



**GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
TECHNICAL CENTRE, OPP SAFDURJUNG AIRPORT, NEW DELHI**

**CIVIL AVIATION REQUIREMENT
SECTION 7 FLIGHT CREW STANDARDS
TRAINING AND LICENSING
SERIES 'J' PART IV
Issue III Dated -----**

Effective: 1st Nov 2018

File No. AV-22024/03/2018-CS

Subject: Flight Duty Time and Flight Time Limitations – Flight crew

1. INTRODUCTION

- 1.1 The ICAO Annex 6, Operation of Aircraft, Part I, to the Convention on International Civil Aviation, requires standards and recommended practices for management of fatigue for flight crew members. These standards require State of the Operator to establish prescriptive regulations for the management of fatigue which establish regulations specifying the limits applicable to Flight Time, Flight Duty Period, Duty Period and Rest Period for Flight crew. The Operator, for the purpose of managing its fatigue related safety risks, is required to establish flight time, flight duty periods, duty period and rest period limitations that are within the prescriptive fatigue management regulations established by the State.
- 1.2 In order to enhance safety of aircraft operations and in exercise of powers conferred under Rule 42A of the Aircraft Rules, 1937 read with Rule 133A of Aircraft Rules, 1937, the following Flight Duty Time and Flight Time Limitations for Flight Crew are issued for information, guidance, and compliance by all concerned.
- 1.3 This CAR supersedes all previous communications, letters and instructions issued by the DGCA regarding Flight crew FDTL.

2. APPLICABILITY

This CAR is applicable to all flight crew members engaged in Scheduled Commuter Operations, Non-scheduled Operators, General Aviation, Public Sector Undertakings/State Governments and Aerial operations.

3. DEFINITIONS

3.1 Acclimatised

It means a state in which a crew member's circadian biological clock is synchronised to the time zone where the crew member is. A crew member is considered to be acclimatised to a 3-hour wide time zone surrounding the local time at the point of departure. When the local time at the place where a flight duty commences differs by

more than 3 hours from the local time at the place where the next duty starts, the crew member, for the calculation of the maximum daily flight duty period, is considered to be acclimatised.

3.2 **Accommodation**

Means, for the purpose of standby and split duty, a quiet and comfortable place not open to the public with the ability to control light and temperature, equipped with adequate furniture that provides a crew member with the possibility to sleep, with enough capacity to accommodate all crew members present at the same time and with access to food and drink.

3.3 **Aerial Operations**

Means for the purpose of Agriculture Operations, Pipeline Survey, Airport Facilities, Calibration Flights, Leaflet and Flower dropping flights, Under Sling Cargo, Carriage, Rescue Hoist, Aerial Photography, Geographical Survey and Other like Operations.

3.4 **Augmented Flight Crew**

Means a flight crew which comprises more than the minimum number required to operate the aircraft, allowing each flight crew member to leave the assigned post, for the purpose of in-flight rest, and to be replaced by another appropriately qualified flight crew member.

3.5 **Duty**

Any task that flight crew members are required by the operator to perform, including, for example, flight duty, administrative work, training, positioning and standby when it is likely to induce fatigue.

3.5.1 **Duty Period**

A period which starts when a flight crew member is required by an operator to report for, or to commence a duty and ends when that person is free from all duties.

Note 1: Standard allowance shall be added at the end of flight time to allow for completion of checks.

- a) 30 minutes for Scheduled Air Transport Services.
- b) 60 minutes in case of International Operations where the flight crew are required to undertake post flight medical examination if the same has not been carried out on board the aircraft after arrival.

Note 2: Duty Period includes Flight Duty Period.

3.4.2 **Flight Duty Period**

A period, which is intended to cover continuous period of duty that always includes a flight or series of flight for a flight crew member. It commences when a flight crew member is required to report for duty and finishes at engine off at the end of the last flight on which he/she is a flight crew member.

