

Civil Aviation Department
The Government of the
Hong Kong Special Administrative Region



CAD 371(2nd Edition)

**THE AVOIDANCE OF FATIGUE
IN AIRCREWS**

May 2010

(This document is re-issued in April 2013 with no change of content except the new CAD logo.)

CAD 371

The Avoidance of Fatigue in Aircrews

This document contains standard provisions on which Hong Kong operators' "Approved Flight Time Limitation Schemes" are to be based.

Civil Aviation Department Hong Kong

THE AVOIDANCE OF FATIGUE IN AIRCREWS

STANDARD PROVISIONS

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THE AVOIDANCE OF FATIGUE IN AIRCREWS

1. LEGAL BACKGROUND

- 1.1 Part VI of the Air Navigation (Hong Kong) Order 1995 [the Order] comprises Articles 53 to 56 and addresses the Fatigue of Crew. Operators and crew members are expected to be aware of the provisions of this legislation and their responsibilities in accordance with these Articles.
- 1.2 In general terms the legislation is applicable to the operator and crew of an aircraft registered in Hong Kong which is either:
 - 1.2.1 Engaged on a flight for the purpose of public transport; or
 - 1.2.2 Operated by an air transport undertaking.
- 1.3 The operator of an aircraft operated for the purposes listed in paragraph 1.2. above must present to the Director-General of Civil Aviation (DGCA), for his approval, a scheme for the regulation of the flight times of his crews (FTL Scheme). When approved by the DGCA the scheme must be published in the Operations Manual, or when an Operations Manual is not required by the Order, incorporated in a separate document. The Operations Manual, or separate document, shall be readily available to every person employed by the operator as a member of an aircraft crew. The Operator is further required to take all reasonable steps to ensure that the provisions of their approved FTL Scheme are complied with.
- 1.4 The approved FTL Scheme applies to all operating crew members on board the aircraft and not merely those carried to meet the minimum crew requirements set out in Part V of the Order.
- 1.5 Since the legislation requires operators to include in their FTL Scheme provisions for all crew members carried, this includes, apart from Flight Crew and Cabin Crew, crew members boarded for special purposes, such as loadmasters. While many of the standard provisions in this document may not sensibly apply to such crew members, a commonsense approach should be taken of their duty and rest periods. If their duties have a direct bearing on the safety of the operation, or if the aircraft commander assigns them duties in the interest of the safety of any passengers, provisions similar to those relating to Cabin Crew should be included in the FTL Scheme.
- 1.6 Holders of an Air Operator's Certificate utilising leased foreign registered aircraft will be directed under the provisions of Article 93 of the Order to comply with the requirements of the Order with respect to flight and duty time limitations.
- 1.7 Much of the text of this publication is presented in the third person singular. For conciseness, the pronoun "he" is used throughout. "She" should be substituted where appropriate.

2. **OBJECTIVES OF APPROVED FTL SCHEMES**

- 2.1 The objectives of a FTL Scheme are to ensure that crew members are adequately rested at the beginning of each flight duty period (FDP), and that the duration and timing of individual duty periods will enable them to operate to a satisfactory level of efficiency and safety in all normal and abnormal situations. The standard provisions set out in this document are therefore concerned solely with the prevention of fatigue and the maintenance of vigilance in flight. They are not intended to take account of commercial circumstances (including crew member basings), social considerations or lifestyle.
- 2.2 Interpretation of the standard provisions contained in this document or of any variations to an operator's Approved Flight Time Limitations Scheme (AFTLS) lies with the DGCA.

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3. **RESPONSIBILITIES OF OPERATORS**

- 3.1 Operators are required by law to take all reasonable steps to ensure that the provisions of their approved FTL Scheme are complied with. The responsibility for making decisions concerning the interpretation and application of an operator's approved FTL Scheme, and for the processing of Commander's Discretion Reports, should be clearly defined and must rest in suitably qualified hands at a senior management level. The designated person or post shall be named in the Scheme.
- 3.2 Operators must ensure that all personnel involved in the application of their approved FTL Scheme appreciate the relationship between the frequency and pattern of rostered flight duty periods, rest periods and days off and that due consideration is given to the cumulative effects of working long hours interspersed with minimum rest periods. Comprehensive guidance and instructions shall be included in the Operations Manual, or other relevant document, for the benefit of all staff concerned with the preparation and day-to-day management of rostering and scheduling. This shall include instructions on rostering practices and guidance on the physiological effects of disturbing circadian rhythms, extensive transmeridian flight, sleep deprivation and sleep disruption.
- 3.3 All Crew shall be provided on induction, and periodically thereafter, with instruction on sleep strategy, fatigue management and fatigue countermeasures, and, where appropriate, on the physiological effects of extensive transmeridian flight and disturbing circadian rhythms. The distinction should be drawn between normal tiredness resulting from the physical and mental efforts of flight, and cumulative fatigue resulting from the interaction of sleep loss and circadian disruption which can lead to significant decreases in operational performance. Suitable material is available from NASA & other sources.
- 3.4 Operators must ensure that all crew rosters include sufficient physiological rest so as to avoid the onset of crew fatigue. To this end, an individual crew member's roster, should, as far as is practical, reflect the crew member's home base.
- 3.5 Operators must ensure that planned schedules allow for flights to be completed within the maximum permitted flight duty period. The Civil Aviation Department (CAD), when assessing the planning of a schedule will take into account the time allowed for pre-flight duties, taxiing, the flight and turn-round times. However, it is recognised that on occasions a planned flight will experience unforeseen delays. Under these conditions the operator may request the aircraft commander to extend an FDP or, exceptionally, to reduce a rest period. Whilst the operator may only request the aircraft commander to exercise his discretion in the event of a service disruption, this does not preclude the commander from individually exercising his discretion at other times.

- 3.6 Factors to be considered when constructing crew rosters should include:
 - 3.6.1 The undesirability of alternating day/night duties.
 - 3.6.2 Avoiding scheduling rest periods of between 18 and 30 hours, except when rest is physiologically based.
 - 3.6.3 The effect of consecutive flights through, or ending within, the window of circadian low.
 - 3.6.4 The effect of consecutive transmeridian flights ensuring that sufficient rest, and where applicable sufficient physiological rest, is provided.
 - 3.6.5 The notification of crews well in advance of days off.
- 3.7 Operators shall establish a means of communication with their crews (such as a rostering committee) to discuss basic roster concepts and the overall application of the provisions of the company approved FTL Scheme.
- 3.8 It is the responsibility of the operator to prepare duty rosters sufficiently in advance to provide the opportunity for crews to plan adequate pre-duty rest. Operators must establish minimum periods of notification of duty for operating crews, or where this is not practicable due to the nature of the operation, must establish in advance minimum periods of notification of days off, during which a crew member will not be required for any duties.
- 3.9 The operator must provide accommodation for crew members when away from home base which allows the crew member the opportunity to obtain adequate pre-flight rest.
- 3.10 When an operator employs a crew member on an irregular basis, then that operator must ensure that the crew member satisfies the provisions of the company approved FTL scheme. Furthermore, operators shall satisfy themselves that crew members who undertake other employment, if allowed by the operator, still have the opportunity to enjoy adequate pre-flight rest.
- 3.11 When an operator first plans a new route involving transmeridian flights where the time difference between the departure point and destination is more than 6 hours, the CAD are to be informed and will make a decision as to whether a further review, a formal observational study be conducted and/or a Fatigue Risk Management System (FRMS) be implemented.
- 3.12 Operations with a scheduled FDP exceeding 19 hours shall be submitted to the CAD after a detailed safety case has been completed by the operator. CAD, may recommend either a formal observational study be conducted and/or a FRMS be implemented.

4. **RESPONSIBILITIES OF CREW MEMBERS**

- 4.1 Responsibility for preventing the onset of fatigue cannot rest on the operator alone.
- 4.2 The formal responsibilities of crew members are set out in Articles 55 and 56 of the Air Navigation (Hong Kong) Order, and crew members are expected to be familiar with these provisions. In general terms they prohibit a person acting as a crew member if he knows, or suspects, that he is suffering from, or having regard to the circumstances of the flight to be undertaken, is likely to suffer from fatigue as may endanger the safety of the aircraft. They are not intended to cover instances where normal tiredness resulting from the physical and mental efforts of flying duty is likely.
- 4.3 A crew member is also required to ensure that the operator is aware of his flight times including any free lance flight times during the preceding 28 days. Other provisions of the Articles set out the maximum number of flying hours which may be flown in any 28 day and 12 month period.
- Note: Flight times in aircraft not exceeding 1600 kg AUW are not accountable.
- 4.4 Individual crew members shall ensure that they are not in breach of their company's approved FTL scheme.
- 4.5 Crew members working on a freelance basis must maintain an individual record of their flying and duty hours which must be presented to an operator before undertaking a flying duty.
- 4.6 All crew members shall make optimum use of the opportunities and facilities for rest provided, and plan and use their rest periods properly. Crew members must recognise that the responsibility for being sufficiently rested before undertaking a flying duty remains entirely with the individual.
- 4.7 No person shall act as a member of the crew of an aircraft registered in Hong Kong or of a foreign registered leased aircraft to which an operator's scheme applies, if the individuals know, or suspect, that their physical or mental condition renders them temporarily unfit so to act.
- 4.8 Travelling time, from home to departure aerodrome, is a factor influencing any subsequent onset of fatigue. If the journey time from home to the departure aerodrome is in excess of 1½ hours, crew members should consider making arrangements for 'suitable accommodation' to be within 1½ hours of the departure aerodrome.

5. APPLICATION OF THE STANDARD PROVISIONS

- 5.1 In order to gain approval of a FTL scheme, an operator shall construct the scheme in accordance with all the provisions set out in this document (“the standard provisions”). Where a particular Section does not apply to Cabin Crew, or a specific type of operation, this is so stated in italics immediately beneath the Section title.
- 5.2 It is incumbent on the operator to establish appropriate maximum flight duty periods (FDP) and minimum rest periods in accordance with the maxima and minima specified in this document. The essentials are identified by use of the words ‘shall’ or ‘must’, desirable features are introduced by the words ‘should’ or ‘may’.
- 5.3 The words ‘scheduled’, ‘planned’, ‘rostered’ are used interchangeably in this document and shall be construed as meaning what was intended to happen. However, when a crew member is called out from a rostered period of stand-by duty, the resulting duty undertaken shall not be considered as having been scheduled, planned or rostered.
- 5.4 Operators and crew members must be aware that the existence of any industrial agreement cannot in any way absolve either the operator or the crew member from observing any of the conditions contained within an approved FTL Scheme.

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6. VARIATIONS TO THE STANDARD PROVISIONS

- 6.1 While operators are required to construct their schemes in accordance with the standard provisions, it is recognised that these provisions will not necessarily interact sensibly with every type of operation. In such circumstances operators may apply to incorporate variations from the standard provisions in their FTL Scheme. Approval to do so will only be given where an operator can show that, despite the variation, the overall level of protection against fatigue will, at least, be equivalent to that provided by the standard provision.
- 6.2 Operators requesting permanent incorporation into their scheme of any significant variation from the standard provisions must consult with their crews or crews' representatives regarding the implementation of the variation(s). If no consensus is reached in this consultation then both parties shall report their respective positions to the CAD who will make the final decision.
- 6.3 Operators may from time to time apply for temporary variations from their AFTLS which may be applicable only to a certain aircraft fleet, schedule, route, flights or "one off" flight. However as for permanent variations there must be documented confirmation of the temporary variation. Temporary variations should normally be valid for a period not exceeding 6 months, after which, any further extension should be in the form of a permanent variation.

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7. DEFINITIONS

For the purposes of this document various terms used have the meanings defined below ascribed to them.

7.1 'Acclimatised'

If a crew member ends a duty period at a place where local time differs by more than 3 hours from his home base time zone he shall straightaway be considered as "unacclimatised" for the purposes of an operator's approved Scheme.

An unacclimatised crew member will become acclimatised again if:

- 7.1.1 He returns to his home base time zone no more than 48 hours after the start of the last duty period which took him away from his home base time zone; or
- 7.1.2 A Flight Crew member returns to home base time zone more than 48 hours after the start of the last duty period which took him away from his home base time zone, and he has completed a recovery period in accordance with Section 21; or
- 7.1.3 A Cabin Crew member returns to home base time zone more than 48 hours after the start of the last duty period which took him away from his home base time zone, and then has 3 consecutive local nights free of duty within a time zone band which is 3 hours wide.

