

# Advisory Circular

**Subject: Flight Crew Fatigue Management – Prescriptive Limitations**

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## 1.0 INTRODUCTION

- (1) This Advisory Circular (AC) provides information and guidance. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulatory requirements. This AC on its own does not set minimum standards or change, create, amend or approve deviations from regulatory requirements.

### 1.1 Purpose

- (1) This document explains the intent of the proposed regulatory requirements related to Flight Crew Fatigue Management – Prescriptive Limitations.

### 1.2 Applicability

- (1) This document applies to the holders of Air Operator Certificates in *Canadian Aviation Regulation* (CAR) Part VII, Subparts 3, 4, and 5 (703, 704, and 705).

### 1.3 Description of Changes

- (1) Not applicable.

## 2.0 REFERENCES AND REQUIREMENTS

### 2.1 Reference Documents

- (1) Reference materials for use with this AC include but are not limited to:
  - (a) **Notice of intent to amend the Canadian Aviation Regulations**, published in Canada Gazette I, on 25 March 2017
  - (b) TP 14573 - Fatigue Risk Management System for the Canadian Aviation Industry - Fatigue Management Strategies for Employees

### 2.2 Cancelled Documents

- (1) Not applicable.
- (2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

### 2.3 Definitions and Abbreviations

- (1) **Definitions** for use with this document are:
  - (a) **Acclimatized** means the physiological and mental state of a flight crew member whose biorhythm is considered aligned with local time.
  - (b) **Duty** means any task that a flight crew member is assigned by an air operator at a specific time, including flight duty, administrative work, training, positioning, reserve, and standby (not defined in regulation).

- (c) **Early duty** means a flight duty period that starts between 02:00 – 06:59, in the flight crew member's acclimatized time.
- (d) **Fit for duty** means a flight crew member whose ability to act as a flight crew member of an aircraft is not impaired due to fatigue, the consumption of alcohol or drugs or any mental or physical condition;
- (e) **Flight crew member on deployed standby** means a flight crew member on standby who is located at or near an aerodrome and who has been provided with suitable accommodation by an air operator for the duration of the period during which the member is available to report for flight duty.
- (f) **Flight crew member on reserve** means a flight crew member who has been designated by an air operator to be available to report for flight duty on notice of more than one hour.
- (g) **Flight crew member on standby** means a flight crew member who has been designated by an air operator or private operator to remain at a specified location in order to be available to report for flight duty on notice of one hour or less;
- (h) **Flight duty period** means a period of time that ends at "engines off" or "rotors stopped" at the end of a flight and begins the earlier of the time that a flight crew member:
  - (i) begins any duties assigned by the private air operator or the air operator or delegated by the Minister before he or she reports for a flight;
  - (ii) reports for a flight or, if the flight duty period comprises more than one flight, reports for the first flight;
  - (iii) reports for positioning; or
  - (iv) reports as a flight crew member on standby.
- (i) **Flight time** means the time from the moment an aircraft first moves under its own power for the purpose of taking off until the moment it comes to rest at the end of the flight.
- (j) **Home base** means the location where a flight crew member normally begins and ends a flight duty period.
- (k) **Late duty** means a flight duty period finishing in the period between 00:00 and 01:59 hours, in the flight crew member's acclimatized time.
- (l) **Local night's rest** means the period of time between 22:30 and 07:30 at a location where the flight crew member is acclimatized;
- (m) **Night duty** means a flight duty period that starts between 13:01 – 01:59 and finishes after 02:00, in the flight crew member's acclimatized time.
- (n) **Positioning in respect of a flight crew member**, means the transfer of the flight crew member from one location to another, at the request of the air operator, but does not include travel to and from suitable accommodation or the flight crew member's lodging;
- (o) **Reserve availability period** means the period of time in any 24 consecutive hour period that a flight crew member on reserve is available to report for flight duty.
- (p) **Reserve duty period** means the period of time between the time that a flight crew member on reserve is available to report for flight duty and when the flight duty period ends.
- (q) **Rest period** means a continuous period of time, excluding the travel time to and from any suitable accommodation provided by a private operator or an air operator, during which a flight crew member is off duty;

- (r) **Single day free from duty** means a time free of all duties consisting of a single day and two local night's rest and which may include a rest period as part of the single day free from duty.
  - (s) **Suitable accommodation** means a single-occupancy bedroom that is subject to a minimal level of noise, is well ventilated and has facilities to control the levels of temperature and light or, where such a bedroom is not available, an accommodation that is suitable for the site and season, is subject to a minimal level of noise and provides adequate comfort and protection from the elements;
  - (t) **Unforeseen operational circumstances** means an event, such as unforecast adverse weather, or an equipment malfunction or air traffic control delay, that is beyond the control of an air operator or private operator;
  - (u) **Window of Circadian Low** means the period of time beginning at 02:00 and ending at 05:59 at the location where a flight crew member is acclimatized.
- (2) The following **abbreviations** are used in this document:
- (a) **AC**: Advisory Circular;
  - (b) **CAR**: Canadian Aviation Regulation;
  - (c) **SAE ARP**: Society of Automotive Engineers Aerospace Recommended Practice;
  - (d) **TCCA**: Transport Canada Civil Aviation.
  - (e) **VFR**: visual flight rules

## 2.4 Background

- (1) With the recent publication in Canada Gazette I of proposed new regulations for Flight Crew Fatigue Management, Transport Canada Civil Aviation (TCCA) has committed to provide guidance material to assist in the interpretation of these proposed regulations.

## 3.0 RELATED CHANGES IN CAR PART VI

- (1) There are two changes in CAR Part VI that relate to Fitness for Duty and one change related to suitable accommodation. These are changes in CAR 602.02, 602.03, and 604.47.

### 3.1 CAR 602.02 - Fit For Duty

- (1) Requires that if an air operator or a person has reason to believe that a flight crew member is not, or is not likely to be, fit for duty, no operator of an aircraft shall require a person to act as a flight crew member or to carry out a preflight duty, and no person shall act as flight crew member or carry out a preflight duty.
- (2) If for any reason a person believes that a flight crew member is not fit for duty, then the flight crew member shall not act as a flight crew member nor carry out preflight duties – nor be assigned by the air operator for these duties.
- (3) **Fit for duty** means a flight crew member whose ability to act as a flight crew member of an aircraft is not impaired due to fatigue, the consumption of alcohol or drugs or any mental or physical condition;
- (4) This applies broadly to performance impairments caused by fatigue (too tired or likely to be too tired during the duty in question), alcohol (under the influence or consuming alcohol within 12 hours of a flight duty period), drugs (legal, prescription, over-the-counter or illegal drugs) and mental or physical condition (having a broken arm and not being able to manipulate the controls).

- (5) This is an obligation to act on an obvious situation: after observing a flight crew member who smells of alcohol, cannot walk in a straight line, and is slurring their speech – a reasonable person observing this behaviour would conclude that this individual is not fit for duty. If a flight crew member were plainly having a mental health crisis – sobbing uncontrollably or in a catatonic state, such that the person observing the situation felt that something was wrong. Prevent that person from flying until you can figure out if there is be a problem.

### **3.2 CAR 602.03 - Alcohol or Drugs — Crew Members**

- (1) Prohibits any person from acting as a crew member of an aircraft
- (a) within 12 hours after consuming an alcoholic beverage;
  - (b) while using any drug that impairs the person’s faculties to the extent that the safety of the aircraft or of persons on board the aircraft is endangered in any way.

### **3.3 CAR 602.47 – Suitable Accommodation**

- (1) Requires that an air operator or private air operator provide suitable accommodation to flight crew members for the purpose of rest periods while away from home base.
- (2) **Suitable accommodation** means a single-occupancy bedroom that is subject to a minimal level of noise, is well ventilated and has facilities to control the levels of temperature and light or, where such a bedroom is not available, an accommodation that is suitable for the site and season, is subject to a minimal level of noise and provides adequate comfort and protection from the elements;

## **4.0 CAR PART VII, DIVISION III — FLIGHT CREW MEMBER FATIGUE MANAGEMENT GUIDANCE MATERIAL**

### **4.1 CAR 700.19 (1) – Non-Application**

- (1) Stipulates that Division III does not apply to flight operations under Subpart 2 of Part VII (702 air operators and their flight crews).
- (2) Where an air operator holds multiple air operator certificates – a 703, 704, or 705 certificate and a 702 or 604 and certificate – the air operator must include all flight time, flight duty periods, duty time, rest periods and time free from duty occurring under subpart 702 or 604 when applying the limitations found in this Division.

### **4.2 CAR 700.19 (2) – Meaning of Local Time**

- (1) This subsection indicates that references to time of day are:
- (a) to the local time at that location if the flight crew member is acclimatized to their location; and
  - (b) to the local time of the last location at which the flight crew member was acclimatized, if the flight crew member is not acclimatized to their location.
- (2) **Acclimatized** means the physiological and mental state of a flight crew member whose biorhythm is considered aligned with local time.
- (3) This means that a flight crew member has been in the location long enough to recover from circadian disruptions resulting from time zone travel (i.e.: jet lag) and practically it means that they sleep at night and are awake during the day.

#### **4.3 CAR 700.20 (1) - Monitoring System and Records**

- (1) Requires an air operator to have a system that monitors the flight time, flight duty periods, duty periods and rest periods of each of its flight crew members. The air operator must document the system: the details of the system, how it works and how it is used.
- (2) The purpose of the monitoring system is to ensure that air operators do not assign flight crew members to duty (and flight crew members will not accept any duty) that will exceed any limitations and that flight crew members are provided with the required rest periods and time free from duty.

#### **4.4 CAR 700.20 (2) – Items to be Recorded**

- (1) Requires that, for each flight crew member, the air operator shall keep a record of:
  - (a) all flight times;
  - (b) flight duty periods - the start, duration and end of each;
  - (c) duty periods - the start, duration and end of each;
  - (d) rest periods and their duration; and
  - (e) time free from duty.
- (2) Again, an air operator holding a 702 or 604 certificate shall include this information from flight operations under those certificates in the calculation of limitations under this Division.

#### **4.5 CAR 700.20 (3) - Records of Use of Unforeseen Operational Circumstances**

- (1) Requires an air operator to keep all notifications from a pilot-in-command of the use of unforeseen operational circumstance provisions to extend or reduce a flight duty period.

#### **4.6 CAR 700.20 (4) – Period to be Kept**

- (1) Requires that the records referred to in this Section (700.20) be kept for a period of 24 months after the record was made. For example a record made on February 12, 2018 would need to be kept until February 12, 2020 (destroy it after February 12, 2020).

