



# Notice of Proposed Amendment 2023-103

in accordance with Article 6 of MB Decision No 01-2022

## Development of flight and duty time limitation rules for commercial air transport operations of emergency medical services by aeroplanes (AEMS)

*Flight and duty time limitations and rest requirements for commercial air transport with aeroplanes — night duties and late finish duties*

RMT.0492

### EXECUTIVE SUMMARY

This NPA proposes to incorporate the scientific recommendations of the first study on 'Effectiveness of Flight Time Limitation (FTL)' in relation to night duties and late finish duties into Commission Regulation (EU) No 965/2012 to mitigate the risk of the onset and accumulation of fatigue for aircrews.

The objective is to prevent the accumulation of abnormal amounts of fatigue for aircrews by considering latest scientific knowledge and best practices available as regards fatigue risk management.

This is expected to improve safety.

### REGULATION(S) TO BE AMENDED

n/a

### EASA DECISIONS TO BE AMENDED

Decision 2014/002/R of the Executive Director of the Agency of 31 January 2014 adopting Certification Specifications and Guidance Material to Annex III (Part ORO) of Commission Regulation (EU) No 965/2012 — 'CS-FTL.1 — Initial Issue'

### AFFECTED STAKEHOLDERS

CAT operators of fixed-wing aircraft for the purpose of scheduled and charter operations; flight and cabin crews

### WORKING METHOD(S)

#### Development

By EASA

#### Impact assessment(s)

Light

#### Consultation

Focused: EASA Advisory Bodies through NPA and workshop

### Related documents/information

- ToR RMT.0492 (former RMT.0346/OPS.071(a)), issued on 18.4.2012<sup>1</sup>
- EASA BIS 'Aircrew fatigue', EPAS 2021–2025, February 2020
- First study on 'Effectiveness of Flight Time Limitation (FTL)', published on 28.2.2019<sup>2</sup>
- European Commission's impact assessment of EASA Opinion No 04/2012<sup>3</sup>

**PLANNING MILESTONES:** See latest update of Volume II of the EPAS for 2023–2025

<sup>1</sup> <https://www.easa.europa.eu/en/document-library/terms-of-reference-and-group-compositions/tor-ops071a-rmt0346>

<sup>2</sup> <https://www.easa.europa.eu/document-library/general-publications/effectiveness-flight-time-limitation-ftl-report>

<sup>3</sup> [http://ec.europa.eu/smart-regulation/impact/ia\\_carried\\_out/docs/ia\\_2014/swd\\_2014\\_0024\\_en.pdf](http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2014/swd_2014_0024_en.pdf)



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## 1. About this NPA

### 1.1. How was this NPA developed

This rulemaking activity is included in Volume II of the European Plan for Aviation Safety (EPAS) for 2023–2025<sup>4</sup> under Rulemaking Task (RMT).0492.

In 2017, EASA launched research task RES.006 to review the effectiveness of the rules concerning flight and duty time limitations and rest requirements (FTL) contained in Annexes II and III to Commission Regulation (EU) No 965/2012<sup>5</sup> (the Air OPS Regulation). The first phase of RES.006 focused on ‘duties of more than 10 hours at the less favourable time of the day’ and ‘disruptive schedules’, and the final report was published on 28.2.2019<sup>6</sup>. The report recommended some enhancements to the applicable rules in relation to safety, and further recommended that EASA include in its safety programming a rulemaking task to amend them.

In 2020, EASA developed a Best Intervention Strategy (BIS) on ‘Aircrew Fatigue’, which was shared with the Advisory Bodies; it was concluded that the recommendations of the first phase of RES.006 should be included in the current regulatory framework. EASA has decided to do this within the scope of RMT.0492, as a specific subtask. EASA has developed the regulatory material in line with Regulation (EU) 2018/1139<sup>7</sup> (the Basic Regulation) and the Rulemaking Procedure<sup>8</sup>, as well as in accordance with the objectives and working methods described in the related Terms of Reference (ToR)<sup>9</sup>.

### 1.2. How to comment on this NPA

The draft regulatory material is hereby submitted for consultation with the Advisory Bodies.

Please submit your comments via email to [air\\_ops@easa.europa.eu](mailto:air_ops@easa.europa.eu).

