

***European Aviation Safety Agency***

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**Certification Specifications  
and  
Guidance Material  
for  
Commercial Air Transport by  
Aeroplane – Scheduled and  
Charter Operations  
CS-FTL.1**

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<sup>1</sup> For the date of entry into force of this Amendment, kindly refer to Decision 2014/002/R in the [Official Publication](#) of the Agency

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**CS-FTL.1**

**Book 1**

**Certification Specifications**

**Commercial Air Transport by  
Aeroplane – Scheduled and  
Charter Operations**

## **CS-FTL.1 – BOOK 1**

### **CS FTL.1.100 Applicability**

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

### **CS FTL.1.200 Home base**

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

### **CS FTL.1.205 Flight duty period (FDP)**

- (a) Night duties under the provisions of ORO.FTL.205(b) and (d) comply with the following:
  - (1) When establishing the maximum FDP for consecutive night duties, the number of sectors is limited to 4 sectors per duty.
  - (2) The operator applies appropriate fatigue risk management to actively manage the fatiguing effect of night duties of more than 10 hours in relation to the surrounding duties and rest periods.
- (b) Extension of FDP without in-flight rest

The extension of FDP without in-flight rest under the provisions of ORO.FTL.205(d)(5) is limited to the values specified in the table below.

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**Maximum daily FDP with extension**

<b>Starting time of FDP</b>	<b>1–2 sectors (in hours)</b>	<b>3 sectors (in hours)</b>	<b>4 sectors (in hours)</b>	<b>5 sectors (in hours)</b>
0600–0614	Not allowed	Not allowed	Not allowed	Not allowed
0615–0629	13:15	12:45	12:15	11:45
0630–0644	13:30	13:00	12:30	12:00
0645–0659	13:45	13:15	12:45	12:15
0700–1329	14:00	13:30	13:00	12:30
1330–1359	13:45	13:15	12:45	Not allowed
1400–1429	13:30	13:00	12:30	Not allowed
1430–1459	13:15	12:45	12:15	Not allowed
1500–1529	13:00	12:30	12:00	Not allowed
1530–1559	12:45	Not allowed	Not allowed	Not allowed
1600–1629	12:30	Not allowed	Not allowed	Not allowed
1630–1659	12:15	Not allowed	Not allowed	Not allowed
1700–1729	12:00	Not allowed	Not allowed	Not allowed
1730–1759	11:45	Not allowed	Not allowed	Not allowed
1800–1829	11:30	Not allowed	Not allowed	Not allowed
1830–1859	11:15	Not allowed	Not allowed	Not allowed
1900–0359	Not allowed	Not allowed	Not allowed	Not allowed
0400–0414	Not allowed	Not allowed	Not allowed	Not allowed
0415–0429	Not allowed	Not allowed	Not allowed	Not allowed
0430–0444	Not allowed	Not allowed	Not allowed	Not allowed
0445–0459	Not allowed	Not allowed	Not allowed	Not allowed
0500–0514	Not allowed	Not allowed	Not allowed	Not allowed
0515–0529	Not allowed	Not allowed	Not allowed	Not allowed
0530–0544	Not allowed	Not allowed	Not allowed	Not allowed
0545–0559	Not allowed	Not allowed	Not allowed	Not allowed

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

In-flight rest facilities in accordance with ORO.FTL.205(e)(iii) fulfil the following minimum standards:

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

(1) The extension of FDP with in-flight rest under the provisions of ORO.FTL.205(e) complies with the following:

- (i) the FDP is limited to 3 sectors; and
- (ii) the minimum in-flight rest period is a consecutive 90-minute period for each crew member and 2 consecutive hours for the flight crew members at control during landing.

(2) The maximum daily FDP under the provisions of ORO.FTL.205 (e) may be extended due to in-flight rest for flight crew:

- (i) with one additional flight crew member:
  - (A) up to 14 hours with class 3 rest facilities;
  - (B) up to 15 hours with class 2 rest facilities; or
  - (C) up to 16 hours with class 1 rest facilities;
- (ii) with two additional flight crew members:
  - (A) up to 15 hours with class 3 rest facilities;
  - (B) up to 16 hours with class 2 rest facilities; or
  - (C) up to 17 hours with class 1 rest facilities.

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(3) The minimum in-flight rest for each cabin crew member is:

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

(4) The limits specified in (2) may be increased by 1 hour for FDPs that include 1 sector of more than 9 hours of continuous flight time and a maximum of 2 sectors.

(5) All time spent in the rest facility is counted as FDP.

(6) The minimum rest at destination is at least as long as the preceding duty period, or 14 hours, whichever is greater.

(7) A crew member does not start a positioning sector to become part of this operating crew on the same flight.