7.2 'Augmented Crew'

The boarding of extra Flight Crew members for the purpose of providing relief at the controls. When four pilots are boarded for flights with a scheduled sector time of 15 hours or more, a maximum of one pilot may hold a P2X rating. When three pilots are boarded for flights with a scheduled sector time of 12 hours or more each pilot must be P1 rated on type.

7.3 'Cabin Crew'

In relation to an aircraft means a person on a flight for the purpose of performing in the interest of the safety of the passengers duties to be assigned by the operator or commander of the aircraft but who shall not act as a member of the Flight Crew.

7.4 'Dispatch Crew'

A fully qualified and current Flight Crew/Cabin Crew authorised to carry out pre-flight duties as defined by an operator.

7.5 **‘Domestic Day Off (DDO)’**

A period at home base available for leisure and relaxation and free of all duties. A single DDO shall comprise a minimum of 34 continuous hours and include two local nights. Additional consecutive DDOs must be of at least 24 hours duration and shall include a further local night for each additional DDO. A Rest Period may be included as part of a DDO. [At the request of the individual crew member, and with the agreement of the operator, a DDO may be taken at other than his home base. In this case the crew member will be considered acclimatised to the place where the DDOs are taken, provided the conditions of paragraph 7.1 are met.]

7.6 **‘Duty Cycle’ – Flight Crew**

A series of duty periods undertaken between DDOs.

‘Duty Cycle’ – Cabin Crew

A series of duty periods undertaken between “Days Off”.

7.7 **‘Duty’ & ‘Duty Period’**

Any continuous period during which a crew member is required to carry out any task associated with the business of an aircraft operator. It includes any flight duty period, positioning, ground training, ground duties and standby.

7.8 **‘Extended Break (EXB)’**

A period away from home base, normally in accommodation provided by the operator, during which the crew member is free of all duties. An EXB shall comprise a minimum of 30 continuous hours throughout which suitable accommodation is available. A rest period may form part of an EXB.

7.9 **‘Fatigue Risk Management System’ (FRMS)**

FRMS is a scientifically based system to manage transient and cumulative fatigue, which will provide an equivalent level of safety as a component of a prescriptive FTL system, or may form the basis of an alternate FTL system.

7.10 **‘Flight Crew’**

In relation to an aircraft means those members of the crew of the aircraft who undertake to act as pilot or flight engineer.

7.11 **‘Flight Duty Period (FDP)’**

Any time during which a person operates in an aircraft as a member of its crew. It starts when the crew member is required by an operator to report for a flight. It finishes at on-chocks or engines off, or rotors stopped, on the final sector, or when a crew member last vacates a control seat and is free of all flight duty for the remainder of the flight, whichever is the earlier.

7.12 **‘Home Base’**

The place nominated by the operator to the crew member, or otherwise contractually agreed between them, from where the crew member normally starts and ends a rostered/planned duty and at which place, under normal conditions, the operator is not responsible for the accommodation of the crew member concerned.

7.13 **‘Late Night Period’ (LNP)**

The period 0100 to 0659 hours home base time zone to which a crew member is acclimatised.

7.14 **‘Local Night’**

A period of 8 hours falling between 2200 hours and 0800 hours local time.

7.15 **‘Long Range Operations’ (LRO)**

An operation by a Two Crew Aircraft that includes a Sector with a Scheduled Sector Time greater than 10 hours but not greater than 16 hours.

7.16 **‘Night’**

The time between half an hour after sunset and half an hour before sunrise.

7.17 **‘Physiological Rest’**

The rostering of rest periods in accordance with paragraphs 20.3 and 28.8.3.

7.18 **‘Positioning’**

The practice of transferring crews from place to place as passengers in surface or air transport at the behest of an operator.

7.19 **‘Recovery Period’**

A period free of duty following a duty cycle of length greater than 48 hours during which the crew member became unacclimatised. A rest period and DDO(s) may form part of a recovery period.

7.20 **‘Reporting Time’**

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

7.21 **‘Rest’**

The word rest shall be taken as meaning repose or sleep.

7.22 **‘Rest Period’**

A period of time before starting an FDP which is designed to give crew members adequate opportunity to rest before a flight.

7.23 **‘Rostered/Planned Duty’**

A duty period, or series of duty periods, with stipulated start and finish times, notified by the operator to crews in advance. These may comprise or form part of a duty cycle.

7.24 **‘Scheduled’**

‘Scheduled’ is an intended future plan of what is intended to happen.

7.25 **‘Sector’ & ‘Sector Time’**

The time between when an aircraft first moves from its parking position until it next comes to rest, after landing, on the designated parking position.

7.26 **‘Service Disruption’**

Unforeseen circumstances which occur during operations after the commencement of an FDP.

7.27 **‘Sleep Opportunity’**

A period which provides the opportunity to take at least 8 consecutive hours of horizontal rest in suitable accommodation.

7.28 **‘Split Duty’**

A flight duty period which consists of two or more sectors, separated by a period of rest which is less than a minimum rest period.

7.29 **‘Standard Operations’ (STO)**

An operation other than a Long Range Operation or an Ultra Long Range operation.

7.30 **‘Standby Duty’**

A period during which an operator places constraints on a crew member who would otherwise be off duty.

7.31 **‘Suitable Accommodation’**

A well furnished bedroom which is subject to minimum noise, is well ventilated, and has the facility to control the levels of light and temperature.

7.32 **‘Travelling Time’**

All time spent by a crew member transiting between the place of rest, and the place of reporting for duty.

7.33 **‘Two Crew Aircraft’**

A fixed wing aircraft certificated to be flown by a minimum Flight Crew of two pilots.

7.34 **‘Three Crew Aircraft’**

A fixed wing aircraft certificated to be flown by a minimum Flight Crew of two pilots and a flight engineer, or three pilots.

7.35 **‘Ultra Long Range Operations’ (ULR)**

An operation by a Two Crew Aircraft that includes a Sector with a Scheduled Sector Time greater than 16 hours, and where four pilots are boarded so that In flight Relief can be provided.

7.36 **‘Unacclimatised’**

Not acclimatised.

7.37 **‘Week’**

A period of seven consecutive days starting at any set time and on any set day as specified and stated by the operator.

7.38 **‘Window of Circadian Low’ (WOCL)**

The period 0200-0559 individual body clock time.

8. REPORTING TIMES

This Section does not apply to Business Jet Operations – see Section 29.

This Section does not apply to Helicopter Operations - see Section 30.

- 8.1 Reporting places and times must be specified by an operator. The reporting times must realistically take account of all pre-flight preparation duties and should not be less than 60 minutes before departure, except where a dispatch crew is utilized. Pre-flight duties are part of the FDP but immediate post-flight duties are not. The FDP commences as specified by the operator and ends when the aircraft is “on chocks”. However, a duty period must allow for post-flight activities which normally should not be less than 30 minutes. The time spent between arrival at the reporting place and the completion of post-flight duties normally determines the length of the Duty Period and, hence, the length of the subsequent rest period. However, if the time between arrival at the airport terminal and arrival at the reporting place, or vice versa, is repetitively delayed due to airport procedures (e.g. immigration, customs and security), this must be brought to the attention of the operator and actioned accordingly.
- 8.2 If a specific operation requires the Cabin Crew to report before the Flight Crew, then the difference between the report times shall be limited to 20 minutes. However in this event the Cabin Crew’s “Local Time of Start”, associated FDP, and subsequent rest period shall be in accordance with the Flight Crew’ local time of start, FDP and subsequent rest period requirements. The Cabin Crew’s additional report time shall however be included in the Cabin Crew’s overall total of duty hours.
- 8.3 If an operator intends to utilise dispatch crews then the mechanism to be adopted must be included in the operator’s scheme.
- 8.4 **Delayed Reporting Time**
- 8.4.1 When a crew member is informed of a delay to the reporting time of less than 4 hours, before leaving the place of rest, the maximum FDP shall be based on the more limiting time band of the scheduled and the actual report time and shall start at the actual report time.
- 8.4.2 However, when a crew member is informed of a delay of 4 hours or more, before leaving the place of rest, the maximum FDP shall be based on the actual report time and shall start at the actual report time.
- 8.4.3 In the event of a second or any subsequent delays, the maximum FDP and FDP start time, will both remain unchanged from the FDP and FDP start time calculated under paragraphs 8.4.1 or 8.4.2 respectively.

- 8.4.4 When an operator informs a crew member before leaving the place of rest of a delay in reporting time of 10 hours or more ahead, and that crew member is not further disturbed by the operator until a mutually agreed hour, then that elapsed time is classed as a rest period. If, upon the resumption of duty, further delays occur then the appropriate criteria in this paragraph and paragraphs 8.4.1, 8.4.2 and 8.4.3 above shall be applied to the rescheduled reporting time.”

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10. FLIGHT CREW IN FLIGHT RELIEF FACILITIES

- 10.1 When the Flight Crew is augmented for the purposes of extending a standard FDP, a bunk or a comfortable reclining seat, separated and screened from the passengers and flight deck, shall be provided for the Flight Crew member(s) not at the controls. However, when seating arrangements in the passenger cabin ensure that the seat provided for the relieved Flight Crew member is not immediately adjacent to a seat occupied by a passenger, there shall be no requirement for screening.

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11. STANDARD OPERATIONS

This Section does not apply to Cabin Crew - see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter Operations - see Section 30.

11.1 Standard Flight Duty Period - Acclimatised Flight Crew

11.1.1 Table “A” below shall be used to determine the Standard FDP for acclimatised Flight Crew of two and three crew aircraft.

Table “A” - Standard FDP for Acclimatised Flight Crew

Local Time of Start	Sectors							
	1	2	3	4	5	6	7	8 or more
0700–0759	13	12¼	11½	10¾	10	9¼	9	9
0800–1259	14	13¼	12½	11¾	11	10¼	9½	9
1300–1759	13	12¼	11½	10¾	10	9¼	9	9
1800–2159	12	11¼	10½	9¾	9	9	9	9
2200–0659	11	10¼	9½	9	9	9	9	9

Note 1. If the scheduled FDP for a two crew aircraft includes:

- a) a scheduled sector length in excess of 9 hours, or
- b) two or more scheduled sectors and the combined scheduled sector time exceeds 8½ hours and one of the scheduled sectors encroaches on the period 0200 – 0559 at the local time where the FDP commenced,

One additional pilot must be boarded.

When a third pilot is boarded a comfortable reclining seat or a bunk shall be provided for the Flight Crew member not at the controls.

Note 2. If the preceding FDP was extended due to service disruption, the minimum rest period may be reduced, provided that the subsequent allowable FDP is also reduced by the same amount.

11.2 Standard Flight Duty Period - Unacclimatised Flight Crew

11.2.1 Table “B” shall be used to determine the FDP for unacclimatised Flight Crew of two and three crew aircraft.

Table “B” - Standard FDP for Unacclimatised Flight Crew

Length of Preceding Rest (hours)	Sectors						
	1	2	3	4	5	6	7 or more
Up to 18	13	12¼	11½	10¾	10	9¼	9
18-30	11½	11	10½	9¾	9	9	9
over 30	13	12¼	11½	10¾	10	9¼	9

Note 1. If the scheduled FDP for a two crew aircraft includes:

- a) a scheduled sector length in excess of 9 hours, and the FDP starts within 9 hours of the end of a sleep opportunity in accordance with paragraph 20.3.1 or 20.3.2, or
- b) a scheduled sector length in excess of 8½ hours, and the FDP starts 9 or more hours after the end of a sleep opportunity in accordance with 20.3.1 or 20.3.2, or
- c) two or more scheduled sectors and the combined scheduled sector time exceeds 8½ hours and the FDP commences 9 hours or more after the end of a sleep opportunity in accordance with 20.3.1 or 20.3.2 ,

One additional pilot must be boarded.

When a third pilot is boarded a comfortable reclining seat or a bunk shall be provided for the Flight Crew member not at the controls.

Note 2. In accordance with Note 2 Table A.