3.4.3 **Flight Time**

The total time from the moment an aeroplane first moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight.

Note: “Flight time” is defined as synonymous with the term “block-to-block” time or “chocks-to-chocks” time in general usage, which is measured from the time an aeroplane first moves for the purpose of take-off until it finally stops at the end of the flight.

3.6 **Mixed Duty**

When a crew member is required to report for a duty in advance of the stipulated reporting time for a scheduled flight or series of flight to carry out a duty at the behest of Operator, the time spent on that duty shall be part of the subsequent FDP. Provision of Mixed Duty is to be utilized and limited to provisions as in Table 6.1.1.

3.7 **Flight Crew Member**

A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.

3.8 **Fatigue**

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.

3.9 **Home Base**

The location nominated by the operator, having high degree of permanence from which the crew member normally starts and ends a flight duty or a series of flight duty periods.

3.10 **Local Day**

Means a 24-hour period commencing at 00:00 local time.

3.11 **Local Night**

A period of eight hours falling between 2200 hours and 0800 hours local time.

Note 1:The operators shall define eight hours of local night to cater for seasonal schedules.

Note 2:The operators may define eight hours of local night to cater for type of aircraft/fleet type.

3.12 **Long Range (LR)**

Continuous non-stop flights involving any sector having a continuous flight time of over 12 hrs and up to 14 hrs and Flight duty periods upto 18 hrs.

3.13 **Night Duty**

Means a flight duty period encroaching any portion of the period between 0000 hrs and 0500 hrs in the time zone to which the crew is acclimatized.

3.14 **Operating Crew Member**

Means a crew member carrying out duties in an aircraft during a sector.

3.15 Positioning

The transferring of a non-operating flight crew member from place to place at the behest of the operator.

Note: “Positioning” as here defined is synonymous with the term “Deadheading”.

3.16 Reporting Time

The time at which flight crew member is required by an operator to report for duty.

Note 1: Each operator must take into account the available airport facilities such that the operating crew gets sufficient time to complete pre-flight activities and have adequate cockpit preparation time. The operator shall include in the ‘Scheme’ the optimum time of pre-flight dispatch activities after taking into account various factors.

Note 2: Operator shall define reporting time based on different requirements of flights to Domestic and International sectors by taking Customs & Immigration formalities, etc. into account.

Note 3: For record purposes, the pre-flight report time shall count both as duty and as flight duty, and the post-flight allowance shall count as duty.

3.17 Rest Period

A continuous, uninterrupted and defined period of time, subsequent to or prior to duty, during which a flight crew member is free from all duties, standby and reserve.

3.18 Rest Facility

Means a bunk or seat with leg and foot support suitable for crew members’ sleeping on board an aircraft;

3.19 Roster

A list provided by an operator of the times when a flight crew member is required to undertake duties.

Note: “Roster” as here defined is synonymous with “Schedule”, “Line of Time”, “Pattern”, and “Rotation”.

3.20 Split Duty (Break)

A period free of all duties, which counts as duty, being less than a rest period.

3.20.1 Break

Means a period of time within a flight duty period, shorter than a rest period, counting as duty and during which a crew member is free of all tasks.

3.21 **Standby**

It is a defined period of time during which a flight crew member is required by the operator to be available to receive an assignment for a specific duty without an intervening rest period.

3.22 **Sector**

Means the segment of an FDP between an aircraft first moving for the purpose of taking off until it comes to rest after landing on the designated parking position.

3.23 **Time Zone**

Means a defined region of the earth with a uniform local time which differs by one hour, or by part of one hour from the uniform local time of an adjoining region of the earth, irrespective of season.

3.24 **Training Flights**

Flights for the purpose of Base Training, Familiarization, Conducting Aircraft Training and Checks (Skill Test/IR/PPC).