#### **4.7 CAR 700.21 (1) – Air Operator Obligations — Scheduling**

- (1) Requires that a flight crew member be provided with his or her schedule sufficiently in advance for the flight crew member to plan for adequate rest.
- (2) This is aimed at advanced notification that will permit the flight crew member to plan for and obtain adequate rest. The schedule may be planned out a month in advance (like at a large airline) or may merely be a report time for the next day and that day's schedule will be determined as the day unfolds.
- (3) Being able to obtain at least 1 local night rest prior to the flight duty would certainly meet this requirement, but it depends on the situation. For example, if the flight crew member reported for a flight duty period at 07:00 and then at 15:00 they are informed that the next day the reporting time will be 07:00. Assuming that the established sleep/wake cycle is not being disturbed and the required rest period can be obtained, this would be reasonable. However in the same situation, if the reporting time the next day will be 03:00 and the flight crew member is being informed at 15:00, this would not be sufficiently in advance.
- (4) Would recommend that an air operator document what they believe is acceptable for meeting "sufficiently in advance" and do this in a manner that is easily defensible.

- (5) An example of sufficiently:
  - (a) If no part of the of the planned flight duty period occurs during the flight crew member's window of circadian low, 12 hours before the beginning of the flight duty period; or
  - (b) If any part of the planned flight duty period occurs during the flight crew member's window of circadian low, 32 hours before the beginning of the planned flight duty period.
- (6) For Medevac and charters – the intent is to ensure the flight crew member knows when they will be available to be assigned a flight duty and plan / obtain rest appropriately.

#### **4.8 CAR 700.21 (2) - Monitoring for Exceedances**

- (1) Requires that the air operator monitor for exceedances to the planned flight duty periods and on a monthly basis determine if the planned flight duty periods are being exceeded more than 10% of the time in a period of 90 consecutive days.
- (2) This is about the realism of the air operator's planning and the use of unforeseen operational circumstances. Use of unforeseen operational circumstances on a particular flight duty period more than 10% of the time would indicate that the planned flight duty period cannot be reasonably be expected to be completed within the allowed flight duty period.
- (3) TCCA expects that air operators would establish and document a process for completing this determination on a monthly basis.
- (4) This will require the air operator to review what they have actually flown. For example the day may be planned with 3 flights and permit an flight duty period of 13 hours. If additional flights are added to the day's schedule, the maximum flight duty period may be reduced. The air operator will need to determine if the allowable flight duty period has been exceeded – was this because of unforeseen operational circumstances?

#### **4.9 CAR 700.21 (3) – Unreasonable Planning**

- (1) Requires that when an air operator has determined that more than ten percent of flight duty periods are exceeded (as in 700.21(2)) as a result of an unforeseen operational circumstance, no later than 28 days after the day on which the determination was made, the air operator shall change the schedule or the flight crew member pairing for the flight.
- (2) Exceeding the limitation more than 10% of the time is not unforeseen but represents unreasonable planning. The air operator will have to replan the flight duty period. They have 28 days to replan the flight duty period.

#### **4.10 Examples for Unreasonable Planning:**

- (1) The flights associated with the flight duty period are always the same:
  - (a) For example: Toronto to Asia (one way) or Toronto to Central America and return. In these two examples the number of variables is reduced and it is fairly straight forward to determine if the flights are being planned realistically. Does the single flight or the two flights fit into the permitted flight duty period? Adjustments could be made within 28 days of discovery or for the same season next year.
- (2) The flights that make up the flight duty period change each month:
  - (a) More involved as the flight duty period is affected by individual flights. To determine if the overall planning is realistic, the individual flights need to be realistic. Determine if the planned time to go from A to B is realistic – including ground delays. For example, a Montreal to LaGuardia and return flight should reflect a realistic amount of time for air traffic control delays, taxi time, etc... and then the other flights that make up the flight

duty period have to be considered individually to determine if the flight duty period was planned realistically.

- (3) The flights are rarely repeated:
  - (a) In general, the individual flights and flight duty periods are planned realistically. For example: Forecast winds are used; additional time for deicing is included (if applicable); the time between flights is realistic. A 20 minute turn (refueling stop) in Thunder Bay may be possible and realistic but a 20 minute turn in Toronto is not – you could be taxiing for 20 minutes.
  - (b) Recommend assessing all of the flown flight duty periods to ensure that not more than 10% of the time the maximum allowable flight duty period is exceeded.

#### **4.11 CAR 700.21 (4) – Seasonal Planning**

- (1) Provides an alternative to Subsection (3), if an air operator plans on a seasonal basis (for example uses historical seasonal winds – winter, spring, summer and fall) and they are exceeding the 10% of the time maximum, they may apply the correction to the schedule at the beginning of the same season the next year.

#### **4.12 CAR 700.26 (1) – Unfit for Duty – At Reporting Time**

- (1) Requires that if a flight crew member reports for a flight duty period and advises the air operator that they are not fit for duty, the air operator shall not permit the flight crew member to begin a flight duty period.
- (2) As flight duty period begins when the flight crew member reports for duty, the intent is that the air operator, after being advised by the flight crew member that they are not fit for duty, will immediately remove the flight crew member from flight duty – the air operator will not permit the flight crew member to continue to work.
- (3) For example, a flight crew member reports for a flight duty period (the flight duty period begins) and shortly after the flight crew member reports they advise the air operator that they are not fit for duty. The air operator then removes the flight crew member from the assigned flight duty period. This is the desired sequence of events. The few minutes where the flight crew member has reported (and have begun the flight duty period) is not of concern.
- (4) The intended action is that the air operator removes the flight crew member from the flight duty.
- (5) If a flight crew member were to advise the air operator that they are unfit for the assigned duty but they are fit for a different duty, it would be reasonable for the air operator to reassign the flight crew member to a duty that they would be fit for. For example: if the flight crew member is assigned to a flight duty period of 12 hours with 6 flights and the flight crew member advises that they are not fit for this duty but would be fit for the next 5 hours and 2 flights. Reassigning the flight crew member to the first 2 flights only and finding a replacement flight crew member for the remainder may provide the air operator with some flexibility. However, if the assigned flight duty period is 15 hours as part of an augmented flight crew, the flight crew member is either fit or not fit for duty.
- (6) When a flight crew member reports that they are not fit for duty, the air operator should investigate to determine the cause – in the context of fatigue management – investigate the reasons that fatigue has resulted in a flight crew member not being fit for duty. For example is it the schedule that the air operator assigned, the schedule the flight crew member has chosen or other individual factors.

#### **4.13 CAR 700.26 (2) – Unfit for Duty – During Flight Duty Period**

- (1) Requires that if during a flight duty period a flight crew member becomes fatigued to an extent that they are no longer fit for duty, the flight crew member shall advise any other flight crew members and the air operator as soon as possible.
- (2) Subsection (1) addresses the first few minutes of a flight duty period. In cases where a flight crew member becomes no longer fit for duty later during a flight duty period, the flight crew member would advise the other flight crew member(s) and the air operator. If the aircraft were on the ground when this occurs, the no longer fit for duty flight crew member will be removed from the flight duty – they will not continue to fly.
- (3) If this occurs during flight with a flight crew of two, the other flight crew member will have to manage the situation to get the aircraft safely on the ground.
- (4) If this occurs during flight with a flight crew with additional flight crew members onboard (augmented flights - 3 or 4 flight crew in total) the no longer fit for duty flight crew member can be replaced by the additional flight crew members or one of the additional flight crew members. This is not intended to apply to a flight crew member taking their inflight rest (when it's time for them to rest). It would apply of following their period of inflight rest, if they felt unfit to return to a flight crew position.

#### **4.14 CAR 700.26 (3) – Unfit for Duty – During Flight Duty Period (Single Pilot)**

- (1) Sets out the steps to be taken for the case described in Subsection (2), but for an aircraft operated by a single-pilot.
- (2) In cases where a single-pilot becomes no longer fit for duty later during a flight duty period, the flight crew member is required to, as soon as possible, remove themselves from the flight duty and advise the air operator.
- (3) If the aircraft were on the ground when this occurs, the no longer fit for duty single-pilot will remove themselves from the flight duty and advise the air operator. They will not continue to fly.
- (4) If this occurs during flight, the single-pilot is expected to get the aircraft safely on the ground then remove themselves from the flight duty and advise the air operator.

#### **4.15 CAR 700.27 (1) - Maximum Flight Time**

- (1) Requires that flight times flown by flight crew members not exceed specified limitations. This refers to all flight times flown by a flight crew member. Thus air operators are prohibited from assigning flight time to a flight crew member and flight crew members are prohibited from accepting a flight time assignment, if the limitations will be exceeded.
- (2) **Flight time** means the time from the moment an aircraft first moves under its own power for the purpose of taking off until the moment it comes to rest at the end of the flight.
- (3) The limits are:
  - (a) 112 hours in any 28 consecutive days;
  - (b) 300 hours in any 90 consecutive days;
  - (c) 1,000 hours in any 365 consecutive days; or
  - (d) 8 hours in any 24 consecutive hours in the case of a single-pilot operation.
- (4) These limitations are running totals over the specified period. To determine how many flight hours are available to be flown today, the total flight time flown in the previous 27, 89, and 364 days (not including today) must be determined. The total number of hours flown in in the previous 27, 89, and 364 days is subtracted from the limitations above and the difference is flight time available to be flown today.

- (5) Examples:
- (a) in the previous 27 days the flight crew member has flown 103.4 hours. The available flight time today is:  $112 - 103.4 = 8.6$  hours;
  - (b) in the previous 89 days the flight crew member has flown 290.2 hours. The available flight time today is:  $300 - 290.2 = 9.8$  hours; and
  - (c) in the previous 364 days the flight crew member has flown 986.7 hours. The available flight time today is:  $1,000 - 986.7 = 13.3$  hours.
- (6) In the case of a single-pilot operation the 8 hours in any 24 hours includes all flight time the flight crew member flies in that period and applies when the flight crew member is acting as a single-pilot.
- (7) For example, a flight crew member is part of a 2 person flight crew and flies 5 hours of flight time during the first part of a flight duty period. This flight crew member could then act as a single-pilot for an additional 3 hours of flight time during that period of 24 consecutive hours (looking back the previous 24 hours).
- (8) Conversely, the flight crew member could act as a single-pilot for up to 8 hours of flight time and then become part of a 2 person flight crew for the remainder of the available flight duty period. The additional flight hours are not as part of single-pilot operation, so there is no flight time limitation on them. The next day, the 24 hour look back would have to be applied to determine if the single pilot has any time available to fly.

#### **4.16 CAR 700.27 (2) (a) – Augmented Flight Crews**

- (1) Stipulates that all flight time accumulated by a flight crew member be considered and that for augmented flight crews the total flight time is counted.
- (2) The air operator and the flight crew member are required to account for all flight time. When combined with section 700.20, this means that the flight crew member must advise the air operator of other flight time that they accumulate and the air operator is required to include this flight time when assigning a flight time to flight crew members.

