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CIVIL AVIATION DIRECTIVE (CAD-PEL-OPS) 13/2020

Subject: Flight and Duty Time Limitations and Rest Requirement for pilots and cabin crew (FTL).

Reference: ICAO Doc 9966, EASA FTL, ANO (OPS) A-10, and ANO (AW) E6

Introduction

01. It has long been recognized that fatigue, sleep loss and circadian disturbance can degrade performance and safety which is an issue for many who work irregular hours. A considerable amount of research has been carried out on the performance of shift workers with emphasis on such issues as the effect of speed and direction of rotation, the number of consecutive night and comparison between the hours of shifts.
02. Existing ANO(OPS) A-10 and ANO(OPS) E-6 dealing with the flight and duty time limitation of pilots and cabin crew respectively require comprehensive change in the contents based on the scientific evidence and research carried out by ICAO, EASA, IFALPA and IATA etc. to ensure the crew are at rest when conducting flight operation. Considering the number of crew involved in the operation of Bangladeshi AOC holder and operators, CAAB has decided to follow the prescriptive approach. In recognizing fatigue as a safety issue, ICAO SARPS require CAAB to establish prescriptive flight and/or duty limitation regulation for particular professional groups.
03. Hence, in exercise of the power conferred by Civil Aviation Act 2017, Section 14, Chairman, Civil Aviation Authority of Bangladesh (CAAB) for the purpose of securing the safety of aircraft operations directs as below "FLIGHT AND DUTY TIME LIMITATION AND REST REQUIREMENTS FOR PILOTS AND CABIN CREW".
04. All Operators of Bangladesh shall implement the above directive on FTL by 31 s December 2020.
05. ANO (OPS) A-10 and ANO (OPS) E-6 shall cease to be effective from 31 December 2020

## FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS (FTL)

### SECTION 1

#### General

#### 1.1 Scope

This Directive establishes the requirements to be met by an operator and its crew member with regard to flight and duty time limitations and rest requirements for Flight and Cabin crew members.

#### 1.2 Definitions

For the purpose of this Directive the following definitions shall apply:

- (1) **“acclimatized”** means a state in which a crew member’s circadian biological clock is synchronized to the time zone where the crew member is. A crew member is acclimatized to a 2-hour wide time zone surrounding the local time at the point of departure. When the local time at the place where a duty commences differs by more than 2 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 acclimatized in accordance with the values in the Table 1.

**Table 1**

Time difference(h) between reference time and local time where the crew member starts the next	Time elapsed since reporting at reference time				
	<48	48–71:59	72–95:59	96–119:59	≥120
< 4	B	D	D	D	D
≤6	B	X	D	D	D
≤9	B	X	X	D	D
≤12	B	X	X	X	D

**Note:**

‘B’ means acclimatized to the local time of the departure time zone;

‘D’ means acclimatized to the local time where the crew member starts his/her next duty; and

‘X’ means that a crew member is in an unknown state of acclimatization.

- (2) **“reference time”** means the local time at the reporting point situated in a 2-hour wide time zone band around the local time where a crew member is acclimatized.

- (3) **“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 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;

(4) **“suitable accommodation”** means for the purpose of standby, split duty and rest, a separate room for each crew member located in a quiet environment and equipped with a bed, which is sufficiently ventilated, has a device for regulating temperature and light intensity, and access to food and drink;

(5) **“acceptable means of compliance (AMC)”** means non-binding standards adopted by the operators to illustrate means to establish compliance with Regulations and its implementing rules;

(6) **“alternate means of compliance (ALMOC)”** means those means that propose an alternative to an existing acceptable means of compliance or those new means to establish compliance with CAA Act 2017 and CA Act 2017 and its implementing Rules for which no associate AMC have been adopted by the CAAB;

(7) **“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;

(8) **“break”** means a period of time within a flight duty period, shorter than a rest period, counting as duty and during which is free of all tasks;

(9) **“delayed reporting”** means the postponement of a scheduled FDP by the operator before a crew member has left the place of rest;

(10) **“disruptive schedule”** means a crew member’s roster which disrupts the sleep opportunity during the optimal sleep time window by comprising an FDP or a combination of FDPs which encroach, start or finish during any portion of the day or of the night where a crew member is acclimatized. A schedule may be disruptive due to early starts, late finishes, or night duties.

(a) **“early type”** of disruptive schedule means:

- (i) for ‘early start’ a duty period starting in the period between 05:00 and 05:59 in the time zone to which a crew member is acclimatized;
- (ii) for ‘late finish’ a duty period finishing in the period between 23:00 and 1:59 in the time zone to which a crew member is acclimatized;

(b) **“late type”** of disruptive schedule means:

- (i) for ‘early start’ a duty period starting in the period between 05:00 and 06:59 in the time zone to which a crew member is acclimatized;
- (ii) for ‘late finish’ a duty period finishing in the period between 00:00 and 01:59 in the time zone to which a crew member is acclimatized;

(11) **“night duty”** means a duty period encroaching any portion of the period between 02:00 and 04:59 in the time zone to which the crew is acclimatized;

(12) **“Duty”** means any task that a crew member performs for the operator, including flight duty, administrative work, giving or receiving training and checking, positioning, and some elements of standby;





(13) **"duty period"** means a period which starts when a crew member is required by a n operator to report for or to commence a duty and ends when that person is free of all duties, including post- flight duty;

(14) **"flight duty period (FDP)"** means a period that commences when a crew member is required to report for duty, which includes a sector or a series of sectors, and finishes when the aircraft finally comes to rest and the engines are shut down, at the end of the last sector on which the crew member acts as an operating crew member;

(15) **"flight time"** means, for aeroplanes and touring motor gliders, the time between an aircraft first moving from its parking place for the purpose of taking off until it comes to rest on the designated parking position and all engines or propellers are shut down;