The deadline for the submission of comments is **31 May 2023**.

<sup>4</sup> <https://www.easa.europa.eu/en/document-library/general-publications/european-plan-aviation-safety-2023-2025>

<sup>5</sup> Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012R0965>).

<sup>6</sup> <https://www.easa.europa.eu/en/document-library/general-publications/effectiveness-flight-time-limitation-ftl-report>

<sup>7</sup> Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139>).

<sup>8</sup> EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the ‘Rulemaking Procedure’. See MB Decision No 01-2022 of 2 May 2022 on the procedure to be applied by EASA for the issuing of opinions, certification specifications and other detailed specifications, acceptable means of compliance and guidance material (‘Rulemaking Procedure’), and repealing Management Board Decision No 18-2015 (<https://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-01-2022-rulemaking-procedure-repealing-mb>).

<sup>9</sup> <https://www.easa.europa.eu/en/document-library/terms-of-reference-and-group-compositions/tor-ops071a-rmt0346>

### **1.3. The next steps**

Following the consultation of the draft regulatory material, EASA will review all the comments received and will duly consider them in the further progress of this RMT. For this purpose, EASA may involve the FTL/FRM Expert Group and/or experts nominated by the FTL/FRM Expert Group members.

Considering the above, EASA may issue a decision. Upon issuing it, EASA will also provide feedback to the commentators and to the general public that provided comments during the consultation of the draft regulatory material as regards the comments received, how such consultation was used in rulemaking, and how the input was considered.



## 2. In summary — why and what

### 2.1. Why we need to act — issue/rationale

### 2.2. Description of the issue

Aircrew fatigue is a safety risk. Air operators address it through their safety risk management (SRM) process by applying appropriate fatigue risk management principles or through a dedicated fatigue risk management (FRM) organisation structure, policy, and procedures. Both means should ensure that fatigue risk is mitigated to a level as low as reasonably practicable.

In addition, regulatory authorities establish legal requirements, also called ‘flight time limitations’ (FTL), which define the minimum rest and maximum duty times to mitigate fatigue risk in aviation. Requirements at EU level are contained in the Air OPS Regulation. Its Article 9a mandates EASA to conduct a continuous review of the provisions concerning flight and duty time limitations and rest requirements.

Consequently, in 2017, EASA launched the first phase of RES.006, which assessed the impact of ‘duties of more than 10 hours at the less favourable time of the day’ and ‘disruptive schedules’ on the alertness of aircrew, since the results of biomathematical model analysis and of an online aircrew survey indicated that these were the two duty periods ranked as the most fatiguing. These were further studied by means of field data collection and its analysis.

The study showed an increased probability of high levels of fatigue during night duties and disruptive schedules, and that the effectiveness of FRM may be improved by increasing operators’ and aircrews’ awareness of the types of duties amid night duties/disruptive schedules where the risk of fatigue is higher, and by promoting prior sleep opportunities, as well as resting opportunities, during such duties.

This NPA addresses the issues highlighted in the report.

### 2.3. Assessment of the issue

The final report<sup>10</sup> of the first phase of RES.006 included the following observations:

- Night duties, both those longer and shorter than 10 hours, are associated with an increased probability of high levels of fatigue at Top of Descent (TOD), which is not fully reflected in the regulatory framework. The current requirements explicitly state the need for appropriate FRM, as well as the importance of obtaining sufficient sleep, in relation to night duties longer than 10 hours, but not for those shorter than 10 hours.
- There is an increased probability of high levels of fatigue at TOD during non-consecutive late finish and non-consecutive night duties, while the prevalence of high levels of fatigue during early starts is very low.
- Three subtypes of night duties can be distinguished and ranked based on the probability of occurrence of high levels of fatigue at TOD:
  - Flight duty periods (FDPs) starting between 2.00 h and 4.59 h;

<sup>10</sup> <https://www.easa.europa.eu/en/document-library/general-publications/effectiveness-flight-time-limitation-ftl-report>

- FDPs ending between 2.00 h and 5.59 h, and starting at 1.59 h or earlier;
  - FDPs ending at 6.00 h or later and starting at 1.59 h or earlier.
- The existence of these three subtypes is currently not considered in the regulatory framework and distinguishing between them could help operators design more effective FRM strategies.
- No significant increase of the probability of high levels of fatigue at TOD is found for disruptive schedules with early starts. A marginal increase is found for mixtures of disruptive FDPs.
- There is a relatively high prevalence of fatigue for consecutive night duties (i.e. at least two in a row). For consecutive late finishes, the results are inconclusive. For consecutive early starts, the prevalence of high levels of fatigue was very low.

