

## Advisory Circular – Prescriptive Limitations

### Flight Crew Fatigue Management

#### Non-application and Interpretation

**CAR 7xx.xx** – Stipulates that new requirements do not apply to flight operations under Subpart 2 of Part VII (702 air operators and their flight crews).

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.

#### Air Operator Obligations

**CAR 700.15 (2)** – 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.

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.

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.

**CAR 700.15 (3)** – 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.

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.

**CAR 700.15 (3)** – 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.

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.

**CAR 700.15**– 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.

**[A description of how many tries at replanning a schedule is acceptable to avoid the excessive use of unforeseen operational circumstances is required. Perhaps 3 strikes and you're out?]**

**CAR 700.15 (6)** – 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.

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.

### **Fitness for Duty**

There are two changes in CAR Part VI that relate to Fitness for Duty. These are changes in CAR 602.02 and 602.03:

**CAR 602.02** – 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.

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.

### **Alcohol or Drugs — Crew Members**

**CAR 602.03** – Prohibits any person from acting as a crew member of an aircraft

- within 12 hours after consuming an alcoholic beverage;
- having consumed alcohol in such a quantity that the concentration in the person's blood exceeds twenty milligrams of alcohol in one hundred millilitres of blood; or

- 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.

**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;

This applies broadly to performance impairments caused by fatigue (too tired), alcohol (consuming alcohol within 12 hours of a flight duty period or a blood alcohol level greater than 20 milligrams per 100 millilitres of blood), drugs (legal, prescription, over-the-counter or illegal drugs) and mental or physical condition (having suicidal thoughts or have a broken arm and are not able to manipulate the controls).

**CAR 700.15 / 16**– 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.

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.

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.

The intended action is that the air operator removes the flight crew member from the flight duty.

**CAR 700.16 (4)** – 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.

The previous section 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.

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.

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.

**CAR 700.16 (4)** – Sets out the steps to be taken for the case described above, but for an aircraft operated by a single-pilot.

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.

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.

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.

### **Home Base**

**CAR 700.17 (2)** – 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 basis).

Is intended to be the location that the flight crew member normally reports for duty. The air operator does not normally provide the flight crew member with suitable accommodation at home base.

**Home base** means the location where a flight crew member normally begins and ends a flight duty period.

### **Suitable Accommodation**

An air operator or private air operator is required to provide suitable accommodations to flight crew member for the purpose of rest periods while away from home base.

**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;

### **Nutrition Break**

**CAR 700.18** – 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.

The air operator is not required to provide the food and drink (they may provide it), just the opportunity to consume it. In many cases this could be during cruise (in an aircraft with an autopilot and two flight crew members).

For flight crews operating as single pilots or on multiple short duration flights, the nutrition beak would need to be provided on the ground between flights.

### Monitoring System and Records

**CAR 700.19 (1)** – Requires that, for each flight crew member, the air operator shall keep a record of:

- all flight times;
- flight duty periods - the start, duration and end of each;
- duty periods - the start, duration and end of each;
- rest periods and their duration; and
- time free from duty.

**CAR 700.19 (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.

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.

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.

**CAR 700.19 (2)** – 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.

**CAR 700.19 (2)** – 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.

Required so that the air operator is aware of the modification and as required take it into considerations per 700.15.

**CAR 700.19**– Requires that the records referred to in this Section 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).

### Maximum Flight Duty Period

**CAR 700.20**– 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.

**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:

- begins any duties assigned by the air operator or delegated by the Minister before he or she reports for a flight;
- reports for a flight or, if the flight duty period comprises more than one flight, reports for the first flight;
- reports for positioning; or
- reports as a flight crew member on standby.

The limitations on the duration of the flight duty period are effected by 3 variables:

- The average flight time for the planned / flown flight(s)
- The number of flights (planned / flown)
- The time of day that the flight duty period (see CAR 700.19(2))

First, the **average flight time** has to be determined (total flight time / number of flights):

- average flight times of less than 30 minutes;
- average flight times of 30 minutes to less than 50 minutes; and
- average flight times of 50 minutes or more.

Calculate the average flight time (total flight time ÷ number of flights = average flight time). Select the appropriate column based on average flight time.

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.

If the additional flight is calculated to be completed within the reduced flight duty period, it may be operated.

