IFALPA
The Global Voice of Pilots
Position
15POS01
9 April 2014

Fatigue Management

Introduction

ICAO defines fatigue as:

> *A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental and / or physical activity) that can impair a crew member's alertness and ability to safely operate an aircraft or perform safety related duties.*

Fatigue Management

ICAO Standards and Recommended Practices (SARPs) for Fatigue Management are contained in ***ICAO Annex 6 Part 1 Chapter 4 Section 10,*** and require that State regulations for fatigue management are based upon scientific principles and knowledge to ensure crew members are performing at an adequate level of alertness.

ICAO provides Standards and Guidance Material for State regulations for fatigue, namely mandatory prescriptive fatigue management regulations, and optional Fatigue Risk Management Systems (FRMS).

ICAO Standards further require operators to develop and maintain a formal process that ensures that hazards in operations are identified as part of the operator's Safety Management System (SMS). Fatigue is a hazard, and as such is required to be identified by a combination of reactive, proactive, and predictive methods of safety data collection (See ***Appendix 7 to ICAO Annex 6 Part 1***). This hazard identification applies to **both** prescriptive and FRMS approaches to fatigue management.

IFALPA agrees with the ICAO Standards for fatigue management but has developed its own guidance material for the development of prescriptive fatigue management, as ICAO has provided no numerical values in their guidance material. A flight and duty time scheme and rest provisions are located in ***IFALPA Annex 6, Part I, Appendix A.***

ICAO has provided amplification of the intent for each of the fatigue management SARPs in ***ICAO Document 9966 FRMS Fatigue Risk Management Systems Manual for Regulators*** (pages 1-5 to 1-7).

Fatigue Countermeasures on the Flight Deck

IFALPA has issued the following policy statement:

> *"It is the responsibility of all crew members to be appropriately rested before flight. During all phases of flight each crew member required to be on flight deck duty shall remain alert. However, if unexpected tiredness or decreased alertness is experienced, appropriate fatigue counter measures may be used. Such counter measures include physical exercise, bright cockpit illumination, intellectual exercise, and when possible, controlled rest on the flight deck at the normal crew stations at the discretion of the commander. Such counter measures on the flight deck cannot be planned before flight and may never be used to extend duty limits, as an alternative to crew augmentation or be considered as part of a rest period for the purposes of calculating flight time limitations.* (POL STAT 5 / 2012)"

Notes:

1. Some regulatory authorities do not permit controlled rest procedures.

2. Guidance material for controlled rest on the flight deck is provided at Appendix C to the ICAO IFALPA IATA FRMS Implementation Guide for Operators. IFALPA supports this guidance but considers the termination of controlled rest procedures 20 minutes prior to top of descent to be an absolute minimum. Adequate time should also be allowed for operational matters such as receipt of ATC clearance, operational briefings etc. in addition to the time necessary to minimise the risk of sleep inertia.

Fatigue Education and Training

IFALPA's position is that operators should be required to establish a fatigue management education programme on an initial and recurrent basis that instructs aircrew schedulers and management regarding fatigue in all flight operations. This programme shall cover the physiological manifestations of fatigue along with mitigation methods and personal counter measures, company fatigue policies and crew strategies. Flight crew should also be trained in the use of personal strategies to prepare and deal with fatigue-related issues.

The content of training programmes should be adapted according to the knowledge and skills required for each group to play their part in effective fatigue management. All groups require basic education about the dynamics of sleep loss and recovery, the effects of the daily cycle of the circadian body clock, the influence of workload, and the ways in which these factors interact with operational demands to produce fatigue.

Training for crew members could address the following areas:

- Crew member responsibilities
- Causes and consequences of fatigue in the operation(s) in which they work.
- Reporting fatigue hazards
- How to identify fatigue in themselves and others.
- Personal strategies that they can use to improve their sleep at home and to minimize their own fatigue risk, and that of others, while they are on duty.
- Basic information on sleep disorders and their treatment, where to seek help if needed, and any requirements relating to fitness to fly.

Note: Chapter 2 of ICAO Doc 9966 and the FRMS Implementation Guide for Operators "Science for FRMS" contains excellent educational information which IFALPA supports. This information also has application for traditional prescriptive management of fatigue because of the importance of sleep on human performance and therefore safety.