(16) **"GM"** means Guidance Material;

(17) **"home base"** means the location, assigned by the operator to the crew member, from where the crew member normally starts and ends a duty period or a series of duty periods and where, under normal circumstances, the operator is not responsible for the accommodation of the crew member concerned;

(18) **"local day"** means a 24-hour period commencing at 00:00;

(19) **"local night"** means a period of 8 hours falling between 22:00 and 08:00 local time;

(20) **"operating crew member"** means a crew member carrying out duties in an aircraft during a sector;

(21) **"Positioning"** means the transferring of a non-operating crew member from one place to another, at the behest of the operator, excluding:

- the time of travel from a private place of rest to the designated reporting place at home base and vice versa, and
- the time for local transfer from a place of rest to the commencement of duty and vice versa;

(22) **"rest facility"** means a bunk or seat with leg and foot support suitable for crew members' sleeping on board an aircraft;

(23) **"reserve"** means a period of time during which a crew member is required by the operator to be available to receive an assignment for an FDP, positioning or other duty notified at least 10 hours in advance;

(24) **"rest period"** means a continuous, uninterrupted and defined period of time, following duty or prior to duty, during which a crew member is free of all duties, standby and reserve;

(25) **"rotation"** means a duty or a series of duties, including at least one flight duty, and rest periods out of home base, starting at home base and ending when returning to home base for rest period where the operator is no longer responsible for the accommodation of the crew member;

(26) **"single day free of duty"** means a time free of all duties and standby consisting of one day and two local nights, which is notified in advance. A rest period may be included as part of the single day free of duty;



(27) **"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;

(28) **"Standby"** means a pre-notified and defined period of time during which a crew member is required by the operator to be available to receive an assignment for a flight, positioning or other duty without an intervening rest period;

(29) **"airport standby duty"** means a pre-notified and defined period of time during which a crew member is required by the operator to be at the airport immediately available to receive an assignment for a flight, positioning or other duty;

(30) **"other standby"** means a standby either at home or in a suitable accommodation;

(31) **"window of circadian low"** means the period between 02.00 and 05.59 hours in the time zone to which a crew member is acclimatized.

### **GM3 1.2 (1) Definitions**

#### **ACCLIMATISED 'TIME ELAPSED SINCE REPORTING AT REFERENCE TIME'**

The time elapsed since reporting at reference time for operations applying Section 3.7 (b)(3)(ii) at home base refers to the time elapsed since reporting for the first time at home base for a rotation.

### **GM1 1.2 (2) Definitions**

#### **REFERENCE TIME**

- (a) Reference time refers to reporting points in a 2-hour wide time zone band around the local time where a crew member is acclimatized;
- (b) Example: A crew member is acclimatized to the local time in Dhaka and reports for duty in Dubai. The reference time is the local time in Dubai.

### **GM1 1.2(3) Definitions**

#### **ADEQUATE FURNITURE FOR ACCOMMODATION**

Adequate furniture for crew member accommodation should include a seat that reclines at least 45° back angle to the vertical, has a seat width of at least 20 inches (50cm) and provides leg and foot support.

### **GM1 1.2(10) Definitions**

#### **DETERMINATION OF DISRUPTIVE SCHEDULES**

If a crew member is acclimatized to the local time at his/her home base, the local time at the home base should be used to consider an FDP as 'disruptive schedule'. This applies to operations within the 2-hour wide time zone surrounding the local time at the home base, if a crew member is acclimatized to the local time at his/her home base.





## **GM1 1.2 (28) Definitions**

### **ELEMENTS OF STANDBY FOR DUTY**

Section 2.6(c) and (d) and Section 3.5(b)(2) determine which elements of standby count as duty.

## **GM1 1.2 (20) Definitions**

### **OPERATING CREW MEMBER**

A person on board an aircraft is either a crew member or a passenger. If a crew member is not a passenger on board an aircraft, he/she should be considered as 'carrying out duties'. The crew member remains an operating crew member during in-flight rest. In-flight rest counts in full as FDP, and for the purpose of Section 2.3.

### **1.3 Operator responsibilities**

An operator shall:

- (a) publish duty rosters sufficiently in advance to provide the opportunity for crew members to plan adequate rest;
- (b) ensure that flight duty periods are planned in a way that enables crew members to remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety under all circumstances;
- (c) specify reporting times that allow sufficient time for ground duties;
- (d) take into account the relationship between the frequency and pattern of flight duty periods and rest periods and give consideration to the cumulative effects of undertaking long duty hours combined with minimum rest periods;
- (e) allocate duty patterns which avoid practices that cause a serious disruption of an established sleep/work pattern, such as alternating day/night duties;
- (f) comply with the provisions concerning disruptive schedules in accordance with Section 1.2 (10);
- (g) provide rest periods of sufficient time to enable crew members to overcome the effects of the previous duties and to be rested by the start of the following flight duty period;
- (h) plan recurrent extended recovery rest periods and notify crew members sufficiently in advance;
- (i) plan flight duties in order to be completed within the allowable flight duty period taking into account the time necessary for pre-flight duties, the sector and turnaround times;
- (j) change a schedule and/or crew arrangements if the actual operation exceeds the maximum flight duty period on more than 33% of the flight duties in that schedule during a scheduled seasonal period.