#### **4.17 CAR 700.27 (2) (b)**

- (1) Stipulates that for augmented flight crews the total flight time is counted. Not just the time that each flight crew member spends at the flight controls (in an operating flight crew member position).

#### **4.18 CAR 700.28 (1) – Maximum Flight Duty Period**

- (1) Requires that assigned flight duty periods not exceed specified limitations. Thus air operators are prohibited from assigning flight duty periods to a flight crew member and flight crew members are prohibited from accepting a flight duty period assignment, if the limitations will be exceeded.
- (2) **Flight duty period** means a period of time that ends at “engines off” or “rotors stopped” at the end of a flight and begins the earlier of the time that a flight crew member:
  - (a) begins any duties assigned by the private air operator or the air operator or delegated by the Minister before he or she reports for a flight;
  - (b) reports for a flight or, if the flight duty period comprises more than one flight, reports for the first flight;
  - (c) reports for positioning; or
  - (d) reports as a flight crew member on standby.

- (3) The limitations on the duration of the flight duty period are effected by 3 variables:
  - (a) The average flight time for the planned / flown flight(s)
  - (b) The number of flights (planned / flown)
  - (c) The time of day that the flight duty period (see CAR 700.19(2))
- (4) First the **average flight time** has to be determined (total flight time / number of flights). There are three Tables:
  - (a) average flight times of less than 30 minutes;
  - (b) average flight times of 30 minutes to less than 50 minutes; and
  - (c) average flight times of 50 minutes or more.
- (5) Calculate the average flight time (total flight time ÷ number of flights = average flight time). Select the appropriate Table based on average flight time.
- (6) The average flight time results from the flight planning for the flight duty period in question.
- (7) Second, the **number of flights** has to be known. Obviously, at the beginning of the flight duty period the number of flights is planned. As a flight duty period passes and changes to the schedule are made or considered (i.e.: flights are added), the effect on the maximum flight duty period must be considered. An additional flight or flights may result in a reduction of the maximum flight duty period. If there is not sufficient time in the flight duty period remaining to operate an additional flight with the reduced flight duty period, the flight shall not be operated.
- (8) If the additional flight is calculated to be completed within the reduced flight duty period, it may be operated.
- (9) The meaning of “flight” is taken from “flight time” which means the time from the moment an aircraft first moves under its own power for the purpose of taking off until the moment it comes to rest at the end of the flight;
- (10) So a flight is one instance of where flight time is logged: an aircraft moving under its own power, taking off, flying, landing and finally coming to rest.
- (11) Thirdly, the **start time of the flight duty period** has to be determined. Per subsection 700.19(2) this either of:
  - (a) the local time at that location if the flight crew member is acclimatized to their location; and
  - (b) the local time of the last location at which the flight crew member was acclimatized, if the flight crew member is not acclimatized to their location.
- (12) When the flight crew member is acclimatized to the location where the flight duty period begins, the start time of the flight duty period is local time.
- (13) When the flight crew member is not acclimatized to the location where the flight duty period begins, the start time of the flight duty period is local time at the location where the flight crew member is acclimatized.
- (14) Examples:
  - (a) A flight crew member is from Halifax and is acclimatized to Atlantic Standard Time (AST). If this flight crew member begins a flight duty period in Vancouver at 07:00 Pacific Standard Time (PST), the start time of the flight duty period would be 11:00 (07:00 + 4 time zones = 11:00).
  - (b) A flight crew member is from Calgary and is acclimatized to Mountain Standard Time (MST). If this flight crew member begins a flight duty period in Toronto at 07:00 Eastern

Standard Time (EST), the start time of the flight duty period would be 05:00 (07:00 - 2 time zones = 05:00).

**4.19 CAR 700.28 (2) - Average Flight Duration of < 30 Minutes.**

- (1) Contains the table for the maximum flight duty period with an average flight duration of less than 30 minutes.
  - (a) Column 1 of the Table contains the start time of the flight duty period;
  - (b) Column 2 contains limitations for flight duty periods for 1 to 11 flights;
  - (c) Column 3 contains limitations for flight duty periods for 12 to 17 flights; and
  - (d) Column 4 contains limitations for flight duty periods for 18 or more flights.
- (2) Select the appropriate column based on the number of flights planned.
- (3) Then select the appropriate row containing the start time of the flight duty period.
- (4) The intersection of this column and row contains the maximum flight duty period.

**4.20 CAR 700.28 (3) - Average Flight Duration of  $\geq$  30 minutes or < 50 Minutes**

- (1) Contains the table for the maximum flight duty period with an average flight duration of 30 minutes or more to less than 50 minutes.
  - (a) Column 1 of the Table contains the start time of the flight duty period;
  - (b) Column 2 contains limitations for flight duty periods for 1 to 7 flights;
  - (c) Column 3 contains limitations for flight duty periods for 8 to 11 flights; and
  - (d) Column 4 contains limitations for flight duty periods for 12 or more flights.
- (2) Select the appropriate column based on the number of flights planned.
- (3) Then select the appropriate row containing the start time of the flight duty period.
- (4) The intersection of this column and row contains the maximum flight duty period.

**4.21 CAR 700.28 (4) – Average Flight Duration of  $\geq$  50 Minutes**

- (1) Contains the table for the maximum flight duty period with an average flight duration of 50 minutes or more.
  - (a) Column 1 of the Table contains the start time of the flight duty period;
  - (b) Column 2 contains limitations for flight duty periods for 1 to 4 flights;
  - (c) Column 3 contains limitations for flight duty periods for 5 to 6 flights; and
  - (d) Column 4 contains limitations for flight duty periods for 7 or more flights.
- (2) Select the appropriate column based on the number of flights planned.
- (3) Then select the appropriate row containing the start time of the flight duty period.
- (4) The intersection of this column and row contains the maximum flight duty period.

**4.22 CAR 700.28 (5) – Acclimatization**

- (1) This subsection describes how to determine the acclimatization of a flight crew member.

- (2) General assumption: an air operator may assume that a flight crew member is acclimatized to the home base time zone unless previous duty would have acclimatized them to a different time zone.
- (3) Only duty can acclimatize a flight crew member to another time zone – other than the one they are in.
- (4) There are 3 methods for determining the acclimatization of a flight crew member. The first two options are fixed options: after travelling so many time zones away and spending a certain period of time in that new time zone, the flight crew member is acclimatized to the new time zone.
- (5) The first 2 options will really only apply if the flight crew member travels for duty to the new time zone and stays there for an extended period. This will not apply if the flight crew member fly out to a new location and then come back to the starting location the next day or day after.
- (6) The third method represents how most humans acclimatize to a new time zone. Most acclimatize at a rate of 1 hour per day spent in the new time zone. If a person travels to a location 3 time zones away, after spending 3 days in the new time zone they will be acclimatized to that location.
- (7) The regulation does not specifically address the switch from daylight to standard time or vice versa. It would be reasonable for the air operator to assume, on the first day of the time change, that the flight crew member is not acclimatized by 1 hour and apply that when determining the permitted flight duty period. On the second day following the time change, the flight crew member would be acclimatized.

#### **4.23 CAR 700.28 (5) (a) – Less than 4 Hours Difference**

- (1) Stipulates that when a flight crew member leaves a location where they are acclimatized and arrives in a new location with a time zone difference that is less than 4 time zones (maximum 3 hours difference) from where they started, they will be considered acclimatized to the new location after spending 72 hours in that new location. The flight crew member must receive the required rest periods during this 72 hour period.

#### **4.24 CAR 700.28 (5) (b) – Difference 4 hours or More**

- (1) Stipulates that when a flight crew member leaves a location where they are acclimatized and arrives in a new location with a time zone difference that is 4 or more time zones (4 hours difference or more) from where they started, they will be considered acclimatized to the new location after spending 96 hours in that new location. The flight crew member must receive the required rest periods during this 96 hour period.
- (2) In the examples below local time is used. If that creates confusion due to changes between standard and daylight savings time, suggest using universal coordinated time (UTC) for all calculations and then convert back to local time.
- (3) Example of (a): A flight crew member departs on Monday morning from Vancouver for Toronto and will fly out of Toronto for 6 days. As this is a difference of 3 time zones (3 hours difference) (a) applies. Supposing that the flight crew member arrives in Toronto on Monday at 18:00 EST. This flight crew member will not be considered to be acclimatized in Toronto until Thursday at 18:00 EST (72 hours after arriving). For each flight duty period that may be assigned during this 72 hour period (on Tuesday, Wednesday, and Thursday) the local time in Vancouver is used to determine the start time of the flight duty period:
  - (a) a reporting time of 07:00 EST would be a reporting time of 04:00 PST, so the row in the Table to be used will contain 04:00 as the flight duty period start time.
  - (b) a reporting time of 23:30 EST would be a reporting time of 20:30 PST, so the row in the Table to be used will contain 20:30 as the flight duty period start time.

- (4) On Friday the flight crew member is acclimatized to Toronto, so the flight duty period start time is local time.
- (5) Example of (b): A flight crew member departs on Monday morning from Vancouver for London, England and will fly out of London for 3 weeks. As this is a difference of 8 time zones (8 hours difference) (b) applies. Supposing that the flight crew member arrives in London on Tuesday at 11:00 Greenwich Mean Time (GMT). This flight crew member will not be considered to be acclimatized in London until Saturday at 11:00 GMT (96 hours after arriving). For each flight duty period that may be assigned during this 96 hour period (on, Wednesday, Thursday, and Friday) the local time in Vancouver is used to determine the start time of the flight duty period:
  - (a) a reporting time of 15:00 GMT would be a reporting time of 07:00 PST, so the row in the Table to be used will contain 07:00 as the flight duty period start time.
  - (b) a reporting time of 08:00 GMT would be a reporting time of 00:00 PST (midnight), so the row in the Table to be used will contain 00:00 PST (midnight) as the flight duty period start time.
- (6) On Saturday as of 11:00 GMT, the flight crew member is acclimatized to London, so the flight duty period start time is local time.