Fatigue Risk Management Systems (FRMS)

States have the option of implementing FRMS regulations which in turn may allow an operator to implement FRMS for part or all of its operations. IFALPA supports FRMS provided it is implemented correctly as intended by ICAO because it should enhance safety in addition to providing flexibility for operators in the conduct of their operations

Prior to making regulatory provision for FRMS, the ICAO requirement that a State's prescriptive fatigue management regulations (flight and duty time regulations) are based on scientific principles and knowledge must be met. This is a necessary precondition for any FRMS as ICAO requires States to establish a process that ensures an operator's FRMS provides a level of safety equivalent to, or better than a State's prescriptive flight time limitations. IFALPA believes the real challenge for FRMS is the need for regulators, employers and employees to have a sufficiently in-depth knowledge and understanding of the causes and consequences of fatigue that enable them to meet their responsibilities in relation to FRMS.

FRMS is still in its infancy and therefore has its own unique challenges:

- FRMS is not fully understood by many Regulators and the implementation of performance based regulations such as FRMS may be beyond the capability of some regulators.
- FRMS requires considerable resources at both the operator and regulatory level. Appropriate resources must be provided to ensure the goal of an equivalent or enhanced level of safety is actually attained.
- Pilot involvement from the outset as a stakeholder at both the regulatory and company level is essential. FRMS programmes have been initiated by some operators without the involvement of their pilot representatives
- The over use or overreliance of bio-mathematical models could degrade fatigue management and safety. No operational decisions should ever be made based solely on a fatigue model threshold.(see note 1)
- A proper balance between the competing goals of reducing fatigue risk and the productivity gains offered by increased operational flexibility is essential.
- FRMS can only be effective where the organisational culture openly encourages reporting of fatigue-related hazards in a manner that is non-punitive to the reporter. All stakeholders (regulators, operators and pilots) need to make themselves fully conversant with the specific requirements for FRMS detailed in ICAO Annex 6 and the supporting guidance material.

Notes:

1. Guidance for fatigue modelling and its application can be found at: ***http://www.casa.gov.au/wcmswr/_assets/main/aoc/fatigue/fatigue_modelling.pdf***

2. IFALPA has Briefing Leaflets that provides Member Associations comprehensive information to assist in implementing FRMS.

Fatigue Related Medical Considerations

The use of sleep inducing drugs and melatonin should be avoided at least the night before the flight. The use of any other wake-promoting drugs except caffeine in coffee or tea is unacceptable. On the whole, IFALPA strongly believes that duty periods should be planned so that one is able to work without the use of any sleep or alertness modulating drugs.

Sleep inducing drugs

Sleep inducing drugs such as benzodiazepines, zolpidem or zaleplon are commonly used in the treatment of sleep disorders, but one should be cautious to use them while actively flying. The half-life of these drugs varies, and there is a risk of drowsiness and psychomotor performance degradation up to 12 hours or more after use. Therefore, the use of sleep inducing drugs should be avoided at least the night before the flight. On the whole, IFALPA strongly believes that duty periods should be planned so that one is able to work without the use of any sleep modulating drugs.

Melatonin

Melatonin is a hormone produced in the pineal gland. It has a role in the regulation of circadian rhythm. It is secreted during the night and light affects its secretion. Melatonin has been used for circadian dysrhythmia, but on the whole, the results have been controversial. Therefore, IFALPA does not promote the use of melatonin for jet-lag. In addition, there is a possibility for drowsiness and therefore the use of melatonin should be avoided at least the night before the flight.

Wake-promoting drugs

In the military aviation dextroamphetamine or amphetamine derivate modanifil has been used during prolonged missions. However, IFALPA's position is that the use of any wake-promoting drugs, other than caffeine in coffee and tea, is unacceptable.

Medical conditions behind fatigue

In the case of excessive fatigue, there might be some medical conditions such as sleep apnoea behind the fatigue. In these situations a pilot is advised to contact an aeromedical examiner.

*Note: IFALPA has a **briefing leaflet on sleep apnoea.***