Canadian Crew Rest: Feasibility Check Documentation

Introduction

Disclaimer

It is always the sole responsibility of the air operator to comply with all applicable regulations. The following checks have been implemented in Avianis with criteria based on the Canadian Aviation Regulation (CAR) crew rest requirements; however, they are not to be considered comprehensive (see omitted passages) and should not be relied upon as the only means of ensuring compliance.

Document Tips

It is recommended before use of the Canadian Crew Rest Feasibility Checks to review this document in its entirety, including the definitions. This is the best way to ensure that the expectations and requirements for these checks to be run successfully are met.

- Use ctrl+F to search for a specific CAR, whether that appears in a check message or an omission
- Feasibility checks reference the failing associated CAR whenever possible, e.g. “CAR 700.27(1.a)”
- Avianis checks are separately coded may cover multiple CARs, please use this in reference to questions or troubleshooting with the Avianis team, e.g. “check (B.1)”
- “Note” footnotes are internal comments or further details on Avianis’ process
- “Interpretation” footnotes are comments on decisions that were made in interpreting the CARs into the Avianis checks

Reference Documents

The following references were used in creating the Avianis checks:

- Consolidated Regulations Online (CAR)
- Advisory Circular 700.047

Setup & Data Integrity

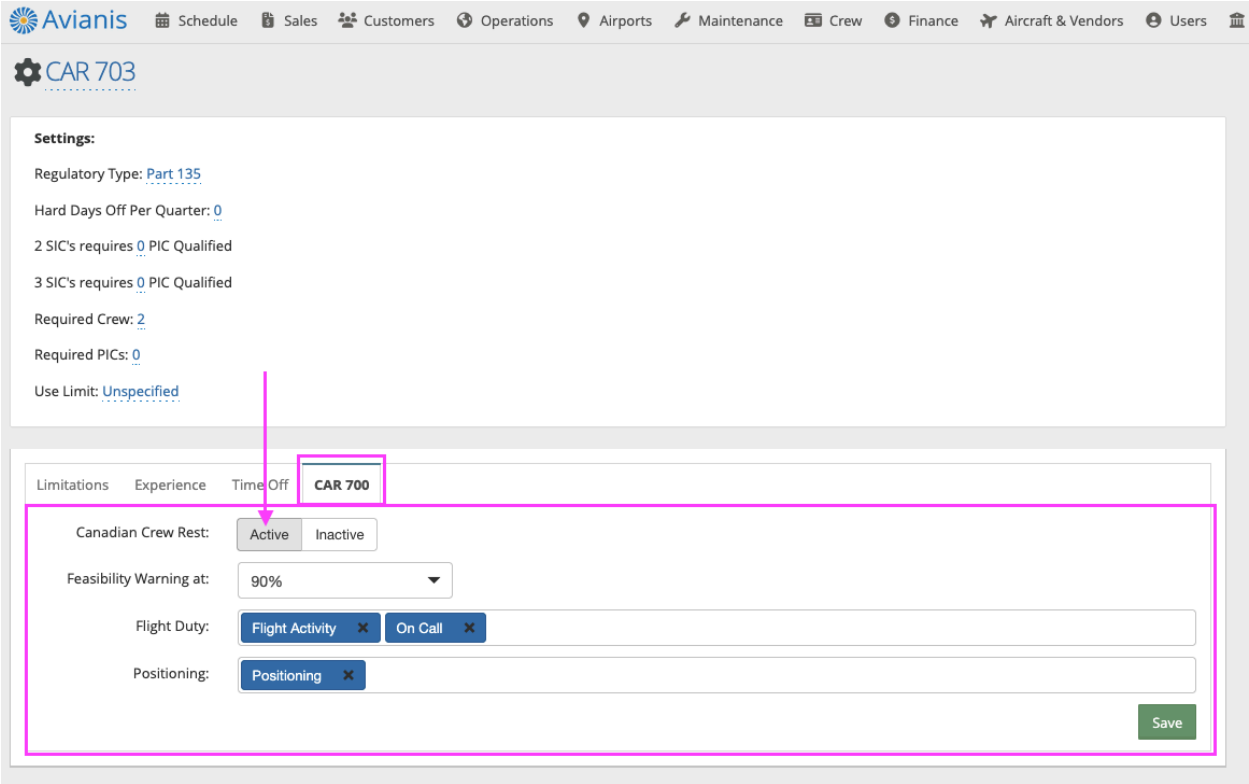
To utilize these checks, the following steps must be followed:

1. Confirm with the `Avianis Support` team that the module is enabled for your organization.
2. Set “*Canadian Crew Rest*” to Active on a RegSet.
3. Apply that RegSet to a flight.
4. View/refresh the Feasibility to see applicable alerts.

Apply Canadian Crew Rest to a RegSet

To run the Canadian Crew Rest checks, they will need to be activated on a new or existing Regulatory Set (“RegSet”), go to: **Crew > Regulatory Sets > ‘Create New’ button OR {edit**

pen} button. (Learn more about RegSets by clicking here.) Then from the 'CAR 700' tab, select Active on the toggle for "*Canadian Crew Rest*" and save.



It is possible to have a RegSet as a default selection on the organization, aircraft, or account-level. (Learn how to set RegSet defaults by clicking here.)

Feasibility Warning Percentage

Checks will fail when a limit is exceeded but, for checks that approach a threshold, there is an option to receive a warning when they are within a selected percentage of failing and will return as a warning. The warning messages will behave the same as other warning/yellow feasibility messages, including operating under the same override/approval requirements.
The options for '*Feasibility warning at*:' are:

- N/A - No threshold warning messages will be shown
- 95% - Warnings will be issued when the value is within 5% of failing
- 90% - Warnings will be issued when the value is within 10% of failing
- 85% - Warnings will be issued when the value is within 15% of failing

Positioning Personnel Event Categories

Since the Personnel Event Categories are user defined, it must be specified on the Canadian Crew Rest RegSet what should be considered as a crew Positioning Event. This impacts how Avianis calculates the crew member's location, and therefore also their acclimated time zone.

These also count as FDPs in select circumstances. For this reason, only Event Categories that are applicable to the Duty Time Event Type are possible to select. One or more Event Categories may be selected.

Note: There is a requirement for Positioning Events to always have an Arrival Airport for the purposes of determining location.

