European Union Aviation Safety Agency

Notice of Proposed Amendment 2024-106(B)

in accordance with Article 6 of MB Decision 01-2022

Proposed amendments to Regulation (EU) No 965/2012 and its certification specifications, acceptable means of compliance and guidance material regarding FTL for commercial air transport with aeroplanes used in emergency medical services (AEMS), air taxi and single-pilot operations

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Proposed amendments and rationale

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

— deleted text is ~~struck through~~;

— new text is highlighted in blue;

— an ellipsis '[…]' indicates that the rest of the text is unchanged.

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

Draft Implementing act

Draft amendments to the Articles of Regulation (EU) No 965/2012

Article 2 Definitions

[…]

~~(6) 'air taxi operation' means, for the purpose of flight time and duty time limitations, a non-scheduled on-demand commercial air transport operation with an aeroplane with a maximum operational passenger seating configuration ('MOPSC') of 19 or less;~~

[…]

Rationale

It is proposed to remove the definition of air taxi operation from Annex I to Regulation (EU) No 965/2012 and add it to ORO.FTL.105 instead, where the other definitions relevant for FTL are located, since this term is only used in FTL. This will contribute to better visibility and accessibility of all relevant FTL definitions. This change follows a comment received during the consultation of NPA 2017-17[1].

Article 8 Flight time limitations

1. ~~CAT operations~~ Commercial air transport (CAT) with aeroplanes shall be subject to the requirements of Subpart FTL of Annex III.

~~2. By way of derogation from paragraph 1, air taxi, emergency medical service and single pilot CAT operations by aeroplanes shall be subject to the requirements specified in the national law referred to in Article 8(4) of Regulation (EEC) No 3922/91 and in Subpart Q of Annex III to that Regulation.~~

3. ~~By way of derogation from paragraph 1,~~ CAT ~~operations~~ with helicopters ~~and CAT operations with sailplanes~~ shall comply as regards flight time limitations with the requirements specified in the national law of the Member State in which the operator has its principal place of business.

4. Non-commercial operations, including non-commercial specialised operations, with complex motor-powered aeroplanes and helicopters, as well as commercial specialised operations with aeroplanes~~,~~ and helicopters~~, and sailplanes~~ shall comply as regards flight time limitations~~,~~ with

[1] Austro Control comment #569, CRD 1 to NPA 2017-17 (Air Taxi/AEMS).

the requirements specified in the national law of the Member State in which the operator has its principal place of business, or, where the operator has no principal place of business, the place where the operator is established or resides.

Rationale

Article 8 of Regulation (EU) No 965/2012 is proposed to be amended by deleting its paragraph 2 on air taxi, AEMS and single-pilot operations. Following the adoption of the new rules on air taxi, AEMS and single-pilot operations, these operations shall be subject to the requirements of Part-ORO (ORO.FTL) of Regulation (EU) No 965/2012 and shall no longer be governed by Subpart Q and Member States' national provisions.

The amendments proposed to paragraph 3 and paragraph 4 remove the reference to sailplanes, which should have been removed when requirements for the operation of sailplanes were removed from Regulation (EU) No 965/2012. The remaining amendments proposed to these paragraphs are merely editorial, to add clarity to the provisions.

Article 9b Review

~~1. The Agency shall conduct a continuous review of the effectiveness of the provisions concerning flight and duty time limitations and rest requirements contained in Annexes II and III. No later than 18 February 2019 the Agency shall produce a first report on the results of this review.~~

~~That review shall involve scientific expertise and shall be based on operational data gathered, with the assistance of Member States, on a long-term basis after the date of application of this Regulation.~~

~~The review shall assess the impact of at least the following on the alertness of aircrew:~~

~~(a) duties of more than 13 hours at the most favourable times of the day;~~

~~(b) duties of more than 10 hours at less favourable times of the day;~~

~~(c) duties of more than 11 hours for crew members in an unknown state of acclimatisation;~~

~~(d) duties including a high level of sectors (more than 6);~~

~~(e) on-call duties such as standby or reserve followed by flight duties; and~~

~~(f) disruptive schedules.~~

1. EASA shall conduct a continuous review of the effectiveness of the provisions concerning flight and duty time limitations and rest requirements contained in Annex III.

That review shall involve scientific expertise, where relevant, and be based, as a minimum, on the following operational data collected by the Member States and submitted to EASA in a standardised form not less than once a year:

(a) the number of fatigue reports;

(b) the frequency of unplanned exceedances of assigned flight duty periods compared to actual flight duty periods; and

(c) the frequency of use of commander discretion to extend the flight duty period or to reduce the rest period.

[…]

Rationale

The proposed changes to paragraph (1) of Article 9b of Regulation (EU) No 965/2012 take into account the comments received during the consultation of NPA 2017-17.

For example, references to qualitative metrics, including evaluations such as 'impact' and 'adequacy', have been removed from the data to be submitted to EASA by the Member States. Materials containing analytical data cannot be collected in the usual operational manner as they would require launching scientific research to assess impacts on fatigue, e.g. of disruptive schedules, time-zone crossing and positioning. Scientific studies are costly and complex and, unless requested by a particular individual flight time specification scheme (IFTSS) deviation, operators do not normally conduct them. As regards analytical metrics such as adequacy of sleep opportunities and adequacy of recovery periods, they only make sense if evaluated against a particular operational context, i.e. they are specific to a particular operator and operation. Such data cannot be averaged at national level.

Materials containing quantitative data such as the number of fatigue reports; frequency of unplanned exceedances of assigned FDPs compared to actual FDPs; and use of commander discretion to extend the FDP or to reduce the rest period, can be collected through the operators' SMS/FRMS and are not expected to put an additional burden on operators.

In addition, the reference to the data being collected in a standardised form is a new proposal, intended to facilitate data collection and analysis.

A dedicated item in point ORO.FTL.110 (Operator responsibilities) is proposed to deal with the collection and submission of FTL-related operational data in a standardised form, and the new proposed AMC1 ORO.FTL.110(m) contains the standardised form.

Draft amendments to Annex II (Part-ARO) to Commission Regulation (EU) No 965/2012

ARO.OPS.235 Approval of individual flight time specification schemes (IFTSS)

(a) ~~The competent authority shall approve flight time specification schemes proposed by CAT operators if the operator demonstrates compliance with Regulation (EC) No 216/2008 and Subpart FTL of Annex III to this Regulation.~~ The IFTSS of an operator shall be approved by the competent authority, if it is appropriate for the type(s) of operation performed and complies with the relevant essential requirements set out in Annex V to Regulation (EU) 2018/1139, this Subpart and other applicable legislation, including Directive 2000/79/EC.

(b) ~~Whenever a flight time specification scheme proposed by an operator deviates from the applicable certification specifications issued by the Agency, the competent authority shall apply the procedure described in Article 22(2) of Regulation (EC) No 216/2008.~~ Whenever the competent authority intends to approve an IFTSS that deviates from the applicable certification specifications adopted by the Agency, the competent authority shall first seek the Agency opinion on that IFTSS in accordance with Article 76(7) of Regulation (EU) 2018/1139. The Agency shall issue that opinion within 3 months after the submission by the competent authority of all necessary documents.

(c) ~~Whenever a flight time specification scheme proposed by an operator derogates from applicable implementing rules, the competent authority shall apply the procedure described in Article 14(6) of Regulation (EC) No 216/2008~~. Before approving the IFTSS referred to in point (b), the competent authority shall ensure that the operator concerned has taken into account the opinion of the Agency issued under Article 76(7) of Regulation (EU) 2018/1139 and has assessed and mitigated the related fatigue risks to an acceptable level.

(d) ~~Approved deviations or derogations~~ An approved IFTSS that deviates from the applicable certification specifications adopted by the Agency shall be subject, after being applied, to an assessment to determine whether ~~such~~ the deviations ~~or derogations~~ should be confirmed or amended. The competent authority and the Agency shall conduct an independent assessment based on information provided by the operator. The assessment shall be proportionate, transparent and based on scientific principles and knowledge.

Rationale

The proposed amendments are intended to clarify the responsibilities of the competent authority when approving IFTSS and to update the requirements following the adoption of Regulation (EU) 2018/1139. The changes proposed are consistent with the changes proposed to point ORO.FTL.125.

Draft amendments to Subpart FTL of Annex III (Part-ORO) to Commission Regulation (EU) No 965/2012

ORO.FTL.100 Scope

This Subpart establishes the flight and duty time limitations and rest requirements to be met by an operator of commercial air transport (CAT) with aeroplanes and its flight crew and cabin crew members.

Rationale

The clarification of the scope of the subpart (CAT operations with aeroplanes) is proposed following requests from non-commercial operators of complex aircraft to which Annex III (PART-ORO) is also applicable.

It is also proposed to clarify that the Subpart only applies to flight and cabin crew members. The current text of point ORO.FTL.100 refers to 'crew members', which creates some ambiguity. According to the definition in point (29) of Annex I, 'crew member' means a person assigned by an operator to perform duties on board an aircraft', while 'duty' means any task that a crew member performs for the operator, including flight duty, administrative work, giving or receiving training and checking, positioning, and some elements of standby', in accordance with point (10) of point ORO.FTL.105. Looking at these definitions, if additional operator's personnel, such as loadmasters or assistants to unaccompanied children, are being carried on board, these are considered crew members. However, Subpart FTL did not intend to cover all mobile workers in civil aviation. This is legally governed in Article 32 of the Basic Regulation which uses the term 'aircrew'. The term 'aircrew' is defined in Article 2 (12) of Regulation (EU) No 1178/2011 as follows: '"aircrew" means flight crew and cabin crew'.

ORO.FTL.105 Definitions

For the purpose of this Subpart, the following definitions shall apply:

(1) 'acclimatised' means a state in which a crew member's circadian biological clock is synchronised to the time zone where the crew member is. A crew member is ~~considered to be acclimatised to a 2-hour wide time zone surrounding the local time at the point of departure~~ acclimatised to the departure time zone unless one or more duties and rest periods would have acclimatised them to a different time zone. For the calculation of the maximum daily flight duty period:

(i) when the local time at the place of departure differs by 2 hours or less from the local time at the place where the next duty starts and less than 24 hours were spent after arrival in the new place, the crew member is acclimatised to the departure time zone;

(ii) when the local time at the place of departure differs by 2 hours or less from the local time at the place where the next duty starts and more than 24 hours were spent after arrival in the new place, the crew member is acclimatised to the local time where the next duty starts;

(iii) ~~When~~ when the local time at the place ~~where a duty commences~~ of departure differs by more than 2 hours from the local time at the place where the next duty starts, the crew member~~, for the calculation of the maximum daily flight duty period~~, is considered to be acclimatised in accordance with the values in ~~the~~ Table 1:

Table 1

Time difference (h) between reference time and local time where the crew member starts the next duty	**Time (h) elapsed since reporting at reference time**				
	<48	**48–71:59**	**72–95:59**	**96–119:59**	**~~≥~~120–143:59**
>2 and <4	B	D	D	D	D
≤6	B	X	D	D	D
≤9	B	X	X	D	D
≤12	B	X	X	X	D

(iv) If, after arriving at a new location, the crew member undertakes duties starting at and returning to the time zone of that location, the acclimatisation state is determined in accordance with Table 1 where the time difference (h) is established between the time zone of last acclimatisation and the time zone with the greatest displacement from it where the crew member rested during a rotation.

[…]

(2) 'reference time' means the local time at the point of departure ~~reporting point situated in a 2 hour wide time zone band around the local time~~ where a crew member is acclimatised or the local time at the last location where a crew member was acclimatised.

[…]

(5) 'augmented flight crew' means:

(a) for scheduled and charter operations, a flight crew which comprises more than the minimum number required to operate the aircraft, allowing each flight crew member to leave the assigned post, for the purpose of in-flight rest, and to be replaced by another appropriately qualified flight crew member when the aircraft is in the air; or

(b) for air taxi and AEMS operations, a flight crew which comprises more than the minimum number required to operate the aircraft, allowing each flight crew member to leave the assigned post for the purpose of on-board rest when the aircraft is in the air or on the ground;

[…]

(6) 'break' means a period of time within a~~n~~ flight duty period, shorter than a minimum rest period, counting as duty and during which a crew member is free of all tasks; for air taxi and AEMS operations, the cumulative duration of all break periods within a flight duty period is shorter than a minimum rest period;

[…]

(8) 'disruptive schedule' means a crew member's roster which disrupts the sleep opportunity during the optimal sleep time window by comprising ~~an FDP~~ a duty or a combination of ~~FDPs~~ duties which encroach, start or finish during any portion of the day or of the night where a crew

member is acclimatised. A schedule may be disruptive due to early starts, late finishes or night duties.