## **AMC1 1.3 Operator responsibilities**

### **SCHEDULING**

- (a) Scheduling has an important impact on a crew member's ability to sleep and to maintain a proper level of alertness. When developing a workable roster, the operator should strike a fair balance between the commercial needs and the capacity of individual crew members to work effectively. Rosters should be developed in such a way that they distribute the amount of work evenly among those that are involved;
- (b) Schedules should allow for flights to be completed within the maximum permitted flight duty period and flight rosters should take into account the time needed for pre-flight duties, taxiing, the flight and turnaround times. Other factors to be considered when planning duty periods should include:
  - (1) the allocation of work patterns which avoid undesirable practices such as alternating day/night duties, alternating eastward-westward or westward-eastward time zone transitions, positioning of crew members so that a serious disruption of established sleep/work patterns occurs;
  - (2) scheduling sufficient rest periods especially after long flights crossing many time zones; and
  - (3) preparation of duty rosters sufficiently in advance with planning of recurrent extended recovery rest periods and notification of the crew members well in advance to plan adequate pre-duty rest.

## **AMC1 1.3(a) Operator responsibilities**

### **PUBLICATION OF ROSTERS**

Monthly/fortnightly rosters should be published at least 07 days in advance;

## **AMC1 1.3 (j) Operator responsibilities**

### **OPERATIONAL ROBUSTNESS OF ROSTERS**

The operator should establish and monitor performance indicators for operational robustness of rosters.

## **GM1 1.3 (j) Operator responsibilities**

### **OPERATIONAL ROBUSTNESS OF ROSTERS**

Performance indicators for operational robustness of rosters should support the operator in the assessment of the stability of its rostering system. Performance indicators for operational robustness of rosters should at least measure how often a rostered crew pairing for a duty period is achieved within the planned duration of that duty period. Crew pairing means rostered positioning and flights for crew members in one duty period.



#### **1.4 Crew member responsibilities**

Crew members shall:

- (a) comply with responsibilities of crew members and other personnel involved in operations of motor powered aircraft (MPA); and
- (b) make optimum use of the opportunities and facilities for rest provided and plan and use their rest periods properly.

#### **1.5 Flight time specification scheme**

- (a) Operators shall establish, implement and maintain flight time specification schemes that are appropriate for the type(s) of operation performed and that comply with this Directive and other applicable national legislation.
- (b) Before being implemented, flight time specification schemes, including any related FRM where required, shall be approved by the CAAB.

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## SECTION 2

### Commercial Air Transport Operators

#### 2.1 Home base

An operator shall assign a home base to each crew member.

#### 2.2 Flight duty period (FDP)

a) The operator shall:

- (1) define reporting times appropriate to each individual operation taking into account 1.3(c);
- (2) establish procedures specifying how the Pilot in Command shall, in case of special circumstances which could lead to severe fatigue, and after consultation with the crew members concerned, reduce the actual FDP and/or increase the rest period in order to eliminate any detrimental effect on flight safety;

b) Basic maximum daily FDP.

- (1) The maximum daily FDP without the use of extensions for acclimatized crew members shall be in accordance with the following table:

**Table 2**

**Maximum daily FDP- Acclimatized crew members**

Start of FDP at reference	1-2 Sectors	3 Sectors	4 Sectors	5 Sectors	6 Sectors	7 Sectors	8 Sectors	9 Sectors	10 Sectors
0600-1329	13:00	12:30	12:00	11:30	11:00	10:30	10:00	09:30	09:00
1330-1359	12:45	12:15	11:45	11:15	10:45	10:15	09:45	09:15	09:00
1400-1429	12:30	12:00	11:30	11:00	10:30	10:00	09:30	09:00	09:00
1430-1459	12:15	11:45	11:15	10:45	10:15	09:45	09:15	09:00	09:00
1500-1529	12:00	11:30	11:00	10:30	10:00	09:30	09:00	09:00	09:00
1530-1559	11:45	11:15	10:45	10:15	09:45	09:15	09:00	09:00	09:00
1600-1629	11:30	11:00	10:30	10:00	09:30	09:00	09:00	09:00	09:00
1630-1659	11:15	10:45	10:15	09:45	09:15	09:00	09:00	09:00	09:00
1700-0459	11:00	10:30	10:00	09:30	09:00	09:00	09:00	09:00	09:00
0500-0514	12:00	11:30	11:00	10:30	10:00	09:30	09:00	09:00	09:00
0515-0529	12:15	11:45	11:15	10:45	10:15	09:45	09:15	09:00	09:00
0530-0544	12:30	12:00	11:30	11:00	10:30	10:00	09:30	09:00	09:00
0545-0559	12:45	12:15	11:45	11:15	10:45	10:15	09:45	09:15	09:00

- (3) The maximum daily FDP when crew members are in an unknown state of acclimatization shall be in accordance with the following table:

**Table 3**

**Crew members in an unknown state of acclimatization**

Maximum daily FDP according to sectors						
1-2	3	4	5	6	7	8
11:00	10:30	10:00	09:30	09:00	09:00	09:00

- (c) FDP with different reporting time for flight crew and cabin crew:

Whenever cabin crew requires more time than the flight crew for their pre-flight briefing for the same sector or series of sectors, the FDP of the cabin crew may be extended by the difference in reporting time between the cabin crew and the flight crew. The difference shall not exceed 1 hour. The maximum daily FDP for cabin crew shall be based on the time at which the flight crew report for their FDP, but the FDP shall start at the reporting time of the cabin crew.

- (d) Maximum daily FDP for acclimatized crew members with the use of extensions without in-flight rest:

- (1) The maximum daily FDP may be extended by up to 1 hour not more than twice in any 7 consecutive days. In that case:
  - (i) the minimum pre-flight and post-flight rest periods shall be increased by 2 hours or
  - (ii) the post-flight rest period shall be increased by 4 hours;
- (2) When extensions are used for consecutive FDPs, the additional pre and post flight rest between the two extended FDPs required under subparagraph 1 shall be provided consecutively.
  - (i) The use of the extension shall be planned in advance, and shall be limited to a maximum of:
  - (ii) 5 sectors when the WOCL is not encroached; or
  - (iii) 4 sectors, when the WOCL is encroached by 2 hours or less; or
  - (iv) 2 sectors, when the WOCL is encroached by more than 2 hours.
- (3) Extension of the maximum basic daily FDP without in-flight rest shall not be combined with extensions due to in-flight rest or split duty in the same duty period.
- (4) Flight time specification schemes shall specify the limits for extensions of the maximum basic daily FDP in accordance with the certification specifications applicable to the type of operation, taking into account:
  - (i) the number of sectors flown; and
  - (ii) WOCL encroachment.