#### **4.25 CAR 700.28 (5) (c) – Daily Adjustment**

- (1) Stipulates that when a flight crew member leaves a location where they are acclimatized and arrives in a new location with a time zone difference, for each 24 hours that passes in the new location the flight crew member's acclimatized time will adjust by 1 hour towards the new location's time zone.
- (2) Example of (c): A flight crew member departs on Monday morning from Vancouver for Toronto and will fly out of Toronto for 6 days. This is a difference of 3 time zones (3 hours difference). Supposing that the flight crew member arrives in Toronto on Monday at 18:00 EST.
- (3) If the flight crew member is assigned a flight duty on Tuesday morning (before 18:00 EST) the local time in Vancouver is used to determine the start time of the flight duty period:
  - (a) a reporting time of 07:00 EST would be a reporting time of 04:00 PST, so the row in the Table to be used will contain 04:00 as the flight duty period start time.
- (4) If the flight crew member is assigned a flight duty on Wednesday morning (before 18:00 EST) the flight crew member's acclimatized time will have changed by 1 hour in the direction of Toronto (moved 1 time zone to the East (MST):  $UTC -8 + 1 = UTC -7$ ) is used to determine the start time of the flight duty period:
  - (a) a reporting time of 07:00 EST would be a reporting time of 05:00 MST, so the row in the Table to be used will contain 05:00 as the flight duty period start time.
- (5) If the flight crew member is assigned a flight duty on Thursday morning (before 18:00 EST) the flight crew member's acclimatized time will have changed by 2 hours in the direction of Toronto (moved 2 time zones to the East (CST):  $UTC -8 + 2 = UTC -6$ ) is used to determine the start time of the flight duty period:
  - (a) a reporting time of 07:00 EST would be a reporting time of 06:00 CST, so the row in the Table to be used will contain 06:00 as the flight duty period start time.
- (6) If the flight crew member is assigned a flight duty on Friday morning (before 18:00 EST) the flight crew member's acclimatized time will have changed by 3 hours in the direction of Toronto (moved 3 time zones to the East (EST):  $UTC -8 + 3 = UTC -5$ ) is used to determine the start time of the flight duty period. The flight crew member is now acclimatized to Toronto, so the flight duty period start time is local time (EST).

#### **4.26 CAR 700.28 (6) – Time Zones**

- (1) Stipulates that for the purposes of Subsection (5) Canada is considered to have 5 time zones:
  - (a) Pacific;
  - (b) Mountain;
  - (c) Central;
  - (d) Eastern; and
  - (e) Atlantic (the Atlantic time is considered to include the Newfoundland time zone (Newfoundland and Labrador))
- (2) This is for the purpose of simplification and avoid the question of is it 6 or 5 ½ time zones.

#### **4.27 CAR 700.28 (7) – Positioning Flight(s) Not Counted**

- (1) Stipulates that for Subsections (2), (3), & (4) that positioning flights do not count towards the “number of flights” used in determining the column of the Table to be used.
- (2) **Positioning in respect of a flight crew member**, means the transfer of the flight crew member from one location to another, at the request of the air operator, but does not include travel to and from suitable accommodation or the flight crew member’s lodging;
- (3) For example a flight crew member is required to position before a flight duty. Supposing that the average flight duration is greater than 50 minutes and 4 flights are planned. This means that the Table in CAR 700.28 (4) applies and that Column 2 of that Table would be used (1 to 4 flights). The positioning flight would not be added to the total number of flights – Column 3 would not be used (5 or 6 flights).

#### **4.28 CAR 700.28 (8) – Beginning of Flight Duty Period on Standby**

- (1) Stipulates that when a flight crew member on standby reports to the location designated by the air operator, the time that the flight crew member reports is the beginning of their flight duty period.

#### **4.29 CAR 700.28 (9) – Day VFR**

- (1) Stipulates that when a flight crew member operates an aircraft under day VFR (all flights operated under day VFR), that the maximum flight duty period is determined from the Table in this subsection.
- (2) In simple terms, the reductions to available flight duty period due to the average flight duration and number of flights do not apply to day VFR operations. If there is a mix of day VFR with IFR or night flights then the appropriate table in subsection (2), (3), or (4) applies.

#### **4.30 CAR 700.29 (1) - Maximum Duty Time**

- (1) Requires that total duty time assigned to flight crew members not exceed specified limitations. This refers to all duty time assigned to a flight crew member. Thus air operators are prohibited from assigning duty time to a flight crew member and flight crew members are prohibited from accepting a duty time assignment, if the limitations will be exceeded.
- (2) **Duty** means any task that a flight crew member is assigned by an air operator at a specific time, including flight duty, administrative work, training, positioning, reserve, and standby (not defined in regulation).
- (3) In the context of a flight duty period, the duty time begins at the same moment that the flight duty period begins. The flight duty period ends when the aircraft engines are off or the rotors have

stopped at the end of the flight. The duty time ends when the flight crew member is released from work – they walk out the door to go home or to the suitable accommodation.

- (4) "Duty time" – refers to hours of work.
- (5) Limitations (the 7 and 28 day limitations are tied to time free from duty options):
  - (a) 2400 hours in any 365 consecutive days;
  - (b) 192 hours in any 28 consecutive days (paired with Time Free from Duty Option 1 or 2)
  - (c) 210 hours in any 28 consecutive days (paired with Time Free from Duty Option 3)
  - (d) 60 hours in any 7 consecutive days or 168 consecutive hours (paired with Time Free from Duty Option 1)
  - (e) 70 hours in any 7 consecutive days or 168 consecutive hours (paired with Time Free from Duty Option 2 or 3)

#### 4.31 Time Free from Duty

- (1) During time free from duty the flight crew member is not required to do anything for the air operator nor is the air operator permitted to demand that the flight crew member do something for the air operator.
- (2) For example the flight crew member is not obligated answer the telephone, check the weather, flight plan, or be available.
- (3) **Single day free from duty** means a time free of all duties consisting of a single day and two local night's rest and which may include a rest period as part of the single day free from duty.
- (4) **Local night's rest** means the period of time between 22:30 and 07:30 at a location where the flight crew member is acclimatized;
- (5) **Option 1:**
  - (a) 1 single day free from duty in the 192 consecutive hours preceding the end of the 168 consecutive hour period; and
  - (b) 4 single days free from duty in any 28 consecutive days or 672 consecutive hours
- (6) **Option 2:**
  - (a) 120 consecutive hours in any 504 consecutive hours (5 consecutive days in any 21 consecutive days) and no assignment of:
    - (i) early duty, late duty or night duty;
    - (ii) flight duty period greater than 12 hours; or
    - (iii) the maximum duty time is 24 hours in any 2 consecutive days
- (7) **Option 3:**
  - (a) 120 consecutive hours in any 672 consecutive hours (5 consecutive days in any 28 consecutive days) and no assignment of:
    - (i) early duty, late duty or night duty; or
    - (ii) flight duty period greater than 12 hours

- (8) Example: Of duty time look back – 60 hours in any 7 consecutive days and time free from duty option 1.

Day	1	2	3	4	5	6	7	8	9
Daily Duty Hours	10	9	10	8	8	8	7	0	—
Cumulative Duty Hours	10	19	29	37	45	53	60	50	41
On or Free from Duty	on (until 22:30)	Single day free from duty	on (at 07:30)						

- (a) On day 8 the cumulative total duty hours becomes 50 (60 hours (day 7) – 10 hours (day 1) = 50 hours (days 2 through 8, 7 day total) and then on day 9 the cumulative total duty hours is 41 hours. So on day 9, the single day free from duty has occurred (after 07:30) and there are 19 hours of cumulative duty available.

#### 4.32 CAR 700.29 (2)

- (1) Stipulates that maximum duty time limits of:
- (a) 192 hours in any 28 consecutive days; and
  - (b) 60 hours in any 7 consecutive days or 168 consecutive hours;
- (2) Which are tied to the use of time free from duty Option 1, are not available when the flight crew member is away from home base.

#### 4.33 CAR 700.29 (3)

- (1) Limits the use of the 210 hours in any 28 consecutive days and time free from duty Option 3 to no more than 6 times per any 365 consecutive days.

#### 4.34 CAR 700.29 (4)

- (1) Stipulates that the beginning of the single day free from duty in time free from duty Option 1 may be delayed by up to 2 hours as a result of unforeseen operational circumstances. If such a delay occurs, the single day free from duty shall be extended by at least 2 hours.
- (2) For example: the single day free from duty begins with a local night's rest. By definition this begins at 22:30 at the location where the flight crew member is acclimatized. And the single day free from duty ends 33 hours after it begins at 07:30 on the second morning. The beginning of the single day free from duty may be delayed up to 00:30 by unforeseen operational circumstances but must be extended until at least 09:30 on the second morning.

#### 4.35 CAR 700.29 (5)

- (1) Stipulates that an air operator must provide 5 days free from duty to a flight crew member in order to switch between Options 1, 2 or 3.

#### 4.36 CAR 700.29 (6)

- (1) Stipulates how the flight crew member's duty time is to be calculated:
  - (a) While on reserve, the time spent during a reserve availability period is counted at a rate of 33% towards the hours of work limitations.
  - (b) All of the time on standby is counted towards the hours of work limitations (100%). While on deployed standby, 20% of the time spent being available is counted towards the hours of work limitations.

#### 4.37 CAR 700.36 – Home Base

- (1) Requires that an air operator designate a home base for each of its flight crew members. It is expected that there is a degree of permanence with this designation (not changed on a weekly / monthly basis).
- (2) Is intended to be the location that the flight crew member normally reports for duty; where the flight crew member is responsible for commuting between this location and their lodging and vice versa; and where the air operator is not responsible for the accommodations of the flight crew member or the flight crew member's transportation to and from the reporting location. When the flight crew member is required to travel from the home base to another location to perform flight duties (i.e.: for a 2 week rotation), this is positioning.
- (3) The air operator does not normally provide the flight crew member with suitable accommodation at home base. The option is available for the air operator to provide suitable accommodation with the agreement of the flight crew member.
- (4) **Home base** means the location where a flight crew member normally begins and ends a flight duty period.

#### 4.38 CAR 700.37 – Nutrition Break

- (1) Requires that a flight crew member be provided with at least a 15 minute period every 6 hours within a flight duty period to eat and drink.
- (2) The air operator is not required to provide the food (they may provide it), just the opportunity to consume it. In many cases this could be during cruise (in an aircraft with two flight crew members) where workload permits one flight crew member to assume control and responsibility for the aircraft while the other flight crew member takes a nutrition break.
- (3) The requirement to provide potable water is found in Part 4 of the *Aviation Occupational Health and Safety Regulations*.
- (4) For flight crews operating as single pilots or on multiple short duration flights, the nutrition break should be provided on the ground between flights. On single pilot aircraft, TCCA does not recommend that the pilot-in-command take a break from operating the aircraft for a nutrition break.