Important Schedule Upkeep

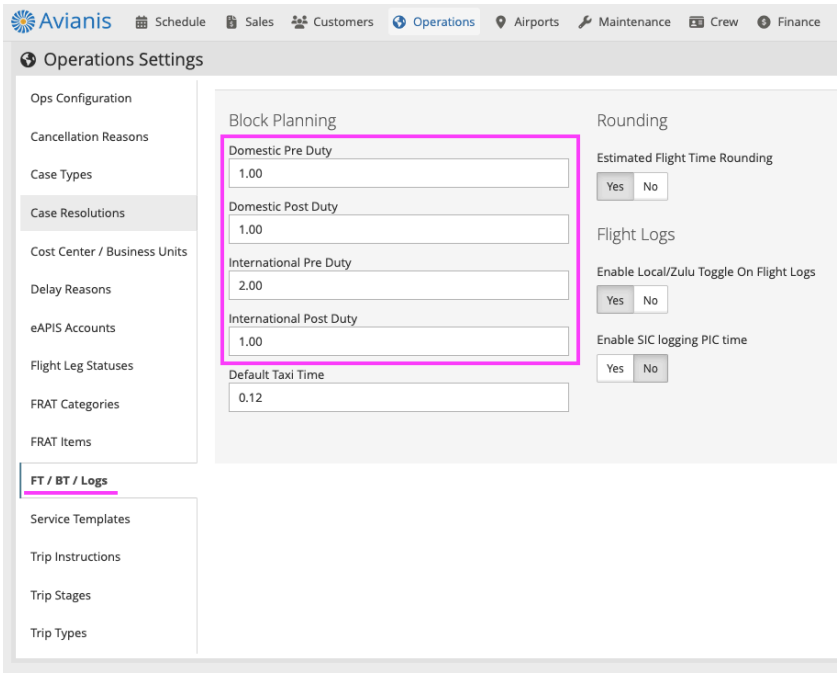
For the checks to perform optimally, it is important to maintain schedules that are as accurate as possible at all times.

- Create Positioning Events as soon as possible/known; and
- Log actual/performed Duty Events as soon as possible/completed; and
- Logbook entries for crew (on their user profile) for flights they were crewed on outside of the Avianis operations; and
- Assign crew to flights early to increase the possibility to catch downstream schedule effects sooner.

Pre-Duty & Post-Duty Setting

To estimate the FDP, it is critical that the pre-duty and post-duty values are provided. This time will be added before and after the estimated block time to determine the DTY time. Provide these values under: **Operations > Operations Settings > FT / BT / Logs**

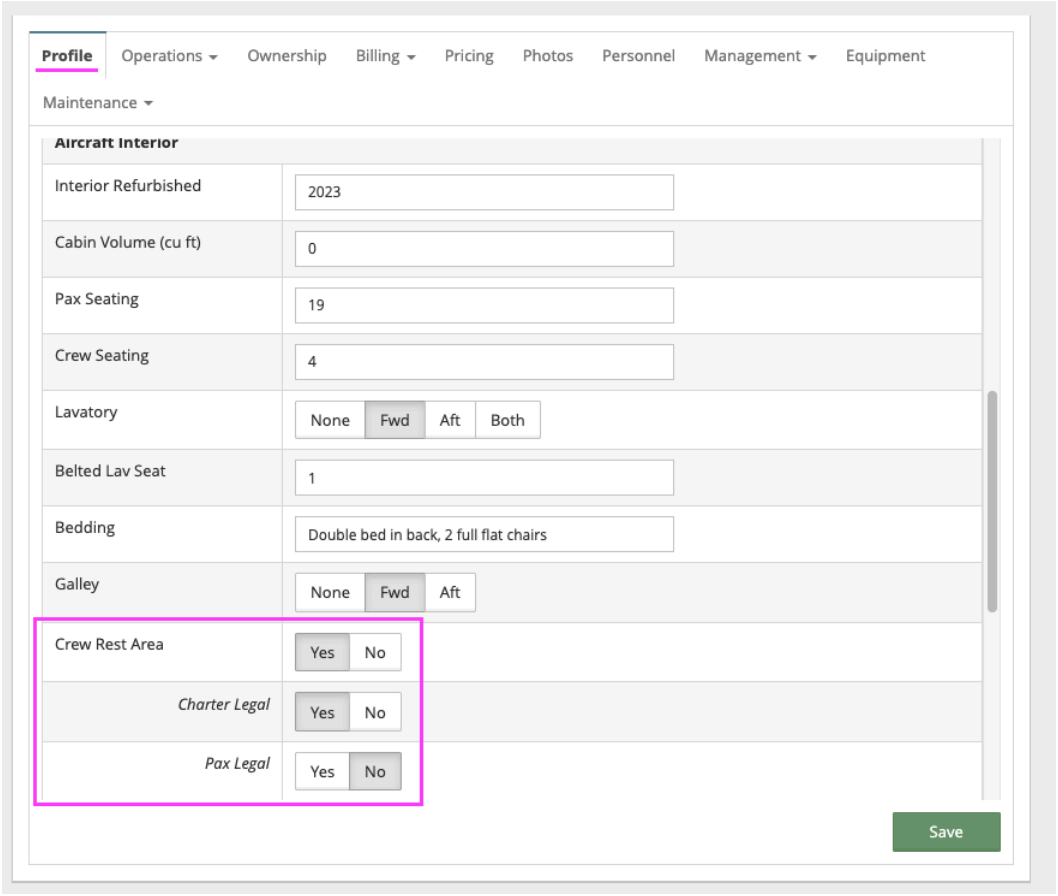
- Domestic Pre Duty
- Domestic Post Duty
- International Pre Duty
- International Post Duty



Aircraft Crew Rest Area Settings

To calculate the augmented crew FDP extensions in the (B.3) check, there must be a crew rest area on the aircraft and extension amount depends on the attributes of the crew rest. To set this for an aircraft go to: **Aircraft & Vendors > Aircraft Search > [select a tail] > Profile (tab) > Aircraft Interior (section).**

Interpretation: In consideration of CAR 700.60(1), Charter Legal Crew Rest in Avianis is considered 'class 1' and Crew Rest without Charter Legal is 'class 3'. Avianis does not define/support 'class 2'.



Applicability

Canadian Crew Rest feasibility checks are run within the existing Avianis Feasibility Check framework. Some important operational notes:

- **Canadian Crew Rest checks only run on Trips/flights.**
  - Checks do not run on Quotes.
  - Feasibility checks are not available on Personnel Events.
- **Checks are run on and per Crew Member.**
  - Personnel/users on the flight that are not a crew member are not checked.

    - Results may be different for each crew member on the same flight.
- **Checks consider the applied Trip/flight and activity happening before / in the past.**
    - Checks do not account for any scheduled activity after the considered flight, unless that activity is within the same FDP.
    - When changes on a Trip/flight affect checks on flights in other Trips downstream on the schedule, those checks must be reviewed on the affected Trip.
    - Rest requirements are always looking at if there is adequate rest before the flight being checked, not if the crew member will have enough rest after the flight.
- **Canadian Crew Rest checks follow the same approval/override rules as other feasibility checks.**
    - 'Hard Stop' settings may be configured separately for each severity per flight leg status. (Learn more here.)
- **Each check may have several possible message results, some of which are passing/green.**
    - Passing checks are not currently shown on the web application.
    - Passing checks may optionally be shown on the mobile app for awareness.