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;

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 (i.e.: to shut down). In the case of an aircraft that lands for a few minutes (to pick up and / or drop off someone or something) and the engine is kept running, this could be considered as the interval between two flights or be considered part of a single flight. This will be left to the air

operator to decide, but the air operator should document how this is to be logged / counted so that it is done consistently across the operation.

Thirdly, the **start time of the flight duty period** has to be determined. This is either of:

- the local time at that location if the flight crew member is acclimatized to their location; and
- 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.

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.

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.

**Examples:**

- 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).
- 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).

**CAR 700.20** – Contains the Flight Duty Period table.

The “Start of FDP” Column of the Table contains the start time of the flight duty period;

Column A contains limitations for flight duty periods for:

- 1 to 11 flights (average flight duration of less than 30 minutes);
- 1 to 7 flights (average flight duration of 30 minutes or more to less than 50 minutes);
- 1 to 4 flights (average flight duration of 50 minutes or more)

Column B contains limitations for flight duty periods for

- 12 to 17 flights (average flight duration of less than 30 minutes);
- 8 to 11 flights (average flight duration of 30 minutes or more to less than 50 minutes);
- 5 to 6 flights (average flight duration of 50 minutes or more)

Column C contains limitations for flight duty periods for

- 18 or more flights (average flight duration of less than 30 minutes);
- 12 or more flights (average flight duration of 30 minutes or more to less than 50 minutes);
- 7 or more flights (average flight duration of 50 minutes or more)

Select the appropriate column based on the average flight duration and number of flights planned.

Then select the appropriate row containing the start time of the flight duty period.

The intersection of this column and row contains the maximum flight duty period.

**CAR 700.20** – 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 Column A in the Table.

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 column of the FDP table applies.

### **Flight Duty Period — In-Flight Rest and Augmented Flight Crew**

**CAR 700.22** – The definitions for the different classes of rest facilities are found in this subsection.

**Class 1 rest facility** means a bunk or other horizontal surface located in an area:

- That is separate from the flight deck and passenger cabin;
- That is temperature-controlled;
- In which the flight crew member can control light; and
- That minimizes the level of noise and exposure to other disturbances.

**Class 2 rest facility** means a seat that allows for a horizontal sleeping position in an area that

- Is separated from passengers by a curtain or other covering that provides some darkness and sound mitigation;
- Is equipped with portable oxygen equipment; and
- Minimizes disturbances by passengers and crew members.

**Class 3 rest facility** means a seat that reclines at least 40 degrees from vertical and that has leg and foot support.

**CAR 700.22 (1) & (2)** – 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).

With one additional flight crew member and a:

- Class 3 rest facility: to a maximum FDP of 14.0 hours;
- Class 2 rest facility: to a maximum FDP 15.0 hours; or
- Class 1 rest facility: to a maximum FDP 15.0 hours

With two additional flight crew members and a:

- Class 3 rest facility: to a maximum FDP 15.25 hours;
- Class 2 rest facility: to a maximum FDP 16.5 hours; or
- Class 1 rest facility: to a maximum FDP 18.0 hours.

**CAR 700.22 (3)** – 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.

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.

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.

**CAR 700.22 (3) (h)** – 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. Not just the time that each flight crew member spends at the flight controls (in an operating flight crew member position).

**CAR 700.22 (3) (f)** – 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).

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. All flight crew member must end their flight duty period at the same location.

**Examples:**

The flight duty period begins in Toronto for all flight crew member and it ends in Abu Dhabi for all flight crew members.

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.

**CAR 700.22 (3) (d)** – 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.

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.

**CAR 700.22 (3) (e)** – 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).

**CAR 700.22 (3) (g)** – Requires that, following an increased flight duty period in accordance with this section, the rest period be the longer duration of the following:

- The duration of the duty period that was just completed; or
- 16 hours when the flight duty period ends at home base; or
- 14 hours in the suitable accommodation when the flight duty period ends away from home base.

### Long-range Flights

**CAR 700.23** – 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 flight is planned with a duration of more than 7 hours flight time; and
- 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.

**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.

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.

### Ultra Long-range Flights

**CAR 700.24** – 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.

**CAR 700.24** – Stipulates that the assigned flight duty period may not exceed 18 hours.

**CAR 700.24** – Stipulates the planned flight time may not exceed 16 hours.

In order to operate an ultra long-range flight, a fatigue risk management system is required.