(d) Unforeseen circumstances in flight operations – delayed reporting

(1) The operator may delay the reporting time in the event of unforeseen circumstances, if procedures for delayed reporting are established in the operations manual. The operator keeps records of delayed reporting. Delayed reporting procedures establish a notification time allowing a crew member to remain in his/her suitable accommodation when the delayed reporting procedure is activated. In such a case, if the crew member is informed of the delayed reporting time, the FDP is calculated as follows:

(i) one notification of a delay leads to the calculation of the maximum FDP according to (iii) or (iv);

(ii) if the reporting time is further amended, the FDP starts counting 1 hour after the second notification or at the original delayed reporting time if this is earlier;

(iii) when the delay is less than 4 hours, the maximum FDP is calculated based on the original reporting time and the FDP starts counting at the delayed reporting time;

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- (iv) when the delay is 4 hours or more, the maximum FDP is calculated based on the more limiting of the original or the delayed reporting time and the FDP starts counting at the delayed reporting time;
- (v) as an exception to (i) and (ii), when the operator informs the crew member of a delay of 10 hours or more in reporting time and the crew member is not further disturbed by the operator, such delay of 10 hours or more counts as a rest period.

### **CS FTL.1.220 Split duty**

The increase of limits on flight duty, under the provisions of ORO.FTL.220, complies with the following:

- (a) The break on the ground within the FDP has a minimum duration of 3 consecutive hours.
- (b) The break excludes the time allowed for post and pre-flight duties and travelling. The minimum total time for post and pre-flight duties and travelling is 30 minutes. The operator specifies the actual times in its operations manual.
- (c) The maximum FDP specified in ORO.FTL.205(b) may be increased by up to 50 % of the break.
- (d) Suitable accommodation is provided either for a break of 6 hours or more or for a break that encroaches the window of circadian low (WOCL).
- (e) In all other cases:
  - (1) accommodation is provided; and
  - (2) any time of the actual break exceeding 6 hours or any time of the break that encroaches the WOCL does not count for the extension of the FDP.
- (f) Split duty cannot be combined with in-flight rest.

### **CS FTL.1.225 Standby**

The modification of limits on flight duty, duty and rest periods under the provisions of ORO.FTL.225 complies with the following:

- (a) Airport standby
  - (1) If not leading to the assignment of an FDP, airport standby is followed by a rest period as specified in ORO.FTL.235.
  - (2) If an assigned FDP starts during airport standby, the following applies:
    - (i) the FDP counts from the start of the FDP. The maximum FDP is reduced by any time spent on standby in excess of 4 hours;
    - (ii) the maximum combined duration of airport standby and assigned FDP as specified in ORO.FTL.205(b) and (d) is 16 hours.
- (b) Standby other than airport standby:
  - (1) the maximum duration of standby other than airport standby is 16 hours;
  - (2) The operator's standby procedures are designed to ensure that the combination of standby and FDP do not lead to more than 18 hours awake time;



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- (3) 25 % of time spent on standby other than airport standby counts as duty time for the purpose of ORO.FTL.210;
- (4) standby is followed by a rest period in accordance with ORO.FTL.235;
- (5) standby ceases when the crew member reports at the designated reporting point;
- (6) if standby ceases within the first 6 hours, the maximum FDP counts from reporting;
- (7) if standby ceases after the first 6 hours, the maximum FDP is reduced by the amount of standby time exceeding 6 hours;
- (8) if the FDP is extended due to in-flight rest according to CS FTL.1.205(c), or to split duty according to CS FTL.1.220, the 6 hours of paragraph (6) and (7) are extended to 8 hours;
- (9) if standby starts between 23:00 and 07:00, the time between 23:00 and 07:00 does not count towards the reduction of the FDP under (6), (7) and (8) until the crew member is contacted by the operator; and
- (10) the response time between call and reporting time established by the operator allows the crew member to arrive from his/her place of rest to the designated reporting point within a reasonable time.

### **CS FTL.1.230 Reserve**

The operator assigns duties to a crew member on reserve under the provisions of ORO.FTL.230 complying with the following:

- (a) An assigned FDP counts from the reporting time.
- (b) Reserve times do not count as duty period for the purpose of ORO.FTL.210 and ORO.FTL.235.
- (c) The operator defines the maximum number of consecutive reserve days within the limits of ORO.FTL.235(d).
- (d) To protect an 8-hour sleep opportunity, the operator rosters a period of 8 hours, taking into account fatigue management principles, for each reserve day during which a crew member on reserve is not contacted by the operator.

### **CS FTL.1.235 Rest periods**

- (a) Disruptive schedules
  - (1) If a transition from a late finish/night duty to an early start is planned at home base, the rest period between the 2 FDPs includes 1 local night.
  - (2) If a crew member performs 4 or more night duties, early starts or late finishes between 2 extended recovery rest periods as defined in ORO.FTL.235(d), the second extended recovery rest period is extended to 60 hours.
- (b) Time zone differences
  - (1) For the purpose of ORO.FTL.235(e)(1), 'rotation' is a series of duties, including at least one flight duty, and rest period out of home base, starting at home base and ending when returning to home base for a rest period

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where the operator is no longer responsible for the accommodation of the crew member.

- (2) The operator monitors rotations and combinations of rotations in terms of their effect on crew member fatigue, and adapts the rosters as necessary.
- (3) Time zone differences are compensated by additional rest, as follows:
  - (i) At home base, if a rotation involves a 4 hour time difference or more, the minimum rest is as specified in the following table.