Omissions

As disclaimed, Avianis has created these feasibility checks for the purpose of assisting Avianis customers in adhering to the Canadian crew rest regulations but is unable to create checks associated with all CARs. Those intentionally and knowingly omitted are listed below with a short explanation.

CAR	Reason for Omission
700.21(3)	This may be covered by a feasibility check override.
700.26	This may be covered by the Avianis FRAT score or external process.
700.27(1.d)	Avianis does not support single pilot check amendments at this time.
700.28(8)	Avianis does not track "standby" time.
700.28(9)	Avianis does not designate when flights are operated by VFR.
700.29(3)	Avianis does not track "reserve" or "standby" time.
700.37	Avianis does not track "nutrition breaks".
700.40(1.a.ii)&(3)	Avianis does not track crew time spent in a "suitable accommodation".
700.40(c)	Avians does not track when crew members are notified about rest.
700.43(3.a)	Avianis does not track communications and so assumes this agreement.

700.50(1.c)	Avianis cannot account for unforeseen circumstances.
700.50(3)	Not possible under a 24hr day and not otherwise fail the 700.28 check.
700.50(5)	Avianis does not track “reserve” time.
700.52	Avians does not track when crew members are notified about delays.
700.60(5)	Avianis does not track phases of flight when the crew is on the flight deck.
700.60(6)	Avianis does not track the altitude or phase of flight during which the augmented crew rests.
700.63	This may be covered by a feasibility check override.
700.64	This may be covered by a feasibility check override.
700.70	Avianis does not track “reserve” time.
700.71	Avianis does not track “standby” time.
700.72	Avianis does not track flight deck rest.
700.100-135	Avianis does not support medical evacuation regulations at this time.

Definitions

Crew Definitions

Crew Member

Users assigned to a flight with the position of:

- PIC;
- PIC Alt;
- SIC;
- ACM;
- Attendant;
- CKA; or
- IP

Flight Crew

Users assigned to a flight with the position of:

- PIC;
- PIC Alt;
- SIC; or
- ACM

Duty Definitions

Duty

Duty (without further distinction) is whenever the crew member is working. This is inclusive of all/any kind of work including FDPs and Duty Events.

Duty Event

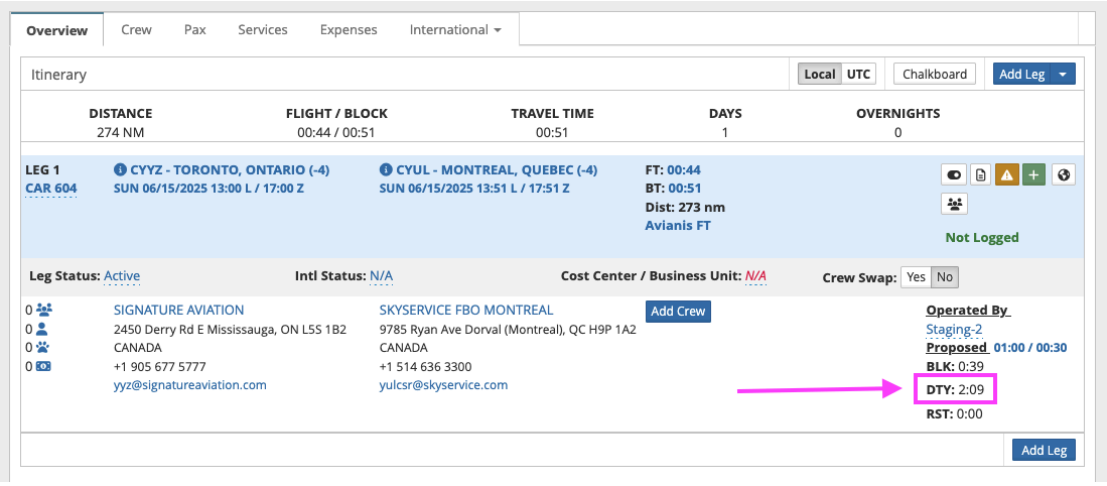
Duty Events are all Avianis Personnel Events where Event Type = ‘Duty Time’.

Flight Duty Event

Flight Duty Events are Personnel Events with an Event Category which has been saved under the Flight Duty setting on the RegSet.

DTY

“DTY” is duty that has been predicted by Avianis for a single flight. Scheduled flight time + block time estimations + the applicable pre-duty and post-duty times = DTY. It can be seen for each flight on the **Trip page > Overview** tab:



Flight Duty

Flight Duty is the duty time / time worked allocated to flight activity for a crew member. Flight Duty is:

- the DTY for a flight, for **unlogged** flights; or
- the Actual Block Time, for **logged** flights*; and
- any/all Flight Duty Events.

*Note: This underscores the importance of logging performed duty time with a Flight Duty Event at the same time as a flight log (OOOI) or as soon as possible afterward. Once a flight is logged, we are not including estimates for pre and post flight duty time.

Flight Duty Period (“FDP”)

A Flight Duty Period - or FDP as it will be referenced in this document - is a collection of Flight Duty. Flight Duty is combined into a single FDP when it is overlapping or starts/ends within 59min* of each other. The FDP is centered on the crew member and may span over multiple flights, across multiple Trips, and/or multiple aircraft.

*Interpretation: 59min was used since Split Duty Rest requirements is, at minimum, 60min.

Previous Flight Duty Period (“PvFDP”)

When running checks on a FDP, many of the conditions rely on referencing the FDP that happened just before the one being checked. For the purposes of this document, that previous flight duty period is notated as PvFDP.

Split Flight Duty Period

When the Rest Period between FDPs is 60min or greater but less than 10hrs, it is considered for the split flight duty checks. Less than 60min and it would be one continuous FDP. Greater than 10hrs would qualify for some conditions of the standard rest requirements.

Early Duty

Duty is considered ‘early duty’ when it **begins** between 02:00 and 06:59 local time at the location where the flight crew member is acclimatized.

Late Duty

Duty is considered ‘late duty’ when it **ends** between 00:00 and 01:59 local time at the location where the flight crew member is acclimatized.

Night Duty

Duty is considered ‘night duty’ when it **begins** between 13:00 and 01:59 local time and **ends** after 01:59 local time at the location where the flight crew member is acclimatized.

Flight/Block Time

Where the Canadian Aviation Regulations (CARs) refers to the use of “flight time” in relation to a crew member, the Avianis flight “block time” is used. This is simply a terminology misalignment. Avianis block time is from out-block to in-block, so includes taxi time and therefore is the accurate time for a crew member’s flight activity.

- For flights that are not logged, the Scheduled Block Time is used.
- For flights that are logged, the Actual Block Time is used.