The report recommended, among other things, that night duties and disruptive schedules be more closely aligned to an established and science-based model used to predict fatigue and thus ensure its better management.

In particular, the final report made the following six recommendations:

1. to amend the definition of ‘night duty’ to include the *three subtypes* mentioned above;
2. that operators apply appropriate FRM to mitigate the fatiguing effect of *late finish* FDPs, regardless of FDP duration;
3. that operators apply appropriate FRM to mitigate the fatiguing effect of *all* night FDPs, regardless of FDP duration;
4. that operators pay specific attention to night FDPs ending at 6.00 h or later and starting at 1.59 h or earlier, when applying appropriate FRM to night duties;
5. that the regulatory material clearly states that it is critical for the crew member to obtain sufficient sleep before *all* night duties, regardless of FDP duration;
6. that operators promote optimum use of sleep opportunities (i.e. before reporting and during the FDP).

Furthermore, the report suggested certain ways to implement the above recommendations:

- A. Providing rest facilities to crew members at or near the airport as this would improve the probability of obtaining sleep as close as possible to the start of the night duty. This might imply providing suitable accommodation at the reporting point for napping in the afternoon prior to a night duty and during the FDP when the crew member is on the ground, such as during a long turnaround.
- B. A way of improving opportunities for in-flight sleep is the use of an augmented crew on longer flights;
- C. Promoting the development and use of controlled rest procedures to enable pilots and cabin crew to take a nap during night FDPs to manage unexpected fatigue. Operators should track the use of controlled rest as it is a very useful indication of where additional, more effective controls may be necessary.

## 2.4. Who is affected

Flight and cabin crew assigned to scheduled and charter CAT operations with aeroplanes.

## 2.5. How could the issue evolve

Delaying the implementation of the study's recommendations could lead to less effective FRM by CAT operators, with operators and crew members being less aware of the types of duties amid night duties/disruptive schedules where the risk of fatigue is higher, and not sufficiently taking advantage of prior sleep opportunities, as well as resting opportunities, during such duties.

## 2.6. What we want to achieve – objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This NPA will contribute to achieving the overall objectives by addressing the issue described in Section 2.1 and adapting the current regulatory framework by considering latest scientific knowledge.

More specifically, with the draft regulatory material presented in this NPA, EASA intends to further mitigate the potential fatigue risk entailed by night duties and late arrivals by increasing the effectiveness of the existing mitigation measures. This is proposed to be achieved by expanding the application of appropriate FRM to night and disruptive duties and facilitating its use by CAT operators.

## 2.7. How we want to achieve it – overview of the proposed amendments

In deciding how to implement recommendation #1 of the first phase of RES.006, EASA assessed whether the Air OPS Regulation (namely the definition of 'night duty' in point ORO.FTL.105(9)) needed to be amended or whether the amendment of CS FTL.1 (namely CS FTL.1.205(a)(2)) and the associated GM would suffice.

'Night duty' is defined in point ORO.FTL.105(9) as 'a duty period encroaching any portion of the period between 2.00 h and 4.59 h in the time zone to which the crew is acclimatised'. This definition is not affected by the three subtypes of night duty identified in the report. The purpose of the subtypes is to support the planning and implementation of appropriate measures to reduce fatigue.

Therefore, EASA decided to include the three subtypes in the relevant guidance material to help CAT operators tailor effective FRM strategies.

Regarding recommendations #2, #3 and #4, the current rules already protect against fatigue at night by reducing the length of the FDPs that encroach the window of circadian low (WOCL) and by compensating the cumulative effects of curtailed sleep.