11.3 Extended Flight Duty Period for Standard Operations

11.3.1 Use of Flight Crew Relief and Flight Crew In Flight Relief Facilities

11.3.1.1 When augmented Flight Crew are boarded, the FDP may be extended as follows.

- (i) A total of in-flight rest of less than three hours does not allow for the extension of a Standard FDP, but where the total in-flight rest, which needs not be continuous, is three hours or more,

then the Flight Crew member's permitted Standard FDP may be extended as follows:

<u>When a bunk is available</u>	<u>When only a seat is available</u>
---------------------------------	--------------------------------------

A period equal to $\frac{1}{2}$ the total in flight rest; provided that the maximum FDP permissible shall be 18 hours	A period equal to $\frac{1}{3}$ the total in flight rest; provided that the maximum FDP permissible shall be 15 hours.
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- (ii) No Flight Crew member may spend more than 8 consecutive hours at the controls without being relieved of all flight duty for at least one hour, or a total of more than 10 hours at the controls within a FDP. For the purposes of this sub-paragraph "at the controls" includes brief absences from the controls for physiological and / or duty reasons.
- (iii) When calculating the period of in-flight relief, the maximum period on any flight cannot be greater than the actual block time less one hour. Scheduled ground transit time may not be taken into consideration.
- (iv) If, on the day, extended unscheduled ground time occurs (such as a technical delay before departure or in transit) then, subject to the conditions set out in paragraph 11.3.2.2 (i) to (vi), rest taken on board the aircraft on the ground may count as in-flight rest at the appropriate seat or bunk rate, as the case may be.
- (v) Where a Flight Crew member undertakes a period of in-flight relief and after its completion is wholly free of all flight duty for the remainder of the flight, then that part of the flight following completion of all flight duty shall be classed as positioning and be subject to the controls on positioning detailed in Section 18.

11.3.2 Use of Split Duty

11.3.2.1 When an FDP consists of two or more sectors but separated by a period of consecutive hours of rest that is less than a minimum rest period (Split Duty), then the FDP may be extended by the amounts indicated below.

Period of Consecutive Hours of Rest	Maximum Extension of the FDP
Less than 3	NIL
3 – 10	A period equal to half the hours of consecutive rest taken.

- (i) The portion of the FDP either side of the period of rest must not exceed 10 hours and no FDP utilising the provision of split-duty may exceed 18 hours.
- (ii) Split duty may not be used to extend an FDP already extended by the use of an augmented crew.
- (iii) The period of rest shall not include the time required for intervening post and pre-flight duties nor travel time to and from the place where rest is taken.
- (iv) When the period of rest is 6 hours or less it will suffice if a quiet and comfortable place, not open to the public, is available. If the period of rest is more than 6 hours, or covers 3 hours or more of the period 2200-0800 local time at the place where it occurs, then suitable accommodation must be provided. Where security considerations make the latter requirement inadvisable the provision of suitable accommodation may be waived.

11.3.2.2 Only under the following conditions may a period of rest within a split-duty be taken in an aircraft on the ground:

- (i) The period of rest is 6 hours or less, or the requirement for suitable accommodation is waived in accordance with security considerations.

- (ii) A comfortable reclining seat, or bunk, must be available for each resting crew member.
- (iii) There must be no passengers on board.
- (iv) There must be no cargo loading or unloading during the period of rest.
- (v) Maintenance must not take place within the vicinity of resting crew members.
- (vi) The crews must have adequate control of the temperature, lighting and ventilation.

These conditions must be included in an operator's FTL scheme.

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12. LONG RANGE OPERATIONS

This Section does not apply to Cabin Crew - see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter operations – see Section 30.

12.1 Calculation of FDP

12.1.1 Where three pilots are boarded, the maximum scheduled FDP shall be as follows:

Immediate Preceding Rest	Maximum FDP (hours)
Physiological Rest Achieved In accordance with 20.3.3	14¾
Physiological Rest Not Achieved	13

- Notes:
1. When three pilots are boarded the maximum scheduled FDP shall be calculated from Table A or B as appropriate and extended in accordance with Section 11.3.1.
 2. For all LROs, a bunk or a comfortable reclining seat shall be provided for the Flight Crew member not at the controls.
 3. Bunks shall be provided for a Scheduled Sector Time in excess of 11 hours.
 4. On completion of a scheduled FDP greater than 13 hours, Flight Crew will be provided with a minimum of 34 hours rest or two sleep opportunities in accordance with Section 20.3 whichever is the greater.

12.1.2 When four pilots are boarded, the maximum FDP that may be scheduled is 18 hours regardless of considerations of acclimatisation or time of start of the FDP. Bunks shall be provided for the Flight Crew members not at the controls. The division of duty and In-Flight Relief must be kept in balance according to operational circumstances and no Flight Crew member will receive less than 3 hours' total In-Flight Relief, which need not be continuous.

12.2 No more than two Sectors will be scheduled within a single FDP. Only one sector will be scheduled within a single FDP scheduled in excess of 13 hours where three pilots are boarded. In the event of Service Disruption, a further Sector may be operated at the Commander's Discretion.

12.3 For each additional sector flown, the maximum FDP is to be reduced by 45 minutes.

- 12.4 During any single FDP no Flight Crew member will:
- 12.4.1 Spend more than 8 consecutive hours at the controls without being relieved of all flight duty for at least one hour; or
 - 12.4.2 Spend more than a total of 10 hours at the controls.
- For the purposes of the above “at the controls” includes brief absences from the controls for physiological and/or duty reasons.
- 12.5 If, on the day, extended unscheduled ground time occurs (such as a technical delay before departure or in transit) then, subject to the conditions specified in paragraph 11.3.2.2 (i) to (vi), rest taken on board the aircraft on the ground may count as In-Flight Relief.
- 12.6 When a Flight Crew member undertakes a period of In-Flight Relief and, after its completion, is wholly free of all flight duty for the remainder of the flight, then that part of the flight following completion of the flight duty will be classed as Positioning.

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13. ULTRA LONG RANGE OPERATIONS

This Section does not apply to Cabin Crew - see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter operations – see Section 30.

- 13.1 Bunks must be provided for Flight Crew members not at the controls.
- 13.2 The minimum number of Flight Crew boarded will be four pilots.
- 13.3 The maximum allowable FDP for a single Sector will be 19 hours, regardless of considerations of acclimatisation or time of start of the FDP.
- 13.4 No more than one Sector will be scheduled within a single FDP. In the event of Service Disruption, a second Sector may be operated at the Commander's Discretion.
- 13.5 Where an additional Sector is flown, the maximum allowable FDP will be reduced by 45 minutes.
- 13.6 No more than two ULR Sectors will be scheduled in a Duty Cycle.
- 13.7 When a rostered Duty Cycle includes a ULR sector then the Duty Cycle shall be limited to four sectors, and the third and fourth sector cannot both be ULR sectors.
- 13.8 When a rostered Duty Cycle includes a ULR sector then rest shall be in accordance with paragraphs 20.4.
- 13.9 When the provisions of this Section are applied, the division of duty and In-Flight Relief must be kept in reasonable balance according to operational circumstances. However, no Flight Crew member will receive less than 3 hours' total In-Flight Relief, which needs not be continuous.
- 13.10 During any single FDP no Flight Crew member will:
 - 13.10.1 Spend more than 8 consecutive hours at the controls without being relieved of all flight duty for at least one hour; or
 - 13.10.2 Spend more than a total of 10 hours at the controls.

For the purposes of the above "at the controls" includes brief absences from the controls for physiological and/or duty reasons.

- 13.11 If, on the day, extended unscheduled ground time occurs (such as a technical delay before departure or in transit) then, subject to the conditions specified in paragraph 11.3.2.2 (i) to (vi), rest taken on board the aircraft on the ground may count as In-Flight Relief.
- 13.12 When a Flight Crew member undertakes a period of In-Flight Relief and, after its completion, is wholly free of all flight duty for the remainder of the flight, then that part of the flight following completion of the flight duty will be classed as Positioning.

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14. **COMMANDER'S DISCRETION**

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter Operations - see Section 30.

14.1 This provision is to cover unforeseen circumstances which occur during operations. It is not intended for use in regular practice, cannot be rostered and shall only apply once the crew member has commenced a rostered FDP.

14.2 In the case of service disruption, the operator may request the aircraft commander to exercise his discretion in order to extend an FDP, or exceptionally, to reduce a Rest Period, or the aircraft commander may at his own initiative decide to do so. The provisions of this Section will only apply to a reduction of a Rest Period as described in paragraph 14.3 below.

14.3 **Reduction of a Rest Period**

14.3.1 The provisions of this paragraph do not apply to recovery periods taken between duty cycles.

14.3.2 The operator may request the aircraft commander or the aircraft commander may, at his discretion after taking note of the circumstances of other members of the crew, reduce a rest period but only insofar as the room allocated to the crew member must be available for occupation for a minimum of 10 hours. As for ULR rest, the 2 physiological rest periods required on completion of any ULR FDP may be reduced, but, in any event, the ULR rest shall not be reduced to less than 1 physiological rest period. The exercise of such discretion shall be considered exceptional and must not be used to reduce successive rest periods. If the preceding FDP was extended due to service disruption, the minimum rest period may be reduced, provided that the subsequent allowable FDP is also reduced by the same amount.

14.3.3 Whenever an aircraft commander reduces a rest period, it shall be reported to his employer on a Commander's Discretion Report (CDR), in a format acceptable to the CAD. If the reduction is more than 1 hour, then the operator shall submit the CDR together with the operator's comments, to the CAD, within 7 days of the aircraft's return to base.

14.3.4 The rest period, following a sequence of reduced rest and an extended FDP, cannot be reduced.

14.4 Requests made must be reasonable in the light of the prevailing circumstances. The persons/posts who may initiate such requests shall be listed in the operator's scheme. The CAD will need to be satisfied that these persons hold suitably senior posts.

- 14.5 The extension of an FDP following a reduced rest period shall only be made in exceptional circumstances. Aircraft commanders and those persons listed in the scheme (14.4 above) must be made aware of this requirement.
- 14.6 After receiving a request the aircraft commander, taking into consideration all relevant factors including the circumstances of the other crew members, and the over-riding consideration of safety, shall inform the operator of his decision. The aircraft commander may elect to work less than, and not necessarily to the full extent of, the provisions of 14.9 below. His decision in such matters shall be final and unquestioned.
- 14.7 The operator shall maintain a written record of each and every request made. The record must show the operator's reason for the request and the aircraft commander's decision. Where an aircraft commander decides to operate he must complete a CDR giving reasons for his decision. If the extension of an FDP exceeds 2 hours or follows upon a reduced rest period, or a rest period is reduced by more than 1 hour, then a copy of the written record and the CDR must be forwarded to the Flight Operations Inspectorate within 7 days of the aircraft's return to base.
- 14.8 The operator must preserve for a period of 12 months all CDRs and records of requests made.
- 14.9 In the case of service disruption the maximum extension to an FDP shall be 3 hours. In the event that a Standard FDP has already been extended by use of an augmented crew, or split duty, or follows upon a reduced rest period or in the case of LRO or ULR operations, then the maximum extension to the FDP shall be 2 hours. These 3 and 2 hour extensions may only be exceeded in an emergency. In this respect, an emergency is a situation which in the judgement of the aircraft commander presents a serious risk to the health or safety of crew and passengers, or endangers the lives of others.

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15. LATE FINISHES/EARLY STARTS

- 15.1 These provisions:
 - 15.1.1 Apply to acclimatised Flight Crew only.
 - 15.1.2 Apply when a duty cycle contains an FDP which is preceded by one or more duty periods any part of which falls within the LNP.
 - 15.1.3 Do not apply if all the duties within the duty cycle are ground duties, or to ground duties following FDP(s) where the former end the duty cycle.
 - 15.1.4 Do not apply to FDP's which are delayed into the LNP by service disruption.
 - 15.1.5 Do not apply to standby duty when undertaken at home, or in suitable accommodation provided by the operator.
- 15.2 Duties may not be undertaken that occur in more than 3 consecutive LNP's, nor may there be more than 4 such duties in any 6 consecutive LNP's, except under the provision of paragraph 15.6 below.
- 15.3 When a crew member is occupying suitable accommodation provided by the operator, and the normal journey time from that accommodation to the reporting point does not exceed 15 minutes, then for the purposes of defining the LNP, 0559 may be substituted for 0659.
- 15.4 When a crew member is scheduled for consecutive FDPs which encroach upon consecutive LNPs, the crew member must receive a rest period, immediately prior to the first of these consecutive FDPs, which includes a sleep opportunity in accordance with 20.3.1 .
- 15.5 If duties occur on either 3 consecutive LNP's, or more than 3 LNP's within 6 consecutive LNP's then the subsequent rostered period free of duty must be of at least 48 hours duration and include two local nights.
- 15.6 Crew members employed on regular "overnight" duties may, subject to the following conditions, operate a block of 5 FDP's on up to 5 consecutive LNP's which encroach upon the LNP:
 - 15.6.1 The minimum rest period before the start of such a series of duties shall be 36 hours.
 - 15.6.2 The FDP must not exceed 8 hours, irrespective of the sectors flown.
 - 15.6.3 At the finish of such a series of duties crew members must have a minimum of 63 hours free from all duties.