### **Unforeseen Operational Circumstances — Flight Duty Period and Rest Period**

**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;

**CAR 700.25** – Provides the authority to the pilot-in-command in the following conditions:

- If the pilot-in-command is of the opinion that unforeseen operational circumstances and associated fatigue may jeopardize the safe operation of the flight; and
- After consulting all crew members on their levels of fatigue;

The pilot-in-command may:

- Reduce the flight duty period;
- Increase the flight duty period in excess of the maximum flight duty period as follows:
  - by 1 hour, in the case of a single-pilot operation;
  - by 2 hours, in the case of 2 pilot flight crews;
  - by 3 hours, in the case of augmented flight crews and flight duty periods planned with one flight;
  - by 2 hours, in the case of augmented flight crews and flight duty periods planned with two or three flights; or
- Increase the duration of the rest period.

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.

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.

**CAR 700.25 (5)** – 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.

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.

**CAR 700.25 (6)** – 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.

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.

#### **Unforeseen Operational Circumstances — Split Flight Duty**

**CAR 700.26 (1) & (4)** – 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.

**CAR 700.26 (2) & (3)** – 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.

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.

#### **Delayed Reporting Time**

**CAR 700.27** – 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.

The maximum flight duty period will never become longer due to a delayed reporting time.

**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 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.

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 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.

**CAR 700.27 (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.

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.

**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.

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.

**CAR 700.27 (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:

- The flight crew member is advised of the delayed reporting time prior to departing the suitable accommodation; and
- The air operator does not disturb the flight crew member before a mutually agreed time.

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

**CAR 700.27 (2)** – 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:

- 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
- 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.

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.

When the flight crew member is at their place of rest, 60 minutes is used.

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.

It is recommended that the flight crew member silence their phone (do not disturb) when going to sleep.

### **Maximum Duty Time / Cumulative Duty Hours**

**CAR 700.28** - 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.

**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, and standby (not defined in regulation).

“Duty time” – refers to hours of work.

- 2400 hours in any 365 consecutive days;

The other limitations (“monthly” and “weekly”) are tied to time free from duty options:

- 192 hours in any 28 consecutive days (paired with Time Free from Duty Option 1 or 2)
- 210 hours in any 28 consecutive days (paired with Time Free from Duty Option 3)
- 60 hours in any 7 consecutive days or 168 consecutive hours (paired with Time Free from Duty Option 1)

- 70 hours in any 7 consecutive days or 168 consecutive hours (paired with Time Free from Duty Option 2 or 3).

**CAR 700.28 (6) (c)** – 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.

### Maximum Flight Time

**CAR 700.29**– 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.

**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.

The limits are:

- 112 hours in any 28 consecutive days;
- 300 hours in any 90 consecutive days;
- 1,000 hours in any 365 consecutive days; or
- 8 hours in any 24 consecutive hours in the case of a single-pilot operation.

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 the previous 27, 89, and 364 days is subtracted from the limitations above and the difference is flight time available to be flown today.

### Examples:

- 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;
- 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
- 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.

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.

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).

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.

## Positioning

**CAR 700.30** – 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:

- 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
- 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);

**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

This subsection addresses extended periods of wakefulness resulting from positioning – an FDP followed by positioning that is longer than the allowed maximum FDP for that day.

### 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.

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 18.0 hours (12 + 6.0). The time in excess of the maximum flight duty period is 5.0 hours (18.0 – 13.0). The required rest period is 18.0 + 5.0 = 23 hours.

**CAR 700.30 (2)** – Stipulates that for determining the maximum flight duty period that positioning flights do not count towards the “number of flights” used in determining the column of the Table to be used.

**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;

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 in the FDP Table that Column A of that Table would be used (1 to 4 flights). The positioning flight would not be added to the total number of flights – Column B would not be used (5 or 6 flights).

**CAR 700.30 (3)** – 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 FRMS would be required for more than 7 hours).

### Split Flight Duty

**CAR 700.31 (1)** – Provides for increasing the maximum flight duty period found in section 700.20 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:

- 100% of the duration of the break during the hours of 00:00 to 05:59 at the flight crew member's acclimatized time;
- 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,
- In the case of short-term re-planning due to unforeseen operational circumstances, 50% of the duration of the break.

**CAR 700.31 (2)** – 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.

The 45 minutes accounts for the time required to:

- get ready for bed (5 minutes)
- fall asleep (20 minutes)
- wake up, overcome sleep inertia and get ready for work (20 minutes)

There is no minimum time specified for the break (other than the 45 minutes to be subtracted) nor is a maximum time specified.