- (e) Maximum daily FDP with the use of extensions due to in-flight rest Flight time specification schemes shall specify the conditions for extensions of the maximum



basic daily FDP with in-flight rest in accordance with the certification specifications applicable to the type of operation, taking into account:

- (i) the number of sectors flown;
  - (ii) the minimum in-flight rest allocated to each crew member;
  - (iii) the type of in-flight rest facilities; and
  - (iv) the augmentation of the basic flight crew.
- (f) Unforeseen circumstances in flight operations– Pilot in Command's (PIC) Discretion
- (1) The conditions to modify the limits on flight duty, duty and rest periods by the PIC in case of unforeseen circumstances in flight operations, which start at or after the reporting time shall comply with the following:
    - (i) the maximum daily FDP which results after applying points (b) and (e) of section 2.2 or section 2.5 may not be increased by more than 2 hours unless the flight crew has been augmented, in which case the maximum flight duty period may be increased by not more than 3 hours;
    - (ii) if on the final sector within an FDP the allowed increase is exceeded because of unforeseen circumstances after take-off, the flight may continue to the planned destination or alternate aerodrome; and
    - (iii) the rest period following the FDP may be reduced but can never be less than 10 hours;
  - (2) In case of unforeseen circumstances which could lead to severe fatigue, the Pilot in Command shall reduce the actual flight duty period and /or increase the rest period in order to eliminate any detrimental effect on flight safety;
  - (3) The Pilot in Command shall consult all crew members on their alertness before deciding the modifications under subparagraphs 1 and 2;
  - (4) The Pilot in Command shall submit a report to the operator when an FDP is increased or a rest period is reduced at his or her discretion;
  - (5) Where the increase of an FDP or reduction of a rest period exceeds 1 hour, a copy of the report, to which the operator shall add its comments, shall be sent by the operator to CAAB not later than 28 days after the event;
  - (6) The operator shall implement a non-punitive process for the use of the discretion described under this provision and shall describe it in the operations manual
- (g) Unforeseen Circumstances in Flight Operations - Delayed Reporting:

The operator shall establish procedures, in the operations manual, for delayed reporting in the event of unforeseen circumstances, in accordance with the certification specifications applicable to the type of operation.





## **GM12.2 (a)(1) Flight Duty Period (FDP)**

### **REPORTING TIMES**

The operator should specify in Operation Manual about the reporting times taking into account the type of operation, the size and type of aircraft and the reporting airport conditions.

## **GM1 2.2(b)(1) Flight duty period (FDP)**

### **REFERENCE TIME**

The start time of the FDP in the table refers to the 'reference time'. That means, to the local time of the point of departure, if this point of departure is within a 2-hour wide time zone band around the local time where a crew member is acclimatized.

## **AMC1 2.2 (f) Flight Duty Period (FDP)**


### **UNFORESEEN CIRCUMSTANCES IN ACTUAL FLIGHT OPERATION-PILOT IN COMMAND'S DISCRETION**

- (a) As general guidance when developing a Pilot in Command's discretion policy, the operator should take into consideration the shared responsibility of management, flight and cabin crew in the case of unforeseen circumstances. The exercise of Pilot in Command's discretion should be considered exceptional and should be avoided at home base and/or company hubs where standby or reserve crew members should be available. Operators should assess on a regular basis the series of pairings where Pilot in Command's discretion has been exercised in order to be aware of possible inconsistencies in their rostering.
- (b) The operator's policy on Pilot in Command's discretion should state the safety objectives, especially in the case of an extended FDP or reduced rest and should take due consideration of additional factors that might decrease a crew member's alertness levels, such as:
  - (1) WOCL encroachment;
  - (2) weather conditions;
  - (3) complexity of the operation and/or airport environment;
  - (4) aeroplane malfunctions or specifications;
  - (5) flight with training or supervisory duties;
  - (6) increased number of sectors;
  - (7) circadian disruption; and
  - (8) individual conditions of affected crew members (time since awake, Sleep-related factor, workload, etc.).

## **GM1 2.2(f)(1)(i) Flight Duty Period (FDP)**

### **PILOT IN COMMAND'S DISCRETION**

The maximum basic daily FDP that results after applying 2.2(b) should be used to calculate the limits of Pilot in Command's discretion, if Pilot in Command's discretion is applied to an FDP which has been extended under the provisions of 2.2(d).



## **2.3 Flight times and duty periods**

- (a) The total duty periods to which a crew member may be assigned shall not exceed:
- (1) 60 duty hours in any 7 consecutive days;
  - (2) 110 duty hours in any 14 consecutive days; and
  - (3) 190 duty hours in any 28 consecutive days, spread as evenly as practicable throughout that period.
- (b) The total flight time of the sectors on which an individual crew member is assigned as an operating crew member shall not exceed:
- (1) 120 hours flight time for flight crew and 125 hours flight time for cabin crew in any 28 consecutive days;
  - (2) 1000 hours flight time for flight crew and 1100 hours flight time for cabin crew in any 12 consecutive calendar months.
- (c) Post-flight duty shall count as duty period. The operator shall specify in its operations manual the minimum time period for post-flight duties.

### **AMC1 2.3 (c) Flight times and duty periods**

#### **POST-FLIGHT DUTIES**

The operator should count a minimum of 30 minutes as post-flight duty times taking into account the type of operation, the size and type of aircraft and the airport conditions.