The one exception is rotor operations, where only Flight Time is captured, then Flight Time is used.

Positioning Event

Positioning Event or simply ‘Positioning’ is a Personnel Event with an Event Category which has been saved under the Positioning setting for the RegSet.

Rest Definitions

Rest Period

A crew member is considered to be in a Rest Period whenever they are not scheduled to be on Duty.

Local Night Rest

Local Night Rest is a rest period of at least 9hrs that takes place between 22:30 and 09:30 local time where the flight crew member is acclimatized.

Window of Circadian Low (“WOCL”)

Window of circadian low - or WOCL - means the period that begins at 02:00 and ends at 05:59 local time where the flight crew member is acclimatized.

Location

A crew member’s physical location is determined by Arrival/End Airport the latest activity on their schedule before the date/time being checked:

- Position Event which has an End Airport*; or
- Flight they are a crew member on; or
- Flight they are a passenger on which doesn’t overlap with a Position Event.

If we are missing the above data or before any of this data is available on a schedule, then the crew member’s Home Base airport is used.

*Note: Position Events must have an End Airport. If they do not, then feasibility checks will throw an error with the date of the offending Personnel Event.

Acclimatization / Acclimated

Note: A crew member’s physical location is not often considered as a part of these checks. Most reference the last acclimatized location of the crew member, regardless of their current location.

Acclimatization is when a crew member’s biorhythm is aligned with a location’s local time. A crew member is acclimated when they have been at a location for a minimum amount of time determined by the **hours** of time zone difference from that location to the location where they were last acclimatized.

Time Difference from Last Acclimated	**Time Required** to Acclimatize
1hr	24hrs*
2hrs	48hrs*
3hrs	72hrs*
4hrs	96hrs
5hrs or more	96hrs*

If a crew member does not spend the required amount of time at a location to acclimate, then they maintain the last acclimated location until they meet the requirement.

For the purposes of considering any daylight saving time changes, the time zone hour difference is considered on the day the flight being checked departs.

If the time zone difference is not a full hour (e.g. 30min), then it will always round up to an hour; with the exception of Newfoundland and Labrador, which are to be considered in the Atlantic time zone**.

*Interpretation: CAR 700.28(5.a) and (5.b) are one set of requirements, but offer an “or” statement to use (5.c). It’s reasonable to assume that operators would adhere to the less restrictive requirements for the purposes of running checks, so Avianis has implemented (5.c) for 1-3hrs and (5.b) for 5 or more hours.

**Interpretation: This is specific to CAR 700.28(7).

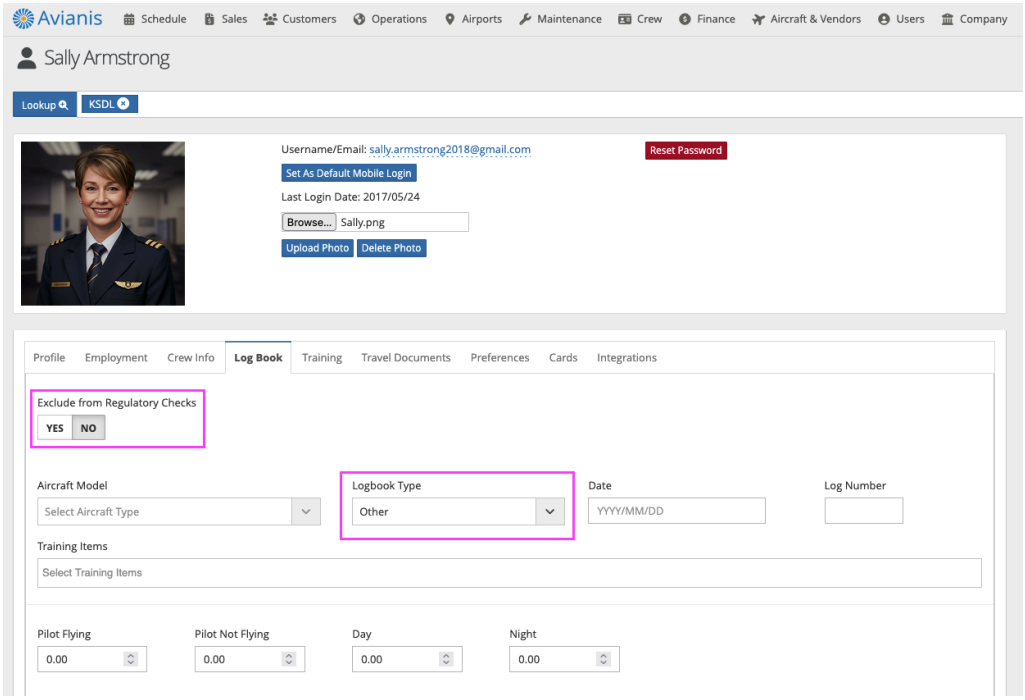
Feasibility Checks

(A) Calendar Checks

(A.1) Max Flight Hours

Taking the total Block Time from:

- all **flights** (that are not cancelled status) operated, in part or in whole, within the previous {x} consecutive calendar days from the local date departure; and
- all **logbook entries*** dated within the previous {x} consecutive calendar days from the local date departure with:
    - Logbook Type = Other; and
    - Exclude from Regulatory Checks = No



*Interpretation: This is to cover CAR 700.27(2.a).

(A.1.i) 28 Days

Total Block Time must not be greater than **112hrs** in the previous **28** consecutive calendar days from the local date departure.

- If exceeded, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of 112 flight hours in the previous 28 days by {x} hours. CAR 700.27(1.a)”

- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within {x%} of the maximum of 112 flight hours in the previous 28 days. CAR 700.27(1.a)”
- If under, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} is under 112 flight hours in the previous 28 days. CAR 700.27(1.a)”

(A.1.ii) 90 Days

Total Block Time must not be greater than **300hrs** in the previous **90** consecutive calendar days from the local date departure.

- If exceeded, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of 300 flight hours in the previous 90 days by {x} hours. CAR 700.27(1.b)”
- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within {x%} of the maximum of 300 flight hours in the previous 90 days. CAR 700.27(1.b)”
- If under, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} is under 300 flight hours in the previous 90 days. CAR 700.27(1.b)”

(A.1.iii) 365 Days

Total Block Time must not be greater than **1,000hrs** in the previous **365** consecutive calendar days from the local date departure.

- If exceeded, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of 1000 flight hours in the previous 365 days by {x} hours. CAR 700.27(1.c)”
- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within {x%} of the maximum of 1000 flight hours in the previous 365 days. CAR 700.27(1.c)”
- If under, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} is under 1000 flight hours in the previous 365 days. CAR 700.27(1.c)”

(A.2) Max Duty

The maximum amount of duty a crew member can perform or be scheduled for within the previous {x} consecutive calendar days from the local date departure.