[…]

(13) ~~'flight time' means, for aeroplanes, the total time between an aircraft first moving from its parking place for the purpose of taking off until it comes to rest on the designated parking position and all engines or propellers are shut down.~~

[…]

(18) 'positioning' means:

(a) the transferring of a non-operating crew member from one place to another, at the behest of the operator, excluding:

— the time of travel from a private place of rest to the designated reporting place at home base and vice versa, and

— the time for local transfer from a place of rest to the commencement of duty and vice versa;

or

(b) when an operating crew member operates the aircraft on a non-commercial flight to an aerodrome from which one or more CAT flights will be performed;

[…]

(29) 'AEMS flight' means a flight with an aeroplane, where immediate and rapid transportation is essential and the purpose of which is to facilitate emergency medical assistance, by carrying one or more of the following:

(a) medical personnel;

(b) medical supplies (equipment, blood, organs, drugs);

(c) ill or injured persons and other persons directly involved.

A sector flown to position an aeroplane for the purpose of carrying (a), (b) or (c) above or to return the aeroplane to the AEMS operating base, is part of the AEMS operation;

(30) 'air taxi operation' means a non-scheduled on-demand commercial air transport with an aeroplane with a maximum operational passenger seating configuration 'MOPSC' of 19 or less;

(31) 'scheduled operation' means a series of flights possessing all the following characteristics:

(a) on each flight seats and/or capacity to transport cargo and/or mail are available for individual purchase by the public (either directly from the air carrier or from its authorised agents);

(b) it is operated so as to serve traffic between the same two or more airports, either:

— according to a published timetable, or

— with flights so regular or frequent that they constitute a recognisably systematic series;

(32) 'charter operation' means a non-scheduled on-demand CAT with an aeroplane with a MOPSC of 20 or more;

(33) 'on-board rest' means, for air taxi and AEMS operations:

(a) a period of flight time in the cruise phase of the flight, during which a member of an augmented flight crew is temporary relieved from any tasks and is resting in an on-board facility that meets the required standard; or

(b) a period of time while the aeroplane is on the ground, during which a member of an augmented or non-augmented flight crew is temporary relieved from any tasks and is resting in an on-board facility that meets the required standard;

(34) 'eastward-westward and westward-eastward transition'' means the transition at home base between a rotation going in one direction and back to home base and a rotation in the opposite direction and back to home base, each crossing four 1-hour time zones or more;

(35) 'fatigue' means a physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental and/or physical activity) that can impair a crew member's alertness and ability to safely operate an aircraft or perform safety-related duties;

(36) 'unforeseen operational circumstances' means unexpected conditions that could not reasonably have been predicted and accommodated, such as bad weather equipment malfunction or air traffic control delay, which may result in necessary on-the-day operational adjustments.

Rationale

The definition of 'acclimatised' (point (1)) is amended to cater for a series of duties inside the five-time-zone-wide area in which a crew member is considered acclimatised. The crew member is considered acclimatised to his or her own time zone time zone and to the time zones +2/-2 h either side of his or her time zone. The current definition does not explain how the acclimatisation status is to be established within this five-time-zone-wide area if sufficient rest periods have been taken between those duties. Hence, the additional clarifications under (a) and (b).

The following assumptions were made for the purpose of the amendments:

— *'acclimatised' means that a crew member has been in the location long enough to recover from circadian disruptions resulting from time zone travel; practically it means that the crew member sleeps at night and is awake during the day;*

— *although the direction of time zone crossing is known to have an influence on the speed of adaptation to a new time zone, people generally acclimatise to a new time zone at a rate of one hour per 24 hours spent in the new time zone.*

As a result of the amendments proposed to the definition of 'acclimatised', Table 1 is amended to reflect the fact that it only applies if the reference time differs by more than 2 hours from the local time at the place where the next duty starts and to include complex rotations crossings of time zones in both eastward and westward directions (point iv).

The definition of 'reference time' (point (2)) is proposed to be clarified to address the fact that the reference time may travel with the aircrew: it is either the local time at the home base where the aircrew member is assumed acclimatised or the local time of the last location at which the crew member was acclimatised.

The definition of 'augmented flight crew' (point (5)) is proposed to be split in two parts to differentiate between the types of operations considering the specificities of having rest on board the aircraft: in-flight rest in scheduled/charter operations and on-board rest in air taxi/AEMS.

Changes are proposed to the definition of 'break' (point(6)), to differentiate between a break and a minimum rest period.

References to 'FDP' in the definition of 'disruptive schedule' (point(8)) are proposed to be replaced by 'duty periods' to account for e.g. a positioning duty or a training duty.

The definition of 'flight time' (point (13)) is proposed to be deleted as a definition of 'flight time' already exists in point (50a) of Annex I to Regulation (EU) No 965/2012. New GM to point ORO.FTL.105 addresses this topic to make sure that the term 'flight time' under Annex I has the same meaning as the term 'flight time' under Annex III.

The definition of 'positioning' (point (18)) is proposed to be supplemented by another type of positioning which is typical for air taxi and AEMS flights, namely the positioning of an operating crew member and aircraft to an aerodrome from which further commercial air transport will be performed. This type of positioning may be a non-commercial flight (see GM1 Article 2(1)(d)), and therefore be outside the scope of Subpart FTL's maximum FDP limits and minimum rest requirements. The purpose of the amendment is therefore to make sure that consecutive duties performed by a crew member, mixing CAT and non-CAT flights, will be covered by the same FTL regime.

A new definition of 'AEMS' (point (29)) is hereby proposed. NPA 2017-17 contained a more general definition of EMS covering both operations with aeroplanes (AEMS) and operations with helicopters (HEMS). Since it was decided to exclude HEMS from the scope of this rulemaking task based on the comments received during the public consultation, this NPA proposes a definition of AEMS only.

The proposed definition follows closely the proposal in NPA 2017-17 but was modified to better reflect the specificity of AEMS operations, which are typically performed as multiple-sector missions where the first sector is from the AEMS base to the site for pick-up of medical supplies and/or patients, the second leg is from the AEMS site to a hospital for the delivery of medical supplies and/or patients, and the third leg is from the hospital back to the AEMS base. There may be additional stops for immigration or sanitary purposes in the case of trans-border operations or for refuelling.

The last sentence clarifies that:

- *any positioning of the aeroplane is part of the AEMS operation, when it is directly linked to the carriage of medical personnel, patients or organs; and*
- *positioning of the aeroplane to any point, and not only to the operating base as was originally proposed in NPA 2017-17, is a sector.*

For AEMS operations, the clarification about the positioning sector is very important in terms of liability of the pilot. Pilots must at all times be aware of the rules under which they operate.

The philosophy behind HEMS and air ambulance operations as explained in GM1 SPA.HEMS.100(a) is also applicable in the case of aeroplanes. Air ambulance flights with an aeroplane, where the emergency is not an issue, are considered normal CAT operations, i.e. air ambulance operations are not AEMS. So, air ambulance operations with aeroplanes are already covered by the existing IRs.

The definition of AEMS is not aligned fully with the definition of HEMS. For AEMS operations no additional SPA approval is required and no alleviations from the performance requirements are foreseen. Regulation (EU) No 965/2012 does not prescribe the medical equipment for AEMS. Also, AEMS are not typically used to rescue a person who faces an imminent or anticipated health risk posed by the environment, or to provide supplies to that person, or transport animals or equipment to/from an AEMS site.

The definition of 'air taxi operation' (point (30)) is transferred here from Article 2 of Regulation (EU) No 965/2012. See the rationale behind the change proposed to Article 2.

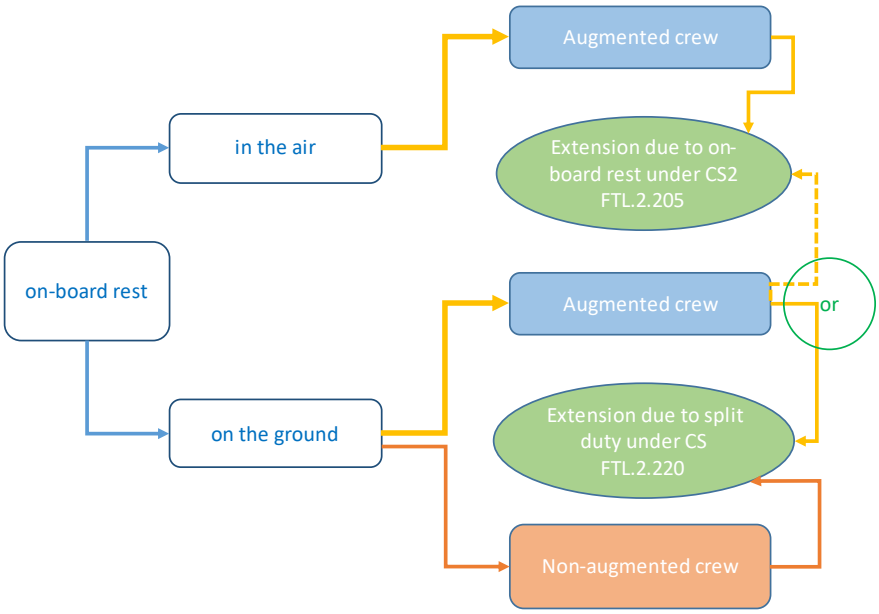
The new definition of 'scheduled operation' (point (31)) is aligned with the definition of 'scheduled air traffic' contained in Article 2(16) of Regulation (EC) 1008/2008[2]. This will provide consistency within EU regulations and will facilitate the distinction between different types of commercial operations.

The new definition of 'charter operation'(point (32)) does not aim to define what 'charter' is in commercial terms, by opposing it to the scheduled operation, as this is obvious when the cumulative criteria for scheduled operations are not met. The definition of 'charter' aims to distinguish between two types of operations – charter and air taxi, which by their nature (non-scheduled, on-demand) look very similar. The proposed basis for differentiation is, for the purpose of FTL only, the MOPSC of the aeroplane i.e. 20 or more.

A new definition of 'on board rest' (point (33)) is proposed to distinguish it from in-flight rest in scheduled operations. Crew in air taxi and AEMS operations may have on-board rest while in the air or on the ground. On-board rest in the air is only possible in the context of augmented flight crew; on board rest follows the procedures for in-flight rest and is taken during the cruise phase of flight (see GM1 CS FTL.1.205(c)(1)(ii)). On-board rest on the ground may be taken by an augmented or non-augmented flight crew; the time on the ground spent for on-board rest is the time spent in a Class A or Class B facility, not the entire turnaround time.

The use of a Class A facility by non-augmented flight crew, while the aeroplane is on the ground, meets the requirements for accommodation in the context of split duty. Any standby time at the airport or in a suitable accommodation elsewhere (home, hotel) cannot be taken on board the aeroplane.

A useful explanation of the differences/similarities between in-flight rest and on-board rest is provided in the following schematic:



The new GM1 ORO.FTL.105 (31) is also proposed on this topic.

[2] Regulation (EC) No 1008/2008 of the European Parliament and of the Council of 24 September 2008 on common rules for the operation of air services in the Community (OJ L 293, 31.10.2008, p. 3) (http://data.europa.eu/eli/reg/2008/1008/oj).

A new definition of 'eastward-westward and westward-eastward transition' (point (34)) is proposed as experience with implementation has shown that clarity about the term used in CS.FTL.1.235 (b)(4) is necessary.

EASA NPA 2010-14 contained the following definition: 'Eastward-Westward and Westward-Eastward transition' means the transition at the place between a rotation encompassing 6-hour time differences or more and a rotation encompassing 4-hour time differences or more in the opposite direction.' This definition was however not retained in Regulation (EU) No 83/2014 that was adopted following NPA 2010-14. A similar definition was proposed with NPA 2017-17.

During the consultation of NPA 2017-17, one stakeholder proposed to go back to the definition proposed in CRD 2010-14, which was, in their view, based on fatigue science and strongly recommended that it should be retained without changes.

However, during the review of the comments, EASA and the review group found that the definition as proposed in CRD 2010-14 was not based on fatigue science. That definition referred to rotations in opposite directions without stipulating which rotation to start with and had different time zone crossings without stating the reason for this imbalance.

As referred to in ICAO Doc 9966, studies with participants flown as passengers have identified the following factors, among others, that affect the rate of adaptation to a new time zone:

- *adaptation generally takes longer when more time zones are crossed;*
- *adaptation is usually faster after westward travel (phase delay) than after eastward travel (phase advance) across the same number of time zones.*

This means that when returning to home base from an eastward rotation which led him or her six time zones away from the home base, a crew member will need more rest time to recover than when returning from a westbound flight with the same number of time zones crossed. In other words, a transition at home base between 6-hour eastward rotation and a 4-hour westward rotation is not equivalent in terms of speed of adaptation to a transition between a 4-hour eastward rotation followed by a 6-hour westward rotation. Under the definition proposed in NPA 2010-14, such combination would have been equivalent in terms of adaptation needed. No scientific evidence, however, substantiates this equivalence.

Therefore, the new definition in point (34) is aligned with CS.FTL.1.235(b)(3)(i) and with CS FTL.2.235 (b)(3)(i) in that it uses the same lower limit of 4-hour time difference for a rotation.

New definitions of 'fatigue' (point (35)) and 'unforeseen operational circumstances' (point (36)) are also proposed. These definitions were not included in NPA 2017-17. However, these two concepts are the subject of frequent queries received by EASA. Therefore, it is felt that including them will be useful.

The definition proposed for 'fatigue' is the ICAO definition used in ICAO Doc 9966 that has been reproduced in many other regulations.