## **2.4 Positioning**

If an operator positions a crew member, the following shall apply:

- positioning after reporting but prior to operating shall be counted as FDP but shall not count as a sector;
- all time spent on positioning shall count as duty period.

## **2.5 Split duty**

The conditions for extending the basic maximum daily FDP due to a break on the ground shall be in accordance with the following:

- (a) flight time specification schemes shall specify the following elements for split duty in accordance with the certification specifications applicable to the type of operation:
- (1) the minimum duration of a break on the ground; and
  - (2) the possibility to extend the FDP prescribed under point 2.5(b) taking into account the duration of the break on the ground, the facilities provided to the crew member to rest and other relevant factors;



- (b) the break on the ground shall count in full as FDP;
- (c) split duty shall not follow a reduced rest.

## **2.6 Standby and duties at the airport**

If an operator assigns crew members to standby or to any duty at the airport, the following shall apply in accordance with the certification specifications applicable to the type of operation:

- (a) standby and any duty at the airport shall be in the roster and the start and end time of standby shall be defined and notified in advance to the crew members concerned to provide them with the opportunity to plan adequate rest;
- (b) a crew member is considered on airport standby from reporting at the reporting point until the end of the notified airport standby period;
- (c) airport standby shall count in full as duty period for the purpose of FDP in Section 2.3 and in section 2.8;
- (d) any duty at the airport shall count in full as duty period and the FDP shall count in full from the airport duty reporting time;
- (e) the operator shall provide accommodation to the crew member on airport standby;
- (f) flight time specification schemes shall specify the following elements:
  - (1) the maximum duration of any standby;
  - (2) the impact of the time spent on standby on the maximum FDP that may be assigned, considering facilities provided to the crew member to rest, and other relevant factors such as:
    - the need for immediate readiness of the crew member;
    - the interference of standby with sleep; and
    - sufficient notification to protect a sleep opportunity between the call for duty and the assigned FDP;
  - (3) the minimum rest period following standby which does not lead to assignment of an FDP;
  - (4) how time spent on standby other than airport standby shall be counted for the purpose of cumulative duty periods.

## **2.7 Reserve**

If an operator assigns crew members to reserve, the following requirements shall apply in accordance with the certification specifications applicable to the type of operation.

- reserve shall be in the roster;





- flight time specification schemes shall specify the following elements:
- the maximum duration of any single reserve period;
- the number of consecutive reserve days that may be assigned to a crew member.

## **GM 12.7 (a) Reserve**

### **ROSTERING OF RESERVE**

Including reserve in a roster, also referred to as 'rostering', implies that a reserve period that does not result in a duty period may not retrospectively be considered as part of a recurrent extended recovery rest period.

## **2.8 Rest periods**

### **a) Minimum rest period at home base.**

- (1) The minimum rest period provided before undertaking an FDP starting at home base shall be at least as long as the preceding duty period, or 12 hours, whichever is greater.
- (2) By way of derogation from point (1), the minimum rest provided under point (b) applies if the operator provides suitable accommodation to the crew member at home base.

### **b) Minimum rest period away from home base.**

The minimum rest period provided before undertaking an FDP starting away from home base shall be at least as long as the preceding duty period, or 10 hours, whichever is greater. This period shall include an 8- hour sleep opportunity in addition to the time for travelling and physiological needs.

### **(c) Reduced rest**

By derogation from points (a) and (b), flight time specification schemes may reduce the minimum rest periods in accordance with the certification specifications applicable to the type of operation and taking into account the following elements:

- (1) the minimum reduced rest period;
- (2) the increase of the subsequent rest period; and
- (3) the reduction of the FDP following the reduced rest.

### **(d) Recurrent extended recovery rest periods**

Flight time specification schemes shall specify recurrent extended recovery rest periods to compensate for cumulative fatigue. The minimum recurrent extended recovery rest period shall be 36 hours, including 2 local nights, and in any case the time between the end of one recurrent extended recovery rest period and the start of the next extended recovery rest period shall not be more than 168 hours. The recurrent extended recovery rest period shall be increased to 2 local days twice every month.

### **(e) Flight time specification schemes shall specify additional rest periods in accordance with the applicable certification specifications to compensate for:**



- (1) the effects of time zone differences and extensions of the FDP;
- (2) additional cumulative fatigue due to disruptive schedules; and
- (3) a change of home base.

#### **GM1 2.8(a)(2) Rest periods**

##### **MINIMUM REST PERIOD AT HOME BASE IF SUITABLE ACCOMMODATION IS PROVIDED**

An operator may apply the minimum rest period away from home base during a rotation which includes a rest period at a crew member's home base. This applies only if the crew member does not rest at his/her residence, or temporary accommodation, because the operator provides suitable accommodation. This type of roster is known as "back-to-back operation".

#### **AMC1 2.8(b) Rest periods**

##### **MINIMUM REST PERIOD AWAY FROM HOME BASE**

The time allowed for physiological needs should be 1 hour. Consequently, if the travelling time to the suitable accommodation is more than 30 minutes, the operator should increase the rest period by twice the amount of difference of travelling time above 30 minutes.

#### **2.9 Nutrition**

- (a) During the FDP there shall be the opportunity for a meal and drink in order to avoid any detriment to a crew member's performance, especially when the FDP exceeds 6 hours.
- (b) An operator shall specify in its operations manual how the crew member's nutrition during FDP is ensured.

#### **AMC1 2.9 Nutrition**

##### **MEAL OPPORTUNITY**

- (a) The operations manual should specify the minimum duration of the meal opportunity, when a meal opportunity is provided, in particular when the FDP encompasses the regular meal windows (e.g. if the FDP starts at 11:00 hours and ends at 22:00 hours meal opportunities for two meals should be given).
- (b) It should define the time frames in which a regular meal should be consumed in order not to alter the human needs for nutrition without affecting the crew member's body rhythms.