In fact, all duties starting in the period from 17.00 h to 04.59 h are considered night duties and have a maximum duration of 11 hours. Furthermore, the current rules prescribe that crew duty schedules are 'disruptive' if they comprise an FDP, or a combination of FDPs, starting, finishing during, or encroaching on any portion of the day/night which disrupts the sleep opportunity during the optimal sleep time window. Disruptive schedules are compensated by additional rest.

Considering the study results, no amendments to those rules are necessary. Nevertheless, this NPA proposes to further enhance the protection against fatigue in relation to night and disruptive schedules by including other 'non-schedule-related' strategies in the related guidance material, as suggested in the report (suggestion A).

Regarding recommendation #5, CS FTL.1.205(a)(2) stipulates that the operator apply appropriate FRM to actively manage the fatiguing effect of night duties *of more than 10 hours*. This NPA proposes to further enhance this protection by making the requirement applicable to *any* night duty, regardless of its duration, and to disruptive schedules.

CS FTL.1.205(a)(1) limits the maximum FDP for consecutive night duties to 4 sectors (maximum 10 hours). Based on the study results, no amendment to this specification is necessary.

Considering recommendation #6 and suggestion A, it should be noted that GM1 CS FTL.1.205(a)(2) already recommends that crew members obtain sufficient sleep as close as possible to the start of the night duty and that the operators' rostering practices specifically avoid duties that may lead to extended wakefulness before such duty.

Nevertheless, this NPA proposes to further detail this guidance material as regards the provision and optimum use of sleep opportunities before reporting, considering the principle of shared responsibility of the operator and its crew members towards aircrew fatigue, laid down in the Air OPS Regulation.

Regarding suggestion B, CS FTL.1.205(c) stipulates that duty periods be extended only if the operator augments the flight crew and provides in-flight rest facilities to all crew members. No amendment to this CS is considered necessary.

As for suggestion C, point CAT.OP.MPA.210 specifies that a controlled rest procedure, organised by the commander, may be used when unexpected fatigue is experienced and provided workload permits. GM1 CAT.OP.MPA.210 clarifies how a controlled rest procedure may be used.

Controlled rest is non-proactive fatigue management and may be performed only to manage unexpected severe fatigue. Therefore, any additional requirements regarding controlled rest such as tracking and reporting as recommended by the study, should be specified in the context of Part-CAT.

Moreover, the second phase of the study on 'Effectiveness of Flight Time Limitation (FTL)', which was launched in 2022, will specifically address the use of controlled rest and whether it should be promoted as a nominal fatigue mitigation strategy. It is, therefore, premature to make any amendments to the requirements of Subpart FTL of Part-ORO in this regard.

Based on all considerations mentioned above, EASA concluded that there is no need to amend the implementing rules of the Air OPS Regulation, and that the recommendations of the first phase of RES.006 could be addressed by amending only CS FTL.1 and the associated GM.

In summary, this NPA proposes to apply appropriate FRM to all night duties and late finishes by amending CS FTL.1.205(a)(2).

This NPA further proposes to complement the associated GM1 CS FTL.1.205(a)(2) as regards appropriate FRM to clarify the process and its safety objectives, and recommends the use of the Prior Sleep Wake model for predicting the likelihood of accumulating fatigue or sleep debt and for assessing crew fitness for duty, based on scientific evidence and principles.

Further explanations on the rationale of the proposed amendments may be found in Section 4.

EASA has not identified the need for a transitional period before the proposed amendments could be fully implemented, considering their nature and limited scope. Stakeholders are invited to

provide their views on the need to foresee a deferred implementation of the proposed amendments or other transitional measures.

## 2.8. What are the stakeholders' views

The extension of appropriate FRM to night and disruptive duties is viewed very favourably by the European Cockpit Association (ECA) and the European Transport Workers' Federation (ETF), which have long asked for the recommendations of the first phase of RES.006 to be incorporated into the current regulatory framework and have even called for a more extended application of appropriate FRM in aviation.

The proposed amendments stemming from the first study on 'Effectiveness of Flight Time Limitation (FTL)' have been consulted and discussed with the FTL/FRM experts of the Advisory Bodies (Air OPS TeB and FS.TeC), and were well received by Member States and air operators.