3.25 **Unforeseen Operational Circumstance**

An unplanned event, such as unforeseen weather, natural calamity, medical emergency, national requirement for relief and rescue operations (mission oriented), equipment malfunction, runway closure, passenger, aircraft security, etc., that is beyond the control of the operator.

3.26 **Window Of Circadian Low (WOCL)**

WOCL is best estimated by the hours between 0200 hrs and 0559 hrs for individuals adapted to a usual day-wake/night sleep schedule. This estimate of the window is calculated from scientific data on the circadian low of performance, alertness, subject report (i.e. peak fatigue) and body temperature.

- i) For flight duty periods that cross 3 or fewer time zones, the window of circadian low is estimated to be 0200 hrs to 0559 hrs home-base/ domicile time for the first 48 hours only.
- ii) For flight duty periods beyond 3 or more time zones, the window of circadian low is estimated to be 0200 hrs to 0559 hrs home-base/ domicile time for the first 48 hours only.
- iii) For a flight crew member remaining more than 48 hours away from home-base/ domicile time, the window of circadian low is estimated to be 0200 hrs to 0559 hrs referred to local time at the point of departure.

When the FDP starts in the WOCL, the maximum FDP stated in the Tables contained in Para 6.1 and 7.1 of this CAR shall be reduced by 100% of its encroachment upto a maximum of 2 hours. When the FDP ends in or fully encompasses the WOCL, the maximum FDP stated in the table shall be reduced by 50% of its encroachment.

Note: The reference time for “48 hours away from home-base” is to be considered from commencement to end of Flight Duty Period.

4. OPERATOR'S RESPONSIBILITY

- 4.1 Every operator shall establish a scheme for complying with the limitations for flight time, flight duty periods, duty periods and rest periods specified in this CAR in respect of flight crew members.
- 4.2 The FDTL scheme shall be submitted to DGCA for approval. The approved scheme shall form part of the Operator's Operations Manual.
- 4.3 The operator shall not require a flight crew member to perform flight crew duties on a flight if it is known or suspected that the flight crew member is fatigued to the extent that the safety of flight may be adversely affected.
- 4.4 No operator may schedule any flight crewmember and no flight crew member may accept an assignment, which shall exceed the prescribed limitation, as mentioned in this CAR.

5. RESPONSIBILITY OF FLIGHT CREW MEMBER

- 5.1 Flight crew members shall make best use of facilities and opportunities that are available or provided for rest and for the consumption of meals, and shall plan and use rest periods to ensure that they are fully rested.
- 5.2 A flight crew member shall not perform flight crew duties on a flight if it is known or suspected that the flight crew member is fatigued to the extent that the safety of flight may be adversely affected.

6. TWO PILOT OPERATION

- 6.1 The maximum flight time and maximum flight duty period during any 24 hrs are indicated in the following Table.

Sub Para	Maximum Flight Time	Maximum Flight Duty Period (in Hours)	Maximum No. of Landings	Day/Night
6.1.1	Up to 8 hrs	10:00	8	Day
6.1.2	Up to 8 hrs	10:30	7	Day (only one landing by night)
6.1.3	Up to 8 hrs	11:00	6	Day/night
6.1.4	Up to 8 hrs	11:30	5	
6.1.5	Up to 8 hrs	12:00	4	
6.1.6	Up to 8 hrs	12:30	3	
6.1.7	Above 8 and up to 9 hrs	13:00	2	
6.1.8	Above 9 and up to 10 hrs	13:30	1	

7. AUGMENTED CREW

7.1 The maximum flight time and maximum flight duty period during any 24 hrs are indicated in the following Table.

Sub Para	Maximum Flight Time	Maximum Flight Duty Period (in Hours)	Maximum No. of Landings
7.1.1	Above 9 and upto 10 hrs (For Three Crew Operation)	13.30	2
7.1.2	Above 10 and upto 12 hrs (For Three Crew Operation)	14:00	1
7.1.3	Above 12 and upto 14 hrs (Long Range - Four Crew Operations)	18:00	1