16. MIXED DUTIES

16.1 General

When a crew member is required to report for duty in advance of the stipulated report time for a scheduled flight, to carry out a task at the behest of an employer, then the time spent on that task shall be part of the subsequent FDP.

16.2 Aeroplane and Helicopter Flying

When both aeroplane and helicopter flying is carried out the more restrictive flight and duty time limitations shall apply.

16.3 Mixed Simulator and Aircraft Flying

When a Flight Crew member occupies a control seat in a simulator or conducts tests or training in a simulator, and then within the same duty period operates as a crew member on a public transport flight, the time spent in the simulator shall be counted as a sector and counted in full towards the subsequent FDP, and for helicopters towards the daily flying hour maxima. The allowable FDP is calculated from the report time of the simulator detail.

16.4 Mixed Single Pilot/Two Pilot Operations

In one duty period a pilot may fly as a single Flight Crew up to the point where the total flying and duty hours reach the single pilot FDP limit. The pilot may then continue beyond the single pilot FDP limit on a two Flight Crew operation up to the two Flight Crew FDP and flying hour maxima, but may only fly as a co-pilot.

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17. TRAVELLING TIME

- 17.1 Travelling time, other than that time spent on positioning, shall not be counted as duty.
- 17.2 When crew members are required to travel from their home to an aerodrome other than the one from which they normally operate, any travelling time over and above the journey time from home to the usual operating aerodrome shall be classed as positioning.

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18. POSITIONING

- 18.1 All time spent on positioning at the behest of an operator shall count as duty, but positioning does not count as a sector when calculating the FDP, even if the positioning journey precedes a split duty FDP. In these circumstances the FDP commences not later than the time at which the crew member reports for the positioning journey, or positions in accordance with paragraph 17.2.
- 18.2 There is no limit to the amount of positioning which may be undertaken following the completion of an FDP other than compliance with the maximum cumulative duty hours limitation.
- 18.3 On occasion, an operator may recover a crew member from an overseas airfield on a positioning flight on the seventh consecutive day of duty.

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19. STANDBY DUTY

This Section does not apply to Cabin Crew – see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter operations – see Section 30.

- 19.1 The time of start, end and nature of the standby duty must be defined and notified to all Flight Crew members. Furthermore, the report time from a standby callout must include, in addition to the relevant travelling time, a minimum of 45 minutes for the Flight Crew member to prepare to leave home, or the suitable accommodation provided by the operator. Section 4 para. 4.8 refers to the relevant travelling time.
- 19.2 The maximum duration of standby duty shall be 12 hours.
- 19.3 If a Flight Crew member is called out from standby, the standby duty will cease at that time.
- 19.4 When standby is undertaken at home, or in suitable accommodation provided by the operator, and a Flight Crew member is called out for duty then:
 - 19.4.1 For Standard Operations, if acclimatised, the maximum FDP shall be based on the Local Time of Start in Table A and shall start at the actual report time.
 - 19.4.2 For Standard Operations, if unacclimatised the FDP shall be based on the Length of Preceding Rest (hours) in Table B, which immediately precedes the standby duty and shall start at the actual report time.
 - 19.4.3 For Long Range Operations the maximum FDP shall be in accordance with paragraph 12.1 and the FDP shall start at the actual report time.
 - 19.4.4 For Ultra Long Range Operations the maximum FDP shall be in accordance with paragraph 13.3 and the FDP shall start at the actual report time.
 - 19.4.5 If a Flight Crew member is called out from Standby for an FDP with a report time after the end of the scheduled Standby duty, then the maximum time limit between the start of the scheduled Standby duty and the end of the FDP shall be 23 hours. This limit will not apply when there is a period of 10 hours or more between call-out and the report time.
- 19.5 When a Flight Crew member is on standby duty on immediate readiness at an airport, the maximum FDP is calculated for the Flight Crew member in accordance with paragraphs 19.4.1 or 19.4.2 or 19.4.3 or 19.4.4 as appropriate except the FDP shall be based on the actual start time of the standby duty and the FDP shall commence at the start time of the standby duty.

19.6 Rest Periods Subsequent to Standby Duty

19.6.1 When standby is undertaken at home, or in suitable accommodation provided by the operator, and a Flight Crew member is called out for duty which:

Commences within the scheduled period of standby or commences 10 hours or more after the callout, then the rest period immediately following the duty shall be at least as long as the duty period for which the crew member was called out.

19.6.2 When standby is undertaken at home, or in suitable accommodation provided by the operator, and a Flight Crew member is called out for duty which:

Commences after the scheduled period of standby and less than 10 hours after the callout then the rest period immediately following the duty shall be at least as long as the call out duty plus half the time spent on standby, except standby between 2200-0800 local time does not qualify for the standby rest.

19.6.3 When standby is undertaken on immediate readiness at an airport, and a Flight Crew member is called out for duty, then the rest period subsequent to the duty shall be at least as long as the total of the standby duty and the duty period.

19.6.4 For rest preceding ULR standby see paragraph 20.4.4.

19.7 The method of adding time spent on standby to cumulative totals is stated in paragraph 24.3.

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20. REST PERIODS

This Section does not apply to Cabin Crew - see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter Operations - see Section 30.

20.1 General

- 20.1.1 The aircraft operator must notify all Flight Crew members in good time of a flight duty period so that sufficient and uninterrupted pre-flight rest can be obtained. When away from base the operator must provide the Flight Crew with the opportunity and the facilities for adequate pre-flight rest. The operator must provide suitable accommodation. When flights are carried out at such short notice that it is impracticable for an operator to arrange suitable accommodation, then this responsibility devolves to the aircraft commander.
- 20.1.2 Flight Crew members who inform an operator that they are having difficulty in achieving adequate pre-flight rest must be given the opportunity to consult an aviation medical specialist.
- 20.1.3 When unacclimatised, no more than 3 consecutive 18-30 hour rest periods, or a total of 4, may be rostered in any 14 day period. If 3 consecutive, or a total of 4 rest periods are so rostered, any subsequent EXB rostered within the same 14 days shall be of at least 34 hours duration. This limitation does not apply to rostering of standby duties.
- 20.1.4 When a Rest Period affords a Flight Crew member a Physiological Rest and the duration of the Rest Period is between 18-30 hours, then that Rest Period will not be counted for the purposes of 20.1.3.
- 20.1.5 When a Flight Crew member is rostered for two consecutive FDPs both of which encroach upon the period 0100-0659 local time at the place where the FDPs commence, and at the completion of the second FDP the time difference between the places where the first FDP began and the second FDP ended is six hours or more, the provisions of 20.3 will apply except when the Rest Period between the two consecutive FDPs is Physiological Rest.
- 20.1.6 In a duty cycle that contains more than 2 FDPs which are LROs, then physiological rest must be rostered between any two consecutive FDPs which are both LRO.

20.2 Normal Rest

20.2.1 When the time difference between the places at which the preceding duty period began and ended is less than 6 hours the minimum rest period which must be provided following the end of that duty period and the commencement of the next FDP shall be:

20.2.1.1 At least as long as the preceding duty period. If the preceding duty period comprises standby duties, see Paragraph 19.6, or

20.2.1.2 12 hours

whichever is the greater.

In the case when the rest period earned by a crew member is 12 hours, and suitable accommodation is provided by the operator, then that rest period may be reduced by one hour. In such circumstances, if the travelling time between the aerodrome and the accommodation is more than 30 minutes each way then the rest period must be increased by the amount the total time spent travelling exceeds one hour. The room allocated to the crew member must be available for occupation for a minimum of 10 hours. This sub-paragraph does not apply to rest periods that exceed 12 hours.

20.2.2 If the preceding duty period, which includes any time spent on positioning, exceeded 18 hours, then the ensuing rest period must include a local night.

20.3 Physiological Rest

When the time difference between the places at which the preceding duty period began and ended is 6 hours or more the minimum rest period which must be provided following the end of that duty period and the commencement of the next FDP shall be determined as follows:

20.3.1 Where the rest period commences within 72 hours of the start of the duty period, which resulted in the crew member becoming unacclimatised, the rest period shall be:

(i) At least as long as the previous duty period, or

(ii) A period of sufficient length to provide a sleep opportunity of at least 8 hours within the period 2200-0800 home base time of the individual crew member, or

(iii) 14 hours;

whichever is the greater; or

(iv) Scheduled in accordance with paragraph 20.3.3 below.

20.3.2 Where the rest period commences later than 72 hours of the start of the duty period which resulted in the crew member becoming unacclimatised, the rest period shall be:

(i) At least as long as the previous duty period, or

(ii) A period of sufficient length to provide a sleep opportunity of at least 8 hours within the period 2200-0800 local time at the place where rest is taken, or

(iii) 14 hours

whichever is the greater; or

(iv) scheduled in accordance with paragraph 20.3.3 below.

20.3.3 As an alternative to paragraph 20.3.1 and paragraph 20.3.2 above an operator may provide a rest period which is:

(i) at least as long as the previous duty period, or

(ii) 34 hours

whichever is the greater.

Note: In the event of unforeseen circumstances, the sleep opportunity of 8 hours required in paragraph 20.3.1 (ii) and 20.3.2 (ii) may be provided between 2200 and 0930 instead of between the stipulated 2200 and 0800, provided the total rest achieved is 14 hours or more.

20.4 **ULR Rest**

20.4.1 Immediately prior to a Rostered Duty Cycle containing a ULR FDP a Flight Crew member will receive a period free of duty of not less than 2 DDOs duration and;

20.4.2 Immediately prior to a ULR FDP that is rostered within the Duty Cycle, a period of time free of duty will be Rostered such that:

20.4.2.1 when the Flight Crew member is acclimatised then the period is sufficient to allow a sleep opportunity within the period 2200 - 0800 home base local time; or

- 20.4.2.2 when the Flight Crew member is unacclimatised, and the period of time free of duty starts less than 72 hours after the start of the Duty Period that resulted in becoming unacclimatised, then the period is sufficient to allow a Sleep Opportunity within the period 2200 - 0800 home base local time; or
- 20.4.2.3 when the Flight Crew member is unacclimatised, and the period of time free of duty starts 72 hours or more after the start of the Duty Period that resulted in becoming unacclimatised, then the period is sufficient to allow a sleep opportunity within the period 2200 - 0800 local time at place of rest.
- 20.4.3 On completion of any ULR FDP in a Duty Cycle, a minimum of 2 physiological rest periods will be Rostered.
- 20.4.4 For the purpose of ULR standby a Flight Crew member may be rostered for standby duty, up to a maximum of 12 hours, immediately preceding a ULR Duty Cycle or a ULR FDP provided the Flight Crew member receives the rest in accordance with paragraph 20.4.1 immediately prior to the commencement of the standby duty.
- 20.4.5 On completion of a ULR Duty Cycle the Flight Crew member will immediately commence a Recovery Period which shall not be less than 4 DDOs duration.

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21. RECOVERY PERIODS

This Section does not apply to Cabin Crew - see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter Operations - see Section 30.

21.1 General

21.1.1 The recovery periods scheduled in Table “X” below apply when an unacclimatised Flight Crew member returns to home base on completion of a duty cycle of duration greater than 48 hours.

21.1.2 The provisions of Table “X” are not intended to apply each and every time a Flight Crew member touches home base *during* a duty cycle.

21.1.3 A rest period may form part of a recovery period.

21.1.4 DDOs contained within a recovery period shall count toward the overall entitlement of DDOs provided that:

Where 6 or more time zones were crossed during the preceding duty cycle, then the first DDO within the recovery period shall not count toward meeting the 7 DDOs in 28 days requirement - see paragraph 22.4.

21.2 Length of Recovery Period

21.2.1 The duration of the recovery period which must be given to a Flight Crew member following return to home base is given by Table “X” below.

21.2.2 The intent of Table “X” is to ensure that a Flight Crew member’s body clock is recovered to home base local time before the commencement of the next duty cycle.

21.2.3 The length of the recovery period is dependent on the accountable length of the duty cycle and shall be determined from the start of the first duty period in the duty cycle which results in the crew member becoming unacclimatised, to the end of the duty cycle.