(A.2.i) 7 Days

(A.2.i.a) Under 70hrs

Total duty must not be greater than **70hrs** in the previous **7** consecutive calendar days from the local date departure.

- If exceeded, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of 70 duty hours in the previous 7 days by {x} hours. CAR 700.29(1.d)”
- If under, then continues on to check (A.2.i.b)

(A.2.i.b) 4 Days Without Duty

This check is only run when check (A.2.i.a) has passed.
A crew member must have **4 days** without any duty in the previous **28** calendar days* from the local date of departure.

- If not met, then **FAIL:** “Leg #{legnum}: {crew name} does not have 4 days without duty in the previous 28 days. CAR 700.29(1.c.ii)”
- If met, then continues on to check (A.2.i.c)

*Interpretation: The CAR 700.29(c.ii) technically states this window as “*672 consecutive hours*” but it has been simplified to calendar days for the purpose of these checks. This means the check will fail sooner than the stated CAR.

(A.2.i.c) 1 Day Without Duty

This check is only run when checks (A.2.i.a-b) have passed.
A crew member must have **1 day*** without any duty in the previous **7** calendar days** from the local date of departure.

- If not met, then **FAIL:** “Leg #{legnum}: {crew name} will not have a day without duty within 7 days. CAR 700.29(1.c.i)”
- If met, then continues on to check (A.2.i.d)

*Interpretation: CAR 700.29(1.c.i) says “*1 single day free from duty*” but does not define this, so it has been assumed as a 24hr period in the acclimated timezone where no duty has been scheduled.

**Interpretation: CAR 700.29(1.c.i) technically states this window as “*168 consecutive hours*” but it has been simplified to calendar days for the purpose of these checks. This means the check will fail sooner than the stated CAR.

(A.2.i.d) 70hr Requirements

These checks are only run when checks (A.2.i.a-c) have passed and there are **more than 60hrs** of duty scheduled in the previous **7** calendar days from the local date of departure.

(A.2.i.d.1) No Exceptional Duty

A crew member must not have early duty, late duty, or night duty within the previous **7** calendar days from the local date of departure.

- If they are, then **FAIL:** “Leg #{legnum}: {crew name} has {duty type(s) comma separated} duty with more than 60hrs of duty in the previous 7 days. CAR 700.29(1.d.i)”
- If not, then no feasibility message will be displayed.

(A.2.i.d.2) No FDP Greater than 12hrs

A crew member must not have a FDP that is more than **12hrs** within the previous **7** calendar days from the local date of departure.

- If they do, then **FAIL:** “Leg #{legnum}: {crew name} exceeds the 12hrs maximum flight duty period by {x} hours when more than 60hrs of duty are in the previous 7 days. CAR 700.29(1.d.ii)”
- If not, then no feasibility message will be displayed.

(A.2.i.d.3) Less than 24hrs Duty in 2 Days

A crew member must not have **24hrs** of duty within the previous **2** days* from the local date of departure.

- If they do, then **FAIL:** “Leg #{legnum}: {crew name} exceeds the 24hrs maximum duty by {x} hours with the previous 2 days when more than 60hrs of duty are in the previous 7 days. CAR 700.29(1.d.ii)”
- If not, then no feasibility message will be displayed.

*Interpretation: The CAR 700.29(1.d.iii) technically states this window as “*consecutive 48 hours*” but it has been simplified to calendar days for the purpose of these checks. This means the check will fail sooner than the stated CAR.

(A.2.i.d.4) No Duty in 5 Days

A crew member must have **5** days without duty that includes **5** consecutive local nights’ rest directly before the FDP to exceed 60hrs of duty in the previous 7 days.

- If they do not, then **FAIL:** “Leg #{legnum}: {crew name} must have 5 duty free days before this flight duty period since it will exceed 60hrs of duty in the previous 7 days. CAR 700.29(2)”
- If they do, then no feasibility message will be displayed.

*Interpretation: The CAR 700.29(2) technically states this window as “*120 consecutive hours*” but it has been simplified to calendar days for the purpose of these checks. This means the check will fail sooner than the stated CAR.

(A.2.ii) 28 Days

Total duty must not be greater than **192hrs** in the previous **28** consecutive calendar days from the local date departure.

- If exceeded, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of 192 duty hours in the previous 28 days by {x} hours. CAR 700.29(1.b)”
- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within {x%} of the maximum of 192 duty hours in the previous 28 days. CAR 700.29(1.b)”
- If under, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} is under 192 duty hours in the previous 28 days. CAR 700.29(1.b)”

(A.2.iii) 365 Days

Total duty must not be greater than **2,200hrs** in the previous **365** consecutive calendar days from the local date departure.

- If exceeded, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of 2200 duty hours in the previous 365 days by {x} hours. CAR 700.29(1.a)”
- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within {x%} of the maximum of 2200 duty hours in the previous 365 days. CAR 700.29(1.a)”
- If under, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} is under 2200 duty hours in the previous 365 days. CAR 700.29(1.a)”

(B) Flight & Flight Duty Period Checks

(B.1) Maximum Flight Duty Period

Under no circumstances may a single FDP be 18hrs or longer duration.

- If exceeded, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum 18 flight duty hours by {x} hours. CAR 700.62(1)”
- If under, then continue to check (B.2)

(B.2) Max Flight Duty Period by Average Block Time

Consider the following within the FDP of a crew member that includes the flight being checked:

- Average Block Time of all flights being operated within the FDP
- FDP start time, converted to the crew member’s acclimated time zone
- Total number of flights within the FDP

(B.2.i) Average less than 30min

If the Average Block Time is less than 30min, then this check is run for…

Start Time of Flight Duty Period	1 to 11 Flights	12 to 17 Flights	18 or More Flights
24:00 to 03:59	9 hours	9 hours	9 hours
04:00 to 04:59	10 hours	9 hours	9 hours
05:00 to 05:59	11 hours	10 hours	9 hours
06:00 to 06:59	12 hours	11 hours	10 hours
07:00 to 12:59	13 hours	12 hours	11 hours
13:00 to 16:59	12.5 hours	11.5 hours	10.5 hours
17:00 to 21:59	12 hours	11 hours	10 hours
22:00 to 22:59	11 hours	10 hours	9 hours
23:00 to 23:59	10 hours	9 hours	9 hours

- If exceeded and there are…

    - only 2 flight crew, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of flight duty hours by {x} hours. CAR 700.28(2)”
    - 3 or more flight crew, then continue on to check (B.3)
- If within the warning percentage and there are…
    - only 2 flight crew, then **WARN:** “Leg #{legnum}: {crew name} is within {x%} of the maximum of flight duty hours. CAR 700.28(2)”
    - 3 or more flight crew, then **INFO:** “Leg #{legnum}: {crew name} is within the maximum of flight duty hours without the augmented crew extension. CAR 700.28(2)”
- If under, then no feasibility message will be displayed.