#### **2.10 Records of Home base flight times, duty and rest periods**

- (a) An operator shall maintain, for a period of 24 months:
  - (1) individual records for each crew member including:
    - (i) flight times;



- (ii) start, duration and end of each duty period and FDP;
  - (iii) rest periods and days free of all duties; and
  - (iv) assigned home base;
- (2) reports on extended flight duty periods and reduced rest periods.
- (b) Upon request, the operator shall provide copies of individual records of flight times, duty periods and rest periods to:
  - (1) the crew member concerned; and
  - (2) to another operator, in relation to a crew member who is or becomes a crew member of the operator concerned.

A handwritten signature in blue ink, consisting of a stylized 'S' or 'J' shape with a horizontal line extending to the right.



## SECTION 3

### CERTIFICATION SPECIFICATIONS AND GUIDANCE MATERIAL FOR COMMERCIAL AIR TRANSPORT BY AEROPLANE-SCHEDULED AND CHARTER OPERATIONS

#### 3.1 Applicability

These Certification Specifications are applicable to commercial air transport by aero planes for scheduled and charter operations, excluding emergency medical service (EMS), air taxi and single pilot operations.

#### 3.2 Home base

- (a) The home base is a single airport location assigned with a high degree of permanence.
- (b) In the case of a change of home base, the first recurrent extended recovery rest period prior to starting duty at the new home base is increased to 72 hours, including 3 local nights. Travelling time between the former home base and the new home base is positioning.

#### 3.3 Flight duty period (FDP)

- (a) Night duties under the provisions of basic maximum daily FOP [2.2(b)] and maximum daily FOP for acclimatized crew members with use of extension without in flight rest [2.2(d)] comply with the following:
  - (1) when establishing the maximum FOP for consecutive night duties, the number of sectors is limited to 4 sectors per duty.
- (b) Extension of FOP without in-flight rest:

The extension of FOP without in-flight rest under the provisions of 2.2(d)(3) is limited to the values specified in the table below.

**Maximum daily FOP with extension**

Starting time of FOP	1-2 sectors (in hours)	3 sectors (in hours)	4 sectors (in hours)	5 sectors (in hours)
0600–0614	Not allowed	Not allowed	Not allowed	Not allowed
0615–0629	13:15	12:45	12:15	11:45
0630–0644	13:30	13:00	12:30	12:00
0645–0659	13:45	13:15	12:45	12:15
0700–1329	14:00	13:30	13:00	12:30
1330–1359	13:45	13:15	12:45	Not allowed
1400–1429	13:30	13:00	12:30	Not allowed
1430–1459	13:15	12:45	12:15	Not allowed
1500–1529	13:00	12:30	12:00	Not allowed

1530–1559	12:45	Not allowed	Not allowed	Not allowed
1600–1629	12:30	Not allowed	Not allowed	Not allowed
1630–1659	12:15	Not allowed	Not allowed	Not allowed
1700–1729	12:00	Not allowed	Not allowed	Not allowed
1730–1759	11:45	Not allowed	Not allowed	Not allowed
1800–1829	11:30	Not allowed	Not allowed	Not allowed
1830–1859	11:15	Not allowed	Not allowed	Not allowed
1900–0359	Not allowed	Not allowed	Not allowed	Not allowed
0400–0414	Not allowed	Not allowed	Not allowed	Not allowed
0415–0429	Not allowed	Not allowed	Not allowed	Not allowed
0430–0444	Not allowed	Not allowed	Not allowed	Not allowed
0445–0459	Not allowed	Not allowed	Not allowed	Not allowed
0500–0514	Not allowed	Not allowed	Not allowed	Not allowed
0515–0529	Not allowed	Not allowed	Not allowed	Not allowed
0530–0544	Not allowed	Not allowed	Not allowed	Not allowed
0545–0559	Not allowed	Not allowed	Not allowed	Not allowed

(c) Extension of FDP due to in-flight rest:

In-flight rest facilities in accordance with 2.2(e)(iii) fulfill the following minimum standards:

- 'Class 1 rest facility' means a bunk or other surface that allows for a flat or near flat sleeping position. It reclines to at least 80° back angle to the vertical and is located separately from both the flight crew compartment and the passenger cabin in an area that allows the crew member to control light, and provides isolation from noise and disturbance;
- 'Class 2 rest facility' means a seat in an aircraft cabin that reclines at least 45° back angle to the vertical, has at least a pitch of 55 inches (137,5 cm), a seat width of at least 20 inches (50 cm) and provides leg and foot support  
It is separated from passengers by at least a curtain to provide darkness and some sound mitigation, and is reasonably free from disturbance by passengers or crew members;
- 'Class 3 rest facility' means a seat in an aircraft cabin or flight crew compartment that reclines at least 40° from the vertical, provides leg and foot support and is separated from passengers by at least a curtain to provide darkness and some sound mitigation, and is not adjacent to any seat occupied by passengers.