21.2.4 However, when the first duty period in the duty cycle which resulted in the crew member becoming unacclimatised was immediately preceded by any FDP, or a standby at home base where the crew member was called out, or a ground duty that encroached on the Late Night Period then the length of the recovery period shall be determined based on the start of that duty period and to the end of the Duty Cycle.

21.3 **Table “X” - Instructions for Use**

- 21.3.1 Enter Table ‘X’ below at column 1 with total accountable hours of the completed Duty Cycle;
- 21.3.2 Move across to the column which gives the maximum time difference from home base time during the Duty Cycle;
- 21.3.3 The figure in italics shows the required length of recovery period in DDO(’s).

21.4

Table “X”

	Maximum Time Difference from Home Base Time during the Duty Cycle			
	More than 3 hrs but less than 5 hrs	5 hrs or more but less than 6 hrs	6 hrs or more but less than 7 hrs	7 hrs or more
1	2	3	4	5
48+ to 72	1 _{DDO}	1 _{DDO}	2 _{DDOs}	2 _{DDOs}
72+ to 96	3 _{DDOs}	3 _{DDOs}	3 _{DDOs}	3 _{DDOs}
96+ to 120	3 _{DDOs}	4 _{DDOs}	4 _{DDOs}	4 _{DDOs}
120+ to 144	3 _{DDOs}	4 _{DDOs}	5 _{DDOs}	5 _{DDOs}
144+	3 _{DDOs}	4 _{DDOs}	5 _{DDOs}	6 _{DDOs}

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22. DOMESTIC DAYS OFF (DDO)

This Section does not apply to Cabin Crew - see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter Operations - see Section 30.

Flight Crew members:

- 22.1 Shall not be rostered for duty on more than 6 consecutive days before being given a DDO or Extended Break (EXB); but
- 22.2 May be positioned to their home base on the seventh day, provided they are then allocated at least 2 consecutive DDOs, and
- 22.3 Shall have 2 consecutive DDOs in any consecutive 14 days following the previous 2 consecutive DDOs, and
- 22.4 Shall have a minimum of 7 DDOs in any consecutive 28 days, and
- 22.5 Shall have an average of at least 8 DDOs in each consecutive 28 days period, averaged over three such periods.
- 22.6 With a crew member's agreement, he may be rostered for duty on not more than 7 consecutive days, and be positioned to his home base on the eighth.

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23. **FLYING HOUR LIMITATIONS**

This Section does not apply to Cabin Crew - see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter Operations - see Section 30.

23.1 A person shall not act as a member of the Flight Crew of an aircraft if at the beginning of the flight the aggregate of all previous flight times:

23.1.1 During the period of 28 consecutive days expiring at the end of the day on which the flight begins exceeds 100 hours; or

23.1.2 During the period of 12 months, expiring at the end of the previous month exceeds 900 hours.

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24. DUTY HOUR LIMITATIONS

This Section does not apply to Cabin Crew - see Section 28.

This Section does not apply to Business Jet Operations - see Section 29.

This Section does not apply to Helicopter Operations - see Section 30.

24.1 General

24.1.1 For the purposes of this Section the various periods of consecutive days referred to herein shall start at 0001 hr Hong Kong local time. However, when an operator has a significant number of Flight Crew based overseas he should, if practical, use the based Flight Crew's midnight home base local time of start when calculating the running cumulative duty hours.

24.2 Maximum Duty Hours

The maximum duty hours for Flight Crew, shall not exceed:

24.2.1 55 hours in any consecutive 7 days, but may be increased to 60 hours, when a rostered duty covering a series of duty periods, once commenced, is subject to unforeseen delays. This 7 day, 60 hour limit may be further exceeded by a maximum of 10 hours provided this 10 hour exceedence is used solely for the purpose of positioning a crew member back to his home base to complete his duty cycle.

24.2.2 95 hours in any 14 consecutive days.

24.2.3 190 hours in any 28 consecutive days

Provided that -

24.2.4 For every duty period containing an FDP where the time zone difference between the places at which the FDP began and ended is 6 hours or more, the individual crew member's 28 day allowable maximum cumulative total shall be reduced by 8 hours.

24.3 Calculation of Cumulative Duty Hour Totals

Duty hours shall be added to cumulative totals in accordance with the following:-

To count in full:

24.3.1 All duty periods except as specified in 24.3.2.

24.3.2 To count as half the time on duty:

Standby duty during the period 2200 to 0800 hours at home, or in suitable accommodation provided by the operator, and the crew member is not called out for duty.

24.4 **Accounting for Periods Away from Flying Duties**

When a crew member is not rostered for either standby or flying duties for 28 or more consecutive days then any duty hours worked within the 28 days need not be added to cumulative totals. Before allocating a flying duty to a crew member the operator must be satisfied that the crew member is in compliance with the scheme.

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25. COURSES AND GROUND DUTIES AWAY FROM HOME BASE

This Section does not apply to Cabin Crew

This Section does not apply to Business Jet Operations – see Section 29.

- 25.1 The standard provisions with respect to DDOs (Section 22) and the application of Table ‘X’ (paragraph 21.4) above may be varied without reference to CAD to the extent necessary to facilitate the attendance of Flight Crew members at extended ground courses overseas and while undertaking other ground duties away from home base.
- 25.2 After completion of the course or ground duties, and before allocating a flying duty to a crew member, the operator must be satisfied that the crew member is in compliance with his approved FTL scheme. In some cases this may require the allocation of a Recovery Period in accordance with Table “X” before flying duties may be undertaken.

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26. **RECORDS TO BE MAINTAINED**

This Section does not apply to Cabin Crew

- 26.1 Records must be kept for the duty and rest periods for all Flight Crew. These records shall include:

For each Flight Crew member:

- 26.1.1 The beginning, end and duration of each duty or flight duty period, and function performed during the period. Duration of each rest period prior to a flight duty or standby duty period. Dates of days off. Cumulative totals of duty.

- 26.1.2 Daily, rolling 28 day and 12 month totals of flying hours.

Records shall be preserved for at least 12 calendar months from the date of the last relevant entry.

- 26.2 Additionally, operators shall retain all aircraft commanders' discretion reports of extended flight duty periods and reduced rest periods for a period of at least twelve months after the event.

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27. SECTOR TIMES

This Section does not apply to Business Jet Operations – see Section 29.

- 27.1 Sector times used by an operator in the application of his approved flight time limitation scheme must reflect actual times achievable in operation. On some sectors the sector time used may be critical in triggering a provision of the operator's approved scheme, such as the requirement for augmented crew or, being scheduled tightly within the maximum and minimum set out in an operator's FTL Scheme, cause regular exceedence of the maximum allowable FDP. Operators must maintain records of the number of occasions on which such achieved sector times cause the use of commander's discretion, and forward the Commander's Discretion Reports involved to CAD. These records are to be reviewed monthly and used to adjust where necessary the crew rostering requirements.
- 27.2 If 15% or more sectors over a 2-month period as reported by Commander's Voyage Reports have actual sector times which exceed by more than 15 minutes the sector times used in the application of the approved scheme, then these sector times shall be adjusted accordingly. If 15% or more FDPs over a 2-month period as reported by Commander's Discretion Reports (CDR) exceed by more than 15 minutes the FDPs used in the application of the approved scheme, then these FDPs shall be adjusted accordingly.
- 27.3 The CAD will conduct periodic checks on operators' records and aircraft commanders' reports to determine if the planning of flight schedules and duty is compatible with the limitations provided for in the operator's scheme.

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28. PROVISIONS RELATING TO CABIN CREW

This Section does not apply to Business Jet Operations – see Section 29.

The following Sections of CAD 371 also apply to Cabin Crew, as appropriate, and are listed for ease of reference.

- ◆ Definitions - see Section 7
- ◆ Reporting Times - see Section 8
- ◆ Commanders Discretion - Reduction of a Rest Period - see Section 14
- ◆ Travelling Time - see Section 17
- ◆ Positioning - see Section 18

28.1 General

28.1.1 The provisions set out in this section apply to all Cabin Crew employed as crew members and not only those Cabin Crew carried to meet the provisions of the Air Navigation (Hong Kong) Order.

28.1.2 In any scheduled sector of 10 hours or more, Cabin Crew must have a break from all in-flight duties of at least 1 hour which need not be continuous.

28.2 Standard FDP – Acclimatised Cabin Crew

28.2.1 Table “C” below shall be used to determine the Standard FDP for acclimatised Cabin Crew.

Table C – Standard FDP for Acclimatised Cabin Crew

Local Time of Start	Sectors							
	1	2	3	4	5	6	7	8 or more
0700-0759	13	12¼	11½	10¾	10	9¼	9	9
0800-1259	14	13¼	12½	11¾	11	10¼	9½	9
1300-1759	13	12¼	11½	10¾	10	9¼	9	9
1800-2159	12	11¼	10½	9¾	9	9	9	9
2200-0659	11	10¼	9½	9	9	9	9	9

Note: If the preceding FDP was extended due to service disruption, the minimum rest period may be reduced, provided that the subsequent allowable FDP is also reduced by the same amount.

28.2.2 Table “D” shall be used to determine the FDP for unacclimatised Cabin Crew.

Table D – Standard FDP for Unacclimatised Cabin Crew

Length of Preceding Rest (hours)	Sectors						
	1	2	3	4	5	6	7 or more
Up to 18	13	12¼	11½	10¾	10	9¼	9
18 - 30	11½	11	10½	9¾	9	9	9
over 30	13	12¼	11½	10¾	10	9¼	9

Note: Note at Table C also applies.

28.3 Extension of Standard FDP

The Standard FDP in Table C or Table D may be extended by the use of Split Duty as follows:

28.3.1 Extended FDP – Split Duty

28.3.1.1 When an FDP consists of two or more sectors but separated by a period of consecutive hours of rest that is less than a minimum rest period, then the FDP may be extended by the amounts indicated below.

Period of Consecutive Hours of Rest	Maximum Extension of the FDP
Less than 3	NIL
3 – 10	A period equal to half the hours of consecutive rest taken.

28.3.1.2 The portion of the FDP either side of the period of rest must not exceed 10 hours and no FDP utilising the provision of split-duty may exceed 18 hours.

28.3.1.3 Split duty may not be used to extend an FDP already extended by the use of in-flight rest.

28.3.1.4 The period of rest shall not include the time required for intervening post and pre-flight duties nor travel time to and from the place where rest is taken.

28.3.1.5 When the period of rest is 6 hours or less it will suffice if a quiet and comfortable place, not open to the public, is available. If the period of rest is more than 6 hours, or covers 3 hours or more of the period 2200-0800 local time at the place where it occurs, then suitable accommodation must be provided. Where security considerations make the latter requirement inadvisable the provision of suitable accommodation may be waived.

28.3.1.6 Only under the following conditions may a period of rest within a split-duty be taken in an aircraft on the ground:

- (i) The period of rest is 6 hours or less, or the requirement for suitable accommodation is waived in accordance with paragraph 28.3.1.5 above.
- (ii) A comfortable reclining seat, or bunk, must be available for each resting crew member.
- (iii) There must be no passengers on board.
- (iv) There must be no cargo loading or unloading during the period of rest.
- (v) Maintenance must not take place within the vicinity of resting crew members.
- (vi) The crews must have adequate control of the temperature, lighting and ventilation.

These conditions must be included in an operator's FTL scheme.

28.3.2 **Extended FDP - In-Flight Rest – Rest taken in a seat**

28.3.2.1 When in-flight relief is provided for Cabin Crew and rest is taken in a seat, the FDPs set out in Tables C and D in paragraph 28.2 may be extended provided that the total in-flight relief, which need not be continuous, is three hours or more. The period of extension shall be equal to one third of the total relief, provided that the maximum FDP permissible shall be 15 hours.

28.4 **Extended FDP - In Flight Rest – Rest taken in a bunk**

28.4.1 When in-flight relief is provided for Cabin Crew and rest is taken in a bunk, Tables C and D shall not apply and the maximum FDP permissible for a single sector shall be 19 hours regardless of acclimatisation or time of start. The maximum FDP permissible shall be reduced by 45 minutes for each additional sector flown. The minimum in-flight rest shall be as follows:

Scheduled FDP	Minimum Bunk Rest
More than 14 hours and up to 16 hours	3 hours
More than 16 hours and up to 17 hours	3½ hours
More than 17 hours and up to 18 hours	4 hours
More than 18 hours and up to 19 hours	4½hours

28.4.2 Scheduled ground transit time may not be taken into consideration. However if, on the day, extended unscheduled ground time occurs (such as a technical delay before departure or in transit) then, subject to the conditions set out in paragraph 28.3.1.6 (i) to (vi), rest taken on board the aircraft on the ground may count as in-flight relief.