#### 4.39 CAR 700.40 (1) – Rest Period - General

- (1) Stipulates the duration and timing of the rest period that an air operator must provide to a flight crew member.
- (2) **Rest period** means a continuous period of time, excluding the travel time to and from any suitable accommodation provided by a private operator or an air operator, during which a flight crew member is off duty;
- (3) Following a flight duty period an air operator must provide the following rest period:
  - (a) When a flight duty period ends at home base, either

- (i) either 12 hours; or 11 hours plus travel time to and from where the rest period is taken; or
    - (ii) if the air operator provides the suitable accommodation, 10 hours in the suitable accommodation
  - (b) When a flight duty period ends away from home base, 10 hours in the suitable accommodation
- (4) The first option at **home base** is a flat 12 hours from the end of duty until reporting for the next flight duty period.
  - (5) The second option at **home base** is the 11 hours at the location where the rest occurs and requires that the air operator account for the travel time. This is intended for locations where travel time is short and predictably so. This is an option available for use by the air operator.
  - (6) Where an air operator decides to employ the at home base 11 hours option: the air operator must document how the travel time is determined; the travel time allotted must reflect reality; the travel time must be adjusted for seasonal changes (commuting at +15° C is generally quicker than at - 45° C) - if required, or account for the worst case (longest commute).
  - (7) The third option at **home base** is for when air operators provide suitable accommodation. Use of this option requires the agreement of the flight crew member. This option is provided for air operators when sufficient time is not available between schedule flight duty periods or to ensure the presence of flight crew - for example, a winter storm is forecast and a hotel room near the airport is provided to ensure the flight crew member arrives in time for the flight.
  - (8) When **away from home base**, the 10 hours rest period begins when the flight crew member arrives in the suitable accommodation (in the bedroom, not at front door of the hotel) or when the flight crew member has access to the suitable accommodation: i.e.: the flight crew member has their room key in hand and is, at most, a couple minutes from their room. This permits the flight crew member to either proceed to the room and sleep or obtain a meal prior to sleeping.
  - (9) The 10 hour rest period provides the opportunity for the flight crew member to obtain 8 hours of sleep and time for meals and personal hygiene.
  - (10) The air operator should take into account the availability of meals for their flight crew members. Where there is a restaurant located at the location of the suitable accommodation (and it is open for the flight crew member to use) it is reasonable to assume that meals will be obtainable during the 10 hour rest period. If there is no place to obtain a meal or the flight crew member must travel (and take significant time) to obtain a meal, the air operator should increase the rest period duration to permit the flight crew member to obtain a meal. Or provide the flight crew member with time prior to reporting for the next flight duty period to obtain a meal.
  - (11) The air operator may not interrupt a rest period. Where an air operator wishes to advise a flight crew member of schedule change during a rest period, the air operator may do so in a passive manner – send a text or email, leave a message with the hotel – so that the flight crew member will receive the message when they wake – but not wake the flight crew member to deliver the message.
  - (12) If the time between the end of the last flight duty period and the beginning of the next is longer than the minimum required rest period, the air operator should not actively contact the flight crew member in order to avoid waking the flight crew member.

#### **4.40 CAR 700.40 (2) – Extended Duty Following Flight Duty Period**

- (1) Requires that when an air operator requires a flight crew member to continue working following a flight duty period (a duty other than flight duty), that if this additional duty time exceeds the maximum flight duty period by more than 1 hour, the flight crew member must be provided with a rest period that is the longer of:

- (a) The duration of the previous duty period (flight duty period plus duty after the flight duty period); or
  - (b) The rest period required in subsection (1).
- (2) Air operators are encouraged to release flight crew members **from duty** as soon as possible following the end of the flight duty period. Where the flight crew member remains on duty after the end of the flight duty period, additional rest is required where the duty period exceeds the maximum flight duty period by 1 hour or more.
- (3) Examples: Following a 12.0 hour flight duty period where the maximum permitted was 13.0 hours, the flight crew member is required by the air operator to clean the aircraft for 2.5 hours. The total duty period for the flight crew member was 14.5 hours (12.0 hours + 2.5 hours). The required rest period for the flight crew member is now 14.5 hours.
- (4) Following an 8.0 hour night time flight duty period, that ends at home base, where the maximum permitted was 9.0 hours, the flight crew member is required by the air operator to clean the aircraft for 2.5 hours. The total duty period for the flight crew member was 10.5 hours (8.0 hours + 2.5 hours). As the normally required rest period for the flight crew member is 12.0 hours and the duration of the previous duty period is less than this (10.5 hours), the 12.0 hours rest period is required.

#### **4.41 CAR 700.40 (3)**

- (1) Requires that when an air operator elects to use the 11 hours plus travel time at home base (in subsection (1)), the air operator must have a means for determining the travel time and document how it is determined.
- (2) The travel time must reflect reality.

#### **4.42 CAR 700.41 (1) – Rest Period - Disruptive Schedules**

- (1) Requires that an air operator provide a flight crew member with a local night's rest between the following duty periods:
  - (a) Between a late duty or night duty and an early duty; or
  - (b) Between an early duty and a late duty or night duty.
- (2) **Local night's rest** means the period beginning at 22:30 and ending at 07:30 at the location where a flight crew member is acclimatized;
- (3) **Early duty** means a flight duty period that starts between 02:00 – 06:59, in the flight crew member's acclimatized time.
- (4) **Late duty** means a flight duty period finishing in the period between 00:00 and 01:59 hours, in the flight crew member's acclimatized time.
- (5) **Night duty** means a flight duty period that starts between 13:01 – 01:59 and finishes after 02:00, in the flight crew member's acclimatized time.
- (6) Additional rest is required for transitioning between late or night to early duties and early to late and night duty periods.

#### **4.43 CAR 700.41 (2)**

- (1) Stipulates that the requirements in subsection (1) do not apply when there is more than 4 hours difference between local time where the flight crew member is and the time where the flight crew member is acclimatized.

- (2) These disruptive schedule provisions are not intended to apply when flight crews operate transoceanic flights – the next section deals with this.

#### **4.44 CAR 700.42 – Rest Period — Time Zone Differences**

#### **4.45 CAR 700.42 (1) – Additional Rest on Flights Ending Away From Home Base**

- (1) Requires that the air operator provide the flight crew member with additional rest due to time zone differences as follows:
- (2) When a duty period ends away from home base at a location where the local time zone differs by:
- (a) 4 hours from the time at the location of the start of the flight duty period, the minimum rest shall be 11 hours in the suitable accommodation; or
  - (b) more than 4 hours from the time at the location of the start of the flight duty period, the minimum rest shall be 14 hours in the suitable accommodation.
- (3) When the time zone difference is less than 4 hours (time zones) – 1, 2 or 3 hours the general rest requirements apply – 700.40.
- (4) This subsection addresses the fatiguing effects of long haul flights - sleep disruption due to trans-meridian (East / West) travel. The further the flight crew member travels, the longer the required rest period.
- (5) This subsection addresses the flight from home base.

#### **4.46 CAR 700.42 (2) – Additional Rest on Return to Home Base**

- (1) Requires that the air operator provide the flight crew member with additional rest due to time zone differences when returning to home base as follows:
- (2) When a duty period ends at home base and the local time zone differs by:
- (a) 4 hours from the time at the location of the start of the flight duty period and the flight crew member has been away from home base for more than 36 consecutive hours, the minimum rest shall be 13 hours;
  - (b) more than 4 hours but not more than 10 hours from the time at the location of the start of the flight duty period and the flight crew member has been away from home base for:
    - (i) more than 60 consecutive hours or the returning flight duty period encroaches upon the flight crew member's WOCL, the flight crew member shall be provided with a minimum of 2 local night's rest prior to the start of the next flight duty period; or
    - (ii) less than or equal to 60 consecutive hours and the returning flight duty period does not encroach on the flight crew member's WOCL, the flight crew member shall be provided with a minimum of 1 local night's rest prior to the start of the next flight duty period.
  - (c) more than 10 hours from the time at the location of the start of the flight duty period and the flight crew member has been away from home base for:
    - (i) more than 60 consecutive hours, the flight crew member shall be provided with a minimum of 3 local night's rest prior to the start of the next flight duty period; or
    - (ii) less than or equal to 60 consecutive hours, the flight crew member shall be provided with a minimum of 2 local night's rest prior to the start of the next flight duty period.

- (3) This sub section addresses the return to home base rest requirements. Depending on how long the flight crew member was away from home base; how many time zones they were away; and the time of day that the return flight is made.
- (4) Takes into account how much acclimatization to a different time zone the flight crew member would have been subjected to.

#### **4.47 CAR 700.43 (1) – Positioning**

- (1) Requires that if a flight crew member is required by the air operator to position following a flight duty period, then the required rest period be increased if certain criteria are exceeded:
  - (a) If the maximum flight duty period is exceeded by 3 hours or less, the required rest period is equal to the duty period (flight duty period plus positioning time); or
  - (b) If the maximum flight duty period is exceeded by more than 3 hours, the required rest period is equal to the duty period plus the time in excess of the maximum flight duty period (flight duty period plus positioning time plus positioning time in excess of maximum flight duty period);
- (2) **Positioning** in respect of a flight crew member, means the transfer of the flight crew member from one location to another, at the request of the air operator, but does not include travel to and from suitable accommodation or the flight crew member's lodging.
- (3) This subsection addresses extended periods of wakefulness resulting from positioning – an flight duty period followed by positioning that is longer than the allowed maximum flight duty period for that day.
- (4) **Examples:** Following a 12 hour flight duty period where the maximum flight duty period was 13 hours, a flight crew member is required to position for 3.5 hours. The total duty period is 15.5 hours (12 + 3.5). The time in excess of the maximum flight duty period is 2.5 hours (15.5 – 13.0). The required rest period is 15.5 hours.
- (5) Following a 12 hour flight duty period where the maximum flight duty period was 13 hours, a flight crew member is required to position for 6.5 hours. The total duty period is 18.5 hours (12 + 6.5). The time in excess of the maximum flight duty period is 5.5 hours (18.5 – 13.0). The required rest period is 18.5 + 5.5 = 24.0 hours.

#### **4.48 CAR 700.43 (2) – Extended Positioning – Flight Crew Member Agreement**

- (1) Stipulates that the air operator must have the agreement of the flight crew member in order to position the flight crew member if the flight crew member's duty period will exceed the maximum flight duty period by more than 3 hours. And that the flight duty period may not be exceeded by more than 7 hours (a fatigue risk management system would be required for more than 7 hours).

#### **4.49 CAR 700.50 (1) – Split Flight Duty**

- (1) Provides for increasing the maximum flight duty period found in section 700.28 when a flight crew member is provided with a break in suitable accommodation of at least 60 minutes during a flight duty period. The permitted increase is related to the time of day when the break occurs. The maximum flight duty period may be increased by an amount of time equal to:
  - (a) 100% of the duration of the break during the hours of 00:00 to 05:59 at the flight crew member's acclimatized time;
  - (b) 50% of the duration of the break during the hours of 06:00 to 23:59 at the flight crew member's acclimatized time; or,

- (c) In the case of short-term re-planning due to unforeseen operational circumstances, 50% of the duration of the break.