The definition proposed for 'unforeseen operational circumstances' is also aligned with an ICAO definition contained in ICAO Doc 9966.

ORO.FTL.110 Operator responsibilities

An operator shall:

[…]

(j) for scheduled and charter operations, change a schedule or crew arrangements, if the actual operation exceeds the maximum flight duty period on more than 33 % of the flight duties in that schedule during a scheduled seasonal period~~.~~;

(k) for air taxi and/or AEMS operations, monitor the operational robustness of rosters and adapt crew arrangements as necessary;

(l) implement fatigue management, through its management system, in accordance with point ORO.GEN.200, including appropriate fatigue risk management, where required, or through a fatigue risk management system in accordance with point ORO.FTL.120, where required.

(m) submit to the competent authority once a year, in a standardised form, the following data:

(1) the number of fatigue reports;

(2) the frequency of unplanned exceedances of assigned flight duty periods compared to actual flight duty periods;

(3) the frequency of use of commander discretion.

Rationale

The change proposed to point (j) will ensure clarity as air taxi are on-demand operations that do not have a seasonal character and the 33 % seasonality is not applicable. The proposal takes into account comments received during the consultation of the NPA[3].

The text proposed in the new point (k) does not follow the initial proposals in NPA 2017-17. The new text ensures that air taxi operations are treated the same way as AEMS, i.e. as unpredictable on-demand operations. The proposal from an operator association[4] that the 10 % allowance between planned/scheduled and actual FDP is not appropriate for AEMS operations and needs to be suppressed is accepted. It does not make sense to require detailed advance planning of FDPs for both types of operation, the more so as they work with 24-hour readiness periods.

The new proposed point (l) aims to introduce clarity on the differences between appropriate FRM and FRMS.

The new point (m) is proposed to support the proposed text of Article 9a. See the rationale behind those proposed changes.

ORO.FTL.115 Crew member responsibilities

(a) Crew members shall:

~~(a) comply with point CAT.GEN.MPA.100(b) of Annex IV (Part-CAT); and~~

(1) comply with all flight and duty time limitations (FTL) and rest requirements applicable to their activities;

(2) when undertaking duties for more than one operator:

(i) maintain their individual records regarding flight and duty times and rest periods as referred to in the applicable FTL requirements; and

[3] Comment NetJets # 55 in CRD 1 to NPA 2017-17 (Air Taxi/AEMS).

[4] Comment FNAM #1 004 in CRD 1 to NPA 2017-17 (Air Taxi/AEMS).

(ii) provide each operator with the data needed to schedule activities in accordance with the applicable FTL requirements; and

~~(b)~~(3) make optimum use of the opportunities and facilities for rest provided and plan and use their rest periods properly.

(b) Crew members shall not perform duties on an aircraft, if they know or suspect that they are suffering from fatigue as referred to in point 7.6 of Annex V to Regulation (EU) 2018/1139 or feel otherwise unfit, to the extent that the safety of the flight may be compromised.

Rationale

The amendments proposed aim at increasing flight and cabin crew members' awareness of the concept of shared responsibility for the management of fatigue, by replacing the reference to point CAT.GEN.MPA.100(b) in the current point (a) with the full text of its FTL-related provisions.

Therefore, the proposed points (a) (1) and (2) repeat the requirements in points (4) and (5)(i) and (ii) of point CAT.GEN.MPA.100(b)).

The current point (b) is proposed to be renumbered (a)(3).

The new point (b) is a repetition of the requirements in point CAT.GEN.MPA.100(c)(5).

ORO.FTL.120 Fatigue risk management system (FRMS)

(a) When an FRMS is required by this Subpart or an applicable certification specification, the operator shall establish, implement and maintain an FRMS as an integral part of its management system. ~~The FRM shall ensure compliance with the essential requirements in points 7.f., 7.g. and 8.f. of Annex IV to Regulation (EC) No 216/2008.~~ The FRMS shall be described in a dedicated manual or in the operations manual.

(b) The FRMS ~~established, implemented and maintained~~ shall provide for a continuous improvement to the overall ~~performance~~ effectiveness of the operator's fatigue risk management ~~FRM~~ and shall include:

(1) a description of:

(i) the operator's philosophy~~, and~~ principles and responsibilities ~~of the operator~~ with regard to the FRMS, referred to as the FRMS policy;

(ii) the responsibilities of aircrew and other personnel with regard to the FRMS; and

(iii) the FRMS dedicated structures;

(2) documentation of the FRMS processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;

[…]

(6) the FRMS safety assurance processes;

(7) the FRMS promotion processes.

(c) The FRMS shall correspond to the flight time specification scheme, the size of the operator and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in those activities and the applicable flight time specification scheme.

(d) The operator shall take mitigating actions when the FRMS safety assurance process shows that the required safety performance is not maintained.

Rationale

The purpose of the proposed amendments is to facilitate the distinction between FRMS and appropriate FRM and align with ICAO.

Point ORO.FTL.120 embeds the concept of a robust and systemic approach to managing fatigue risks, comprising continuous fatigue prevention and mitigation efforts, and is designed to monitor, improve and manage the effects of fatigue and associated risks for the health and safety of crew. A robust and systemic approach is supposed to be supported by a distinct organisational structure, working on the basis of dedicated policy, documentation and processes. An FRMS based on the risk management system theory with an emphasis on fatigue risk management is the way to meet the purpose of point ORO.FTL.120 .

Changing 'FRM' to 'FRMS' where 'S' stands for 'system' is therefore aimed to ensure an easy distinction between the system approach to fatigue risk management, described in point ORO.FTL.120, and another approach to fatigue risk management referred to as 'appropriate FRM'.

Appropriate FRM is described under the CSs and is today only applicable to disruptive duties: night duties and late finish duties. The concept behind appropriate FRM is to provide for a number of targeted measures on the basis of the existing operator's safety management system (SMS).

ORO.FTL.125 Individual ~~F~~flight time specification scheme~~s~~

(a) The operator ~~Operators~~ shall establish, implement and maintain an individual flight time specification scheme~~s~~ (IFTSS) that ~~are~~ is appropriate for the type(s) of operation performed and ~~that comply~~ complies with ~~Regulation (EC) No 216/2008~~ the relevant essential requirements set out in Annex V to Regulation (EU) 2018/1139, this Subpart and other applicable legislation, including applicable national law deriving from the transposition of Directive 2000/79/EC.

(b) Before being implemented, the IFTSS ~~flight time specification schemes~~, including any related appropriate FRM or FRMS where required, shall be approved by the competent authority, in accordance with point ARO.OPS.235.

(c) To demonstrate compliance with point (a) above ~~Regulation (EC) No 216/2008 and this Subpart~~, the operator shall apply the applicable certification specifications adopted by the Agency.

Alternatively, if the operator wants to deviate from those certification specifications ~~in accordance with Article 22(2) of Regulation (EC) No 216/2008~~, it shall provide the competent authority, together with the application for the approval of the IFTSS, with a safety case, including a full description of the intended deviation ~~prior to implementing it~~, an assessment of related fatigue risks and appropriate measures to mitigate the risk to an acceptable level, and~~.~~ ~~The description shall include~~ any revisions to manuals or procedures that may be relevant~~, as well as an assessment demonstrating that the requirements of Regulation (EC) No 216/2008 and of this Subpart are met~~. In this case, prior to receiving the approval of the IFTSS, the

operator also needs to demonstrate to the competent authority how it has taken into account the opinion of the Agency issued in accordance with Article 76(7) of Regulation (EU) 2018/1139.

(d) For the purpose of the assessment referred to in point ARO.OPS.235 (d), within 2 years of the implementation of an IFTSS that deviates from the applicable certification specifications issued by the Agency ~~a deviation or derogation~~, the operator shall collect data concerning the granted deviation ~~or derogation~~ and analyse that data using scientific principles with a view to assessing the effects of the deviation or derogation on aircrew fatigue. Such analysis shall be provided in the form of a report to the competent authority.

Rationale

The changes proposed to this point are intended to clarify it and reflect the experience with its implementation so far.

The current text of point ORO.FTL.125 does not sufficiently emphasise the individual character of the operator's FTL scheme, whilst this was actually the purpose of the provisions. An operator must develop an individual FTL specification scheme that is appropriate to their operation(s). Point ORO.FTL.125 has been so far largely misunderstood by many operators who simply copy-paste texts of ORO.FTL in their OM, Chapter 7, without any customisation.

Further clarity is provided on the conditions for operators to deviate from CS-FTL.1 and/or CS-FTL.2 when developing their IFTSS. Related changes to increase clarity have been made to point ARO.OPS.235, which includes requirements for competent authorities when approving IFTSS. With the proposed changes both provisions are fully consistent and mirror each other.

It should be highlighted that the flexibility provisions of Article 71 of Regulation (EU) 2018/1139 also apply in the area of FTL. Some deviations are combined with the requirements to have an FRMS.

ORO.FTL.205 Flight duty period (FDP)

[…]

(b) Basic maximum daily FDP~~.~~

(1) The maximum daily FDP without the use of extensions for all acclimatised crew members carried in scheduled and charter operations where the flight crew consists of two pilots shall be in accordance with the following table:

Table 2

Maximum daily FDP — ~~A~~acclimatised crew members — two-pilot operations

[…]

(2) The maximum daily FDP ~~when~~ for all crew members ~~are~~ in an unknown state of acclimatisation, carried in scheduled and charter operations where the flight crew consists of two pilots, shall be in accordance with the following table:

Table 3

Crew members in an unknown state of acclimatisation — two-pilot operations

[…]

(3) The maximum daily FDP ~~when~~ for all crew members ~~are~~ in an unknown state of acclimatisation, carried in scheduled and charter operations where the flight crew consists of two pilots, ~~and~~ when the operator has implemented an FRMS, shall be in accordance with the following table:

Table 4

Crew members in an unknown state of acclimatisation under FRMS — two-pilot operations

[…]

(4) The maximum daily FDP for acclimatised crew members carried in scheduled and charter operations where the flight crew consists of a single pilot shall be either one of the following:

(i) in accordance with the following table:

Table 5

Maximum daily FDP* in hours — acclimatised crew members — single-pilot operations

Starting time of FDP	Number of sectors						
	Up to 4	5	6	7	8	9	10 or more
0600–0659	10:00	09:15	08:45	08:15	08:00	08:00	08:00
0700–0759	10:30	09:45	09:15	08:45	08:15	08:00	08:00
0800–1259	11:00	10:15	09:45	09:15	08:45	08:15	08:00
1300–1429	10:30	09:45	09:15	08:45	08:15	08:00	08:00
1430–1659	10:00	09:15	08:45	08:15	08:00	08:00	08:00
1700–2159	09:00	08:15	08:00	08:00	08:00	08:00	08:00
2200–0359	08:00	08:00	08:00	08:00	08:00	08:00	08:00
0400–0559	09:00	08:15	08:00	08:00	08:00	08:00	08:00

* The flight time for each sector shall be limited to 4 hours with autopilot and to 2 hours without autopilot.

(ii) 10 hours, regardless of the number of sectors, provided that all the following conditions are met:

(A) the operation takes place entirely within the range of 0700 to 2159 hours;

(B) the operation is conducted in VFR conditions;

(C) the operations takes place between preselected aerodromes;

(D) the duration of each sector is 1 hour or less.

(5) The maximum daily FDP for all crew members in an unknown state of acclimatisation carried in scheduled and charter operations where the flight crew consists of a single pilot shall be 8 hours.

(6) The operator's IFTSS shall specify the maximum daily FDP without the use of extensions for all acclimatised crew members carried in air taxi and AEMS operations, where the flight crew consists of two pilots, in accordance with the applicable certification specifications.

[…]

(d) Maximum daily FDP ~~for acclimatised crew members~~ with the use of extensions, without in-flight rest, for acclimatised crew members carried in scheduled and charter operations where the flight crew consists of two pilots.

[…]

(5) ~~Flight time specification schemes~~ The operators' IFTSS shall specify the limits for extensions of the maximum basic daily FDP in accordance with the certification specifications applicable to the type of operation, taking into account:

(i) the number of sectors flown; and

(ii) window of circadian low (WOCL) encroachment.

(d1) Maximum daily FDP with the use of extensions without on-board rest for acclimatised crew members carried in air taxi and AEMS operations, where the flight crew consists of two pilots

(1) The maximum daily FDP may be extended by up to 1 hour not more than three times in any 7 consecutive days.

(2) The use of the extension shall be planned in advance.

(3) Where an FDP is planned to use an extension, the minimum pre-flight and post-flight rest periods shall be increased by 2 hours, or the post-flight rest period shall be increased by 4 hours. Where extensions are used for consecutive FDPs, the additional pre- and post-flight rest between the two extended FDPs shall be provided consecutively.

(4) Extension of the maximum basic daily FDP without on-board rest shall not be combined with extensions due to on-board rest or split duty in the same duty period.

(5) The operator's IFTSS shall specify the limits for extensions of the maximum basic daily FDP in accordance with the applicable certification specifications.