28.4.3 **ULR Sectors**

28.4.3.1 No more than one Sector will be scheduled within a single FDP. In the event of Service Disruption, a second Sector may be operated at the Commander's Discretion.

28.4.3.2 No more than two ULR Sectors will be scheduled in a Duty Cycle.

28.4.3.3 The maximum allowable FDP for a single Sector will be 19 hours, regardless of considerations of acclimatisation or time of start of the FDP.

28.4.3.4 When a rostered Duty Cycle includes a ULR sector then the Duty Cycle shall be limited to four sectors, and the third and fourth sector cannot both be ULR sectors.

28.4.3.5 For ULR Rest Periods see Paragraph 28.8.4.

28.5 Standby Duty

- 28.5.1 The time of start, end and nature of the standby duty must be defined and notified to all Cabin Crew members. Furthermore, the report time from a standby callout must include, in addition to the relevant travelling time, a minimum of 45 minutes for the Cabin Crew member to prepare to leave home, or the suitable accommodation provided by the operator. Section 4 para. 4.8 refers to the relevant travelling time.
- 28.5.2 The maximum duration of standby duty shall be 12 hours.
- 28.5.3 If a Cabin Crew member is called out from standby, the standby duty will cease at that time.
- 28.5.4 When standby is undertaken at home, or in suitable accommodation provided by the operator, and a crew member is called out for duty then:
- 28.5.4.1 For Standard FDP, if acclimatised, the maximum FDP shall be based on the Local Time of Start in Table C and shall start at the actual report time.
- 28.5.4.2 For Standard FDP, if unacclimatised, the FDP shall be based on the Length of Preceding Rest (hours) in Table D, which immediately precedes the standby duty and shall start at the actual report time.
- 28.5.4.3 For Extended FDP Operations where rest is taken in a seat, the maximum FDP shall be 15 hours in accordance with paragraph 28.3.2. The FDP shall start at the actual report time.
- 28.5.4.4 For Extended FDP Operations where rest is taken in a bunk, the maximum FDP shall be 19 hours in accordance with 28.4.1. The FDP shall start at the actual report time.
- 28.5.4.5 If a Cabin Crew member is called out from Standby for an FDP with a report time after the end of the scheduled Standby duty, then the maximum time limit between the start of the scheduled Standby duty and the end of the FDP shall be 23 hours. This limit will not apply when there is a period of 10 hours or more between call-out and the report time.
- 28.5.5 When a Cabin Crew member is on standby duty on immediate readiness at an airport, the maximum FDP is calculated for the Cabin Crew member in accordance with paragraphs 28.5.4.1 or 28.5.4.2 or 28.5.4.3 or 28.5.4.4 as appropriate except the FDP shall be based on the actual start time of the standby duty and the FDP shall commence at the start time of the standby duty.

28.6 **Rest Periods Subsequent to Standby Duty**

28.6.1 When standby is undertaken at home, or in suitable accommodation provided by the operator, and a Cabin Crew member is called out for duty which:

Commences within the scheduled period of standby or commences 10 hours or more after the callout, then the rest period immediately following the duty shall be at least as long as the duty period for which the crew member was called out.

28.6.2 When standby is undertaken at home, or in suitable accommodation provided by the operator, and a Cabin Crew member is called out for duty which:

Commences after the scheduled period of standby and less than 10 hours after the callout then the rest period immediately following the duty shall be at least as long as the call out duty plus half the time spent on standby, except standby between 2200-0800 local time does not qualify for the standby rest.

28.6.3 When standby is undertaken on immediate readiness at an airport, and a Cabin Crew member is called out for duty, then the rest period subsequent to the duty shall be at least as long as the total of the standby duty and the duty period.

28.7 The method of adding time spent on standby to cumulative totals is stated in paragraph 28.12.

28.8 **Rest Periods**

28.8.1 **General**

28.8.1.1 The aircraft operator must notify all Cabin Crew members in good time of a flight duty period so that sufficient and uninterrupted pre-flight rest can be obtained. When away from base the operator must provide the Cabin Crew with the opportunity and the facilities for adequate pre-flight rest. The operator must provide suitable accommodation. When flights are carried out at such short notice that it is impracticable for an operator to arrange suitable accommodation, then this responsibility devolves to the aircraft commander.

28.8.1.2 Cabin Crew members who inform an operator that they are having difficulty in achieving adequate pre-flight rest must be given the opportunity to consult an aviation medical specialist.

28.8.2 Normal Rest

28.8.2.1 When the time difference between the places at which the preceding duty period began and ended is less than 6 hours the minimum rest period which must be provided following the end of that duty period and the commencement of the next FDP shall be:

- (i) At least as long as the preceding duty period. If the preceding duty period comprises standby duties, see paragraph 28.6, or
- (ii) 12 hours

whichever is the greater.

In the case when the rest period earned by a crew member is 12 hours, and suitable accommodation is provided by the operator, then that rest period may be reduced by one hour. In such circumstances, if the travelling time between the aerodrome and the accommodation is more than 30 minutes each way then the rest period must be increased by the amount the total time spent travelling exceeds one hour. The room allocated to the crew member must be available for occupation for a minimum of 10 hours. This sub-paragraph does not apply to rest periods that exceed 12 hours.

28.8.2.2 If the preceding duty period, which includes any time spent on positioning, exceeded 18 hours, then the ensuing rest period must include a local night.

28.8.3 Physiological Rest

When the time difference between the places at which the preceding duty period began and ended is 6 hours or more the minimum rest period which must be provided following the end of that duty period and the commencement of the next FDP shall be determined as follows:

28.8.3.1 Where the rest period commences within 72 hours of the start of the duty period during which the Cabin Crew member first became unacclimatised, the rest period shall be:

- (i) At least as long as the previous duty period, or
 - (ii) A period of sufficient length to provide a sleep opportunity of at least 8 hours within the period 2200-0800 home base time of the individual crew member, or
 - (iii) 14 hours;
- whichever is the greater; or
- (iv) Scheduled in accordance with paragraph 28.8.3.3 below.

28.8.3.2 Where the rest period commences later than 72 hours of the start of the duty period during which the Cabin Crew member first became unacclimatised, the rest period shall be:

- (i) at least as long as the previous duty period, or
 - (ii) a period of sufficient length to provide a sleep opportunity of at least 8 hours within the period 2200-0800 local time at the place of rest, or
 - (iii) 14 hours
- whichever is the greater; or
- (iv) scheduled in accordance with paragraph 28.8.3.3 below.

28.8.3.3 As an alternative to paragraphs 28.8.3.1 and 28.8.3.2 above an operator may provide a rest period which is:

- (i) at least as long as the previous duty period, or
- (ii) 34 hours

whichever is the greater.

Note: In the event of unforeseen circumstances, the sleep opportunity of 8 hours required in paragraph 28.8.3.1(ii) and 28.8.3.2(ii) may be provided between 2200 and 0930 instead of between the stipulated 2200 and 0800, provided the total rest achieved is 14 hours or more.

28.8.4 **ULR Rest**

- 28.8.4.1 Immediately prior to a Rostered Duty Cycle containing a ULR FDP a Cabin Crew member will receive a period free of duty of not less than 2 Days Off duration and;
- 28.8.4.2 Immediately prior to the first ULR FDP that is rostered within the Duty Cycle, a period of time, free of duty will be rostered such that:
- (i) when the Cabin Crew member is acclimatised then the period is sufficient to allow a sleep opportunity within the period 2200 - 0800 home base local time; or
 - (ii) when the Cabin Crew member is unacclimatised, and the period of time free of duty starts less than 72 hours after the start of the Duty Period that resulted in becoming unacclimatised, then the period is sufficient to allow a sleep opportunity within the period 2200 - 0800 home base local time; or
 - (iii) when the Cabin Crew member is unacclimatised, and the period of time free of Duty starts 72 hours or more after the start of the Duty Period that resulted in becoming unacclimatised, then the period is sufficient to allow a sleep opportunity within the period 2200 - 0800 local time at place of rest.
- 28.8.4.3 On completion of a ULR FDP in a Duty Cycle, a minimum of 2 physiological rest periods will be Rostered.
- 28.8.4.4 On completion of a ULR Duty Cycle and return to home base the Cabin Crew member will immediately commence a Recovery Period which shall not be less than 4 Days Off duration.
- 28.8.4.5 For the purpose of ULR standby a Cabin Crew member may be rostered for standby duty, up to a maximum of 12 hours, immediately preceding a ULR Duty Cycle or a ULR FDP provided the Cabin Crew member receives the rest in accordance with paragraph 28.8.4.1 immediately prior to the commencement of the standby duty.

28.9 **Recovery Periods – Non ULR FDPs**

Cabin Crew completing a Duty Cycle of 120 hours or more, during which the maximum time displacement was more than 6 hours, shall be rostered for a period of not less than 2 Days Off. This period must include 3 local nights. This does not apply to duty cycles, which include a ULR FDP (see paragraph 28.8.4.4).

28.10 **Days Off**

28.10.1 Cabin Crew shall not be rostered for duty on more than 6 consecutive days between Days Off; but

28.10.2 May be positioned to their home base on the seventh day, provided they are then allocated at least 2 consecutive Days Off, and

28.10.3 Shall have 2 consecutive Days Off in any consecutive 14 days following the previous 2 consecutive Days Off, and

28.10.4 Shall have a minimum of 7 Days Off in any consecutive 28 days, and

28.10.5 Shall have an average of at least 8 Days Off in each consecutive 28 days period, averaged over three such periods.

Note: A “Day Off” means periods free of all duties available for leisure and relaxation. A single Day Off shall be a minimum period of 34 hours and include 2 local nights. Consecutive Days Off shall include a further local night for each additional consecutive Day Off. A rest period may form part of a Day Off.

28.11 **Duty Hour Limitations**

The maximum duty hours for Cabin Crew shall not exceed:

28.11.1 60 hours in any consecutive 7 days, but may be increased to 65 hours when a rostered duty covering a series of duty periods, once commenced, is subject to unforeseen delays;

28.11.2 105 hours in any 14 consecutive days;

28.11.3 210 hours in any 28 consecutive days.

28.12 **Calculation of Cumulative Duty Hour Totals**

Duty hours shall be added to cumulative totals in accordance with the following:-

To count in full:

28.12.1 All duty periods except as specified below.

To count as half the time on duty:

28.12.2 The standby duty is undertaken during the period 2200 to 0800 hours at home, or in suitable accommodation provided by the operator, and the crew member can take undisturbed rest and is not called out for duty.

28.13 Accounting for Periods Away from flying Duties

When a crew member is not rostered for either standby or flying duties for 28 or more consecutive days then any duty hours worked within the 28 days need not be added to cumulative totals. Before allocating a flying duty to a crew member the operator must be satisfied that crew member is in compliance with the scheme.

28.14 Records to be Maintained

28.14.1 Records must be kept for the duty and rest periods of all Cabin Crew. These records shall include:

For each Cabin Crew member:

28.14.2 The beginning, end and duration of each duty or flight duty period, and function performed during the period. Duration of each rest period prior to a flight duty or standby duty period. Dates of days off. Cumulative totals of duty.

28.14.3 Records shall be preserved for at least 12 calendar months from the date of the last relevant entry.

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29. BUSINESS JET OPERATIONS

29.1 Flight Time Limitations – Flight Crew

A person shall not act as a member of the Flight Crew of an aircraft if at the beginning of the flight the aggregate of all previous flight times:

- 29.1.1 During the period of 28 consecutive days, expiring at the end of the day on which the flight begins exceeds 100 hours, or
- 29.1.2 During the period of 12 months, expiring at the end of the previous month exceeds 900 hours.

29.2 Duty Hours

The maximum duty hours for Flight Crew shall not exceed:

- 29.2.1 95 hours in any consecutive 14 days.
- 29.2.2 190 hours in any consecutive 28 days.

29.3 FDP – Flight Crew

29.3.1 Table 1 – Standard FDP – Two Pilots

Reporting Time	SECTORS					
	1	2	3	4	5	6
	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)
0800 - 1959	15	14	12½	11½	11	10½
2000 - 0759	12	11½	10½	9½	9	9

Note: If the planned FDP includes a scheduled sector length in excess of 10 hours (9 hours if the sector extends through or ends within the period 0200-0559 hours at the local time where the FDP commenced), one additional pilot must be carried.