#### **4.50 CAR 700.50 (2) – Calculation of Increase**

- (1) Stipulates that when calculating the duration of the increase, 45 minutes is first subtracted from the time spent in the suitable accommodation, and the difference is multiplied by 100% or 50% depending on the time of day.
- (2) The 45 minutes accounts for the time required to:
  - (a) get ready for bed (5 minutes)
  - (b) fall asleep (20 minutes)
  - (c) wake up, overcome sleep inertia and get ready for work (20 minutes)
- (3) The minimum break duration of 60 minutes allows for 15 minutes to be used to increase the flight duty period. The flight duty period could be increased by 15 minutes (@ 100%) or 7.5 minutes (@ 50%). No maximum duration for the break is specified.

#### **4.51 CAR 700.50 (3) – Use Limited to 3 Consecutive Nights**

- (1) Stipulates that a flight crew member may have their flight duty period extended during a night duty for 3 consecutive nights.

#### **4.52 CAR 700.50 (4)**

- (1) Specifies that the local time referred to in Subsection (1) is at the location where the flight crew member is acclimatized.

#### **4.53 CAR 700.50 (5) – Split Duty & Reserve**

- (1) Stipulates that when a flight crew member on reserve is assigned to a flight duty period that includes split flight duty, the flight crew member's reserve duty period may not be extended by more than 2 hours, under this section. Also, following the break, there may not be more than 2 flights flown.
- (2) This limits the use of split flight duty periods for flight crew members on reserve.

#### **4.54 CAR 700.51 (1) – Consecutive Night Duty Periods**

- (1) Requires, following 3 consecutive night duty periods, that an air operator provide a flight crew member with a local night's rest following the 3<sup>rd</sup> night duty period. These duties have to meet the definition of "night duty" – begin between 13:00 and 01:59 and end after 02:00. If they do meet this definition, then no more than 3 night duties consecutively.

#### **4.55 CAR 700.51 (2) – Conditions**

- (1) Stipulates that a flight crew member may be assigned up to 5 consecutive night duties if they are provided with:
  - (a) A 3 hour rest period in suitable accommodation during each night duty period; and
  - (b) Following the 4<sup>th</sup> or 5<sup>th</sup> duty period, at least 56 consecutive hours free from duty.
- (2) If the flight crew member is provided with a break in suitable accommodation, up to 5 consecutive night duties may occur.

- (3) This break, which permits up to 5 consecutive night duties, is not used to increase the duration of the flight duty period. It is used to overcome the fatiguing effect of the consecutive night duties, not to increase the length of the flight duty period, as in split flight duty.

#### **4.56 CAR 700.52 (1) – Delayed Reporting Time**

- (1) Applies to situations where schedule changes occur during the hours immediately prior to the reporting time of a flight crew member. For example, an event occurs during the rest period prior to the beginning of a flight duty period that will prevent the departure from occurring as planned.
- (2) For example, it does not apply to a schedule change that will occur in two days.
- (3) Sets criteria for determining when the flight crew member's flight duty period will begin following a delayed reporting time. A delayed reporting time occurs when the air operator advises the flight crew member of the delay prior to them departing their suitable accommodation. The maximum flight duty period will be shorter flight duty period when calculated from the initial reporting time and from the delayed reporting time.
- (4) The maximum flight duty period will never become longer due to a delayed reporting time.
- (5) Examples: Referring to the Maximum Flight Duty Period Tables, if the initial reporting time was 06:00 the maximum flight duty period would be 12 hours. If the delayed reporting time became 09:00, the maximum flight duty period from the Maximum Flight Duty Period Tables would be 13 hours. However, the lesser flight duty period is the one available at 06:00 – The maximum flight duty period would remain 12 hours.
- (6) If the initial reporting time was 22:30 the maximum flight duty period would be 11 hours. If the delayed reporting time became 02:00, the maximum flight duty period from the Maximum Flight Duty Period Tables would be 9 hours. However, the lesser flight duty period is the one available at 02:00 – The maximum flight duty period would remain 9 hours.

#### **4.57 CAR 700.52 (2)**

- (1) Stipulates when the flight duty period begins during the use of a delayed reporting time. When the delayed reporting time is less than 4 hours (the difference between the initial reporting time and the delayed reporting time) the beginning of the flight duty period is the delayed reporting time.
- (2) When the delayed reporting time is 4 hours or more but less than 10 hours (the difference between the initial reporting time and the delayed reporting time) the beginning of the flight duty period is 4 hours after the initial reporting time.
- (3) **Examples:** If the initial reporting time was 06:00 and the delayed reporting time became 09:00, the flight duty period would begin at 09:00.
- (4) If the initial reporting time was 06:00 and the delayed reporting time became 12:00, the flight duty period would begin at 10:00.

#### **4.58 CAR 700.52 (3)**

- (1) Sets for criteria for a delayed reporting time of 10 hours or more. A delayed reporting time of 10 hours or more may be considered a rest period if:
  - (a) The flight crew member is advised of the delayed reporting time prior to departing the suitable accommodation; and
  - (b) The air operator does not disturb the flight crew member before a mutually agreed time.
- (2) If the delay is more than 10 hours, effectively the flight crew member is being assigned to a new flight duty period.

- (3) If the associated conditions for CAR 700.41 - Disruptive Schedules - are met, then they must be applied.

**4.59 CAR 700.52 (4)**

- (1) Stipulates when an air operator may contact a flight crew member during the delay in subsection (3) unless they have mutually agreed upon a time to be contacted:
- (a) When a flight crew member is in suitable accommodation the air operator may contact the flight crew member within 30 minutes of the originally scheduled departure time from the suitable accommodation; or
  - (b) When the flight crew member is at their own place of rest, the air operator may contact the flight crew member within 60 minutes of the originally scheduled reporting time.
- (2) In order to advise the flight crew member of a delayed reporting time, the air operator will need to contact them at some point. When the flight crew member is in suitable accommodation 30 minutes prior to scheduled pick up is used.
- (3) When the flight crew member is at their own place of rest, 60 minutes is used.
- (4) Both of these cases are for when the air operator will actively will disturb the flight crew member. Sending a message (passively) that the flight crew member will get after they wake up is permitted at any time.
- (5) It is recommended that the flight crew member silence their phone (do not disturb) when going to sleep.

**4.60 CAR 700.60 (1) – Flight Duty Period — In-Flight Rest and Augmented Flight Crew**

- (1) The definitions for the different classes of rest facilities are found in this subsection.
- (2) **Class 1 rest facility** means a bunk or other horizontal surface located in an area:
- (a) That is separate from the flight deck and passenger cabin;
  - (b) That is temperature-controlled;
  - (c) In which the flight crew member can control light; and
  - (d) That minimizes the level of noise and exposure to other disturbances.
- (3) To ensure the suitability of a rest facility, the SAE ARP 4101/3, Crew Rest Facilities, should be used in conjunction with ARP 4101, Flight Deck Layout and Facilities, for the design and installation of flight crew member rest facilities. The following SAE documents may also be useful and may be obtained for a fee from:
- (a) SAE World Headquarters  
400 Commonwealth Drive  
Warrendale, PA 15096  
1-877-606-7323 (U.S. and Canada)  
1-724-776-4970 (International)  
CustomerService@sae.org
  - (b) SAE ARP 1323, Type Measurements of Aircraft Interior Sound Pressure Levels During Cruise.
  - (c) SAE ARP 4245, Quantities for Description of the Acoustical Environment in the Interior of the Aircraft.
- (4) **Class 2 rest facility** means a seat that allows for a horizontal sleeping position in an area that

- (a) Is separated from passengers by a curtain or other covering that provides some darkness and sound mitigation;
  - (b) Is equipped with portable oxygen equipment; and
  - (c) Minimizes disturbances by passengers and crew members.
- (5) **Class 3 rest facility** means a seat that reclines at least 40 degrees from vertical and that has leg and foot support.

#### **4.61 CAR 700.60 (2) – Limitations**

- (1) Stipulates the maximum flight duty period available when a flight is augmented with one or two additional flight crew members and is dependent on the class of rest facility provided. A rest facility is required to be provided for each additional flight crew member. If 2 different classes of rest facilities are provided, the maximum flight duty period is the one associated with the lower class rest facility (the lesser value flight duty period).
- (2) With one additional flight crew member and a:
  - (a) Class 3 rest facility: to a maximum flight duty period of 14.0 hours;
  - (b) Class 2 rest facility: to a maximum flight duty period 15.0 hours; or
  - (c) Class 1 rest facility: to a maximum flight duty period 15.0 hours
- (3) With two additional flight crew members and a:
  - (a) Class 3 rest facility: to a maximum flight duty period 15.25 hours;
  - (b) Class 2 rest facility: to a maximum flight duty period 16.5 hours; or
  - (c) Class 1 rest facility: to a maximum flight duty period 18.0 hours.

#### **4.62 CAR 700.60 (3)**

- (1) Stipulates conditions around the use of augmented flight crews and restricts the use on the increased flight duty periods in subsection (2) to no more than 3 flights. Augmented flight crews and the increased flight duty periods may not be used if 4 or more flights are planned.
- (2) For a flight duty period that includes 1 flight, all flight crew members are required to receive in-flight rest in the rest facility during the flight. This rest time should be equally distributed among the flight crew members.
- (3) For a flight duty period that includes 2 or 3 flights, the flight crew member who will be landing the aircraft on the final landing (manipulating the flight controls) will receive at least 2 consecutive hours of in-flight rest in the rest facility. The other flight crew members will receive at least 90 consecutive minutes of in-flight rest in the rest facility.

#### **4.63 CAR 700.60 (4)**

- (1) Stipulates that all flight time while part of an augmented flight crew counts as flight time for the individual flight crew members. The time spent in the rest facility counts as flight time.

#### **4.64 CAR 700.60 (5)**

- (1) Stipulates that the flight duty period for all flight crew members who are part of an augmented flight crew, shall begin at the same location and end the same location (the flight duty period begins in the departure location and ends in the arrival location).

- (2) In cases where more than one flight is planned, this subsection allows for additional flight crew member(s) to join the flight crew after the first flight if it is planned to be less than 105 minutes of flight time (the intent is for the planned flight time to be 105 minutes or less – being realistically planned – not actual flight time). All flight crew member must end their flight duty period at the same location.
- (3) Examples: The flight duty period begins in Toronto for all flight crew member and it ends in Abu Dhabi for all flight crew members.
- (4) The flight duty period begins in Toronto, has a stop in Montreal, continues on and ends in Abu Dhabi for all flight crew members. Assuming the flight time from Toronto to Montreal is less than 105 minutes, the additional flight crew member(s) may join the flight in Montreal.