The ETF and the ECA appreciated the proposals as they introduced various improvements targeting several fatigue issues. They requested, however, that further amendments be made to mandate the following on the level of the implementing rules:

1. FDPs encroaching the WOCL and longer than 8 hours are operated with augmented crew, unless operated under FRM (point ORO.FTL.120);
2. more than 3 night duties between 2 extended recovery rest periods are only operated under FRM (point ORO.FTL.120);
3. the operator provides suitable accommodation at the reporting point before a night duty;
4. rest periods longer than the minimum rest under point ORO.FTL.235 are provided between consecutive night duties;
5. the number of consecutive early starts or late finishes is limited to a maximum of 3;
6. 4 or more early starts or late finishes between 2 extended recovery rest periods are allowed only when operated under FRM (point ORO.FTL.120);
7. the FDP is limited to a maximum of 9 hours, irrespective of the sectors flown, in the case of consecutive early starts or late finishes;
8. consecutive early starts are delayed by a minimum of 1 hour per day;
9. early starts and late finishes, or blocks of them, are scheduled with a maximum of 1 transition between 2 different types of disruptive schedules (early starts, late finishes, night duties) between 2 extended recovery rest periods.

EASA found these additional proposals to be beyond the scope and content of the study recommendations. Some of the requested amendments (such as points 1 and 5) would represent fundamental amendments to the Air OPS Regulation for which EASA could not find a real justification, as such amendments are not needed to implement the recommendations of the study, as explained in Section 2.3 above.

Others (such as points 8 and 9) are fatigue-mitigation strategies typically applied in the context of specific operations, which cannot be made applicable to every operator.

A third category (such as point 3) contradicts the existing principles of the Air OPS Regulation, namely:

- the provision of suitable accommodation at home base is not the operator's responsibility;

- the management of crew fatigue is a shared responsibility between the operator and the crew members; and
- crew members should find themselves suitable accommodation closer to the home base if commuting time is longer than 90 minutes.

Therefore, the provision of suitable accommodation at the reporting point before a night duty should be recommended where possible (as this NPA proposes in GM2 CS FTL.1.205(a)(2)), rather than made mandatory.

## 2.9. Other relevant information

In addition to the proposals included in this NPA, EASA will consider the recommendations from the first phase of RES.006 when finalising the upcoming opinions on CAT operations of emergency medical services by aeroplanes (AEMS) (RMT.0492) and on CAT operations by aeroplanes for air taxi and single-pilot operations (RMT.0493).



### 3. What are the expected benefits and drawbacks of the regulatory material

EASA has assessed the best intervention options in the BIS on 'Aircrew Fatigue' and has shared the draft BIS with its ABs. In that BIS, it was concluded that rulemaking intervention was necessary to incorporate the recommendations from the first phase of RES.006 into the current regulatory framework.

The proposed amendments to the related CSs are expected to pave the way for better fatigue management as they align night duties and disruptive schedules more closely to an established and scientifically based model used to predict fatigue.

In particular, since prior sleep is a strong determinant of fatigue during night duties, highlighting the need for operators to provide resting opportunities to crew members and for crew members to make optimum use of these opportunities is believed to be an effective way of obtaining more sleep.

In terms of safety, no drawbacks are expected from to the proposed amendments. In terms of economic impact, the proposed amendments may have a small negative impact on operators, since it extends the scope of activities that need to be covered by appropriate FRM. However, it is assumed that the operators to which the proposed provisions will apply have already implemented appropriate FRM, and that its extension to further areas of their operations will have limited costs.

Therefore, the safety benefits expected from the proposed amendments outweigh the potential economic impact.

EASA has concluded that the amendments proposed are the simplest, most proportionate way to integrate the recommendations from the first phase of RES.006 into the current regulatory framework.

## 4. Proposed amendments and rationale

The amendments are arranged to show deleted, new and unchanged text as follows:

- deleted text is ~~struck through~~;
- new or amended text is highlighted in blue;
- an ellipsis '[...]' indicates that the rest of the text is unchanged.

Where necessary, the rationale is provided in *italics*.

### 4.1. Draft certification specifications (draft EASA decision)

#### Draft certification specifications

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

- (a) Night duties **and late finish duties** under the provisions of **point** 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~~ **and late finish duties** in relation to the surrounding duties and rest periods.