29.3.2 Table 2 – Extended FDP – Three or more Pilots

Reporting Time	SECTORS					
	1	2	3	4	5	6
	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)
0800 - 1959	18	18	16½	15½	N/A	N/A
2000 - 0759	16	16	14½	13½	N/A	N/A

Note: The Flight Crew must consist of at least 1 Commander qualified in both left and right control seats and 2 co-pilots. When the Commander is not seated at a control seat the co-pilot in the right control seat must be the nominated Pilot Flying (PF). The second co-pilot will occupy the left control seat and be the nominated Pilot Not Flying (PNF).

29.3.3 **Augmented Flight Crew**

29.3.3.1 When the Flight Crew is augmented, a comfortable reclining seat, separated by at least one seat from the passengers and flight deck, shall be provided for the Flight Crew member not at the controls.

29.3.3.2 No Flight Crew member may spend more than 10 consecutive hours at the controls without being relieved of all flight duty for at least one hour, or a total of more than 12 hours at the controls within a FDP.

29.3.3.3 The crew must have had the full entitlement of rest relating to the preceding duty, prior to starting an Extended FDP.

29.3.3.4 When calculating the period of in-flight relief, the maximum period on any flight cannot be greater than the actual block time less one hour. Scheduled ground transit time cannot be taken into consideration. If however on the day, extended unscheduled ground time occurs then rest taken on board the aircraft on the ground may count as in-flight relief.

29.4 **Split Duty**

29.4.1 When a FDP consists of two or more sectors – of which one can be a positioning journey counted as a sector – but separated by a period of consecutive hours of rest that is less than a minimum rest period, then the FDP may be extended by the period equal to half the hours of consecutive rest taken, but not more than 5 hours.

29.4.2 Any rest period less than 3 hours may not count as split duty.

29.4.3 The portion of the FDP either side of the period of rest must not exceed 10 hours and no FDP utilizing the provision of split duty may exceed 18 hours.

29.4.4 Split duty may not be used to extend a FDP if the FDP is in accordance with Table 2 (29.3.2 above)

- 29.4.5 The period of rest shall not include the time required for intervening post- and pre-flight duties, or travel time to and from the place where rest is taken.
- 29.4.6 When the period of rest is less than 6 hours it will suffice if a quiet and comfortable place, not open to the public, is available. If the period of rest is more than 6 hours, or covers 3 hours or more of the period 2200 - 0800 local time at the place where it occurs, then suitable accommodation must be provided. Where security considerations make the latter requirement inadvisable the provision of suitable accommodation may be waived
- 29.4.7 Only under the following circumstances may a period of rest within a split duty be taken in an aircraft on the ground:
 - 29.4.7.1 The period of rest must be less than 6 hours.
 - 29.4.7.2 A comfortable reclining seat must be available for each resting crew member.
 - 29.4.7.3 There must be no passengers on board.
 - 29.4.7.4 Maintenance must not take place within the vicinity of resting crew members.
 - 29.4.7.5 The crews must have adequate control of the temperature and ventilation within the aircraft.

29.5 **Service Disruption**

- 29.5.1 This provision is to cover unforeseen circumstances which occur during operations. It is not intended for use in regular practice, cannot be rostered and shall only apply once the Flight Crew member or Cabin Crew member has commenced a rostered FDP.
- 29.5.2 In the case of service disruption the operator may request the aircraft commander to implement the provisions of this section in order to extend a FDP, or exceptionally, to reduce a rest period, or the aircraft commander may at his own initiative decide to do so. The provisions of this section will only apply to a reduction of a rest period as prescribed in section 29.9.4.
- 29.5.3 Requests made must be reasonable in the light of the prevailing circumstances. The persons/posts who may initiate such requests shall be listed in the operator's scheme. The CAD will need to be satisfied that these persons hold suitable posts.

- 29.5.4 The extension of a FDP following a reduced rest period shall only be made in exceptional circumstances. Aircraft commanders and those persons listed in the scheme (29.5.3 above) must be made aware of this requirement.
- 29.5.5 After receiving a request the aircraft commander, taking into consideration all relevant factors including the circumstances of the other crew members, and the overriding consideration of safety, shall inform the operator of his decision. The aircraft commander may elect to work less than, and not necessarily to the full extent of, the provisions of 29.5.8 below. His decision in such matters shall be final and unquestioned.
- 29.5.6 The operator shall maintain a written record of each and every request made. The record must show the operator's reason for the request and the aircraft commander's decision. Where an aircraft commander decides to operate he must complete a Commanders Discretion Report (CDR) giving reasons for his decision. If the extension of a FDP exceeds 2 hours, or follows upon a reduced rest period, or a rest period is reduced by more than 1 hour, then a copy of the written record and the CDR must be forwarded to the CAD Flight Operations Inspector within 7 days of the aircraft's return to home base.
- 29.5.7 The operator must preserve all CDRs for a period of at least 12 months.
- 29.5.8 In the case of service disruption the maximum FDP shall be calculated by adding 3 hours to the FDP otherwise available by using the appropriate standard provisions. In the event that the standard FDP has already been extended by:
- 29.5.8.1 Use of an augmented crew, or
 - 29.5.8.2 Split duty, or
 - 29.5.8.3 Follows upon a reduced rest period,
- then the maximum that can be added is 2 hours.
- 29.5.9 The 3 and 2 hours referred to in 29.5.8 above may only be exceeded in an emergency. In this respect, an emergency is a situation which in the judgement of the aircraft commander presents a serious risk to the health or safety of the crew and passengers, or endangers the lives of others.

29.6 **Standby**

- 29.6.1 The time of start, end and nature of the standby duty must be defined and notified to crew members, and the maximum duration of standby duty shall be 12 hours.
- 29.6.2 When a crewmember is called out from standby, the standby duty will cease at that time.
- 29.6.3 When a crew member is on standby duty on immediate readiness at an airport, then the allowable FDP is calculated using the start time of the standby duty.
- 29.6.4 When standby is undertaken at home, or in suitable accommodation provided by the operator, and a crew member is called out for duty, the FDP shall be based upon the actual report time, and shall start at the actual report time (paragraph 29.3.1 or 29.3.2).
- 29.6.5 The method of adding time spent on standby to cumulative totals is stated in paragraph 29.9.6.

29.7 **Reporting Time**

- 29.7.1 Reporting times prior to flight must be specified by an operator. These must realistically take account of pre-flight preparation duties, and transfer times from the crew check-in point to the aircraft, and should not be less than 60 minutes except where a dispatch crew is utilised. Pre-flight duties are part of the FDP but immediate post-flight duties are not. A period must be allowed for post-flight activities. The time spent between reporting for a flight and the completion of post-flight tasks determines the length of the duty period and hence the length of the subsequent rest period.

29.8 **Flight Time Limitations - Cabin Crew**

29.8.1 **Duty Hours**

The maximum duty hours, shall not exceed:

29.8.1.1 65 hours in any consecutive 7 days.

29.8.1.2 105 hours in any consecutive 14 days.

29.8.1.3 210 hours in any consecutive 28 days.

29.8.2

Table 3 - FDP – Cabin Crew

Reporting Time	SECTORS					
	1	2	3	4	5	6
	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)
0800 - 1959	18	18	16½	15½	N/A	N/A
2000 - 0759	16	16	14½	13½	N/A	N/A

29.8.3 **Reporting Time**

29.8.3.1 The operator will publish a reporting time for the Cabin Crew which is commensurate with the requirements of the particular flight.

29.8.3.2 If a specific operation requires the Cabin Crew to report before the Flight Crew, then the difference between the report times should be limited to 45 minutes. However in this event the Cabin Crew’s “Local Time of Start”, associated FDP, and subsequent rest period shall be in accordance with the Flight Crew’ local time of start, FDP and subsequent rest period requirements. The Cabin Crew’s additional report time shall however be included in the Cabin Crew’s overall total of duty hours.

29.8.4 The following Sections which are applicable to Flight Crew shall also be applicable to Cabin Crew:

Section 29.4 - Split Duty

Section 29.5 - Service Disruption

Section 29.6 - Standby

29.9 **Rest Time – Flight Crew and Cabin Crew**

29.9.1 **General**

Crew members should be notified in good time of a FDP so that sufficient and uninterrupted pre-flight rest can be obtained. When away from base, opportunities and facilities for adequate pre-flight rest will be provided by the operator

Crew members who inform the operator that they are having difficulty in achieving adequate pre-flight rest must be given the opportunity to consult an aviation medical specialist.

The minimum rest period, which must be taken before undertaking a FDP, shall be:

29.9.1.1 At least as long as the preceding duty period, or

29.9.1.2 12 hours, whichever is greater.

Except that when an 18 hour FDP (Table 2) originates from Hong Kong the pilots must have a minimum of 2 consecutive days off clear of all duty prior to the commencement of the FDP.

29.9.2 In the case when the rest period earned by a crew member is 12 hours, and suitable accommodation is provided, then the rest period may be reduced by 1 hour. In such circumstances, if the travelling time between the airport and the accommodation is more than 30 minutes each way, the rest period must be increased by the amount the total time spent travelling exceeds 1 hour. The room allocated to the crew member must be available for occupation for a minimum of 10 hours. This sub-paragraph does not apply to rest periods that exceed 12 hours.

If the preceding duty period exceeded 18 hours, then the ensuing rest period must include a local night.

29.9.3 **Days Off**

Flight Crew and Cabin Crew shall:

29.9.3.1 Not be rostered for duty on more than 7 consecutive days before being given a day off.

29.9.3.2 Shall have a minimum of 8 Days Off in any consecutive 28 days and

Note: In this context a “Day Off” means periods free of all duties available for leisure and relaxation. A single Day Off shall be a minimum period of 34 hours and include 2 local nights. Consecutive Days Off shall include a further local night for each additional consecutive Day Off. A rest period may form part of a Day Off.

29.9.4 **Reduction of a Rest Period**

An aircraft commander may, at his discretion, and after taking note of the circumstances of all other members of the crew, reduce a rest period, but only insofar as the room allocated to the crew member must be available for occupation for a minimum of 10 hours. The exercise of such discretion shall be considered exceptional and must not be used to reduce successive rest periods. If the preceding FDP was extended due to service disruption, the rest period may be reduced, provided that the subsequent allowable FDP is also reduced by the same amount.

Whenever an aircraft commander reduces a rest period, it shall be reported to the operator on a CDR in a format acceptable to the CAD. If the reduction is more than 1 hour, then the operator shall submit the CDR together with the operator's comments, to the CAD, within 7 days of the aircraft's return to Home Base.

29.9.5 **Extension of a FDP**

An aircraft commander may, at his discretion, and after taking note of the circumstances of all other members of the crew, extend a FDP, as follows, provided he is satisfied that the flight can be safely made:

29.9.5.1 In an FDP from Table 1, an extension up to a maximum of 3 hours may be exercised.

29.9.5.2 In an FDP from Table 2, or split duty, or following a reduced rest period, an extension up to a maximum of 2 hours may be exercised.

The above extensions may only be exceeded in a case of an emergency (see Section 29.5.9).

29.9.5.3 Whenever a commander extends a FDP, he shall complete a CDR. If the reduction is more than 1 hour, then the operator shall submit the CDR together with his comments, to the CAD, within 7 days of the aircraft's return to Home Base.

29.9.6 **Calculation of Cumulative duty Hour Totals**

Duty hours shall be added to cumulative totals in accordance with the following:-

To count in full:

29.9.6.1 All duty periods except as specified below.

To count as half the time on duty:

29.9.6.2 The standby duty when undertaken at home, or in suitable accommodation provided by the operator, takes place during the period 2200 to 0800 hours, and the crew member can take undisturbed rest and is not called out for duty.

29.9.7 Accounting for Periods Away from Flying Duties

When a crew member is not rostered for either standby or flying duties for 28 or more consecutive days then any duty hours worked within the 28 days need not be added to cumulative totals. Before allocating a flying duty to a crew member the operator must be satisfied that the crew member is in compliance with the scheme.

29.10 Courses and Ground Duties Away from Home Base

After completion of the course or ground duties, and before allocating a flying duty to a crew member, the operator must be satisfied the crew member is in compliance with his approved FTL scheme.

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30. HELICOPTER OPERATIONS

30.1 General

All foregoing Sections of this document apply to helicopter operations unless specifically stated to the contrary or the context requires otherwise.