#### **4.65 CAR 700.60 (6)**

- (1) Requires that when additional flight crew members are augmenting a flight crew and are onboard an aircraft, at least one of them must be on the flight deck for take-offs and landings.
- (2) An exception is provided for the case in subsection (5) where the flight crew member has not yet joined the flight crew. If the additional flight crew member has not joined the crew yet (on the first flight) they cannot be present on the flight deck.

#### **4.66 CAR 700.60 (7)**

- (1) Stipulates that the air operator use the planned period of the flight between climbing above 10,000 above aerodrome elevation and 15 minutes prior to the planned beginning of the descent, in order to determine the time available for in-flight rest. This is principally for the purpose of the calculations required in subsection (3).

#### **4.67 CAR 700.60 (8)**

- (1) Requires that, following an increased flight duty period in accordance with this section, the rest period be the longer duration of the following:
  - (a) The duration of the duty period that was just completed; or
  - (b) 16 hours when the flight duty period ends at home base; or
  - (c) 14 hours in the suitable accommodation when the flight duty period ends away from home base.

#### **4.68 CAR 700.61 – Long-range Flights**

- (1) Stipulates restrictions concerning long-range flights. Air operators are prohibited from assigning flight duty periods to a flight crew member and flight crew members are prohibited from accepting a flight duty period assignment, when:
  - (a) A flight is planned with a duration of more than 7 hours flight time; and
  - (b) Following the first flight, a second flight is planned and any portion of the second flight will occur during the flight crew member's window of circadian low.

The flight duty period infringes on the window of circadian low and includes a flight that is planned with a duration of more than 7 hours

NACC, ALPA, and ACPA have commented – Should read “if either leg occurs during the WOCL”]

- (2) **Window of circadian low** means the period of time between 02:00 and 05:59 at a location where the flight crew member is acclimatized.
- (3) In order to operate a flight longer than 7 hours followed by an additional flight (with the same flight crew) that infringes on the flight crew member's window of circadian low, a fatigue risk management system would be required.

#### **4.69 CAR 700.62 – Ultra Long-range Flights**

- (1) Defines what an ultra long-range flight is. Requires that assigned flight duty periods and that planned flight time do not exceed specified limitations. Thus air operators are prohibited from assigning flight duty periods and planned flight times to a flight crew member and flight crew members are prohibited from accepting such assignments, if the limitations will be exceeded.

#### **4.70 CAR 700.62 (1) – Maximum Flight Duty Period**

- (1) Stipulates that the assigned flight duty period may not exceed 18 hours.

#### **4.71 CAR 700.62 (2) – Maximum Flight Time**

- (1) Stipulates the planned flight time may not exceed 16 hours.
- (2) In order to operate an ultra long-range flight, a fatigue risk management system is required.

#### **4.72 CAR 700.63 – Unforeseen Operational Circumstances — Flight Duty Period and Rest Period**

- (1) **Unforeseen operational circumstance** means an event, such as unforecast adverse weather, or an equipment malfunction or air traffic control delay, that is beyond the control of an air operator or private operator;
- (2) In order to be considered an unforeseen operational circumstance the event has to occur after the beginning of the flight duty period – after the flight crew member reports for the flight duty.
- (3) An event that occurs prior to the flight crew member reporting for duty is not unforeseen and the flight duty period may not be extended as a result.

#### **4.73 CAR 700.63 (1) – Authority of Pilot-in-Command**

- (1) If the pilot-in-command is of the opinion that an unforeseen operational circumstance that occurred after the beginning of the flight duty period, and associated fatigue may jeopardize the safe operation of the flight; and
- (2) After consulting all crew members on their levels of fatigue, the pilot-in-command may:
  - (a) Reduce the flight duty period;
  - (b) Increase the flight duty period in excess of the maximum flight duty period as follows:
    - (i) by 1 hour, in the case of a single-pilot operation;
    - (ii) by 2 hours, in the case of 2 pilot flight crews;
    - (iii) by 3 hours, in the case of augmented flight crews and flight duty periods planned with one flight;
    - (iv) by 2 hours, in the case of augmented flight crews and flight duty periods planned with two or three flights; or
  - (c) Increase the duration of the rest period.

- (3) The air operator should provide guidance on the use of this authority for their pilots-in-command in their company documentation. The authority to reduce the flight duty period effectively repeats the obligation of flight crew members to declare themselves no longer fit for duty, if that is the case, and end the flight duty period as soon as possible.
- (4) As other crew members may be present to perform safety related duties, their levels of fatigue need to be considered. For example, if a flight attendant were to no longer be fit for duty and that reduced the number of flight attendants below the minimum required – the flight should not continue.

#### **4.74 CAR 700.63 (2) – Exceeding Permitted Increase**

- (1) Addresses the instance where a pilot-in-command has extended the flight duty period due to unforeseen operational circumstances and after take-off on the final flight another unforeseen operational circumstance is encountered: this additional unforeseen operational circumstance will result in the permitted exceedance in subsection (1) being exceeded. The flight is permitted to continue to the destination or alternate.
- (2) Example: Assuming a flight crew of two and a maximum flight duty period for the day of 12 hours. The day's flights are planned to be completed in 11 hours. An unforeseen operational circumstance results in a 2.5 hour delay. Assuming that the pilot-in-command decides to apply the available extension in subsection (1), the maximum flight duty period will be exceeded by 1.5 hours (with 2 hours permitted). Due to weather at the destination, the flight diverts to the alternate aerodrome that is 1 hour of flight time away. This will result in a 2.5 hour exceedance to the maximum flight duty period, but subsection (2) permits this.

#### **4.75 CAR 700.63 (3) – Rest Period Extension**

- (1) Stipulates that following a flight duty period that is extended due to unforeseen operational circumstances, the duration of the rest period following this extended flight duty period will be extended by an amount of time equal to the extension.
- (2) Example: If the flight duty period is extended beyond the maximum by 1.5 hours the next rest period will increased in duration by 1.5 hours.

#### **4.76 CAR 700.63 (4) – Requirement to Advise Air Operator**

- (1) Requires that the pilot-in-command advise the air operator of any change in the flight duty period made under this section at the end of the flight duty period.
- (2) This is required so that the air operator is aware of the modification and as required take it into considerations per 700.21.

#### **4.77 CAR 700.64 (1) – Unforeseen Operational Circumstances — Split Flight Duty**

- (1) Stipulates that an air operator may introduce a split flight duty (per 700.50) and modify a flight crew member's flight duty period if the pilot-in-command agrees to the modification. The modification may only occur if it is made prior to the beginning of the scheduled break. The "scheduled break" occurs after the decision to insert the split flight duty. Any time spent waiting around for a decision to be made to introduce a split flight duty does not count towards the break.
- (2) Example: after the first of several planned flights there is a mechanical problem with the aircraft. Initially it is thought that it will, be fixed in 30 minutes. After one hour it is decided that it will take 4 hours to repair. At this point a split flight duty could be introduced. The first hour on the ground is not part of the scheduled break. In this example the break is being introduced into the anticipated 4 hour delay (after the first 1 hour delay).

#### **4.78 CAR 700.64 (2) – Introduction of Split Duty**

- (1) Requires that the pilot-in-command not agree with the introduction of a split duty period if, after consulting all crew members on their levels of fatigue, is of the opinion that the circumstances of the split duty period and associated fatigue may jeopardize the safe operation of the flight.
- (2) As other crew members may be present to perform safety related duties, their levels of fatigue need to be considered. For example, if a flight attendant were to no longer be fit for duty and that reduced the number of flight attendants below the minimum required – the flight cannot continue.

#### **4.79 CAR 700.70 – Flight Crew Member on Reserve**

- (1) This section establishes the parameters for the assignment of a flight crew member on reserve.
- (2) **Flight crew member on reserve** means a flight crew member who has been designated by an air operator to be available to report for flight duty on notice of more than one hour.

#### **4.80 CAR 700.70 (1) – Notification of Flight Crew Member**

- (1) Details the notice an air operator must provide to a flight crew before being assigned as a flight crew member on reserve. The notice must include when the reserve availability period will begin and end and the location where it will take place. The notice must be provided to the flight crew member no later than:
  - (a) If no part of the reserve availability period occurs during the flight crew member's window of circadian low, 12 hours before the beginning of the reserve availability period; or
  - (b) If any part of the reserve availability period occurs during the flight crew member's window of circadian low, 32 hours before the beginning of the reserve availability period.
- (2) **Reserve availability period** means the period of time in any 24 consecutive hour period that a flight crew member on reserve is available to report for flight duty.

#### **4.81 CAR 700.70 (2) – Changing Start Time of Reserve**

- (1) Stipulates restrictions placed on the air operator with respect to changes that may be made to the start time of the reserve availability period in the notice provided to the flight crew member in subsection (1). The air operator may not change the start time of the reserve availability period by more than:
  - (a) 2 hours before or 4 hours after the start time that was provided in to the flight crew member in subsection (1); or
  - (b) 2 hours before or 4 hours after the start time of the preceding reserve availability period; and
  - (c) Not more than 8 hours before or 4 hours after the start time that was provided in to the flight crew member in subsection (1) within in any period of 168 consecutive hours, unless the flight crew member is provided with 2 consecutive days free from duty within the 168 consecutive hours before the revised start time of the reserve availability period.

#### **4.82 CAR 700.70 (3) – Start Time of Reserve Crossing 02:00**

- (1) Requires that when an air operator changes the start time of a reserve availability period and this change in start time crosses 02:00, the air operator must provide the flight crew member with 2 consecutive days free from duty prior to commencing the next reserve availability period.
- (2) Example: if the start time of the reserve availability period was 01:00 and is changed to 03:00 or was 03:30 and is changed to 01:30, this provision applies.

**4.83 CAR 700.70 (4) – Changing Start Time of Reserve - Entering Window of Circadian Low**

- (1) Requires that the air operator provide the flight crew member with at least 24 hours' notice prior to changing the start of the flight crew member's reserve availability period, such that it will start in the flight crew member's window of circadian low.
- (2) This applies if the start of the flight crew member's reserve availability period moves into the period of time between 02:00 and 05:59 at a location where the flight crew member is acclimatized.

**4.84 CAR 700.70 (5) – Duration of Reserve Availability Period**

- (1) Stipulates the maximum duration of the reserve availability period. The air operator may assign a flight crew member to a reserve availability period of a maximum of 14 consecutive hours in duration.

**4.85 CAR 700.70 (6) – Required Rest Period**

- (1) Stipulates the minimum duration of the required rest period between reserve availability periods. The air operator is required to provide the flight crew member on reserve with a rest period of at least 10 hours between reserve availability periods.