(e) Maximum daily FDP with the use of extensions due to in-flight rest or on-board rest for all crew members carried where the flight crew consisting of two pilots is augmented

~~Flight time specification schemes~~ The operator's IFTSS shall specify the conditions for extensions of the maximum basic daily FDP with in-flight rest or on-board rest in accordance with the certification specifications applicable to the type of operation, taking into account:

(1~~i~~) the number of sectors flown;

(2~~ii~~) the minimum in-flight or on-board rest allocated to each crew member;

(3~~iii~~) the type of in-flight or on-board rest facilities; and

(4~~iv~~) the augmentation of the basic flight crew.

(f) Unforeseen circumstances in ~~flight~~ scheduled and charter operations— commander's discretion

(1) The commander may ~~conditions to~~ modify the limits on flight duty, duty and rest periods ~~by the commander~~ in the case of unforeseen circumstances in ~~flight~~ scheduled and charter operations, about which he or she has been informed ~~start~~ at or after the reporting time, ~~shall comply with the following~~ as follows:

[…]

(6) The operator shall implement a non-punitive ~~process~~ policy ~~for the use of the discretion described under this provision~~ with regard to commander's discretion under point ORO.FTL.205(f) and shall describe it in the ~~operations manual~~ operator's IFTSS.

[…]

(f1) Unforeseen circumstances in air taxi and AEMS operations — commander's discretion

The operator's IFTSS shall specify the conditions under which the commander may modify the limits on flight duty, duty and rest periods in the case of unforeseen circumstances in air taxi and AEMS operations in accordance with the applicable certification specifications.

(g) Unforeseen circumstances in flight operations – delayed reporting

[…]

Rationale

The changes proposed to points (b)(1), (2) and (3) are intended to clarify that the FDP Tables 2, 3 and 4 apply only to scheduled and charter operations, as well as to all crew members carried (which includes both flight and cabin crew), where the flight crew consists of two pilots.

During the consultation of NPA 2017-17, some commentators[5] stated that the limits prescribed in Table 3 for crew members in an unknown state of acclimatisation were excessively restrictive for air taxi operations. Air taxi is different from scheduled CAT and crew will often spend extended time on the ground after crossing multiple time zones making them unacclimatised, but very well rested. In addition, they have consolidated 'OFF' blocks (in general, 2 weeks for long-haul air taxi operations) whereby any effects of time zone crossing and cumulative fatigue are mitigated. Following these comments, EASA proposes specific tables for unacclimatised crew in air taxi and AEMS operations in CS-FTL.2.

The proposed new point (b)(4) includes specific provisions for single-pilot operations. Point (4)(i) and Table 5 were already included in NPA 2017-17. The new proposed point (b)(4)(ii) was added following the review of comments received[6]; it adds an alternative possibility for repetitive short flights in single-pilot operations where the maximum daily FDP is 10 hours irrespective of the number of sectors.

The new proposed point (d1) has been aligned with the current content of Subpart Q, following the comments received during the consultation of NPA 2017-17 which criticised the introduction of novel requirements. However, a third extension of the maximum daily FDP is proposed to be allowed for air taxi and AEMS operations,

5 Comment Vista Jet #130, CRD to NPA 2017-17 (Air Taxi/AEMS).

6 Comment DSAC #887, CRD to NPA 2017-17 (Air Taxi/AEMS).

where large periods of time are typically spent on the ground without flying activity. This third extension has to be planned within 7 consecutive days.

With NPA 2017-17, 60 hours of extended recovery rest, including 3 local nights, were proposed as additional mitigation to compensate for the extended daily FDPs without in-flight rest. However, this requirement does not exist in Subpart Q and may put undue burden on the operators. The operators shall anyway comply with point ORO.FTL.235(d), i.e. minimum 36 hours of recurrent extended recovery rest periods including 2 local nights and 48 hours of recurrent extended recovery rest periods twice every month.

The changes proposed to point (e) are intended to clarify its applicability. Point (e) applies to augmented flight crew in two-pilot operations, where in-flight/on-board rest is used; hence, it does not apply to single-pilot or non-augmented two-pilot flight crew operations. The reference to air taxi and AEMS operations that was included in NPA 2017-17 is removed since it is clear from the definition of on-board rest that it only applies to these operations.

The changes proposed to point (f) are intended to clarify that 'which start at or after reporting' refers to when the conditions allowing the exercise of commander's discretion are present and not to the unforeseen circumstances. In terms of safety of flight, what is important is to avoid contacting the commander during their rest time rather than to know when unforeseen circumstances have occurred.

A recent spike in confidential safety reports related to commander's discretion reveals that some operators implement an unfair or unjust policy to prevent recurrence when the commander refuses to use discretion to increase the FDP, resulting in a delay or cancellation of the flight. The changes proposed to (f)(6) aim to clarify that the non-punitive policy needs to cover all possible combinations of use or non-use of commander's discretion. Consequent amendments are also proposed to AMC1 ORO.FTL.205(f).

The requirements on commander's discretion in air taxi and AEMS operations are proposed in a separate point (f1) to facilitate the implementation, following comments[7] received during the consultation of NPA 2017-17.

NPA 2017-17 also proposed changes to point (a), and a new point (b)(8), which were not retained following the review of comments.

ORO.FTL.210 Flight times and duty periods

(a) The total duty periods to which an individual crew member in scheduled and charter operations may be assigned shall not exceed:

(1) 60 duty hours in any 7 consecutive days;

(2) 110 duty hours in any 14 consecutive days; ~~and~~

(3) 190 duty hours in any 28 consecutive days, spread as evenly as practicable throughout that period; and

(4) 2 000 duty hours in any calendar year.

(a1) The total duty periods to which an individual crew member in air taxi and AEMS operations may be assigned shall not exceed:

(1) 60 duty hours in any 7 consecutive days;

[7] Comment # 56 NetJets, CRD to NPA 2017-17 (Air Taxi/AEMS).

(2) 190 duty hours in any 28 consecutive days, spread as evenly as practicable throughout that period; and

(3) 2 000 duty hours in any calendar year.

(a2) By way of derogation from (a)(1) or (a1)(1), the total duty hours in any 7 consecutive days may be exceeded by a maximum of 10 hours, provided that this exceedance is solely used for the purpose of positioning a crew member back to his or her home base for the start of the extended recovery rest period.

[…]

Rationale

Point (a)(4): The limit of 2 000 duty hours in any calendar year already exists in the working time directive[8], and is now added also here following comments received during the consultation of NPA 2017-17 to ease understanding and facilitate implementation[9].

Point (a1) is proposed to reflect the limits applicable to air taxi and AEMS operations only. Cumulative duty periods for air taxi/AEMS are separated from those applicable to scheduled and charter operators as the limit of 110 hours does not exist today under Subpart Q. This considers comments received during the consultation of NPA 2017-17[10]. 190 duty hours is the same limit as the one currently applicable to air taxi operations under Subpart Q. The studies in support of NPA 2017-17 and this NPA showed that 190 hours was an adequate limit.

The new proposed point (a2) is intended to provide for flexibility that has in the past been allowed under Article 14(6) of Regulation (EU) No 216/2008 and Article 8 (3) on Council Regulation (EEC) No 3922/91 but is no longer possible under Article 71 of Regulation (EU) 2018/1139, and considers the comments received during the consultation of NPA 2017-17. Some operators had in the past their IFTSS approved with a derogation from the cumulative limit per 7 consecutive days, i.e. more than 60 duty hours, namely:

— *Widerøe (NO), a CAT operator, whose rosters 7-on/7-off (for cabin crew) and 7-on/6-off (for flight crew) derogate from point ORO.FTL.210(a) of Subpart FTL. This derogation was approved in accordance with Article 14(6) of Regulation (EU) No 216/2008. The operator applies a maximum of 70 cumulative hours per 7 consecutive days for their short-field, multiple-sector routes;*

— *Babcock (NO), an AEMS operator, whose rosters 7-on,-7 off, 7-on and 14-off derogate from OPS 1.1100 (1.1)(b) of Subpart Q. This derogation was approved in accordance with Article 8(3) of Council Regulation (EEC) No 3922/91. The operator applies a maximum of 90 duty hours which may be distributed in any 7 consecutive days within any 14-day period;*

— *NetJets (PT), an air taxi operator, whose rosters derogate from point OPS 1.1100(1.1)(b) of Subpart Q. This derogation was approved in accordance with Article 8(3) of Council Regulation (EEC) No 3922/91. The operator applies a maximum of 70 cumulative hours per 7 consecutive days, as the additional 10 hours are only used for positioning back to base.*

The text proposed in NPA 2017-17 with regard to the total flight time in air taxi and AEMS operations is removed. It made a reference to CS FTL.2.210 (now deleted) which contained limits far more restricting than those currently

8 Council Directive 2000/79/EC of 27 November 2000 concerning the European Agreement on the Organisation of Working Time of Mobile Workers in Civil Aviation concluded by the Association of European Airlines (AEA), the European Transport Workers' Federation (ETF), the European Cockpit Association (ECA), the European Regions Airline Association (ERA) and the International Air Carrier Association (IACA) (OJ L 302, 1.12.2000, p. 57–60).

9 Comment #28, CRD to NPA 2017-17 (Air Taxi/AEMS).

10 Comment Vista Jet # 130, CRD to NPA 2017-17 (Air Taxi/AEMS).

applicable under Subpart Q, OPS 1.1100 i.e. 900 block hours in a calendar year and 100 block hours in 28 consecutive days.

ORO.FTL.215 Positioning

If ~~an operator positions~~ a crew member is positioned, the following shall apply:

(a) positioning of a non-operating crew member after reporting but prior to operating, without an intervening rest period, shall be counted as FDP but shall not count as a sector;

(b) all time spent on positioning shall count as duty period~~.~~;

(c) in air taxi and AEMS operations, when an operating crew member operates the aircraft on a non-commercial flight to an aerodrome, from which one or more CAT flights will be performed without an intervening rest period, positioning shall count as FDP and as a sector;

(d) the IFTSS established in accordance with the certification specifications applicable to air taxi and AEMS operations shall specify the impact on the maximum FDP of:

(2) the duration of positioning; and

(3) the mode of transportation.

Rationale

The changes proposed to point (a) are for consistency with the new point (c).

The new point (c) is proposed to cater for types of positioning specific to air taxi and AEMS operations and to avoid a situation where the positioning sector is outside Subpart FTL limits. As a result, consecutive sectors performed by an operating crew member, mixing CAT and non-CAT, shall be under the same FTL requirements.

The proposed new point (d) allows operators to customise their IFTSS with regard to positioning, as long distances travelled on positioning or the change of main transport modes, which are typical for air taxi and AEMS operations, may be a factor influencing subsequent onset of fatigue. According to the 2015 Study of FRMSc[11] for the EBAA & ECA, which supported the development of NPA 2017-17, every 1 hour of positioning increases fatigue scores by 0,25. For comparison, 1 hour of flight time increases fatigue scores by 0,13. Main transport mode includes airline, train and intercity coach/buses; it excludes taxi or vehicle driven by the staff.

ORO.FTL.220 Split duty

The conditions for extending the basic maximum daily FDP due to a break on the ground shall be in accordance with the following:

(a) ~~flight time specification schemes~~ the operator's IFTSS shall specify the following elements for split duty in accordance with the certification specifications applicable to the type of operation:

(1) the minimum duration of a break on the ground; ~~and~~

[11] EBAA/ECA Study of Fatigue in Air Taxi, Emergency Medical Service Commercial Air Operations https://www.easa.europa.eu/en/downloads/43767/en.

(2) the possibility to extend the maximum basic daily FDP ~~prescribed under point ORO.FTL.205(b)~~ taking into account the duration of the break or breaks on the ground, the facilities provided to the crew member to rest and other relevant factors;

(3) the possibility to extend the maximum basic daily FDP due to one or more breaks imposed by unforeseen circumstances occurring after the start of the FDP, if the commander agrees to the change and the crew members are provided with nutrition; and

(4) the maximum length of the FDP extended due to split duty, ensuring that it does not lead to more than 18 hours continuous awake time.

(b) the break or break(s) on the ground, as applicable, shall count in full as FDP;

(c) split duty shall not follow a reduced rest in accordance with point ORO.FTL.235(c).

Rationale

Many commentators indicated that air taxi and AEMS operators should be allowed more operational flexibility on the day of operation if unforeseen circumstances after the start of the FDP imposed one or more breaks on the ground (for example, due to a significant passenger delay after the first sector, the crew is put into an airport hotel for the duration of the unexpected break). In other words, in unforeseen circumstances there should be an opportunity to convert a non-split duty into a split duty and extend the FDP duration on the day of operation.

The nature of air taxi and AEMS activities will often result in changes to the FDP on the day of operations. While this is expected, the potential for increased fatigue risk must also be accounted for.

Based on scientists' views provided for the purpose of OPS.055 (FTL for scheduled and charter operations) and the experience gained with FTL implementation so far, any disruption on the day of operation increases fatigue levels. EASA therefore believes that split duty and split-duty breaks should be planned in advance of the FDP, so that flight crew members can accurately self-assess their ability to safely complete the FDP before it begins.