7.1.4 The maximum flight duty period may be extended for three crew operation as in sub-para 7.1.2 in accordance with the following:

Rest Facility Available	Maximum Extension of the FDP
Rest Seat	2 Hours
Bunk	3 Hours

Note: The Operator may choose to augment crew beyond the prescriptive requirement as per Table 6.1.7 and 6.1.7 to mitigate Fatigue, however the Flight Time, Flight Duty Period and the Maximum number of landings shall be limited to the respective, corresponding tables i.e. (6.1.7 & 6.1.8)

7.2 AUGMENTATION OF FLIGHT CREW AND INFLIGHT REST

7.2.1 The operator shall ensure that a Rated Captain is always on duty during the in-flight rest of the other Flight crew.

7.2.2 The scheme shall specify that Flight Time will be counted only when the crew is 'On Controls'.

7.2.3 The minimum in-flight rest period shall be a consecutive 90 minute period for each crew member and 2 consecutive hours for the flight crew members at control during landing. Crew shall be allowed to return to controls only after 30 minutes of waking after bunk/seat rest which may be part of the rest.

7.2.4 Rest Seat will be at least a 'Horizontal Rest' outside the cockpit and separated from passengers by a dark curtain.

7.2.5 The conditions of rest should be such that a flight crew member can obtain recuperative rest in a comfortable horizontal seat, or in a bunk, separated and screened from the passengers, and reasonably free from disturbance.

7.2.6 In case of augmented flight crew, the division of duty and rest between the flight crew members being relieved will be kept in balance, which would be spelt out in detail in the scheme of the operator.

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8. MAXIMUM CUMULATIVE FLIGHT TIME AND DUTY PERIOD LIMITATIONS

Sub Para	Maximum Cumulative Flight Time Limitations	Maximum Flight Time Limitation (in Hours)	Maximum Cumulative Duty Period
8.1	In 7 consecutive days	35	60
8.2	In 14 consecutive days	65	100
8.3	In 28 consecutive days	100	190
8.4	In 90 consecutive day	300	600
8.5	In 365 consecutive days	1000	1800

9. SPLIT DUTY

Split duty shall be as follows:

No.	Consecutive hours of break	Maximum Extension of the Flight Duty Time
9.1	Less than 3 hours	Nil
9.2	Between 3 hours and 12 hours	A period equal to half the consecutive hours break taken
9.3	>12 hours	No extension permitted

- a) Post-flight and Pre-flight duties / transport time will not be counted as part of rest.
- b) If the break is more than 6 consecutive hours or fully encroach on the WOCL, then operator will provide suitable accommodation.
- c) Parts of the Flight Duty Period before and after the break shall not exceed 10 hours.
- d) Split duty shall only be applicable for Para 6, Sub Para 6.1.1 to 6.1.6
- e) The Break on the ground shall count in full as FDP.

10. MINIMUM REST PERIODS

10.1 Rest Period (Before the Flight)

The minimum rest, which must be provided before undertaking a flight duty period, shall be:

- a) At least as long as the preceding duty period,

OR

- b)
 - i) 12 hours
 - ii) 18 hours for crossing 3 time zones up to 7 time zone
 - iii) 36 hours for crossing 7 time zones up to 10 time zone
 - iv) 48 hours for crossing 10 time zone

Whichever is greater.

Note 1: The above hours as in (b) may be reduced by 15% Twice in a period of any consecutive 168 Hours in such case additional rest will be double the amount reduced, which is to be provided after the subject Duty Period.

Note 2: In Case of using Note 1, the Flight time is limited to 4 Hours and landings are limited to number 4.

Note 2: For a Flight Crew operating between 3 to 7 Time Zones, and proceeding to farther Time Zones, the crew shall be provided a minimum rest, at lay over station, as per para 10.1, before proceeding beyond on the next Flight Duty Period. The Time Zone difference for subsequent flight will be calculated from the place of new departure to destination.