**CAR 700.31** – Specifies that the local time referred to in Subsection (1) is at the location where the flight crew member is acclimatized.

**CAR 700.31 (2)** – 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.

This limits the use of split flight duty periods for flight crew members on reserve.

## Flight Crew Member on Reserve

**CAR 700.32** – This section establishes the parameters for the assignment of a flight crew member on reserve.

**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.

**CAR 700.32 (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:

- 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
- 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.

**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.

**CAR 700.32 (2)** – 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:

- 2 hours before or 4 hours after the start time that was provided in to the flight crew member in subsection (1); or
- 2 hours before or 4 hours after the start time of the preceding reserve availability period; and
- 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.

**CAR 700.32 (3)** – 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.

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.

**CAR 700.32 (4)** – 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.

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.

**CAR 700.32 (6) (a)** – 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.

**CAR 700.32 (6) (c)** – 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.

**CAR 700.32 (6) (d)** – Stipulates limits for the duration of the reserve duty period.

**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.

This is the total time from the start of the reserve availability period to the end of an assigned flight duty period.

The maximum reserve duty period that may be assigned is, when the reserve duty period begins between:

- 02:00 and 17:59 – 18 consecutive hours;
- 18:00 and 18:59 – 17 consecutive hours;
- 19:00 and 20:59 – 16 consecutive hours;
- 21:00 and 22:59 – 15 consecutive hours; and
- 23:00 and 01:59 – 14 consecutive hours;

**CAR 700.32 (6) (e)** – 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 (6)(d) may be increased as follows:

- 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
- 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;

**CAR 700.32 (7)** – 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.

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).

**CAR 700.32 (8)** – Stipulates that an air operator not assign a flight crew member to a flight duty period that exceeds either of:

- The maximum reserve duty period specified in this section; or
- The maximum flight duty period specified in the maximum flight duty period table (section 700.20).

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).

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.

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.

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:

- The flight crew member is provided with 24 hours notice of the assignment prior to the beginning of the flight duty period;
- This notice is not provided between 22:30 and 07:30; and
- No duties are assigned to the flight crew member from the receipt of the notice until the beginning of the flight duty period.

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).

**CAR 700.32 (9)** – Stipulates how the flight crew member's duty time is to be calculated, while on reserve, the time spent during a reserve availability period is counted at a rate of 33% towards the hours of work limitations.

**CAR 700.32 (10)** - Transitioning from “on reserve” to a flight assignment to back “on reserve”.

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.

### **Flight Crew Member on Standby**

**CAR 700.33 (1)** – Stipulates that when a flight crew member on airport 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.

**CAR 700.33 (2)** – Stipulates how the flight crew member's duty time is to be calculated, while on standby, all of the time on standby is counted towards the hours of work limitations (100%).

**CAR 700.33 (4)** – For flight crew members on reserve, 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.

**CAR 700.33 (5)** – 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:

- At home base, either
  - 12 hours or 11 hours plus travel time to and from the flight crew member's lodging; or
  - 10 hours in suitable accommodation if the air operator provides that accommodation; or
- Away from home base, 10 hours in the suitable accommodation.

### **Flight Crew Member on Deployed Standby**

**CAR 7xx.xx (1)** – Stipulates restrictions on flight duty periods during deployed standby:

- 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

- The flight crew member must be provided with a rest period of at least 11 hours between flight duty periods.

**CAR 7xx.xx (2)** – Stipulates that time free from duty option may not be used in conjunction with deployed standby.

**CAR 7xx.xx(4) (Deployed Standby)** - Stipulates how the flight crew member's duty time is to be calculated, while on deployed standby, 20% of the time spent being available is counted towards the hours of work limitations. -

### Rest Period - General

**CAR 700.34**– Stipulates the duration and timing of the rest period that an air operator must provide to a flight crew member.

**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;

Following a flight duty period an air operator must provide the following rest period:

- When a flight duty period ends at home base, either
  - either 12 hours; or 11 hours plus travel time to and from where the rest period is taken; or
  - if the air operator provides the suitable accommodation, 10 hours in the suitable accommodation
- When a flight duty period ends away from home base, 10 hours in the suitable accommodation

The first option at **home base** is a flat 12 hours from the end of duty until reporting for the next FDP.

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.

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 be reflect reality; the travel time must be adjusted for seasonal changes (commuting at +15° C is generally quicker than at - 45° C) - if required.