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

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

- (ii) Away from home base, if an FDP involves a 4-hour time difference or more, the minimum rest following that FDP is at least as long as the preceding duty period, or 14 hours, whichever is greater. By way of derogation from point (b)(3)(i) and only once between 2 recurrent extended recovery rest periods as specified in ORO.FTL.235(d), the minimum rest provided under this point (b)(3)(ii) may also apply to home base if the operator provides suitable accommodation to the crew member.
  - (4) In case of an Eastward-Westward or Westward-Eastward transition, at least 3 local nights of rest at home base are provided between alternating rotations.
  - (5) The monitoring of combinations of rotations is conducted under the operator’s management system provisions.
- (c) Reduced rest
- (1) The minimum reduced rest periods under reduced rest arrangements are 12 hours at home base and 10 hours out of base.
  - (2) Reduced rest is used under fatigue risk management.
  - (3) The rest period following the reduced rest is extended by the difference between the minimum rest period specified in ORO.FTL.235(a) or (b) and the reduced rest.

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- (4) The FDP following the reduced rest is reduced by the difference between the minimum rest period specified in ORO.FTL.235(a) or (b) as applicable and the reduced rest.
- (5) There is a maximum of 2 reduced rest periods between 2 recurrent extended recovery rest periods specified in accordance with ORO.FTL.235(d).

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**Book 2**

**Guidance Material**

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**GM1 CS FTL.1.200 Home base**

TRAVELLING TIME

Crew members should consider making arrangements for temporary accommodation closer to their home base if the travelling time from their residence to their home base usually exceeds 90 minutes.

**GM1 CS FTL.1.205(a)(2) Flight duty period (FDP)**

NIGHT DUTIES – APPROPRIATE FATIGUE RISK MANAGEMENT

- (a) When rostering night duties of more than 10 hours (referred to below as 'long night duties'), it is critical for the crew member to obtain sufficient sleep before such duties when he/she is adapted to being awake during day time hours at the local time where he/she is acclimatised. To optimise alertness on long night duties, the likelihood of obtaining sleep as close as possible to the start of the FDP should be considered, when rostering rest periods before long night duties, by providing sufficient time to the crew member to adapt to being awake during the night. Rostering practices leading to extended wakefulness before reporting for such duties should be avoided. Fatigue risk management principles that could be applied to the rostering of long night duties may include:
- (1) avoiding long night duties after extended recovery rest periods
  - (2) progressively delaying the rostered ending time of the FDPs preceding long night duties;
  - (3) starting a block of night duties with a shorter FDP; and
  - (4) avoiding the sequence of early starts and long night duties.
- (b) Fatigue risk management principles may be applied to the rostering of long night duties by means of:
- (1) considering operator or industry operational experience and data collected on similar operations;
  - (2) evidence-based scheduling practices; and
  - (3) bio-mathematical models.

**GM1 CS FTL.1.205(c)(1)(ii) Flight Duty Period (FDP)**

IN-FLIGHT REST

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

**GM2 CS FTL.1.205(c)(1)(ii) Flight Duty Period (FDP)**

IN-FLIGHT REST

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

**GM1 CS FTL.1.205(d) Flight Duty Period (FDP)**

DELAYED REPORTING

Operator procedures for delayed reporting should:

- (a) specify a contacting mode;
- (b) establish minimum and maximum notification times; and
- (c) avoid interference with sleeping patterns when possible.

**GM1 CS FTL.1.220(b) Split duty**

POST, PRE-FLIGHT DUTY AND TRAVELLING TIMES

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

**GM1 CS FTL.1.225 Standby**

MINIMUM REST AND STANDBY

- (a) If airport or other standby initially assigned is reduced by the operator during standby that does not lead to an assignment to a flight duty period, the minimum rest requirements specified in ORO.FTL.235 should apply.
- (b) If a minimum rest period as specified in ORO.FTL.235 is provided before reporting for the duty assigned during the standby, this time period should not count as standby duty.
- (c) Standby other than airport standby counts (partly) as duty for the purpose of ORO.FTL.210 only. If a crew member receives an assignment during standby other than airport standby, the actual reporting time at the designated reporting point should be used for the purpose of ORO.FTL.235.

**GM1 CS FTL.1.225(b) Standby**

STANDBY OTHER THAN AIRPORT STANDBY NOTIFICATION

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

**GM1 CS FTL.1.225(b)(2) Standby**

AWAKE TIME

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

**GM1 CS FTL.1.230 Reserve**

RESERVE NOTIFICATION

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

**GM2 CS FTL.1.230 Reserve**

NOTIFICATION IN ADVANCE

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

### **GM1 CS FTL.1.230(c) Reserve**

RECURRENT EXTENDED RECOVERY REST

ORO.FTL.235(d) applies to a crew member on reserve.

### **GM1 CS FTL.1.235(b)(3) Rest periods**

TIME ELAPSED SINCE REPORTING

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