10.2 For all other duties, apart from Flight Duty/ Mixed Duty, a minimum rest period of 10 hours shall be given. Operators to define the same in their FDTL Scheme.

10.3 Rest Period After Standby

10.3.1 When any period of standby finishes, which does not culminate into flight duty, the rest for home standby shall be 8 hrs and for airport standby shall be 12 hrs.

10.3.2 When standby culminates in to a duty, then the rest period shall be decided based on total period of duty i.e. the duty plus the percentage of standby counted for duty.

10.4 If the preceding duty period, which includes any time spent on positioning, exceeds 18 hours, then the ensuing rest period shall include a local night

10.5 Period of transportation to and from an airport shall neither be counted towards duty time nor rest period. The operator shall include in the 'Scheme' the optimum time of transportation after taking into account various factors and on ensuring that the rest period does not get reduced below the minimum rest requirements.

10.6 Weekly Rest

An operator shall ensure that the minimum weekly rest of continuous 36 hours including two local night is provided such that there shall never be more than 168 hours between the end of one weekly rest period and the start of the next.

10.7 Rest After Return to Home Base

Operator shall ensure that effects on flight crew members of time zone differences will be compensated by additional rest as specified below.

10.8 Minimum rest including local nights shall be given, according to the Table given below, to any flight crew member when coming back to home base, who has been

away from the home base on flight duty in such a way that the WOCL had to be encroached.

Sub Para	Time Zone difference	Rest (in Hours)	Local Nights	WOCL Encroachment
10.8.1	More than 3 to 7	24	1	Upto 50%
10.8.2	More than 3 to 7	36	2	More Than 50%
10.8.3	More than 7 to 10	48	2	Up to 50%
10.8.4	More than 10	72	3	Up to 50%

Note 1: For flight crew who have availed a rest period of 36 hours including two (2) Local Nights or more at layover station, then a rest period of only 24 hours including one local night shall be provided on return to Home Base. This provision is applicable to 10.8.1 & 10.8.2.

Note 2: Flight crew covered by Para 10.6. whose weekly rest is due after completion of flight duty, will be given 50% of rest in hours only (as indicated in Table above 10.8) over and above the admissible weekly rest as in 10.6, when concurrently due.

Note 3: For flight crew operating flights crossing 7 Time Zones and under 10.8.3 and 10.8.4, additional rest of 24 including one local night shall be added to the Note 2.

Note 4: WOCL encroachment to be considered for rest on return to Home base, as in Table 10.8, is for only the last return flight, to Home Base/Domicile.

11. STANDBY

11.1 General

11.1.1 Operators shall include 'Standby' as part of their regular rosters and concerned flight crew shall be kept notified.

11.1.2 In case of exigencies when 'Standby' duty may go beyond the roster; Operator shall ensure that concerned flight crew is notified in advance.

11.2 Standby Period

11.2.1 Standby period shall not extend beyond 12 hours. However, a maximum standby at airport (with or without sleeping quarters) shall not exceed 8 hours.

11.2.2 If the standby period is at the airport and

- a) Standby culminates into a flight duty then the total period (i.e. 100%) shall be counted towards the flight duty period and also towards cumulative duty period.
- b) Standby does not culminate into a flight duty then the total period (i.e. 100%) shall be counted towards cumulative duty period.

11.2.3 If the standby period is at home or in a hotel and culminates into duty

- a) Within first 6 hours then no part of standby shall be considered as part of flight duty period or cumulative duty period.
- b) At 6 hours or later then flight duty period shall be reduced by 50% of the standby time.

11.2.4 If standby period is at home or in a hotel does not culminate into a duty then, 25% of its time shall be considered under cumulative duty.

12. POSITIONING

12.1 All the time spent on positioning on the behest of the operator shall be counted as duty.

12.2 Positioning time should be a part of a flight duty period when it immediately precedes (i.e. without an intervening rest period) a flight duty period in which that person participates as a flight crew member.