30.2 Maximum Standard Flight Duty Period

Table "Z" below shall be used to calculate the FDP for single pilot and two pilot operation of helicopters. The table also shows the maximum flight time allowable within the associated FDP.

Table "Z" Standard FDP & Associated Flying Hours – Helicopters

Local Time of Start	SINGLE PILOT		TWO PILOTS	
	Maximum Flight Duty Period (Hours)	Maximum Flight Time (Hours)	Maximum Flight Duty Period (Hours)	Maximum Flight Time (Hours)
0600-0659	9	6	10	7
0700-0759	10	7	11	8
0800-1359	11	7	12	8
1400-2159	9	6	10	7
2200-0559	8	5	9	6

30.3 Additional Limits

30.3.1 Repetitive Short Sectors

Crews flying repetitive short sectors at an average rate of 10 or more landings per hour, shall have a break of at least 30 minutes away from the helicopter within any continuous period of 3 hours.

30.3.2 Off-Shore Shuttles

After 3 hours shuttle operations between off-shore installations in conditions other than day VMC, a rest of 30 minutes free of all duty shall be allowed.

30.3.3 Aeroplane and Helicopter Flying

When both aeroplane and helicopter flying is carried out the more restrictive flight and duty time limitations shall apply.

30.3.4 Mixed Single Pilot/Two Pilot Operations

In one duty period a pilot may fly as a single Flight Crew up to the point where the total flying and duty hours reach the single pilot FDP limit. The pilot may then continue beyond the single pilot FDP limit on a two Flight Crew operation up to the two Flight Crew FDP and flying hour maximum, but may only fly as a co-pilot.

30.3.5 Extension of Flight Duty Period by Split Duty

The calculation of a permitted FDP does not rely on the number of sectors flown, but to increase an FDP as allowed for in this paragraph then at least one sector must be flown before any extension is permitted. The extensions allowed are set out below:

<i>Consecutive Hours Rest</i>	<i>Maximum Extension of the FDP</i>
Less than 2	NIL
2 - 3 (See Note)	One hour
3 - 10	A period equal to $\frac{1}{2}$ the consecutive hours rest taken.

Note: Consecutive hours of rest between 2 and 3 hours shall be used once only in any single FDP.

30.3.6 The period of rest shall not include the time allowed for immediate post flight and pre-flight duties. When the period of rest is less than 6 hours it will suffice if a quiet and comfortable place, not open to the public, is available. Rest cannot be taken in the helicopter. If the period of rest is more than 6 consecutive hours, then suitable accommodation must be provided.

30.4 Aircraft Commander's Discretion to Extend A Flight Duty Period

30.4.1 An aircraft commander may, at his discretion, and after taking note of the circumstances of other members of the crew, if carried, extend an FDP beyond that permitted in paragraph 30.2, provided he is satisfied that the flight can be safely made. The extension shall be calculated according to what actually happens, not on what was planned to happen. An extension of 3 hours is the maximum permitted, except in cases of emergency. In this context an emergency is a situation which in the judgement of the aircraft commander presents a serious risk to the health or safety of crew and passengers, or endangers the lives of others.

- 30.4.2 An aircraft commander is authorised to exercise his discretion in the following circumstances and to the limits prescribed below:
- 30.4.2.1 In an FDP involving 2 or more sectors, up to a maximum of 2 hours discretion may be exercised prior to the first and subsequent sectors.
- 30.4.2.2 In a single sector FDP and prior to the last sector in a multi-sector FDP, an aircraft commander may use the maximum amount of discretion permitted.
- 30.4.3 An aircraft commander may exercise discretion to extend an FDP following a reduced rest period, only exceptionally, and then only to the extent necessary to allow for unforeseen circumstances that become apparent during the last sector.

30.5 Rest Periods

- 30.5.1 Crew members will be notified in good time of an FDP so that sufficient and uninterrupted pre-flight rest can be obtained. When away from base, opportunities and facilities for adequate pre-flight rest must be provided by the operator in suitable accommodation. When flights are carried out at such short notice that it is impracticable for the operator to arrange suitable accommodation, then this responsibility devolves to the aircraft commander.
- 30.5.2 The minimum rest period which must be taken before undertaking a FDP shall be:
- 30.5.2.1 At least as long as the preceding duty period, or
- 30.5.2.2 12 hours, whichever is the greater.
- 30.5.3 In the case when the rest period earned by a crew member is 12 hours, and suitable accommodation is provided by the operator then that rest period may be reduced by one hour. In such circumstances, if the travelling time between the aerodrome and the accommodation is more than 30 minutes each way then the rest period will be increased by the amount the total time spent travelling exceeds one hour. The room allocated to the crew member will be available for occupation for a minimum of 10 hours. *This subparagraph does not apply to rest periods that exceed 12 hours.*
- 30.5.4 If the preceding duty period, which includes any time spent on positioning, exceeded 18 hours, then the ensuing rest period must include a local night.

- 30.5.5 After being called out from a standby duty the length of the minimum rest period shall be determined by the length of standby duty, plus any time spent on positioning, and any FDP completed.
- 30.5.6 Crew members who inform the Company that they are having difficulties in achieving adequate pre flight rest will be given the opportunity to consult an aviation medical specialist.

30.6 **Reduction of a Rest Period**

- 30.6.1 An aircraft commander may, at his discretion, and after taking note of the circumstances of other members of the crew, if carried, reduce a rest period, but only insofar as the room allocated to the crew member must be available for occupation for a minimum of 10 hours. The exercise of such discretion must be considered exceptional and must not be used to reduce successive rest periods. If the preceding FDP was extended, the rest period may be reduced, provided that the subsequent allowable FDP is also reduced by the same amount. In no circumstances may an aircraft commander exercise discretion to reduce a rest period below 10 hours at accommodation.

30.7 **Days Off**

- 30.7.1 Wherever possible, and if required by the crew member, days off should be taken in the home environment. A single day off shall include two local nights, and shall be of at least 36 hours duration. A planned rest period may be included as part of a day off.
- 30.7.2 Crew members shall:
 - 30.7.2.1 Not work more than 6 consecutive days, and
 - 30.7.2.2 Have 2 consecutive days off following a period of 6 consecutive days duty, and
 - 30.7.2.3 Have at least 3 days off in any consecutive 14 days of which at least 2 days must be consecutive, and
 - 30.7.2.4 Have a minimum of 7 days off in any consecutive 28 days, and
 - 30.7.2.5 Have an average of at least 8 days off in each consecutive 28 days period averaged over 3 such periods.

Note: A single day off can only be allocated when 5 or less consecutive days duty have been worked.

30.8 **Flying Hour Limitations**

30.8.1 The maximum number of flying hours a pilot may be permitted to undertake are as follows:

Single Day	- Table "Z"
Any 3 consecutive days	- 18 hours
Any 7 consecutive days	- 30 hours
Any 28 consecutive days	- 90 hours
Any 3 consecutive 28 day periods	- 240 hours
Any 12 month period	- 800 hours

30.8.2 The maximum number of daily Flying hours shall be in accordance with Table Z in paragraph 30.2.

30.9 **Duty Hour Limitations**

Maximum duty hours for Flight Crew shall not exceed :

30.9.1 60 hours in any 7 consecutive days; and

30.9.2 200 hours in any 28 consecutive days

30.10 **Reporting Exercise of Discretion**

30.10.1 Whenever an aircraft commander extends an FDP it shall be reported on a Commander's Discretion Report (CDR), in a format acceptable to the CAD. If the extension is greater than 2 hours, or discretion is exercised after any reduced rest period, then the operator will submit the CDR, together with operator's comments, to the Flight Operations Inspectorate, within 7 days of the event.

30.10.2 Whenever an aircraft commander reduces a rest period, it shall be reported to the company operations management on a CDR. If the reduction is more than 1 hour, then the operator will submit the CDR together with the operator's comments to the Flight Operations Inspectorate, within 7 days of the event.

30.11 **Standby**

30.11.1 The time of start, end and nature of the standby duty must be defined and notified to crew members, and the maximum duration of standby duty shall be 12 hours.

30.11.2 When a crewmember is called out from standby, the standby duty will cease at that time.

30.11.3 When a crew member is on standby duty on immediate readiness at an airport, then the allowable FDP is calculated using the start time of the standby duty.

30.11.4 When standby is undertaken at home, or in suitable accommodation provided by the operator, and a crew member is called out for duty, the FDP shall be based upon the actual report time, and shall start at the actual report time (30.8.2).

30.11.5 The method of adding time spent on standby to cumulative totals is stated in paragraph 30.12.

30.12 **Calculation of Cumulative duty Hour Totals**

Duty hours shall be added to cumulative totals in accordance with the following:-

To count in full:

30.12.1 All duty periods except as specified below.

To count as half the time on duty:

30.12.2 The standby duty when undertaken at home, or in suitable accommodation provided by the operator, takes place during the period 2200 to 0800 hours, and the crew member can take undisturbed rest and is not called out for duty.

30.13 **Accounting for Periods Away from Flying Duties**

When a crew member is not rostered for either standby or flying duties for 28 or more consecutive days then any duty hours worked within the 28 days need not be added to cumulative totals. Before allocating a flying duty to a crew member the operator must be satisfied that the crew member is in compliance with the scheme.

31. AIR AMBULANCE FLIGHTS

- 31.1 When carrying out an Air Ambulance flight, the allowable Flight Duty Period (FDP) extracted from the table in the Company's approved FTL Scheme may be increased by up to a maximum of 4 hours ("extended Air Ambulance FDP"), subject to all the following conditions being met:
- 31.2 Where an FDP is extended under the terms of this provision, a qualified medical attendant must accompany the flight.
- 31.3 The only passengers that may be carried in addition to the patient and medical attendants are the immediate family or next of kin. One close friend only may be carried in lieu of any immediate family or next of kin.
- 31.4 The crew must have had the full entitlement of rest relating to the preceding duty prior to starting an air ambulance flying duty.
- 31.5 The use of Commander's discretion to further extend the FDP, beyond the extra 4 hours permitted, may be exercised only to off-load/deliver the patient or organ to the destination. Such discretion cannot be used after the patient or organ has been off-loaded. A Commander's Discretion Report must be submitted to the CAD.
- 31.6 Following an extended Air Ambulance FDP the appropriate full rest period must be taken.
- 31.7 At least 48 hours must elapse between the end of one extended Air Ambulance FDP and the start of another Air Ambulance FDP.
- 31.8 A pilot can only fly 3 extended Air Ambulance FDPs in any 28 consecutive days.
- 31.9 The relevant duty records must show where an FDP was conducted in accordance with Air Ambulance Flights.
- 31.10 The use of split duty to extend the FDP is not permitted.
- 31.11 **Combined Public Transport/Air Ambulance**

On the day, if an operator wishes to use an aircraft and crew for a combination of Public Transport and Air Ambulance work then the FDP specified must be that obtained Table 1 or Table 2 (paragraphs 29.3.1 and 29.3.2). Extension of the allowable FDP by the use of split duty and Commander's discretion, as stated in paragraphs 29.4 and 29.5 respectively, is allowed.

Note: Reference to 'extended Air Ambulance FDP' in this Section means any extension beyond the maximum of 3 hours allowed under 'Service Disruption' – see paragraph 29.5.

32. SINGLE PILOT OPERATIONS - AEROPLANES

32.1 Single Pilot Operations

32.1.1 General

All foregoing Sections of this document apply unless specifically stated to the contrary or the context requires otherwise.

32.1.2 Mixed Single Pilot/Two Pilot Operations

In one duty period a pilot may fly as a single Flight Crew up to the point where the total flying and duty hours reach the single pilot FDP limit. The pilot may then continue beyond the single pilot FDP limit on a two Flight Crew operation up to the two Flight Crew FDP and flying hour maximum, but may only fly as a co-pilot.

32.1.3 Maximum Standard Flight Duty Period – Single Pilot - Aeroplanes

Table “Y” below shall be used to calculate the FDP for single pilot operation of aeroplanes.

Table “Y” - Standard FDP Single Pilot – Aeroplanes

Local Time of Start	Sector							
	1	2	3	4	5	6	7	8 or more
0600-0659	10	10	10	10	9¼	8½	8	8
0700-1259	11	11	11	11	10¼	9½	8¾	8
1300-1759	10	10	10	10	9¼	8½	8	8
1800-2159	9	9	9	9	8¼	8	8	8
2200-0559	8	8	8	8	8	8	8	8

Note: For the action following a reduced rest period see paragraph 14.

******END******