#### **Rationale:**

*The proposed amendments address recommendations #2 and #3 of the study on 'Effectiveness of Flight Time Limitation (FTL)'.*

*The study concluded that night duties and late finish duties, regardless of their duration, are associated with an increased probability of high levels of fatigue at Top of Descent (TOD).*

### 4.2. Draft acceptable means of compliance and guidance material (draft EASA decision)

#### Draft guidance material (GM)

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

#### NIGHT DUTIES AND LATE FINISH DUTIES — APPROPRIATE FATIGUE RISK MANAGEMENT (FRM)

- (a) The operator should apply appropriate FRM to night duties and late finish duties:
- (1) **in the safety risk management process by assessing fatigue-related hazards in relation to a particular duty and mitigating fatigue-related risks and consequences to an acceptable level or to a level as low as reasonably practicable; and**
  - (2) **in the crew rostering process by applying scientifically based principles.**

- (b) For the purpose of applying appropriate FRM, the operator should monitor night duties and late finish duties, and collect data by means of:
- (1) crew fatigue reports;
  - (2) fatigue metrics and associated targets and thresholds;
  - (3) proactive fatigue data collection tools, such as but not limited to sleep-wake diaries or fatigue survey questionnaires, to collect relevant data to feed its fatigue risk assessment process;
  - (4) fatigue predictive tools, such as but not limited to the Prior Sleep Wake model (described in GM4 CS FTL.1.205(a)(2));
  - (5) the safety assurance process.
- (c) The operator should describe in the operations manual the responsibilities of the management, crew and crew-rostering personnel for the implementation of appropriate FRM to night duties and late finish duties.
- (d) The operator should provide personalised and context-specific training to its crew on fatigue-mitigation strategies, especially on how to obtain more sleep prior to night duties and late finish duties, e.g. by providing advice regarding exposure to daylight, sleep, physical activity, and nutrition.

## GM12 CS FTL.1.205(a)(2) Flight duty period (FDP)

### NIGHT DUTIES AND LATE FINISH DUTIES — APPROPRIATE FATIGUE RISK MANAGEMENT (FRM)

- (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~~ **they are** adapted to being awake during daytime hours at the local time where ~~he/she is~~ **they are** acclimatised. To optimise alertness **during** ~~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 night 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; **and**
  - ~~(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.~~

(b) When the operator applies appropriate FRM to night duties, it should consider the following subtypes of night duties where the risk of increase of fatigue at the Top of Descent (TOD) is likely to be higher:

- (1) FDPs with a start time between 02.00h and 04.59h;
- (2) FDPs with an end time between 02.00h and 05.59h and a start at 01.59h or earlier; and
- (3) FDPs with an end time at 06.00h or later and a start time at 01.59h or earlier.

(c) Obtaining sufficient sleep is a shared responsibility between the operator and its crew members. The operator should promote the optimum use of sleep opportunities among their crew, in particular before crew reporting for night duties. Crew members should make optimum use of sleep opportunities in the afternoon prior to a night duty or during FDPs with in-flight rest or during a long turnaround. Where possible, the operator should provide suitable accommodation at or near the crew reporting point or use augmented crew.

(d) When rostering late finish duties, sleep deprivation may arise, leading to the onset of fatigue. To optimise crew alertness during late finish duties, the operator should avoid rostering practices that may lead to sleep debt prior to the reporting for late finish duties.

## GM3 CS FTL.1.205(a)(2) Flight duty period (FDP)

### CONSECUTIVE NIGHT DUTIES AND CONSECUTIVE LATE FINISH DUTIES — APPROPRIATE FATIGUE RISK MANAGEMENT (FRM)

Appropriate FRM principles that could be applied to consecutive night / late finish duties include:

- (1) rostering a block of identical duties (late finishes or night duties) rather than rostering mixed disruptive duties;
- (2) starting a block of late finish duties or night duties with a shorter FDP;
- (3) rostering not more than one transition between two different types of disruptive duties, between two extended recovery rest periods.