- (1) the extension of FDP with in-flight rest under the provisions of 2.2(e) complies with the following:



- (i) the FDP is limited to 3 sectors; and
  - (ii) the minimum in-flight rest period is a consecutive 90-minute period for each crew member and 2 consecutive hours for the flight crew members at control during landing.
- (2) the maximum daily FDP under the provisions of 2.2(e) may be extended due to in flight rest for flight crew:
- (i) with one additional flight crew member:
    - (A) up to 14 hours with class 3 rest facilities;
    - (B) up to 15 hours with class 2 rest facilities; or
    - (C) up to 16 hours with class 1 rest facilities;
  - (ii) with two additional flight crew members:
    - (A) up to 15 hours with class 3 rest facilities;
    - (B) up to 16 hours with class 2 rest facilities; or
    - (C) up to 17 hours with class 1 rest facilities.
- (3) the minimum in-flight rest for each cabin crew member is:

Maximum extended FDP	Minimum in-flight rest (in hours)		
	Class 1	Class 2	Class 3
up to 14:30 hrs	1:30	1:30	1:30
14:31 – 15:00 hrs	1:45	2:00	2:20
15:01 – 15:30 hrs	2:00	2:20	2:40
15:31 – 16:00 hrs	2:15	2:40	3:00
16:01 – 16:30 hrs	2:35	3:00	Not allowed
16:31 – 17:00 hrs	3:00	3:25	Not allowed
17:01 – 17:30 hrs	3:25	Not allowed	Not allowed
17:31 – 18:00 hrs	3:50	Not allowed	Not allowed

- (4) the limits specified in (2) may be increased by 1 hour for FDPs that include 1 sector of more than 9 hours of continuous flight time and a maximum of 2 sectors.
- (5) all time spent in the rest facility is counted as FDP.
- (6) the minimum rest at destination is at least as long as the preceding duty period, or 14 hours, whichever is greater.
- (7) a crew member does not start a positioning sector to become part of this operating crew on the same flight.





(d) Unforeseen circumstances in flight operations - delayed reporting:

- (1) The operator may delay the reporting time in the event of unforeseen circumstances, if procedures for delayed reporting are established in the operations manual. The operator keeps records of delayed reporting. Delayed reporting procedures establish a notification time allowing a crew member to remain in his/her suitable accommodation when the delayed reporting procedure is activated. In such a case, if the crew member is informed of the delayed reporting time, the FDP is calculated as follows:
  - (i) one notification of a delay leads to the calculation of the maximum FDP according to (iii) or (iv);
  - (ii) if the reporting time is further amended, the FDP starts counting 1 hour after the second notification or at the original delayed reporting time if this is earlier;
  - (iii) when the delay is less than 4 hours, the maximum calculated based on the original reporting time and counting at the delayed reporting time;
  - (iv) when the delay is 4 hours or more, the maximum FDP is calculated based on the more limiting of the original or the delayed reporting time and the FDP starts counting at the delayed reporting time;
  - (v) as an exception to (i) and (ii), when the operator informs the crew member of a delay of 10 hours or more in reporting time and the crew member is not further disturbed by the operator, such delay of 10 hours or more counts as a rest period.

#### **GM1 3.3 (c)(1)(ii) Flight Duty Period (FDP)**

##### **IN-FLIGHT REST**

In-flight rest should be taken during the cruise phase of the flight.

#### **GM2 3.3 (c)(1)(ii) Flight Duty Period (FDP)**

##### **IN-FLIGHT REST**

In-flight rest periods should be allocated in order to optimize the alertness of those flight crew members at control during landing.

#### **GM2 3.3 (d) Flight Duty Period (FDP)**

##### **DELAYED REPORTING**

Operator procedures for delayed reporting should:

- (a) specify a contacting mode;



- (b) establish minimum and maximum notification times; and c) avoid interference with sleeping patterns when possible

### **3.4 Split duty**

The increase of limits on flight duty, under the provisions of Section 2.5, complies with the following:

- (a) The break on the ground within the FDP has a minimum duration of 3 consecutive hours.
- (b) the break excludes the time allowed for post and pre-flight duties and travelling. The minimum total time for post and pre-flight duties and travelling is 30 minutes. The operator specifies the actual times in its operations manual.
- (c) the maximum FDP specified in Section 2.2 (b) may be increased by up to 50 % of the break.
- (d) suitable accommodation is provided either for a break of 6 hours or more or for a break that encroaches the window of circadian low (WOCL).
- (e) in all other cases:
  - (1) accommodation is provided; and
  - (2) any time of the actual break exceeding 6 hours or any time of the break that encroaches the WOCL does not count for the extension of the FDP.
- (f) split duty cannot be combined with inflight rest.

### **GM1 3.4(b) Split duty**

#### **POST, PRE-FLIGHT DUTY AND TRAVELLING TIMES**

The operator should specify post and pre-flight duty and travelling times taking into account aircraft type, type of operation and airport conditions.

### **3.5 Stand by**

The modification of limits on flight duty, duty and rest periods under the provisions of Section 2.6 complies with the following:

- (a) Airport standby:
  - (1) If not leading to the assignment of an FDP, airport standby is followed by a rest period as specified in Section 2.8;
  - (2) If an assigned FDP starts during airport standby, the following applies:
    - (i) the FDP counts from the start of the FDP. The maximum FDP is reduced by any time spent on standby in excess of 4 hours;



- (ii) the maximum combined duration of airport standby and assigned FDP as specified in Section 2.2(b) and (d) is 16 hours.

(b) Standby other than airport standby:

- (1) the maximum duration of standby other than airport standby is 16 hours;
- (2) the operator's standby procedures are designed to ensure that the combination of standby and FDP do not lead to more than 18 hours awake time;
- (3) 25 % of time spent on standby other than airport standby counts as duty time for the purpose of Section 2.3;
- (4) standby is followed by a rest period in accordance with Section 2.8;
- (5) standby ceases when the crew member reports at the designated reporting point;
- (6) if standby ceases within the first 6 hours, the maximum FDP counts from reporting;
- (7) if standby ceases after the first 6 hours, the maximum FDP is reduced by the amount of standby time exceeding 6 hours;
- (8) if the FDP is extended due to in-flight rest according to Section 3.3(c), or to split duty according to Section 3.4, the 6 hours of paragraph (5) and (6) are extended to 8 hours;
- (9) if standby starts between 23:00 and 07:00, the time between 23:00 and 07:00 does not count towards the reduction of the FDP under (6), and (7) until the crew member is contacted by the operator;
- (10) the response time between call and reporting time established by the operator allows the crew member to arrive from his/her place of rest to the designated reporting point within a reasonable time; and
- (11) standby ceases if a crew member is contacted for duty but not utilized.