**4.86 CAR 700.70 (7) – Reserve Duty Period Limitations**

- (1) Stipulates limits for the duration of the reserve duty period.
- (2) **Reserve duty period** means the period of time between the time that a flight crew member on reserve is available to report for flight duty and when the flight duty period ends.
- (3) This is the total time from the start of the reserve availability period to the end of an assigned flight duty period.
- (4) The maximum reserve duty period that may be assigned is, when the reserve duty period begins between:
  - (a) 02:00 and 17:59 – 18 consecutive hours;
  - (b) 18:00 and 18:59 – 17 consecutive hours;
  - (c) 19:00 and 20:59 – 16 consecutive hours;
  - (d) 21:00 and 22:59 – 15 consecutive hours; and
  - (e) 23:00 and 01:59 – 14 consecutive hours;

**4.87 CAR 700.70 (8) – Reserve Duty Period Limitations - Augmented Flight Crews**

- (1) In the case of a flight crew member on reserve who is assigned to a flight duty period with an augmented flight crew, the maximum reserve duty period in subsection (7) may be increased as follows:
  - (a) To a maximum of 20 hours, if the flight crew is augmented with one additional flight crew member and a class 1 or class 2 rest facility is provided; or
  - (b) To a maximum of 22 hours, if the flight crew is augmented with two additional flight crew members and two class 1 or class 2 rest facilities are provided;

**4.88 CAR 700.70 (9) – Increase of Duration of Reserve Duty Period**

- (1) Permits the reserve duty period in subsection (7) to be increased if the reserve duty period starts

between 02:00 and 05:59 in the flight crew member's acclimatized time and the air operator does not contact the flight crew member (between 02:00 and 05:59). The reserve duty period may be increased by a maximum of 2 hours or 50% of the reserve availability period that occurred between 02:00 and 05:59.

- (2) Example: The reserve duty period starts at 04:00 and the flight crew member is not contacted by the air operator before 06:00. 1 hour may be added to the reserve duty period in subsection (7) – 18 hours plus 1 hour = 19 hours. In this case the reserve duty period could end no later than 23:00 (04:00 plus 19 hours).

#### **4.89 CAR 700.70 (10) – Limitation: Reserve Duty Period / Flight Duty Period**

- (1) Stipulates that an air operator not assign a flight crew member to a flight duty period that exceeds either of:
  - (a) The maximum reserve duty period specified in this section; or
  - (b) The maximum flight duty period specified in the maximum flight duty period table (section 700.28).
- (2) Examples: The reserve availability period starts at 05:00 and ends no later than 19:00 (14 hours maximum). The reserve duty period would begin at 05:00 and be a maximum of 18 hours (18.5 hours if subsection (9) applies). The reserve duty period must end no later than 23:00 (05:00 plus 18 hours).
- (3) If the flight crew member is assigned to a flight duty period that starts at 08:00 – the maximum flight duty period would be 13 hours (1 to 4 flights). The flight duty period must end no later than 21:00. In this case the flight duty period is limiting.
- (4) If the flight crew member is assigned to a flight duty period that starts at 18:00 – the maximum flight duty period would be 12 hours (1 to 4 flights). The flight duty period would end no later than 06:00, however in this case the reserve duty period is limiting - the flight duty would end no later than 23:00 (or 23:30 if subsection (9) applies). A 5 or 5.5 hours flight duty would be possible.
- (5) This subsection also stipulates that under certain conditions, the air operator may assign a flight duty period that will exceed the reserve duty period if:
  - (a) The flight crew member is provided with 24 hours notice of the assignment prior to the beginning of the flight duty period;
  - (b) This notice is not provided between 22:30 and 07:30; and
  - (c) No duties are assigned to the flight crew member from the receipt of the notice until the beginning of the flight duty period.
- (6) Example: In the second example above, the air operator wants to assign the flight crew member to a flight duty period that starts at 18:00 and use the maximum flight duty period available of 12 hours (1 to 4 flights). The flight duty period would begin at 18:00 and end the next day at 06:00. If the air operator advises the flight crew member prior to 18:00 today, tomorrow they may begin this flight duty period at 18:00 – this is permitted (as long as the two other conditions are followed).
- (7) Flight duty period end no later than 06:00, however in this case the reserve duty period is limiting - the flight duty would end no later than 23:00 (or 23:30 if subsection (9) applies). A 5 or 5.5 hours flight duty would be possible.

#### **4.90 Transitioning from “on reserve” to a flight assignment to back “on reserve”.**

- (1) In the case of a flight crew member who has been assigned to a period of on reserve (a week or month) The scheduled reserve availability period starts at 05:00 and ends no later than 19:00 (14 hours maximum). When the flight crew member is assigned to a flight duty period – a start at

08:00 and a finish at 21:00 – and receives the required rest period – assuming 12 hours at home base. The rest period would end at 09:00 the next day. The air operator may return the flight crew member to “on reserve” status as was previously scheduled. At 09:00 the reserve availability period would recommence but it would end as previously scheduled at 19:00. The scheduled start – 05:00 – would be used for calculating the maximum reserve duty period.

- (2) Otherwise the notification requirements of 700.70(1) would have to be applied.

#### **4.91 CAR 700.71 (1) – Flight Crew Member on Standby**

- (1) For flight crew members on standby, an air operator is required to provide them a place to wait that is protected from the elements, has a place to sit and has access to food and drink and if possible is not open to the public.
- (2) **Flight crew member on standby** means a flight crew member who has been designated by an air operator or private operator to remain at a specified location in order to be available to report for flight duty on notice of one hour or less;

#### **4.92 CAR 700.71 (2) – Rest Period**

- (1) Requires that an air operator provide the following rest periods to a flight crew member on standby when they are not assigned to a flight duty:
- (a) At home base, either
- (i) 12 hours or 11 hours plus travel time to and from the flight crew member’s lodging; or
  - (ii) 10 hours in suitable accommodation if the air operator provides that accommodation; or
- (b) Away from home base, 10 hours in the suitable accommodation.

#### **4.93 CAR 700.72 (1) – Flight Crew Member on Deployed Standby**

- (1) **Flight crew member on deployed standby** means a flight crew member on standby who is located at or near an aerodrome and who has been provided with suitable accommodation by an air operator for the duration of the period during which the member is available to report for flight duty.
- (2) Stipulates restrictions on flight duty periods during deployed standby:
- (a) Flight duty periods (the flight duty period begins when the flight crew member is available to be assigned to a flight duty) may start no earlier than 07:00 and end no later than 23:00 local time; and
- (b) The flight crew member must be provided with a rest period of at least 11 hours between periods spent on standby and / or flight duty periods.

#### **4.94 CAR 700.72 (2) – Time Free from Duty**

- (1) Stipulates the time free from duty option that may be used in conjunction with deployed standby.
- (a) 120 consecutive hours in any 672 consecutive hours (5 consecutive days in 28 consecutive days); and
- (b) no early, late, or night duty; or
- (c) no flight duty period greater than 12 hours.

- (2) Deployed standby is intended for operations where flight crew members generally spend more time waiting around to fly than actually flying, hence these restrictions.
- (3) See 700.29.
- (4) The air operator is expected to inform the flight crew member of the beginning and end of each day's standby availability – when will the flight crew member be expected to be availability for a flight duty assignment. This time of being available to be assigned to flight duty is counted towards the maximum duty time at a rate of 20%.

#### **4.95 CAR 700.73 – Controlled Rest on the Flight Deck**

- (1) Controlled rest on the flight deck is an opportunity for a flight crew member to obtain some rest during a flight duty period. As there are no guarantees that it will be possible during a flight duty period to obtain controlled rest, a flight crew member must report for duty, fit for duty.
- (2) Reporting for duty unrested and counting upon controlled rest in order to make it through the flight duty period is unacceptable.

#### **4.96 CAR 700.73 (1)**

- (1) Stipulates restrictions for the use of controlled rest on the flight deck;
  - (a) Each period or controlled rest may not be in excess of 45 minutes;
  - (b) The rest must be taken on the flight deck;
  - (c) The rest must occur during the cruise portion of the flight and be completed at least 30 minutes prior to descent.
  - (d) Only one flight crew member will rest at a time;
  - (e) All flight crew members will remain on the flight deck during the rest.

#### **4.97 CAR 700.73 (2)**

- (1) Stipulates conditions for beginning a period of controlled rest:
  - (a) The flight crew member taking the rest will transfer their duties to the other flight crew member;
  - (b) The flight crew members will review the status of the flight, taking note of specific tasks that the non-resting flight crew member will have to complete during the rest;
  - (c) The flight crew members will review the wake up criteria; and
  - (d) Advise other crew members of the start and end times of the rest. The intent being that the other crew members will check at the end of the rest time to ensure that the flight crew members are awake.
  - (e) For flights operated without other crew members, and alarm clock or similar means to ensure that both flight crew members are woken up in the event the non-resting flight crew member inadvertently falls asleep.

#### **4.98 CAR 700.73 (3)**

- (1) Stipulates that the flight crew member who was resting will not begin duties until 15 minutes after the end of the rest. This permits sleep inertia to be overcome.

#### 4.99 CAR 700.73 (4)

- (1) Requires the non-resting flight crew member to provide the flight crew member who just finished the rest period with an operational briefing prior to them reassuming any duties. This is an operational update to the previously resting flight crew member – “while you were sleeping, this is what has happened...”

### 5.0 FATIGUE MANAGEMENT TRAINING PROGRAM

#### 5.1 CAR 703.98 / 704.115 / 705.124 – new Subsection (4) -

- (1) **Subsection (4)** - Requires air operators to provide fatigue management training to all flight crew members that contains the following elements:
  - (a) personal fatigue management strategies relating to
    - (i) sleep hygiene,
    - (ii) lifestyle, exercise and diet, and
    - (iii) the consumption of alcohol and drugs;
  - (b) the impact of fatigue on aviation safety;
  - (c) sleep requirements and the science relating to fatigue;
  - (d) the causes and consequences of fatigue;
  - (e) how to recognize fatigue in themselves and in others;
  - (f) sleep disorders and their impact on safety and treatment options; and
  - (g) human and organizational factors that may cause fatigue, including;
    - (i) sleep quality and duration,
    - (ii) the impact of shift work and overtime,
    - (iii) circadian rhythm, and
    - (iv) the effects of changes in time zones.
- (2) One source of this information is **TP 14573 - Fatigue Risk Management System for the Canadian Aviation Industry - Fatigue Management Strategies for Employees** (<http://www.tc.gc.ca/eng/civilaviation/publications/TP14573-6039.htm>).
- (3) There is also a presentation on **Fatigue Risk Management for Employees** on the Transport Canada website (<http://www.tc.gc.ca/eng/civilaviation/standards/standards-3919.htm>).

### 6.0 INFORMATION MANAGEMENT

- (1) Not applicable.

### 7.0 DOCUMENT HISTORY

- (1) Not applicable.

## 8.0 CONTACT OFFICE

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