consequences for individuals in safety-critical domains.

- Slowed reaction times
- Loss of situational awareness
- Impaired decision making
- Trouble concentrating



Management of Fatigue Mitigation

- The **only** way to cure fatigue is **sleep**, there are a lot of countermeasures to fatigue risk coffee, breaks
- Tactical management of fatigue is about balancing the operational needs with the safety needs
- Risk management through strategic and tactical rostering and assurance of the processes



Shared Responsibility

- Fatigue Risk Management is A Shared Responsibility
- Education on the effects of fatigue and how to manage appropriately
- Outlines accountabilities for individual and organisation



Mitigation

- Report fatigue hazards
- Provide a supportive environment for reporting fatigue hazards
- Design appropriate work schedule
- Educate employees on fatigue, the risks and management strategies



Mitigation

- Fatigue management doesn't stop when you leave the office
- Ensure fitness for duty, or report accordingly
- Bring stakeholders along on the journey
- Commitment from senior leadership is key
- Technological solutions help support complex operating environment

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