## GM4 CS FTL.1.205(a)(2) Flight duty period (FDP)

### APPROPRIATE FATIGUE RISK MANAGEMENT (FRM) — THE PRIOR SLEEP WAKE MODEL

- (a) The Prior Sleep Wake model is a simple method that may be used to predict the likelihood of accumulating fatigue or sleep debt and of assessing crew fitness for duty, based on scientific evidence and principles. It allows the operator to set minimum and maximum thresholds for sleep and time awake, according to the specific work risk profile of the crew members concerned to determine whether they have obtained sufficient sleep and are by inference fit for duty.

Most evidence suggests that to maintain optimum performance, health, and well-being, individuals should get between 7 and 9 hours of sleep during a 24-hour period.

Many studies have investigated how decreasing levels of sleep and increasing time awake affects performance. In general, research has found that performance begins to become impaired after getting less than 5 hours of sleep over a 24-hour period. Performance also becomes impaired if sleep consistently falls below 6 hours per night on an ongoing basis.

Sleepiness is related to factors such as the time of day, the time since awakening and the duration of prior sleep. As prior sleep decreases and time awake increases, the likelihood of fatigue-related symptoms, errors, and incidents also increases.

- (b) The prior sleep–wake score is calculated by means of the following table:

Calculating prior sleep–wake					Score*	
<b>Step 1: Sleep in prior 24 hours</b>						
Sleep	2 hrs	3 hrs	4 hrs	5+ hrs		
Points	12	8	4	0		
<b>Step 2: Sleep in prior 48 hours</b>						
Sleep	8 hrs	9 hrs	10 hrs	11 hrs		12+ hrs
Points	8	6	4	2		0
<b>Step 3: Predicted hours awake since last sleep</b>						
If sleep hours in Step 2 are greater than hours awake, score = 0. If less, add 1 point per hour awake greater than sleep in Step 2.						
<b>Total</b>						

(c) Fitness for duty is assessed by means of the following table:

Score	Risk level	Approved controls
0	Acceptable	No additional controls necessary except in the presence of higher-level indicators of fatigue (i.e. symptoms, errors, or incidents).
1–4	Minor	Inform line supervisor and document in daily logbook. Self-monitor for fatigue-related symptoms and apply individual controls such as strategic use of caffeine, task rotation, working in pairs, additional rest breaks.
5–8	Moderate	Inform local manager and document in a fatigue report. Implement additional fatigue controls such as task reallocation, napping, and increased level of peer and supervisory monitoring.
9+	Significant	Call manager before driving to work. Document in a fatigue report on next work shift. Do not engage in safety-critical tasks (including driving to work), and do not return to work until sufficiently rested as per sleep/time awake rules.

**Rationale:**

The proposed amendments to the GM to CS FTL.1.205(a)(2) address recommendations #1, #4, #5 and #6 of the study on ‘Effectiveness of Flight Time Limitation (FTL)’.

Moreover, the GM provides further guidance on the concept of appropriate FRM to enable its better understanding and facilitate its proper implementation and, last but not least, to differentiate it from a fully fledged FRM system under point ORO.FTL.120.

A fully fledged FRM system is a scientifically based, data-driven addition or alternative to prescriptive regulation of flight and duty time, which manages crew fatigue in a flexible manner with due consideration to the risk exposure and the nature of operation. Operators need such an FRM system when deviating from the implementing rules or when applying a mix between prescriptive rules and flexible arrangements.

Appropriate FRM is a process within the operators’ safety management system, i.e. a safety risk management process for establishing, assessing and mitigating particular fatigue hazards and associated risks. Appropriate FRM is not necessarily applied when deviating from a prescriptive rule.

## 5. Monitoring and evaluation

EASA will monitor the implementation of the amended CS FTL.1.205(a)(2) and the associated GM through its regular standardisation activities.

Moreover, in accordance with Article 9b of the Air OPS Regulation, on a long-term basis, EASA will conduct a continuous review of the effectiveness of the flight and duty time limitations and rest requirements through scientific methods for operational data collection and analysis, with the assistance of the Member States.

The second phase of RES.006 was launched in 2022. It will assess duties of more than 11 hours for crew members in an unknown state of acclimatisation; duties including a high number of sectors (more than 6); duties of more than 13 hours at the most favourable time of the day; and on-call duties such as standby or reserve, followed by flight duties.