12.3 Positioning after operating a flight duty period without an intervening rest period shall be counted as duty period for determining the rest period.

12.4 Positioning should not count as an operating sector when planning or calculating a flight duty period.

13. CONSECUTIVE NIGHT OPERATION

13.1 Flight crew shall neither be detailed nor undertake any flight duty between periods embracing 0000 to 0500 hrs local time for more than two consecutive nights except once within a period of 168 hours.

13.2 For a flight crew member remaining less than 48 hours away from home-base/ domicile time, two consecutive nights is estimated to be referred to local time at the point of first departure of flight schedule

13.3 Flight crew shall also not be detailed or undertake any duty between the hours of 0000 to 0500 prior to utilizing the provisions of 13.1 above.

13.4 When a crew has undertaken flights in consecutive nights then for transition to flights beyond period 0000 to 0500 hrs, he/ she should not be scheduled for a flight which is commencing prior to, at least 24 hrs including one local night from arrival of the flight and prior to company local night plus 2 hrs.

14. TRAINING FLIGHTS

14.1 Whenever training flight is conducted by the Flight Crew, before or after operating a commercial operation, entire such period including training flight shall count for Flight Duty Time/Flight Time/number of landings etc.

14.2 The Training flights are conducted beyond the provisions of table 6.1.1 as Base Training Flights then the following provisions shall apply:

Base Training for 18+2 Landings

Base training may be conducted with a maximum of up to 18 landings and additional

02 landings which may be carried out by the trainer for positioning the aircraft within 11 hours of flight duty time and 6 hours of flying time with applicable restrictions of WOCL and the following:

- 14.2.1 The first landing for positioning the aircraft may be a Commercial Operations. The landing for positioning back of aircraft has to be a Non-Commercial Operations.
- 14.2.2 Any training apart from base training may be done on the 02-Positioning flights i.e. SLF, Route Checks etc.
- 14.2.3 In case Base training is carried out at night encroaching WOCL, to the extent of full 20 landings, then additional rest of 12 hours to be given including one local night apart from the minimum rest mandated.
- 14.2.4 Before assigning the trainer and the trainee for base training flight the crew member must be provided with the minimum rest period as laid down in para 10.

15. UNFORSEEN OPERATIONAL CIRCUMSTANCES

15.1 Flight Time', 'Flight Duty Period', "landing" and "Consecutive Night" may be extended due to unforeseen operational circumstances as follows:

- a) Flight Time by maximum of 1½ hours.
- b) FDP by maximum of 6 hours.
- c) Only one extra landing may be carried out in the event of a diversion to complete the flight.
- d) One additional Flight Duty between 0000 to 0500 hrs in continuation to provision of Para 14 (Consecutive Night Operations) may be carried out in case of utilizing the provisions of para 15.1 (a) or 15.1 (b) or 15.1 (c) or any combination thereof.
- e) The above is subject to a cumulative limit of maximum of 0430 hours (Flight Time), maximum of 9 hrs (FDP) and 02 landings during any period of 28 consecutive days.
- f) Whenever the Flight duty period or flight time gets extended, the rest period shall be pro-rata increased by twice the amount of extended time of Flight duty period.
- g) Extension of the maximum basic FDP shall not be combined with split duty in the same duty period.
- h) In case of not utilizing any flight time after commencement of FDP (Reporting) the crew can be utilized after a minimum of twice the time period spent after reporting subject to a minimum limit of 8 hours of rest.

Note 1: Provisions of only para 8.1 to 8.4 can be extended by the limits specified in 15.1 (a) and 15.1 (b).

Note 2: PIC in consultation with other Flight Crew members will convey their willingness or consent to the Head of Operations for operating the flight.