### **GM1 3.5 Standby**

#### **MINIMUM REST AND STANDBY**

- (a) If airport or other standby initially assigned is reduced by the operator during standby that does not lead to an assignment to a flight duty period, the minimum rest requirements specified in Section 2.8 should apply.
- (b) If a minimum rest period as specified in Section 2.8 is provided before reporting for the duty assigned during the standby, this time period should not count as standby duty.
- (c) Standby other than airport standby counts (partly) as duty for the purpose of Section 2.3 only. If a crew member receives an assignment during standby





other than airport standby, the actual reporting time at the designated reporting point should be used for the purpose of Section 2.8.

### **GM1 3.5(b) STANDBY**

#### **STANDBY OTHER THAN AIRPORT STANDBY NOTIFICATION**

Operator procedures for the notification of assigned duties during standby other than airport standby should avoid interference with sleeping patterns if possible.

### **GM1 3.5(b)(2) Standby**

#### **AWAKE TIME**

Scientific research shows that continuous awake in excess of 18 hours can reduce the alertness and should be avoided.

### **3.6 Reserve**

The operator assigns duties to a crew member on reserve under the provisions of Section 2.7 complying with the following:

- (a) An assigned FDP counts from the reporting time;
- (b) Reserve times do not count as duty period for the purpose of Section 2.3 and 2.8;
- (c) The operator defines the maximum number of consecutive reserve days within the limits of Section 2.8(d);
- (d) To protect an 8-hour sleep opportunity, the operator rosters a period of 8-hours, taking into account fatigue management principal, for each reserve day during which a crew member on reserve is not contacted by the operator.

### **GM 13.6 Reserve**

#### **RESERVE NOTIFICATION**

Operator procedures for the notification of assigned duties during reserve should avoid interference with sleeping patterns if possible.

### **GM 23.6 Reserve**

#### **NOTIFICATION IN ADVANCE**

The minimum 'at least 10 hours' between the notification of an assignment for any duty and reporting for that duty during reserve may include the period of 8 hours during which a crew member on reserve is not contacted by the operator.

### **GM13.6(c) Reserve**

#### **RECURRENT EXTENDED RECOVERY REST**

Section 2.8(d) applies to a crew member on reserve.



### 3.7 Rest periods

#### (a) Disruptive schedules

- (1) If a transition from a late finish/night duty to an early start is planned at home base, the rest period between the 2 (two) FDPs includes 1 (one) local night.
- (2) If a crew member performs 4 or more-night duties, early starts or late finishes between 2 extended recovery rest periods as defined in Section 2.8(d), the second extended recovery rest period is extended to 60 hours.

#### (b) Time zone differences

- (1) For the purpose of Section 2.8(e)(1), 'rotation' is a series of duties, including at least one flight duty, and rest period out of home base, starting at home base and ending when returning to home base for a rest period where the operator is no longer responsible for the accommodation of the crew member.
- (2) The operator monitors rotations and combinations of rotations in terms of their effect on crew member fatigue, and adapts the rosters as necessary.
- (3) Time zone differences are compensated by additional rest, as follows:
  - (i) at home base, if a rotation involves a 4 hours time difference or more, the minimum rest is as specified in the following table.

Minimum local nights of rest at home base to compensate for time zone difference

Maximum time difference (h) between reference time and local time where a crew member rest during a rotation	Time elapsed (h) since reporting for the first FD in a rotation involving at least 4 hours time difference to the reference time		
	48 – 71:59	72 – 95:59	≥96
≤6	2	3	3
≤9	3	3	4
≤12	3	4	5

- (ii) Away from home base, if an FDP involves a 4-hour time difference or more, the minimum rest following that FDP is at least as long as the preceding duty period, or 14 hours, whichever is greater. By way of derogation from point (b)(3)(i) and only once between 2 recurrent extended recovery rest periods as specified in Section 2.8(d), the minimum rest provided under this point (b)(3)(ii) may also apply to home base if the operator provides suitable accommodation to the crew member.



- (4) In case of an Eastward-Westward or Westward-Eastward transition, at least 3 local nights of rest at home base are provided between alternating rotations.
- (5) The monitoring of combinations of rotations is conducted under the operator's management system provisions.

(c) Reduced rest

- (1) The minimum reduced rest periods under reduced rest arrangements are 12 hours at home base and 10 hours out of base.
- (2) The rest period following the reduced rest is extended by the difference between the minimum rest period specified in Section 2.8 (a) or (b) and the reduced rest.
- (3) The FDP following the reduced rest is reduced by the difference between the minimum rest period specified in Section 2.8(a) or (b) as applicable and the reduced rest.
- (4) There is a maximum of 2 reduced rest periods between 2 recurrent extended recovery rest periods specified in accordance with Section 2.8(d).

**GM1 3.7(b)(3) Rest periods**

**TIME ELAPSED SINCE REPORTING**

The time elapsed since reporting for a rotation involving at least a 4-hour time difference to the reference time stops counting when the crew member returns to his/her home base for a rest period during which the operator is no longer responsible for the accommodation of the crew member.

**GM2 3.7(b)(3) Additional rest to compensate for time zone differences**

**REST AFTER ROTATIONS WITH THREE OR MORE FLIGHT DUTY PERIODS**

For a rotation with three or more FDPs, the greatest time zone difference from the original reference time should be used to determine the minimum number of local nights of rest to compensate for time zone differences. If such a rotation includes time zones crossings in both directions, the calculation is based on the highest number of time zones crossed in any one FDP during the rotation.



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