Unlike scheduled and charter operations, however, there is a considerable unpredictability in scheduling in air taxi and AEMS operations, as well as frequent changes of schedule. The specific characteristics of air taxi and AEMS flights require more flexibility when dealing with events outside the operator's control and justify a more differentiated approach. It is not practical to require a detailed advance planning of FDPs in both air taxi and AEMS, the more so as they work with 24-hour readiness periods.

It should be emphasised that a break period within the FDP does not 'stop' or 'pause' the FDP; in fact, the FDP continues running regardless of the break(s).

Therefore, the proposed new point (a)(3) includes the possibility to extend the FDP in unforeseen circumstances on the day of operation due to a break or breaks if the commander agrees to the change.

With regard to the proposed new point (a)(4), the 18-hour continuous awake time cap is considered appropriate also for split duty. Currently it is only available for the combination of standby and FDP.

The changes proposed to point (c) are intended to clarify that a break is not reduced rest.

ORO.FTL.225 Standby and duties at the airport

[…]

(f) ~~flight time specification schemes~~ the IFTSS established in accordance with the certification specifications applicable to the type of operations shall specify the following elements:

[…]

(3) how time spent on standby ~~other than airport standby~~ in suitable accommodation shall be counted for the purpose of cumulative duty periods.

Rationale

The changes proposed to point (f) are editorial.

The expression 'standby other than airport standby' used in point (f)(4) so far to distinguish between airport standby and home/hotel standby was found overly complicated for everyday use often leading to confusion. It is therefore proposed to be replaced with the expression 'standby in suitable accommodation', as the type of accommodation is the primary difference with airport standby.

ORO.FTL.235 Rest periods

[…]

(c) Reduced rest

By derogation from points (a) and (b), ~~flight time specification schemes~~ the IFTSS established in accordance with the applicable certification specifications may reduce the minimum rest periods at home base or away from home base ~~in accordance with the certification specification applicable to the type of operation and~~ taking into account the following elements:

(1) for scheduled and charter operations:

(i) ~~(1)~~ the minimum reduced rest period;

(ii) ~~(2)~~the increase of the subsequent rest period; and

(iii) ~~(3)~~the reduction of the FDP following the reduced rest

(2) for air taxi operations and AEMS:

(i) the minimum reduced rest period;

(ii) the state of acclimatisation;

(iii) whether local nights are included in the rest period;

(iv) the time zone crossing;

(v) the combination of flight time and positioning immediately prior to the reduced rest period;

(vi) the flight time in the previous 7 consecutive days prior to rest period; and

(vii) the travelling time to/from the place of rest.

(d) Recurrent extended recovery rest periods

~~Flight time specification schemes~~ The IFTSS established in accordance with the applicable certification specifications shall specify recurrent extended recovery rest periods to compensate for cumulative fatigue. The minimum recurrent extended recovery rest period shall be 36 hours, including 2 local nights, and in any case the time between the end of one

recurrent extended recovery rest period and the start of the next extended recovery rest period shall not be more than 168 hours. The recurrent extended recovery rest period shall be increased to 2 local days twice every month.

(e) ~~Flight time specification schemes~~ The IFTSS established in accordance with the applicable certification specifications shall specify additional rest periods ~~in accordance with the applicable certification specifications~~ to compensate for:

[…]

Rationale

The changes proposed to point (c) are intended to introduce specific elements to cater for air taxi and AEMS operations. No significant changes are made to the original proposal of NPA 2017-17, except that an additional point (vii) is proposed to be added to point (c)(2) following a proposal from stakeholders.

The changes proposed to point (d) and point (e) are editorial.

ORO.FTL.240 Nutrition

(a) During the FDP there shall be the opportunity for a meal and drink in order to avoid any detriment to a crew member's performance, especially when the FDP exceeds 6 hours, or 5 hours for single-pilot operations or when eating or drinking during flight operations is impossible. The circadian rhythm and the regular mealtimes shall be taken into consideration.

[…]

Rationale

It is proposed to complement point (a) with elements proposed by a crew association. It should be noted that the emphasis placed on FDPs in excess of 6 or 5 hours does not mean that for shorter FDPs the operator may not offer a meal opportunity. Point ORO.FTL.240 applies to any FDP duration, but special care for crew performance is due when the FDP is longer and when eating or drinking during flight operations is impossible.

Draft Decision

Draft amendments to Certification Specifications and Guidance Material for Commercial Air Transport by Aeroplane – Scheduled and Charter Operations (CS-FTL.1)

CS FTL.1.100 Applicability

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

(b) An operator may decide to apply CS-FTL.1 to air taxi operations or to AEMS operations if the flight crew consists of minimum two pilots. In that case, the operator applies the entire CS-FTL.1.

Rationale

In point (a) the exclusion of AEMS and air taxi operations is removed as it is no longer necessary considering the extension of the scope of the Regulation and the possibility for operators to apply CS-FTL.1 to any type of CAT by aeroplanes.

It should be noted that charter and air taxi flights have many similarities as both are on-demand operations where the entire capacity of the aircraft is rented. What differentiates them is the size/capacity of the aircraft. The same may also be valid for charter and AEMS flights. In that sense, some operators may decide to use CS-FTL.1 for their two-pilot air taxi or AEMS flights.

CS-FTL.1 and the implementing rules relevant to scheduled/charter operations apply to single-pilot operations, regardless of their regularity and purpose.

Point (b) caters for the optional use of CS-FTL.1 in air taxi /AEMS operations and addresses several stakeholders' comments pointing to the need to clarify that cherry-picking from CS-FTL.2 should not be allowed. For example, an operator who conducts any combination between scheduled, charter, air taxi and AEMS operations may choose to apply CS-FTL.1 to the entire mix for convenience; once having decided to conduct air taxi/AEMS operations under CS-FTL.1, however, the operator cannot 'jump' between CS-FTL.1 and CS-FTL.2 searching for a more favourable regime.

~~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~~.

Rationale

It is proposed to relocate the content this GM to the implementing rule (point ORO.FTL.200), since it applies to all types of operation.

CS FTL.1.205 Flight duty period (FDP)

[…]

(b) Extension of FDP without in-flight rest

The extension of FDP without in-flight rest under the provisions of point ORO.FTL.205(d)(5) is limited to the values specified in ~~the t~~Table 6 below.

Table 6. Maximum daily FDP with extension

[…]

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

[…]

(3) The minimum in-flight rest for each cabin crew member is in accordance with Table 7 below:

Table 7. Minimum in-flight rest for each cabin crew member

[…]

Rationale

Tables are numbered for ease of reference.

GM2 CS FTL.1.205(c)(1)(ii) Flight ~~D~~duty ~~P~~period (FDP)

IN-FLIGHT REST

In-flight rest periods should be allocated in order to optimise the alertness of those flight crew members who will be at aircraft controls during landing. The purpose of the in-flight rest facility is to enable the flight crew to sleep, not just meet a technical specification for the seat.

Rationale

The purpose of the in-flight rest or on-board rest facility is to enable the flight crew to sleep, not just meet a very simple technical specification for the seat.

Since experience has shown some deficiencies in the understanding of the purpose in-flight rest, two instances of mirroring GM are therefore proposed to be included in CS-FTL.1 and CS-FTL.2.

~~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.~~

Rationale

The deletion of this GM as proposed by NPA 2017-17 is retained. These provisions are relevant for all types of operations and are therefore better placed under point ORO.FTL.225. See the proposed new AMC1 ORO.FTL.225.

~~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.~~

Rationale

The deletion of this GM as proposed by NPA 2017-17 is retained. These provisions are relevant for all types of operations and are therefore better placed under point ORO.FTL.225. See the proposed new GM1 ORO.FTL.225.

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.

The operator should apply duty assignment procedures, in the planning phase and on the day of operation, designed to avoid that an FDP taking place immediately after a period of standby in suitable accommodation does not result in more than 18 consecutive hours awake time. For that purpose, the operator may consider e.g. the time of the day in which the standby takes place. The operator should take into account the frequency of such long awake periods in their operations and the severity of their impact on crew member fatigue levels.

Rationale

It is proposed to complement the GM with additional text aiming to clarify what stakeholders are expected to do to avoid continuous awake in excess of 18 hours and when.

GM1 CS.FTL.1.230(d) Reserve

PROTECTED SLEEP OPPORTUNITY

The application of fatigue management principles to protect an 8-hour sleep opportunity for each reserve day means that crew members should be able to maintain a sleep pattern consistent with surrounding days.

Rationale

This guidance was initially proposed under CS-FTL.2 in NPA 2017-17. One MS commented that this guidance should be considered as applicable to all types of operations. It is therefore proposed to include the text under CS-FTL.1 as well. See the rationale for the proposed GM1 CS.FTL.2.230(d).

CS FTL.1.235 Rest periods

(a) Disruptive schedules

(1) If a transition from a late finish/night duty period to an early start duty period is planned at home base, ~~2 FDPs~~ two duty periods include~~s~~ 1 local night.

(2) If a crew member performs ~~4~~ four or more night duties, early starts or late finish~~es~~ duties between ~~2~~ two extended recovery rest periods, as defined in point ORO.FTL.235(d), the second extended recovery rest period is extended to 60 hours.

(b) Time zone differences

(1) For the purpose of Table 8 ~~ORO.FTL.235(c)(1),~~ 'rotation' is a series of duties, including at least one flight duty, and one or more rest period**s** out of home base, starting at home base and ending when returning to home base for a rest period where the operator is no longer responsible for the accommodation of the crew member.

[…]

(3) Time zone differences are compensated for by additional rest, as follows:

(i) At home base, when returning to home base after a rotation with at least one duty period ~~if a rotation involves~~ that crossed at least four 1-hour time zones ~~a 4 hour time difference or more~~, the minimum rest is as specified in the following table.

Table 8. Minimum consecutive local nights of rest at home base to compensate for time zone differences

~~Maximum time~~ Time difference (h) between ~~reference time and local time where a crew member rests during a rotation~~ the time zone of last acclimatisation and the time zone with the greatest displacement from it where the crew member rested 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~~ Time elapsed (h) since reporting for the first duty period that crosses at least four 1-hour time zones during a rotation (*)				
	< 48	48 – 71:59	72 – 95:59	~~≥~~96 ~~–~~119:59	>120

≥4 and ≤ 6	2	2	3	3	3
≤ 9	2	3	3	4	4
≤ 12	2	3	4	5	5
	Minimum consecutive local nights of rest				

Note:

(*) The time elapsed since reporting stops counting when the crew member returns to his or her home base for the compensatory rest period during which the operator is no longer responsible for the accommodation of the crew member.

(ii) Away from home base, if ~~an FDP~~ a duty period ~~involves a 4-hour time difference or more~~ crosses at least four 1-hour time zones, the minimum rest following that ~~FDP~~ duty period is at least as long as the ~~preceding~~ duty period duration, or 14 hours, whichever is greater. By way of derogation from point (b)(3)(i) and only once between ~~2~~ two recurrent extended recovery rest periods as specified in point ORO.FTL.235(d), the minimum rest provided under this point (b)(2)(ii) may also apply to home base if the operator provides suitable accommodation to the crew member.

(4) In the case of an ~~E~~eastward-~~W~~westward or ~~W~~westward-~~E~~eastward transition at home base, at least 3 local nights of rest at home base are provided between alternating rotations.

(5) The monitoring of rotations and of combinations of rotations is conducted under the operator's safety risk management process ~~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~~ if the operator has established an FRMS under point ORO.FTL.120.

(3) The rest period following the reduced rest is extended by the difference between the minimum rest period specified in point ORO.FTL.235(a) or (b) and the reduced rest.

(4) The maximum FDP following the reduced rest is reduced by the difference between the minimum rest period specified in point ORO.FTL.235(a) or (b) as applicable and the reduced rest.

(5) There is a maximum of ~~2~~ two reduced rest periods between ~~2~~ two recurrent extended recovery rest periods specified in accordance with point ORO.FTL.235(d).

Rationale

A number of amendments are proposed to CS FTL.1.235 that were not included in NPA 2017-17.

The table under (b)(3)(i) is proposed to be numbered as Table 8 and its title clarified based on the experience gained during implementation of this CS.

References to 'FDP' are proposed to be replaced by 'duty periods' where needed, to account for e.g. a positioning duty or a training duty.

For the purpose of calculating compensatory rest after rotations involving time zone crossings, Table 8 is proposed to be aligned with Table 12 of CS FTL.2.235 (applicable to air taxi and AEMS) for consistency.

The heading of the first column is proposed to be reworded as 'Time difference (h) between the time zone of last acclimatisation and the time zone with the greatest displacement from it where the crew member rested during a rotation'. This is to account for complex rotations lasting for several days and including subsequent duty periods starting and returning to a new location where the crew member gradually becomes acclimatised to; hence, the need to account for the greatest displacement from the time zone of last acclimatisation.

The heading of the second column is proposed to be changed to read 'Time elapsed (h) since reporting for the first duty period that crosses at least four 1-hour time zones during a rotation'. This change is expected to facilitate the application of Table 8 to complex rotations with more than two FDPs, where the first FDP or the first few FDPs in the rotation do(es) not involve crossing of more than four time zones. For example, the FDP that crosses ≥ four time zones may be the second or the third in a row within the rotation. Also, the reference time changes after the crew member becomes acclimatised to the new time zone. Since the minimum rest as per Table 8 is to allow a crew member to re-acclimatise upon return to home base and, therefore, to compensate him or her for time zone crossings, the calculation of time elapsed should be based on the duty period that causes de-synchronisation of the crew member's body clock.