16. MAINTENANCE OF RECORDS AND MONITORING SYSTEM

16.1 Records

Records shall be kept for 18 months of the duties performed and the rest periods provided so as to facilitate inspection by the operator's authorized personnel and surveillance/audit by DGCA officers. The records may be made available to flight crew on request.

16.2 The Operator should ensure that these records include for each flight crew member, at least:

- i) Start, duration and end of each flight duty period.
- ii) Start, duration and end of each duty period.
- iii) Rest periods.
- iv) Flight time.
- v) Cumulative flight time as per Para 8 of this CAR.

16.3 The operator shall also keep records of occasions when flight time and duty were extended as per Para 15 of this CAR.

16.4 If discretion was used for similar reasons on more than 20% of occasions when a particular route or a route pattern is flown, for the seasonal schedule or minimum of 28 Flight Duty Periods, then the operator shall review and change the schedule or the crew scheduling arrangements so as to reduce the frequency at which such events occur.

16.5 In addition, DGCA may require submission of copies and analysis of records in the manner deemed fit.

16.6 Above maybe achieved through a fool proof transparent computerized system. The operator shall evolve a system so that only designated officers of the operator have access to the system. Further, the system shall have a provision of audit trail so that any change made in the data may be tracked down to its source.

16.7 Operator shall ensure that the Flight crew members shall maintain a personal record of their daily flight time, duty period, flight duty period and rest periods.

16.8 The operator through the computerized system shall ensure that the flight crew member is well within the flight time, flight duty period, duty period and rest period requirements before permitting him to operate a flight.

17. FATIGUE RISK MANAGEMENT SYSTEM (FRMS)

17.1 When FRM is required by DGCA, the operator shall establish, implement and maintain a FRM as an integral part of its management system. The FRM shall ensure compliance with the following essential requirements:

17.2 The FRM established, implemented and maintained shall provide for continuous improvement to the overall performance of the FRM and shall include:

17.3 A description of the philosophy and principles of the operator with regard to FRM, referred to as the FRM policy;

17.4 Documentation of the FRM processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;

17.5 Scientific principles and knowledge.

- 17.6 A hazard identification and risk assessment process that allows managing the operational risk(s) of the operator arising from crew member fatigue on a continuous basis.
- 17.7 A risk mitigation process that provides for remedial actions to be implemented promptly, which are necessary to effectively mitigate the operator's risk(s) arising from crew member fatigue and for continuous monitoring and regular assessment of the mitigation of fatigue risks achieved by such actions;
- 17.8 FRM safety assurance processes.
- 17.9 FRM promotion processes.
- 17.10 The FRM shall correspond to the flight time specification scheme, the size of the operator and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in those activities and the applicable flight time specification scheme.
- 17.11 The operator shall take mitigating actions when the FRM safety assurance process shows that the required safety performance is not maintained.

18. NIGHT DUTIES – APPROPRIATE FATIGUE RISK MANAGEMENT

- 18.1 When rostering night duties of more than 10 hours (referred to below as 'long night duties'), it is critical for the crew member to obtain sufficient sleep before such duties when he/she is adapted to being awake during day time hours at the local time where he/she is acclimatized. To optimize alertness on long night duties, the likelihood of obtaining sleep as close as possible to the start of the FDP should be considered, when rostering rest periods before long night duties, by providing sufficient time to the crew member to adapt to being awake during the night. Rostering practices leading to extended wakefulness before reporting for such duties should be avoided. Fatigue risk management principles that could be applied to the rostering of long night duties may include:
- a) Avoiding long night duties after extended recovery rest periods;
 - b) Progressively delaying the rostered ending time of the FDPs preceding long night duties;
 - c) Starting a block of night duties with a shorter FDP; and
 - d) Avoiding the sequence of early starts and long night duties.
- 18.2 Fatigue risk management principles may be applied to the rostering of long night duties by means of:
- a) Considering operator or industry operational experience and data collected on similar operations;
 - b) Evidence-based scheduling practices; and
 - c) Bio-mathematical models.

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