(B.2.ii) Average 30min-49min

If the Average Block Time is 30min - 49min, then this check is run for…

Start Time of Flight Duty Period	1 to 7 Flights	8 to 11 Flights	12 or More Flights
24:00 to 03:59	9 hours	9 hours	9 hours
04:00 to 04:59	10 hours	9 hours	9 hours
05:00 to 05:59	11 hours	10 hours	9 hours
06:00 to 06:59	12 hours	11 hours	10 hours
07:00 to 12:59	13 hours	12 hours	11 hours
13:00 to 16:59	12.5 hours	11.5 hours	10.5 hours
17:00 to 21:59	12 hours	11 hours	10 hours
22:00 to 22:59	11 hours	10 hours	9 hours
23:00 to 23:59	10 hours	9 hours	9 hours

- If exceeded and there are…
    - only 2 flight crew, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of flight duty hours by {x} hours. CAR 700.28(3)”
    - 3 or more flight crew, then continue on to check (B.3)
- If within the warning percentage and there are…
    - only 2 flight crew, then **WARN:** “Leg #{legnum}: {crew name} is within {x%} of the maximum of flight duty hours. CAR 700.28(3)”
    - 3 or more flight crew, then **INFO:** “Leg #{legnum}: {crew name} is within the maximum of flight duty hours without the augmented crew extension. CAR 700.28(3)”
- If under, then no feasibility message will be displayed.

(B.2.iii) Average 50min or More

If the Average Block Time is less than 50min or more, then this check is run for…

Start Time of Flight Duty Period	1 to 4 Flights	5 or 6 Flights	7 or More Flights
24:00 to 03:59	9 hours	9 hours	9 hours
04:00 to 04:59	10 hours	9 hours	9 hours
05:00 to 05:59	11 hours	10 hours	9 hours
06:00 to 06:59	12 hours	11 hours	10 hours
07:00 to 12:59	13 hours	12 hours	11 hours
13:00 to 16:59	12.5 hours	11.5 hours	10.5 hours
17:00 to 21:59	12 hours	11 hours	10 hours
22:00 to 22:59	11 hours	10 hours	9 hours
23:00 to 23:59	10 hours	9 hours	9 hours

- If exceeded and there are…
    - only 2 flight crew, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum of flight duty hours by {x} hours. CAR 700.28(4)”
    - 3 or more flight crew, then continue on to check (B.3)
- If within the warning percentage and there are…
    - only 2 flight crew, then **WARN:** “Leg #{legnum}: {crew name} is within {x%} of the maximum of flight duty hours. CAR 700.28(4)”
    - 3 or more flight crew, then **INFO:** “Leg #{legnum}: {crew name} is within the maximum of flight duty hours without the augmented crew extension. CAR 700.28(4)”
- If under, then no feasibility message will be displayed.

(B.3) Augmented Crew FDP Extensions

These checks are only run when (see diagram):

- (B.1) check has passed; and
- the applicable (B.2) check failed; and
- there are 3 or more flight crew on a flight*.

*Note/Interpretation: Avianis has made a number of assumptions for the purpose of this check:

- all other flights in FDP for that flight crew member also have an augmented crew; and
- the augmented crew has the appropriate start/end FDP locations per CAR 700.60(4); and
- flight crew takes appropriate onboard rest requirements in available facilities per CAR 700.60(2) and 700.60(3).

To ensure the operator manually confirms these requirements, there is no passing state for these checks.

(B.3.i) No Crew Rest Area

In order for the augmented crew FDP extensions to apply, there must be a crew rest area on the aircraft.

- If there is no rest area, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum flight duty hours and cannot extend for augmented crew due to no crew rest area on the aircraft. CAR 700.60(2.a)”
- If there is a rest area, then continue to check (B.3.ii)

(B.3.ii) Revised Maximum FDP

A crew member’s maximum FDP may be extended for augmented crew. Use the following to determine the extended hours:

- Number of flight crew on the flight; and
- Crew Rest Area on the aircraft profile.

Number of Flight Crew	Aircraft has…	Extended Max FDP
3	Crew Rest Area	14hrs
3	Charter Legal Crew Rest Area	15hrs
4+	Crew Rest Area	15.25 hrs
4+	Charter Legal Crew Rest Area	18hrs

- If exceeded, then **FAIL:** “Leg #{legnum}: {crew name} has exceeded the maximum {x} flight duty hours even with augmented crew extensions by {x} hours. CAR 700.60(1)”
- If under, then **WARN:** “Leg #{legnum}: {crew name} is under the maximum {x} flight duty hours but only with the augmented crew extensions. CAR 700.60(1)”

(B.4) Split Duty Extensions

This check is only runs when check (C.1) originally fails but then passes on a conglomerate of FDPs that also passes as its own FDP.

Interpretation: Since there is no provided definition of when a rest period is short enough to be considered as split duty or how many splits are possible in a single FDP, Avianis runs the split duty checks on any combined FDPs that do not meet the standard rest requirements to discover if the extensions apply.

Interpretation: For the purpose of these checks, Avianis assumes that the split duty rest is provided with suitable accommodation.

(B.4.i) Rest Within 00:00-05:59

If the split duty rest is greater than 60min and both begins & ends **within 00:00-05:59** of where the crew member is acclimated, then the maximum FDP requirements from (B.2) checks may be **extended by 100%** of that time minus 45min*. CAR 700.50(1.a)

*Note: For example, a 2hr split duty rest extends FDP by 1hr15min.

(B.4.ii) Rest Within 06:00-23:59

If the split duty rest is greater than 60min and both begins & ends **within 06:00-23:59** of where the crew member is acclimated, then the maximum FDP requirements from (B.2) checks may be **extended by 50%** of that time minus 45min*. CAR 700.50(1.b)

*Note: For example, a 2hr split duty rest extends FDP by 37min.

(B.5) WOCL Restriction

If any part of a FDP falls within a crew member's WOCL, there must not be a flight within that FDP that is 7 or more hours in duration.

- If there is, then **FAIL:** "Leg #{legnum}: {crew name} has a +7hr flight within this flight duty period when working in a window of circadian low. CAR 700.61"
- If not, then no feasibility message will be displayed.

(B.6) Maximum Block Time

For any given flight, the Block Time may not exceed **16hrs**.

- If there is, then **FAIL:** "Leg #{legnum}: This flight exceeds the maximum 16hrs of block time for {crew name}. CAR 700.62(2)"
- If not, then no feasibility message will be displayed.

(B.7) Including Positioning

If a crew member has a positioning event that starts within 3 hours* from the end of the FDP, then from the end of the FDP to the end of the positioning event must not exceed 7 hours.