The Note in fact reproduces GM2 CS FTL.1.235(b)(3), which specifies conditions for the application of Table 8 and is therefore placed right beneath the table. This GM is therefore deleted.

The proposed amendment to point (c)(2) is aligned with the revised text of point ORO.FTL.120, while the proposed amendment of point (c)(4) is a clarification based on the experience gained during implementation of this CS.

~~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~~.

Rationale

NPA 2017-17 proposed to move the content of this GM to the IR to make it applicable to any operation. In this NPA it is proposed to incorporate this text in both CS FTL.1.235 (as a note to Table 8) and CS FTL.2.235 (as a note to Table 12). Therefore, this GM is proposed to be deleted.

~~GM2 CS FTL.1.235(b)(3) Additional rest to compensate for time zone differences~~

~~REST AFTER ROTATIONS WITH THREE OR MORE FLIGHT DUTY PERIODS~~

~~For a rotation with three or more FDPs, the greatest time zone difference from the original reference time should be used to determine the minimum number of local nights of rest to compensate for time zone differences. If such a rotation includes time zones crossings in both directions, the calculation is based on the highest number of time zones crossed in any one FDP during the rotation~~.

Rationale

The term 'original reference time' may be misleading. Assuming that it refers to the local time at home base, there may be 3, 4 or more days in the case of three or more duty periods in a rotation, during which the crew member may have not crossed more than four time zones and is therefore still acclimatised to the reference time. Since the minimum rest as per Table 8 is to compensate crew members for the time they have been de-synchronised from the local time at home base, the calculation of time elapsed should be based on the duty period that causes de-synchronisation of the crew member's body clock. Therefore, it is proposed to delete the first sentence of this GM.

The reference to 'the highest number of time zones crossed in any one FDP during the rotation' is reworded to 'the greatest displacement from the reference time where the crew member rested during a rotation' and is reproduced in the title of the first column of Table 8. This is believed to give a more precise depiction of the concept and better guidance for calculations.

Draft Certification specifications and guidance material for commercial air transport by aeroplane – air taxi and AEMS operations (CS-FTL.2)

CS FTL.2.100 Applicability

(a) These Certification Specifications are applicable to commercial air transport by aeroplanes for air taxi and AEMS operations, where the flight crew consists of minimum of two pilots.

(b) When applying CS-FTL.2 to air taxi or to AEMS operations, the operator applies the entire CS-FTL.2.

Rationale

The proposed point (a) establishes the applicability of CS-FTL.2.

The proposed point (b) addresses several stakeholders' comments pointing to the need to clarify that the operator cannot 'jump' between CS-FTL.1 and CS-FTL.2 searching for a more favourable regime.

GM1 CS FTL.2.100 Applicability

To ensure regulatory continuity for the full duration of an AEMS flight, an AEMS flight may include positioning the aeroplane before the patient, medical personnel or medical supplies are loaded, and positioning after the patient, medical personnel or medical supplies are unloaded from the aeroplane to enable it to return to a suitable location for the next AEMS flight.

Rationale

The original proposal of NPA 2017-17 is maintained, with an additional clarification that positioning can also take place prior to loading the patient, medical personnel or medical supplies.

CS FTL.2.200 Home base

The home base is an airport.

Rationale

The original proposal of NPA 2017-17 is not maintained in its entirety. The certification specification about home base (CS FTL.2.200) is also subject to post-NPA changes driven by stakeholders' comments.

'Home base' is defined in point ORO.FTL.105(14) as '… the location, assigned by the operator to the crew member, from where the crew member normally starts and ends a duty period or a series of duty periods and where, under normal circumstances, the operator is not responsible for the accommodation of the crew member concerned'.

'Home base' for scheduled operations is built around the concept of a single airport location to mitigate potential fatigue issues with aircrew having to commute to different airports within the same airport system, sometimes at a significant distance from their private place of residence. For air taxi and AEMS operations the same is not proposed, since the duty scheduling structure consisting of long block-off times between duty blocks is considered a mitigating factor; hence, the airport location should not necessarily be a single one.

The operator assigns a home base to each crew member (point ORO.FTL.200). This is relevant for e.g. the establishment of the acclimatisation status, the calculation of positioning duties and the determination of compensatory rest. Home base must not be confused with the crew member's permanent residence. The operator has no control over the place crew members choose to set up their residence. Commuting or travelling

from the private place of residence to the assigned home base and vice versa, as opposed to positioning, does not count for duty.

The assigned home base is the place where aircrew start/finish the essential part of their duties vis-à-vis their employer. To determine the home base, it may be necessary to establish: (i) the place from which the employee carries out his or her transport-related tasks; (ii) the place where he or she returns to after completion of those tasks; and (iii) the place where his or her work tools (e.g. aircraft) are to be found. In on-demand operations such as air taxi and AEMS this may be difficult to establish as, for example, the aircraft location may change every time the crew member receives an assignment.

The qualifier 'high degree of permanence', which applies to home base in scheduled and charter operations (CS FTL.1.200(a)), may be a business-limiting factor for air taxi and AEMS. This is the reason why it is removed from the original proposal in NPA 2017-17. Nonetheless, the condition 'from where the crew member normally starts and ends a duty period' in the definition of 'home base' is valid for air taxi and AEMS.

Today, some air taxi operators use the concept of 'gateway'. The term 'gateway airport' does not appear in Subpart FTL and, if used instead of 'home base', results in non-compliance. The operator may use 'gateway airport' in addition to home base airport but must clarify what relationship exists between 'home base' and 'gateway' in its IFTSS. The home base and a gateway may be the same airport location but may differ. In other words, the assignment of home base is compulsory, whilst the gateway is an optional operational solution.

Considering that in air taxi and AEMS operations last-minute changes are typical, had the recurrent extended recovery rest period have to be increased with any change of the home base, it would be unnecessarily penalising the operations. Therefore, this proposal included in NPA 2017-17 is also removed.

CS1 FTL.2.205 Flight duty period (FDP) — maximum basic daily FDP

(a) The maximum basic daily FDP, without the use of extensions, for acclimatised flight crew in air taxi and AEMS operations where the flight crew consists of two pilots is limited to the values specified in Table 9 below. An IFTSS cannot deviate from Table 9 unless the operator has established an FRMS accordance with point ORO.FTL.120.

Table 9. Maximum basic daily FDP in hours — acclimatised flight crew — air taxi and AEMS operations

Start of FDP at reference time	1–4 sectors	5 sectors	6 sectors
0600–1329	13:00	12:30	11:30
1330–1359	12:45	12:15	11:15
1400–1429	12:30	12:00	11:00
1430–1459	12:15	11:45	10:45
1500–1529	12:00	11:30	10:30
1530–1559	11:45	11:15	10:15

1600–1629	11:30	11:00	10:00
1630–1659	11:15	10:45	09:45
1700–0459	11:00	10:30	09:30
0500–0514	12:00	11:30	10:30
0515–0529	12:15	11:45	10:45
0530–0544	12:30	12:00	11:00
0545–0559	12:45	12:15	11:15

Note: In the case of more than six sectors, the maximum basic daily FDP should be reduced by 30 minutes per additional sector down to a maximum basic daily FDP of 9 hours.

(b) The maximum basic daily FDP for flight crew in an unknown state of acclimatisation, in air taxi and AEMS operations where the flight crew consists of two pilots, is limited to the values specified in Table 9a below:

Table 9a. Maximum basic daily FDP in hours — unacclimatised flight crew — air taxi and AEMS operations

Number of sectors	1-4	5	6 (or more)
FDP	11:00	10:30	Not allowed

(c) The maximum basic daily FDP for flight crew in an unknown state of acclimatisation, in air taxi and AEMS operations where the flight crew consists of two pilots and the operator applies an FRMS in accordance with point ORO.FTL.120, is limited to the values specified in Table 9b below:

Table 9b. Maximum basic daily FDP in hours — unacclimatised flight crew — air taxi and AEMS operations — FRMS

Number of sectors	1-4	5	6 (or more)
FDP	12:00	11:30	11:00

Rationale

The proposed maximum basic daily FDPs for acclimatised two-pilot air taxi and AEMS operations in Table 9 is a significant revision of the original proposal following stakeholders' comments to NPA 2017-17.

One major change is the number of sectors in one FDP in the first column: from 1-3 to 1-4 sectors. The 2015 EBAA/ECA Study found that on average air taxi flights consisted of 1-3 sectors and the majority of AEMS flights consisted of 1-4 sectors. Stakeholders' feedback received after the publication of NPA 2017-17 suggested that the average number of sectors in air taxi operations was 1-4 sectors due to the usual landing at a customs airport prior to flying to the client's location.

Both the 2015 Study and the 2016 Report on the Assessment of proposed FTL tables for Air Taxi and Emergency Medical Services Operations[12] recognised that the amount of flying contributes more to fatigue than the number of sectors and proposed a relaxation of the link between the maximum duration of the FDP and the number of sectors.

Another major change in Table 9 is that it now proposes a lower maximum basic daily FDP of 13 hours in the most favourable time of the day (i.e. between 06:00–13:29) compared to NPA 2017-17 which proposed more than 13 hours of FDP between 08:15 and 12:30. The revised Table 9 recognises the greater workload when operating more sectors as it shortens the FDPs by 30 minutes for 5 sectors and by 60 minutes for 6 sectors. In the case of more than 6 sectors, the maximum FDP is further reduced by 30 minutes per any additional sector down to a maximum FDP of 9 hours.

The revised Table 9 is expected to bring more benefits for on-demand flights when compared to the initially proposed table in NPA 2017-17 in that:

— *it facilitates implementation for duties starting between 06:00 h and 13:29 h, i.e. in the most favourable time of the day, allowing less granularity as those duties will have the same maximum duration; and*

— *it proposes the same FDPs for 1-4 sectors as for 1-2 sectors in scheduled operations; this may facilitate the convergence between operations in accordance with Table 2 and operations in accordance with Table 9.*

EASA requested an evaluation of the fatigue potential of the FDPs as per the revised Table 9 with the help of two bio-mathematical models. The results are referred to in Appendices I and II to this NPA.

Assuming that the workload is low compared to other CAT operations, the SAFE model[13] (Appendix I) showed that, with regard to air taxi operations, the predicted fatigue scores for 1-4 sectors and for 5 sectors are very

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12 https://www.easa.europa.eu/en/downloads/43768/en

13 Interpretation of Samn Perelli Scores predicted by SAFE Biomathematical Model (Samn S.W., Perelli, L.P. Estimating aircrew fatigue: A technique with application to airlift operations. In: Medicine USoA, ed. Brooks Air Force Base, Texas: Air Force Research Laboratory; 1982:1-26).

The SAFE model classifies fatigue according to a number of subjective and objective scales. The Samn Perelli scale is a subjective fatigue score which was validated against simulator performance. At a score of SP 5 errors begin to appear in simulator performance.

The Samn-Perelli (SP) Seven Point Scale

1. Fully alert, wide awake
2. Very lively, responsive, but not at peak
3. Okay, somewhat fresh
4. A little tired, less than fresh
5. Moderately tired, let down
6. Extremely tired, very difficult to concentrate
7. Completely exhausted, unable to function effectively

SAFE calculates fatigue scores based on time since sleep, circadian rhythm, sleep inertia, sleep reservoir, workload. Although the subjective scale consists of whole numbers related to the descriptions shown above, the biomathematical model will predict fatigue up to two decimal places.

The scores during an overnight duty are quite likely to exceed SP 5 because of the effect of working in the WOCL. On the other hand a score of SP 5 during the day would likely imply very high workload and a degree of sleep deprivation.

The duration of exposure is also important and SAFE scores which are close to SP 5 for several hours may also be excessive as subjects describe themselves as never alert. The model calculates the score for the average pilot and individual variation may also play a part.

It is therefore recommended that scores over SP 5 are monitored as in night operations they cannot be completely avoided. Experience shows that fatigue reports are likely to arise with scores between 5.2 and 5.3 although the duration of exposure is also important. Scores above SP5 should be checked for fatigue reports. It is important to recognise that removing duties with scores above 5.2 may lead to more duties with scores above 5.1. It may be preferable to have one

close and those for 5 sectors do not exceed 5.06 (moderately tired) on the Samn-Perelli (SP) scale. The SAFE model therefore supports the revised Table 9, recommending caution when the number of sectors exceeds 4.

With regard to non-extended duties starting in the afternoon and duties partially or encroaching the WOCL, the analysis of the revised Table 9 with the SAFE model suggested that the predicted fatigue scores were slightly higher but were within the typical values for such duties.

The analysis of some real operational schedules of two air taxi operators showed that fatigue scores were within acceptable levels. Some slightly high fatigue levels were predicted for duties starting in the afternoon but still with SP <5.0. Night duties slightly exceed SP 5.0 due to the long flight time at night.