The third option at **home base** is for when air operators provide suitable accommodation. 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.

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.

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.

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.

**CAR 700.34 (4)** – 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:

- The duration of the previous duty period (flight duty period plus duty after the flight duty period); or
- The rest period otherwise required by this section.

Air operators are encouraged to have flight crew members begin their rest period 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 FDP, additional rest is required where the duty period exceeds the maximum FDP by 1 hour or more.

**Examples:**

Following a 12 hour flight duty period where the maximum permitted was 13 hours, the flight crew member is required by the air operator to clean the aircraft for 2 hours. The total duty period for the flight crew member was 14 hours (12 hours + 2 hours). The required rest period for the flight crew member is now 14 hours.

Following an 8 hour night time flight duty period, that ends at home base, where the maximum permitted was 9 hours, the flight crew member is required by the air operator to clean the aircraft for 2 hours. The total duty period for the flight crew member was 10 hours (8 hours + 2 hours). The required rest period for the flight crew member is 12 hours (normal home base option or 11 hours plus travel time, if applicable).

**CAR 700.34 (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.

## Time Free from Duty

### CAR 700.35

**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.

**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;

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.

For example the flight crew member is not obligated answer the telephone, check the weather, flight plan, or be available.

#### Option 1:

- 1 single day free from duty in the 192 consecutive hours preceding the end of the 168 consecutive hour period; and
- 4 single days free from duty in any 28 consecutive days or 672 consecutive hours

#### Option 2:

- 5 consecutive days in any 21 consecutive days or 504 consecutive hours and no assignment of:
  - early duty, late duty or night duty;
  - flight duty period greater than 12 hours; or
  - the maximum duty time is 24 hours in any 2 consecutive days

#### Option 3:

- 5 consecutive days in any 28 consecutive days or 672 consecutive hours and no assignment of:
  - early duty, late duty or night duty; or
  - flight duty period greater than 12 hours

**CAR 7xx.xx (2) (on deployed standby)** – Stipulates that maximum duty time limits of:

- 192 hours in any 28 consecutive days; and
- 60 hours in any 7 consecutive days or 168 consecutive hours;

Which are tied to the use of time free from duty Option 1, are not available when the flight crew member is away on deployed standby.

**CAR 700.35 (1) (ii)** – 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.

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.

**CAR 700.35 (2)** – 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.

### **Disruptive Schedules**

**CAR 700.36 (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.

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

**CAR 700.36 (2)** – Requires that an air operator provide a flight crew member with a local night's rest between the following duty periods:

- Between a late duty or night duty and an early duty; or
- Between an early duty and a late duty or night duty.

**Early Duty** means a flight duty period that starts between 02:00 – 06:59, in the flight crew member's acclimatized time.

**Late duty** means a FDP finishing in the period between 00:00 and 01:59 hours, in the flight crew member's acclimatized time.

**Night duty** means a FDP that starts between 13:01 – 01:59 and finishes after 02:00, in the flight crew member's acclimatized time.

Additional rest is required for transitioning between late or night to early duties and early to late and night duty periods.

## Rest Period — Time Zone Differences

**CAR 700.37 (1)** – requires that the air operator provide the flight crew member with additional rest due to time zone differences as follows:

- When a duty period ends away from home base at a location where the local time zone differs by:
  - 4 hours from the time at the location of the start of the FDP, the minimum rest shall be 11 hours in the suitable accommodation; or
  - more than 4 hours from the time at the location of the start of the FDP, the minimum rest shall be 14 hours in the suitable accommodation.

This subsection addresses the fatiguing effects of long haul flights - sleep disruption due to trans meridian travel. The further the flight crew member travels, the longer the required rest period.

This subsection addresses the flight from home base.

**CAR 700.37 (2)** – 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:

- When a duty period ends at home base and the local time zone differs by:
  - 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;
  - 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:
    - more than 60 consecutive hours or the returning FDP 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
    - less than or equal to 60 consecutive hours and the returning FDP 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.
- 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:

- 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
- 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.

This sub section addresses the return to home base flight. 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.

Takes into account how much acclimatization to a different time zone the flight crew member would have been subjected to.

### **Consecutive Night Duty Periods**

**CAR 700.38 (2)** – 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.

**CAR 700.38 (3)** – Stipulates that a flight crew member may have their flight duty period extended during a night duty for 3 consecutive nights.