- If exceeded, then **FAIL:** "Leg #{legnum}: {crew name} is over 7hrs maximum extended duty including positioning. CAR 700.43(3)"
- If within the warning percentage, then **WARN:** "Leg #{legnum}: {crew name} is within (x%} of the 7hrs maximum extended duty including positioning. CAR 700.43(3)"
- If over, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} is under the 7hrs maximum extended duty including positioning. CAR 700.43(3)"

*Interpretation: CAR 700.43(3) does not mention a threshold where positioning is considered extended or not so Avianis has selected 3hrs since that is the threshold in the other points of CAR 700.43.

Note: Avianis makes the assumption that the crew member has agreed, since it does not track these communications. CAR 700.43(3.a).

(C) Rest Period Checks

(C.1) Minimum Rest by Location

Determining whether to run check (C.1.i) or (C.1.ii) requires the results of the (B.2) FDP * check.

*Interpretation: The specific regulation is mentioned and not any of the possible modifications (e.g. the augmented crew extensions), so Avianis does not consider them as a part of this check. CAR 700.40(2)

(C.1.i) Within Passing FDP

Given the PvFDP **passes/meets** the (B.2) FDP check or exceeds the maximum by less than 1hr, and…

(C.1.i.a) At Home Base

…ends at the crew member's **home base**, then they must have a minimum of **12hrs*** rest before the FDP begins.

- If under, then **FAIL:** "Leg #{legnum}: {crew name} is under the minimum 12hrs rest required at home base by {x} hours. CAR 700.40(1.a.i)"
- If within the warning percentage, then **WARN:** "Leg #{legnum}: {crew name} is within (x%} of the minimum 12hrs rest required at home base. CAR 700.40(1.a.i)"
- If over, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has met the minimum 12hrs rest required at home base. CAR 700.40(1.a.i)"

*Interpretation: Avianis does not capture or track travel time to/from accommodation and because of this only uses the maximum value. CAR 700.40(1.a.i)

(C.1.i.b) Away from Home

…ends **away** from the crew member's home base, then they must have a minimum of **10hrs** rest before the FDP begins.

- If under, then **FAIL:** "Leg #{legnum}: {crew name} is under the minimum 10hrs rest required away from home by {x} hours. CAR 700.40(1.b)"
- If within the warning percentage, then **WARN:** "Leg #{legnum}: {crew name} is within (x%} of the minimum 10hrs rest required away from home. CAR 700.40(1.b)"
- If over, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has met the minimum 10hrs rest required away from home. CAR 700.40(1.b)"

(C.1.ii) Exceeded FDP Extended Rest

Given the PvFDP **fails/exceeds** the (B.2) FDP check by 1hr or more, and…

Note: This check will only be seen once the flight has been logged and/or the Duty Event has been created that reflects actual time worked that exceeded the regulation/check due to unforeseen circumstances or when the failure has been overridden.

(C.1.ii.a) Ending at Home Base

…ends at the crew member's **home base**, then they must have a minimum of rest before the FDP begins that is **equal to the total duration** of the PvFDP but not less than 12hrs.

- If under, then **FAIL:** "Leg #{legnum}: {crew name} is under the minimum (x)hrs rest required at home with overtime flight duty by {x} hours. CAR 700.40(2)"
- If within the warning percentage, then **WARN:** "Leg #{legnum}: {crew name} is within (x%} of the minimum {x}hrs rest required at home with overtime flight duty. CAR 700.40(2)"
- If over, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has met the minimum {x}hrs rest required at home base with overtime flight duty. CAR 700.40(2)"

(C.1.ii.b) Ending Away from Home

…ends at the crew member's **home base**, then they must have a minimum of rest before the FDP begins that is **equal to the total duration** of the PvFDP but not less than 10hrs.

- If under, then **FAIL:** "Leg #{legnum}: {crew name} is under the minimum (x)hrs rest required away from home with overtime flight duty by {x} hours. CAR 700.40(2)"
- If within the warning percentage, then **WARN:** "Leg #{legnum}: {crew name} is within (x%} of the minimum {x}hrs rest required away from home with overtime flight duty. CAR 700.40(2)"
- If over, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has met the minimum {x}hrs rest required away from home base with overtime flight duty. CAR 700.40(2)"

(C.2) Local Nights' Rest Required

(C.2.i) Early Duty after working late

When a FDP* begins where the crew member is acclimated or with a 4hr or less time zone difference from where they are acclimated, and it is an early duty directly preceded by a late duty or night duty, then a local nights' rest is required before that FDP.

- If not met, then **FAIL:** "Leg #{legnum}: {crew name} does not have the required local nights' rest for the late/early back-to-back flight duty. CAR 700.41(1.b)"
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has the required local nights' rest for the late/early back-to-back flight duty. CAR 700.41(1.b)"

*Note: For the purpose of this check, the FDP is never combined/considered as a Split Flight Duty.

(C.2.ii) Double Shift

When a FDP* begins where the crew member is acclimated or with a 4hr or less time zone difference from where they are acclimated, and it is a late duty or night duty directly preceded by an early duty, then a local nights' rest is required before that FDP.

- If not met, then **FAIL:** "Leg #{legnum}: {crew name} does not have the required local nights' rest for the early/late back-to-back flight duty. 700.41(1.a)"
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has the required local nights' rest for the early/late back-to-back flight duty. 700.41(1.a)"

*Note: For the purpose of this check, the FDP is never combined/considered as a Split Flight Duty.

(C.2.iii) Consecutive Late Duty

For the three consecutive PvFDP, if any part of those PvFPD fall within 02:00-05:59 local time*, then the rest period before the FDP (being the fourth consecutive) must include one local night's rest directly before the start of the FDP**.

- If not met, then **FAIL:** "Leg #{legnum}: {crew name} does not have the required local nights' rest after 3 consecutive early flight duties. 700.41(1.a)"
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has the required local nights' rest after 3 consecutive early flight duties. 700.41(1.a)"

*Interpretation Comment: The regulation has a specified time window and does not use the definitions of WOCL, early duty, or consider acclimatization.

**Interpretation Comment: It is unclear in the language of the regulation, but we take "consecutive" to be FDPs without one local night's rest between them. So a local night's rest would "reset" this requirement. 700.51(1)

Note: The 700.51(2.a-b) alternate method compliance cannot be covered by Avianis due to how FDP and Split Duty are defined. Therefore checks only cover 700.51(1), which is more restrictive. Operators who want to use the alternate means of compliance may override the failed check and self-track.

(C.3) Extended Rest for Extended FDP

(C.3.i) Extended Duty Ending at Home Base

If a FDP has been extended and the FDP ends at the crew member's home base, then that crew member will have a rest period that is equal to greater of these two: the duration of the extended FDP or 16 hours.