The SAFTE FAST model (Appendix II) assessed the effect of maximum basic duty hours for 1-4 sectors at various times of the day on the predictive scores for sleep reservoir and flight crew performance in AEMS operations, and found that:

— *for duties starting in the most favourable time of the day (06:00 h – 13:29 h), pilot performance and sleep reservoir are well above the relevant thresholds considered acceptable during critical phases of flight for airline pilots. Neither of the predictive scores indicate fatigue risk during the top of descent (TOD) during the last sector;*

— *for duties starting in the afternoon, and for duties partially or fully encroaching the WOCL, the predicted pilot performance levels decrease gradually bellow the acceptable threshold, while the sleep reservoir remains above the minimum threshold. The level of the predicted pilot performance indicates fatigue risk during the TOD during the last sector. Both Karolinska Sleepiness Scale (KSS) [14] and SP estimates suggest general sleepiness and high levels of difficulty concentrating at TOD. Negative factors that possibly contribute to these results include low amounts of sleep in the past 24 hours, total hours awake since last sleep and time of day as the TOD occurs within the WOCL, considered to be between 02:00-05:59 h.*

These results may be considered as a baseline to which various operational scenarios can be compared.

For example, a typical AEMS schedule was evaluated with SAFTE-FAST, consisting of 3 consecutive days on shift, each with a 12-hour FDP starting at 07:00 h. The final flight was followed by 3 consecutive days-off followed by 2 consecutive standby days. The standby day began at 06:00 h and lasted 16 hours, followed by minimum of 8 hours sleep opportunity (i.e. in total 24 hours).

Neither of the studied parameters (pilot's performance level and sleep reservoir) indicate fatigue risk during the TOD at the final sector.

Two new tables, Tables 9a and 9b, are proposed in this NPA, both dealing with FDPs for pilots in an unknown state of acclimatisation.

Stakeholders' feedback to NPA 2017-17 suggested including adequate limits for pilots in an unknown state of acclimatisation in air taxi and AEMS flights since the limits prescribed in Table 3 for scheduled flights are not tailored to crews in those operations, who will often spend extended time (days) on the ground after crossing multiple time zones, making them unacclimatised, but very well rested.

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or two duties with scores above 5.2 and share these evenly between crew as well as giving extra time off if this results in a lower average fatigue score.

It is also important to realise that SAFE is a model and in real life other factors can lead to higher fatigue than predicted fatigue. That is why it is so important to have a robust fatigue reporting culture. Fatigue reports should always be taken seriously even when they disagree with model predictions.

The SP level is determined by the airline and we would provide guidance but not a 'go' or 'no go' value. Each airline has measures that may reduce fatigue and model predictions may be higher or lower than the fatigue experienced.

[14] The Karolinska Sleepiness Scale (KSS) consists of a 9-point scale where a score of 1 corresponds s to being extremely alert and 9 corresponds to being extremely sleepy.

In addition, crews in air taxi operations have consolidated off-duty blocks (generally 2 weeks for long-haul air taxi) whereby the effects of time zone crossing and cumulative fatigue are being managed.

Table 9a was developed by the EBAA on the basis of the lowest maximum basic daily FDPs from Table 9 for duties starting in the most unfavourable time of the day between 17:00 h and 04:59 h, i.e. covering night duties. Table 9b adds 1 hour to the limits of Table 9a (in the same manner as Table 4 does to the limits of Table 3 in scheduled flights), if the operator applies an FRMS in accordance with point ORO.FTL.120.

Thus, unacclimatised crew members will work less than acclimatised for the same number of sectors (1-4), and those working with the limits of Table 9b will have an additional protection of managing these limits under an FRMS.

The SAFE model (Appendix I) showed that when comparing Table 9 and Table 9a limits, no higher SP scores were encountered in air taxi operations, owing to the limit of Table 9a being aligned with the most restrictive limit from Table 9.

The SAFTE FAST model (Appendix II) constructed two scenarios to represent a 4-FDP rotation with crew whose status of acclimatisation was unknown from the third FDP: Rotation A with a 12-h duty period (FDP#3) and Rotation B with an 11-hr duty period (FDP#3). The purpose was to compare the values of Table 9a and Table 9b for 1-4-sector FDPs and establish how much more fatiguing would a 12-hr FDP be so as to justify a full FRMS.

The results show that Rotation B (11-h FDP) is in general more fatiguing than Rotation A (12-h FDP). The difference in the predicted fatigue levels comes from the final FDP #4 that is longer in Rotation B compared to Rotation A. One other negative factor that likely contributes to lower performance levels in general for Rotation B is greater circadian misalignment due to the specific timing of duties chosen for the comparison.

However, a direct comparison between FDP#3 in Rotation A and FDP#3 in Rotation B, which was the purpose of this exercise, shows no major differences.

The conclusion we can draw from this is that the length of the FDP in X-state of acclimatisation does not play a major role. What matters is the surrounding duties and the time of the day when TOD occurs.

CS2 FTL.2.205 Flight duty period — extensions

(a) The maximum daily FDP with extensions without on-board rest for acclimatised flight crew, in air taxi and AEMS operations where the flight crew consists of two pilots, is limited to the values specified in Table 10 below:

Table 10. Maximum daily FDP with extensions without on-board rest— acclimatised flight crew in air taxi and AEMS operations

Starting time of FDP	1–2 sectors (in hours)	3-4 sectors (in hours)	5 sectors (in hours)
0500–0614	No extension	No extension	No extension
0615–0629	13:15	13:15	12:45
0630–0644	13:30	13:30	13:00
0645–0659	13:45	13:45	13:15

0700–1229	14:00	14:00	13:30
1230–1259	14:00	14:00	13:00
1300–1329	14:00	14:00	12:30
1330–1359	13:45	13:45	No extension
1400–1429	13:30	13:30	No extension
1430–1459	13:15	13:00	No extension
1500–1529	13:00	12:30	No extension
1530–1559	12:45	No extension	No extension
1600–1629	12:30	No extension	No extension
1630–1659	12:15	No extension	No extension
1700–1729	12:00	No extension	No extension
1730–0459	11:45	No extension	No extension

(b) The maximum basic daily FDP in air taxi and AEMS operations is extended due to on-board rest with augmented flight crew under the following conditions:

(1) where the flight crew is augmented with one additional flight crew member, the maximum daily FDP is limited to:

(i) 15 hours with class B rest facilities; or

(ii) 16 hours with class A rest facilities;

(2) where the flight crew is augmented with two additional flight crew members, the maximum daily FDP is limited to:

(i) 16 hours with class B rest facilities; or

(ii) 17 hours with class A rest facilities;

(3) the minimum on-board rest is a continuous 1-h-30-min rest period for each flight crew member and a continuous 2-h rest period for those flight crew members at the controls during the last landing;

(4) the on-board rest facilities provide isolation by at least a curtain to provide darkness and some sound mitigation to enable each flight crew member to sleep and comply with the following specifications:

(i) for ‘Class A rest facility’, a bunk or other surface, with adequate length and width to accommodate an average person, that allows for a flat or near flat sleeping position. It reclines to at least 80° back angle to the vertical;

(ii) for 'Class B rest facility', a seat in an aircraft cabin with adequate length and width to accommodate an average person, that reclines to at least 45° back angle to the vertical, has a seat width of at least 20 inches (50 cm) and provides leg and foot support;

(5) the flight crew member is not disturbed during on-board rest according to a procedure established by the operator in the operations manual;

(6) the limits in accordance with (b)(1) or (b)(2) may be increased by 1 hour if the FDP includes a continuous 2-h-30-min on-board rest period for each flight crew member at the controls during the last landing;

(7) all time spent in the on-board rest facility is counted as FDP;

(8) the minimum rest away from home base is at least as long as the preceding duty period, or 14 hours, whichever is greater;

(9) the first sector of an FDP extended in accordance with (b)(1) or (b)(2) may only be operated by two flight crew members if the subsequent sectors allow for each flight crew member to take their due on-board rest;

(10) the limits in accordance with (b)(1) or (b)(2) may be increased by 2 hours if the operator implements an FRMS in accordance with point ORO.FTL.120.

Rationale

The maximum daily FDP with extensions without on-board rest for acclimatised flight crew in air taxi and AEMS operations, where the crew consists of two pilots, is proposed in Table 10.

The original table with FDP extensions proposed in NPA 2017-17 contained the following flaws:

— *the principles for the encroachment of WOCL of Subpart Q (OPS 1.1105, point 2) and of Subpart FTL (point ORO.FTL.205(d)(3)) were not accounted for;*

— *extensions between 19:00 h and 06:14 h were not allowed, thus practically grounding current air taxi and AEMS flights that are anyway feasible under Subpart Q, where the so-called operator's extension between 22:00 h and 04: 59 h is fixed to 11:45 hours;*

— *a new requirement should not stop an existing business unless safety is seriously endangered, which does not seem to be the case.*

The originally proposed Table 10 was therefore revised with the help of the EBAA and DGAC and subsequently shared with the members of the FTL/FRM expert group.

While it was necessary to reinstate the above-mentioned principles of Subpart Q and Subpart FTL for the purpose of Table 10 limits, it was not possible to adapt that table to an FDP with 1-4 sectors since some time periods where extensions are not allowed will not be visible. Table 10 therefore includes a column with 1-2 sector FDPs.

The proposed Table 10 provides a maximum FDP with extension for 1-2 sectors, with extension not possible from 05:00 h to 06:15 h. In Subpart Q, an extension in that period is possible. However, the proposed Table 10 allows for 4-sector FDPs of 14 hours starting between 07:00 h and 13:29 h and is more flexible than Subpart Q, in which the same number of sectors allows for a 13-hr FDP.

Another difference in the proposed Table 10 is that the limit of 11.45 hours for night FDPs applies between 17:30 h and 04:59 h, whilst under Subpart Q it applies between 22:00 h and 04:59 h, meaning that the duties starting between 17:30 h and 21:59 h will be as long as 12 hours when based on Subpart Q.

These differences have led the EBAA to propose an alternative version of it (Table 10 Version 2), which draws from both the new flexibility proposed in this NPA and the existing flexibility of Subpart Q.

Table 10 Version 1 (the current proposal) and Table 10 Version 2 were assessed with the help of the SAFE model (Appendix I).

The line of fatigue scores when evaluating Table 10 Version 1 shows a smoother, shallower and shorter peak between 18:00 h and 20:00 h, for 1-2-sector duties (Figure 1, Analysis of Table 10 Version 1), than Table 10 Version 2, where the peak between 17:00 h and 21:00 h is longer and steeper (Figure 2, Analysis of Table 10 Version 2).

Table 10 Version 2 as assessed by the SAFE model shows that the highest fatigue scores are seen with 1-2-sector duties starting between 18:00 h and 20:00 h, with the predicted scores being slightly higher than SP 5.0 for these overnight duties. This coincides with the scientists' view provided for the purpose of NPA 2010-14[15] (EASA draft Implementing Rules on Flight and Duty Time Limitations and rest requirements for commercial air transport (CAT) with aeroplanes). For example, on page 145 of NPA 2010-14, FRMSc Limited concluded that 'When Subpart Q FDP reductions for WOCL encroachment are applied, the alertness scores are 5 or less for reporting times before 1800 and higher for reporting times between 1800 and 2000, albeit only by 0.1 on the Samn-Perelli scale.' and 'The results therefore indicate that company extensions need to be carefully managed and monitored as they do increase fatigue near the critical level. A special focus should be on flights with reporting times between 1800 and 2200.'

Finally, when comparing Table 10 Version 1 and Table 10 Version 2, FRMSc concludes that '… there is negligible to no difference in fatigue scores for a 15-minute difference in FDP times of this length' (Appendix I).

Table 10 Version 1 was also assessed by the SAFTE FAST model upon request by EASA (Appendix II). The assessment shows that for duties with extensions starting in the most favourable time of the day (e.g. 06:15 h), pilots' effectiveness and sleep reservoir are predicted to be well above the respective critical thresholds and indicate no fatigue risk during the TOD on the final sector.

This cannot be seen for duties with extensions starting in the afternoon (e.g. at 13:30 h, 15:00 h, 17:00 h and 17:30 h), where the predicted pilot effectiveness scores are well below the critical threshold and indicate fatigue risk during the TOD on the final sector. The predicted sleep reservoir is only slightly above the critical threshold.

Based on the above considerations, EASA decided to propose Table 10 Version 1, which provides for more protection, especially for duties starting times between 17:30 h and 21:59 h, as well as for early starts.

The maximum daily FDPs with extensions due to on-board rest with augmented flight crew in air taxi and AEMS operations proposed in NPA 2017-17 have been modified mainly for the purpose of clarification.

EASA decided to maintain its original proposal for extended FDPs with on-board rest and augmented flight crew despite requests to allow an FDP of four sectors with augmented crew to be extended to 18 hours. The 2015 EBAA/ECA Study demonstrated that long duty hours contributed the most to the increase of pilots' fatigue and to the decrease of their performance. The on-board rest can provide effective mitigation if used on (a) sector(s) long enough to allow for sufficient cruise time to rest. Multiple sectors in an FDP (typically four sectors in air taxi and AEMS) may prevent good rest opportunities from being available.