**CAR 700.38 (4)** – Stipulates that a flight crew member may be assigned up to 5 consecutive night duties if they are provided with:

- A 3 hour rest period in suitable accommodation during each night duty period; and
- Following the 4<sup>th</sup> or 5<sup>th</sup> duty period, at least 56 consecutive hours free from duty.

If the flight crew member is provided with a break in suitable accommodation, up to 5 consecutive night duties may occur.

This break is not used to increase the duration of the FDP (not like a split flight duty).

### **Acclimatization**

**CAR 700.39** – This subsection indicates that references to time of day are:

- to the local time at that location if the flight crew member is acclimatized to their location; and
- 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.

**Acclimatized** means the physiological and mental state of a flight crew member whose biorhythm is considered aligned with local time.

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.

**CAR 700.39** — This subsection describes how to determine the acclimatization of a flight crew member.

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.

The first 2 options will really only apply if the flight crew member travels 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.

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.

**CAR 700.39 (3) (b)** – 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.

**CAR 700.39 (3) (c)** – 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.

**Example of (b):**

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 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.
- 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.

On Friday the flight crew member is acclimatized to Toronto, so the flight duty period start time is local time.

**Example of (c):**

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 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.
- 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.

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.

**CAR 700.39 (3) (d)** – 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.

**Example of (d):**

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. 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 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.

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 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.

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 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.

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).

**CAR 700.39 (3) (a)** – Stipulates that for the purposes of Subsection (5) Canada is considered to have 5 time zones:

- Pacific;
- Mountain;
- Central;
- Eastern; and
- Atlantic (the Atlantic time is considered to include the Newfoundland time zone (Newfoundland and Labrador))

This is for the purpose of simplification and avoid the question of is it 6 or 5 ½ time zones. Not intended to be a slight against the Newfoundland time zone.

### **Fatigue Management Training**

**CAR 700.40 (1)** – Requires air operators to provide fatigue management training to all flight crew members.

**CAR 700.40 (2)** – Stipulates the elements to be addressed in the training:

- personal fatigue management strategies relating to
  - sleep hygiene,
  - lifestyle, exercise and diet, and
  - the consumption of alcohol and drugs;
- the impact of fatigue on aviation safety;
- sleep requirements and the science relating to fatigue;

- the causes and consequences of fatigue;
- how to recognize fatigue in themselves and in others;
- sleep disorders and their impact on safety and treatment options; and
- human and organizational factors that may cause fatigue, including;
  - sleep quality and duration,
  - the impact of shift work and overtime,
  - circadian rhythm, and
  - the effects of changes in time zones.

### **Controlled Rest on the Flight Deck**

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.

**Reporting for duty unrested and counting upon controlled rest in order to make it through the flight duty period is unacceptable.**

**CAR 700.41 (2)** – Stipulates restrictions for the use of controlled rest on the flight deck;

- Each period of controlled rest may not be in excess of 45 minutes;
- The rest must be taken on the flight deck;
- The rest must occur during the cruise portion of the flight and be completed at least 30 minutes prior to descent.
- Only one flight crew member will rest at a time;
- All flight crew members will remain on the flight deck during the rest.

**CAR 700.41 (3)** – Stipulates conditions for beginning a period of controlled rest:

- The flight crew member taking the rest will transfer their duties to the other flight crew member;
- 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;
- The flight crew members will review the wake up criteria; and
- Advise the flight attendants of the start and end times of the rest.

**CAR 700.41 (5)** – Stipulates that the flight crew member who was resting will begin duties until 15 minutes after the end of the rest. This permits sleep inertia to be overcome.

**CAR 700.41 (5)** – 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...”

DRAFT

**Table 1 - Maximum Daily FDP**

Average Flight Time		Columns		
		A	B	C
		Number of Flights		
> 50 minutes		1 - 4	5 - 6	7+
30 to 50 minutes		1-7	8-11	12+
< 30 minutes		1-11	12 - 17	18+
Rows	Start of FDP	Maximum Flight Duty Period (hours)		
1	0000-0359	9.0	9.0	9.0
2	0400-0459	10.0	9.0	9.0
3	0500-0559	11.0	10.0	9.0
4	0600-0659	12.0	11.0	10.0
5	0700-1259	13.0	12.0	11.0
6	1300-1659	12.5	11.5	10.5
7	1700-2159	12.0	11.0	10.0
8	2200-2259	11.0	10.0	9.0
9	2300-2359	10.0	9.0	9.0