- If not met, then **FAIL:** "Leg #{legnum}: {crew name} does not have the required {x} hours rest after extended duty ending at homebase. 700.60(7)"
- If within the warning percentage, then **WARN:** "Leg #{legnum}: {crew name} is within (x%} of the minimum {x} hours rest after extended duty ending at homebase. 700.60(7)"

- If met, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} has the required {x} hours rest after extended duty ending at homebase. 700.60(7)”

(C.3.ii) Extended Duty Ending Away from Home

If a FDP has been extended and the FDP ends **not** at the crew member’s home base, then that crew member will have a rest period that is equal to greater of these two: the duration of the extended FDP or 14 hours.

- If not met, then **FAIL:** “Leg #{legnum}: {crew name} does not have the required {x} hours rest after extended duty ending away from home. 700.60(7)”
- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within (x%} of the minimum {x} hours rest after extended duty ending away from home. 700.60(7)”
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} has the required {x} hours rest after extended duty ending away from home. 700.60(7)”

(C.4) Rest Away from Home Base

(C.4.i) Away from Home with Four Hour Difference

When the PvFDP does **not** end at a crew member’s home base* and the end location local time is **exactly 4 hours** different from the FDP start location local time zone, then 11 consecutive rest hours are required before the FDP.

- If not met, then **FAIL:** “Leg #{legnum}: {crew name} does not have the required 11 hours consecutive rest away from home base with a 4hr timezone difference. 700.42(1.a)”
- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within (x%} of the minimum 11 hours consecutive rest away from home base with a 4hr timezone difference. 700.42(1.a)”
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} has the required 11 hours consecutive rest away from home base with a 4hr timezone difference. 700.42(1.a)”

*Note: This is ‘home base airport’ and not home base time zone.

(C.4.ii) Away from Home with More Than Four Hour Difference

When the PvFDP does **not** end at a crew member’s home base* and the end location local time is **more than 4 hours** different from the FDP start location local time zone, then 14 consecutive rest hours are required before the FDP.

- If not met, then **FAIL:** “Leg #{legnum}: {crew name} does not have the required 14 hours consecutive rest away from home base with more than 4hrs timezone difference. 700.42(1.b)”

- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within (x%} of the minimum 14 hours consecutive rest away from home base with more than 4hrs timezone difference. 700.42(1.b)”
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} has the required 14 hours consecutive rest away from home base with more than 4hrs timezone difference. 700.42(1.b)”

*Note: This is ‘home base airport’ and not home base time zone.

(C.4.iii) Away from Home for More Than 36 Hours

When the PvFDP does **not** end within a crew member’s home base timezone, the end location local time is **exactly 4 hours** different from the FDP start location local time zone, and at the end of the PvFDP the crew member has been away from their home base for 36 or more consecutive hours, then 13 consecutive rest hours are required before the FDP.

- If not met, then **FAIL:** “Leg #{legnum}: {crew name} does not have the required 13 hours consecutive rest away from home base more than 36hrs with a 4hr timezone difference. 700.42(2.a)”
- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within (x%} of the minimum 13 hours consecutive rest away from home base more than 36hrs with a 4hr timezone difference. 700.42(2.a)”
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} has the required 13 hours consecutive rest away from home base more than 36hrs with a 4hr timezone difference. 700.42(2.a)”

(C.4.iv) Away from Home Requiring Local Night’s Rest

When the PvFDP does **not** end within a crew member’s home base timezone and the end location local time is **between more than 4hrs but less than 10hrs** different from the FDP start location local time zone and…

(C.4.iv.a) Less than 60 Hours and No WOCL

… at the end of the PvFDP the crew member has been away from their home base for **less than 60 or more consecutive hours** and no part of the PvFDP falls within the WOCL of the last acclimated time zone, then the rest before the FDP must include 1 local night’s rest.

- If not met, then **FAIL:** “Leg #{legnum}: {crew name} does not have the required 1 local night’s rest away from home base with a 4-10hr time difference. 700.42(2.b.i)”
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} has the required 1 local night’s rest away from home base with a 4-10hr time difference. 700.42(2.b.i)”

(C.4.iv.a) More than 60 Hours or WOCL

… at the end of the PvFDP the crew member has been away from their home base for **more than 60 or more consecutive hours** or part of the PvFDP falls within the WOCL of the last acclimated time zone, then the rest before the FDP must include 2 local night's rest.

- If not met, then **FAIL:** "Leg #{legnum}: {crew name} does not have the required 2 local night's rest away from home base with a 4-10hr time difference either with 60hrs away or within WOCL. 700.42(2.b.ii)"
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has the required 2 local night's rest away from home base with a 4-10hr time difference either with 60hrs away or within WOCL. 700.42(2.b.ii)"

(C.5) Rest After Positioning

If the PvFDP is followed by a Positioning event that starts less than hour* after the end of the PvFDP and…

*Interpretation: 700.43(4) does not define "immediately" as far as when Positioning Events should be inclusive or not so, for the purpose of checks, Avianis has chosen with 1 hour.

(C.5.i) Fails by Less Than 3 Hours

…the PvFDP plus the Positioning event total fails checks based on CAR 700.28 by **3 hours or less**, then the rest period before the FDP must equal or exceed the greater value: the PvFDP plus the positioning event or the rest requirements per the applicable checks based on CAR 700.40.

- If not met, then **FAIL:** "Leg #{legnum}: {crew name} does not have the required {x} hours rest when a positioning event immediately follows. 700.43(1)"
- If within the warning percentage, then **WARN:** "Leg #{legnum}: {crew name} is within (x%} of the minimum {x} hours rest when a positioning event immediately follows. 700.43(1)"
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: "Leg #{legnum}: {crew name} has the required {x} hours rest when a positioning event immediately follows. 700.43(1)"

Note: It is possible to meet the consecutive Rest Period requirements and have Duty (non-flight) in between the end of the Rest Period and the FDP.

(C.5.i) Fails by More Than 3 Hours

…the PvFDP plus the Positioning event total fails checks based on CAR 700.28 by **more than 3 hours**, then the rest period before the FDP must equal or exceed the greater value: the PvFDP plus the positioning event plus the exceeded number of hours or the rest requirements per the applicable checks based on CAR 700.40.

- If not met, then **FAIL:** “Leg #{legnum}: {crew name} does not have the required {x} hours rest when a positioning event immediately follows. 700.43(1)”
- If within the warning percentage, then **WARN:** “Leg #{legnum}: {crew name} is within (x%} of the minimum {x} hours rest when a positioning event immediately follows. 700.43(1)”
- If met, then no feasibility message will be displayed unless enabled to see **PASS**: “Leg #{legnum}: {crew name} has the required {x} hours rest when a positioning event immediately follows. 700.43(1)”

Note: It is possible to meet the consecutive Rest Period requirements and have Duty (non-flight) in between the end of the Rest Period and the FDP.