Once the results of the second phase of RES.006 are known, EASA will assess the need to further amend the current regulatory framework applicable to flight time limitations.



## 6. Proposed actions to support implementation

The following means will be used to support and facilitate the implementation of the proposed amendments:

- Communication with stakeholders and national competent authorities' FTL/FRM experts
- Dedicated thematic workshop(s)/webinar(s)



## 7. References

### 7.1. Affected EU regulations

n/a

### 7.2. Affected EASA decisions

- Decision 2014/002/R of the Executive Director of the Agency of 31 January 2014 adopting Certification Specifications and Guidance Material to Annex III (Part ORO) of Commission Regulation (EU) No 965/2012 — ‘CS-FTL.1 — Initial Issue’

### 7.3. Other references

- Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1)
- COMMISSION STAFF WORKING DOCUMENT — IMPACT ASSESSMENT *accompanying the document* — COMMISSION REGULATION amending Regulation (EU) N° 965/2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) N° 216/2008 of the European Parliament and of the Council (SWD(2014) 24 final, 29.1.2014)<sup>11</sup>
- Report on the first phase of RES.006 ‘Effectiveness of Flight Time Limitation (FTL)’, published on 28.2.2019<sup>12</sup>
- EASA BIS on ‘Aircrew Fatigue’, February 2020
- ToR RMT.0492 ‘Development of FTL for CAT operations of emergency medical services (EMS) by aeroplanes and helicopters’ (former RMT.0346/OPS.071(a)), issued on 18.4.2012<sup>13</sup>
- EASA NPA 2017-17 ‘Development of FTL for CAT ops of EMS by aeroplanes and helicopters & Update and harmonisation of FTL for CAT by aeroplane for air taxi ops and single-pilot ops taking into account operational experience and recent scientific evidence’, published on 30.10.2017<sup>14</sup>

<sup>11</sup> [https://ec.europa.eu/smart-regulation/impact/ia\\_carried\\_out/docs/ia\\_2014/swd\\_2014\\_0024\\_en.pdf](https://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2014/swd_2014_0024_en.pdf)

<sup>12</sup> <https://www.easa.europa.eu/en/document-library/general-publications/effectiveness-flight-time-limitation-ftl-report>

<sup>13</sup> <https://www.easa.europa.eu/en/document-library/terms-of-reference-and-group-compositions/tor-ops071a-rmt0346>

<sup>14</sup> <https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2017-17>

## 8. Quality of the NPA

To continuously improve the quality of its documents, EASA welcomes your feedback on the quality of this document with regard to the following aspects:

Please provide your feedback on the quality of this document as part of the other comments you have on this NPA. We invite you to also provide a brief justification, especially when you disagree or strongly disagree, so that we consider this for improvement. Your comments will be considered for internal quality assurance and management purposes only and will not be published (e.g. as part of the CRD).

### 8.1. The regulatory proposal is of technically good/high quality

*Please choose one of the options*

Fully agree / Agree / Neutral / Disagree / Strongly disagree

### 8.2. The text is clear, readable and understandable

*Please choose one of the options*

Fully agree / Agree / Neutral / Disagree / Strongly disagree

### 8.3. The regulatory proposal is well substantiated

*Please choose one of the options*

Fully agree / Agree / Neutral / Disagree / Strongly disagree

### 8.4. The regulatory proposal is fit for purpose (achieving the objectives set)

*Please choose one of the options*

Fully agree / Agree / Neutral / Disagree / Strongly disagree

### 8.5. The impact assessment (IA), as well as its qualitative and quantitative data, is of high quality

*Please choose one of the options*

Fully agree / Agree / Neutral / Disagree / Strongly disagree

### 8.6. The regulatory proposal applies the 'better regulation' principles<sup>[1]</sup>

*Please choose one of the options*

Fully agree / Agree / Neutral / Disagree / Strongly disagree

### 8.7. Any other comments on the quality of this document (please specify)

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<sup>[1]</sup> For information and guidance, see:

- [https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how\\_en](https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how_en)
- [https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox\\_en](https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox_en)
- [https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox/better-regulation-toolbox\\_en](https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox/better-regulation-toolbox_en)