An FDP where the flight crew is augmented with one additional pilot may only reach 18 hours (16 hours + 2 hours extension) if the operator has a functioning FRMS under point ORO.FTL.120.

[15] https://www.easa.europa.eu/sites/default/files/dfu/NPA%202010-14.pdf

The operator may schedule an FDP of 17 hours (16 hours + 1 hour extension) if one of the sectors is sufficiently long to accommodate a consecutive 150-minute on-board rest period for each flight crew member at the controls during the last landing.

Point (b)(5) has been amended since NPA 2017-17 to better specify the requirements for on-board rest facilities. Class A and B on-board rest facilities specifications were originally focused on the quality of bunks/seats (recline and width) but did not provide for a separation from the passenger compartment. Not all aeroplanes currently performing air taxi and AEMS operations may be able to ensure separation from the cabin and to guarantee full comfort with regard to noise, light and disturbances. However, this does not mean that the operator is fully relieved from the responsibility to mitigate as much as possible the impact of light and noise.

GM1 CS2 FTL.2.205 Flight duty period — extensions

EXTENSIONS DUE TO ON-BOARD REST FOR FLIGHT CREW

On-board rest periods should be allocated in order to optimise the alertness of those flight crew members who will be at aircraft controls during landing. The purpose of the on-board rest facility is to enable the flight crew to sleep, not just meet a technical specification for the seat.

Rationale

This new GM was suggested by a competent authority[16] and accepted by EASA given the challenges experienced so far in understanding and implementing the requirements regarding in-flight rest facilities.

CS3 FTL.2.205 Flight duty period (FDP) — night duties and late finish duties

The operator applies appropriate fatigue risk management (appropriate FRM) to actively manage the fatiguing effect of night duties and late finish duties, under CS1 FTL.2.205 and CS2 FTL.2.205, in relation to the surrounding duties and rest periods.

Rationale

NPA 2017-17 proposed a CS which limited the FDP to four sectors in the case of consecutive night duties in a similar manner as for scheduled operations. EASA decided to remove this CS. As long as the number of consecutive night duties is not limited in either of the operations, a limitation of the sectors would not bring any substantial relief. It would potentially force air taxi and AEMS operators to have two different flight crew sets for duties with more than four sectors or to alternate night and day duties in order to maximise crews' productivity. The first option would make the operation costly and the second one would increase pilots' fatigue.

However, disruptive duties need to be assigned under appropriate FRM mitigation, in a similar manner as was recommended for scheduled and charter operations by the study on effectiveness of flight time limitations[17] and recently implemented by ED Decision 2023/023/R[18]. This measure is substantiated by the SAFTE-FAST study results (Appendix II) relative to duties with start times in the afternoon and to duties encroaching the WOCL.

16 Comment #112, CRD to NPA 2017-17 (Air Taxi/AEMS).

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

18 https://www.easa.europa.eu/en/document-library/agency-decisions/ed-decision-2023023r

GM1 CS3 FTL.2.205 Flight duty period (FDP) — night duties and late finish duties

NIGHT DUTIES AND LATE FINISH DUTIES — APPROPRIATE FRM

The operator should use the following GM for its appropriate FRM mitigation measures:

— GM1 CS FTL.1.205(a)(2);

— GM2 CS FTL.1.205(a)(2);

— GM3 CS FTL.1.205(a)(2);

— GM4 CS FTL.1.205(a)(2); and

— GM5 CS FTL.1.205(a)(2).

Rationale

This proposed new GM refers to the GM introduced in CS-FTL.1 by EDD 2023/023/R, to support the implementation of appropriate FRM for night and disruptive duties.

CS4 FTL.2.205 Flight duty period (FDP) — commander's discretion in unforeseen circumstances

(a) The commander may modify the limits on flight duty, duty and rest periods in accordance with point ORO.FTL.205(f1) in the case of unforeseen circumstances in air taxi and/or AEMS operations, about which he or she has been informed at or after reporting, as follows:

(1) The maximum basic daily FDP according to Table 9 of CS1 FTL.2.205, CS2 FTL.2.205(b) or CS FTL.2.220 may be increased by up to 2 hours unless the flight crew has been augmented, in which case the maximum FDP may be increased by up to 3 hours;

(2) If after the increase according to point (1) above a further increase of the same FDP is necessary after take-off on the final sector, because of unforeseen circumstances, the flight may continue to the planned destination aerodrome or alternate aerodrome;

(3) If after the increase according to point (1) above a further increase of the same FDP is necessary just before take-off for the final sector, because of unforeseen circumstances, the flight may continue to the planned destination aerodrome or alternate aerodrome if an immediate and rapid transportation of medical personnel, medical supplies or ill or injured persons is essential;

(4) The rest period away from home base, following an FDP increased in accordance with points (1), (2) or (3) above, may be reduced but can never be less than 10 hours;

(5) The commander consults all flight crew members on their alertness levels before deciding on the modifications under points (1), (2), (3) and (4) above.

(b) After the flight duty period has ended, delays caused by airport operational issues or unannounced inspections by customs, immigration, law enforcement or the competent authority are recorded as duty time (hours of work), as applicable, and are not unforeseen operational circumstances.

Rationale

The proposed provisions on commander's discretion in unforeseen circumstances were changed following NPA 2017-17 to allow for similar flexibility as that currently available under Subpart Q.

Paragraph (a)(3) is proposed to cater for AEMS flights whose specificities justify a deviation from the provisions applicable to other types of operations, thus allowing a further increase of the FDP just before the final sector if an immediate and rapid transportation of medical personnel, medical supplies or ill or injured persons is essential.

CS5 FTL.2.205 Flight duty period (FDP) — delayed reporting in unforeseen circumstances

When an operator delays the reporting time in the event of unforeseen circumstances under point ORO.FTL.205(g), its IFTSS specifies the following:

(a) which method is used for communication with the affected flight crew member(s);

(b) which minimum and maximum notification times apply to allow a flight crew member to remain in his or her suitable accommodation when the delayed reporting procedure is activated;

(c) how interference with sleeping patterns is avoided;

(d) how the potential for an increased fatigue risk in the case of a delayed reporting of more than 4 hours is mitigated; and

(e) that the FDP starts counting at the delayed reporting time.

GM1 CS5 FTL.2.205(b) Flight duty period (FDP) — delayed reporting in unforeseen circumstances

NOTIFICATION TIMES

When the operator notifies a flight crew member of a delay of 10 hours or more in reporting time and he or she is not further disturbed by the operator, such delay of 10 hours or more counts as a rest period.

Rationale

The provisions on delayed reporting in unforeseen circumstances were considerably simplified compared to the original proposal in NPA 2017-17. Flexibility in departures is an essential element of business of air taxi and AEMS. Delayed reporting must be possible at any time without any consequences on the FDP, as long as notification reaches the flight crew prior to leaving their suitable accommodation.

CS FTL.2.215 Positioning

When an operator assigns flight crew to positioning duty under point ORO.FTL.215, its IFTSS specifies the following:

(a) If the positioning time is more than 1 hour or includes more than one main transport mode, the maximum FDP is reduced by 30 minutes.

(b) If a motor vehicle driven by the flight crew member is chosen as a method for positioning and the driving time is more than 1 hour, the maximum daily FDP is reduced by 30 minutes.

Rationale

This proposed CS is modified and simplified in comparison with the text proposed by NPA 2017-17 and now applies to both air taxi and AEMS, as it is possible that flight crew members in AEMS, though typically operating from AEMS bases, are also positioned.

There seemed to be some misunderstanding about 'positioning' following the publication of NPA 2017-17. Some commentators believed that CS FTL.2.215 deals with travelling from residence to work, others thought it included leisure travel for social reasons during crew layover. A large group of commentators did not account for the fact that point ORO.FTL.215 and the definition of positioning apply to air taxi and AEMS too.

Positioning is the practice of transferring flight crew from place to place as passengers in surface or air transport at the behest of the company, excluding transportation to or from a suitable accommodation. Positioning, except when a motor vehicle driven by the flight crew member is chosen as the positioning method, begins when a crew member is required to report for a positioning duty at the home base airport or at an outstation designated by the operator, from where the operator is responsible for the crew member transportation through one or more main transport modes.

Long distances travelled on positioning and the change of transport modes may be factors influencing subsequent onset of fatigue and cannot be the crews' decision only. According to the 2015 EBAA/ECA Study, every 1 hour spent in positioning increases fatigue scores by 0,25. For comparison, 1 hour flight time increases fatigue scores by 0,13.

Positioning after reporting but prior to operating is part of the FDP. FDP reductions are necessary if the positioning time is longer than 60 minutes or if the main transport mode is more than one. Main transport mode includes airline, train and intercity coach/buses; excludes taxi or self-driving vehicle.

One commentator wished that CS FTL.2.215 differentiates between positioning in 'economy' and 'business' class. There is no scientific or practical evidence, however, of whether or how much positioning in business class is less fatiguing than positioning in economy class; such differentiation is therefore not included. If positioning on certain routes, transport modes and economy class is particularly fatiguing, the operator should account for this impact.

GM1 CS FTL.2.215(a) Positioning

START AND END OF POSITIONING — MAIN TRANSPORT MODES

Positioning, except when self-driving, begins when a flight crew member is required to report for a positioning duty at the home base or at an outstation designated by the operator, from where the operator is responsible for the flight crew member transportation through one or more main transport modes.

The operator should specify in the OM reporting times that account for the time necessary to complete travelling procedures specific to the mode of transportation (e.g. registration of passengers and baggage, security checks, disembarking, baggage collection, etc.).

Positioning prior to operating without an intervening rest period ends when the flight crew member reports for a flight duty as an operating pilot. Positioning to return to home base or to start a duty after a rest period ends when the flight crew member arrives at the destination following the use of one or more main transport modes and, where applicable, passes security controls.

Main transport modes include airline, train and intercity coach/buses; they exclude taxi or self-driving vehicle.

Rationale

This GM is proposed after the NPA 2017-17 consultation in response to comments asking for more clarity about the start and end times of positioning duty and suggested that positioning should account for the time necessary to complete travelling procedures specific to the mode of transportation, e.g. registration of passengers and baggage, security checks, disembarking and baggage collection, etc.

CS FTL.2.220 Split duty

When flight crew members are assigned to split duty under point ORO.FTL.220, the operator's IFTSS specifies the following:

(a) a single split duty break period on the ground has a minimum duration of at least 2 continuous hours;

(b) the maximum basic daily FDP specified in CS1 FTL.2.205 may be increased by up to 50 % of the combined duration of all split duty breaks on the ground;

(c) the minimum total time for post- and pre-flight duties and for travelling to/from (suitable) accommodation is 30 minutes and is excluded from each split duty break; the operator specifies the actual times when longer than 30 minutes;

(d) accommodation or a Class A facility is provided in all cases other than those under point (e);

(e) suitable accommodation is provided for any single break period lasting 6 hours or more and for any single break period encroaching the window of circadian low (WOCL);

(f) an extension of the maximum basic daily FDP due to split duty cannot be combined with an extension due to on-board rest in accordance with point ORO.FTL.205(e).

GM CS FTL.2.220(c) Split duty

POST-, PRE-FLIGHT DUTY AND TRAVELLING TIMES

Conditions at airports such as accessibility to the airport infrastructure from a place of rest, time needed for security checks, time to reach the aircraft parking place, and similar factors may have an impact on post- and pre-flight duty and travelling times.

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

Rationale

The proposed CS FTL.2.220 was significantly modified following NPA 2017-17. A commentator proposed to clarify point (e) as it might be wrongly interpreted as referring to the total break time i.e. the sum of all breaks during the FDP. Point (e) now reads that a suitable accommodation is always required for a single break that lasts 6 hours or more or for a break encroaching the WOCL.

Another notable modification is the removal of the condition under point (g) for the operator to exclude from the allowable extension the time spent in other-than-suitable accommodation during a break exceeding 6 hours or

a break encroaching the WOCL. The reason for the removal is that already, according to point (e) of CS FTL.2.220, the operator has the obligation to provide suitable accommodation for a break exceeding 6 hours or encroaching the WOCL. The presence of two contradicting conditions may infer that the operator is permitted to disregard its obligation to provide suitable accommodation for some break periods and that the only problem is the time that will be used to calculate the extension. However, extending the FDP is not just a matter of hours counting, but a matter of fatigue risk management i.e. the operator should consider the potential for fatigue build-up and, hence, the conditions in which flight crews are forced to spend hours waiting to resume work.

CS FTL.2.225 Standby

When an operator assigns flight crew members to standby under point ORO.FTL.225, its IFTSS specifies the following:

(a) Airport standby (standby in accommodation or class A on-board rest facility)

(1) When airport standby does not lead to the assignment of an FDP, the airport standby is followed by a rest period as specified in point 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 points ORO.FTL.205(b) and (d) is 16 hours unless split duty applies.

(b) Standby in suitable accommodation

(1) The maximum duration of standby in suitable accommodation is 24 hours.

(2) The operator's standby procedures are designed to avoid that the combination of standby in suitable accommodation and FDP leads to more than 18 consecutive hours awake time;

(3) Time spent on standby in suitable accommodation counts as duty time for the purpose of point ORO.FTL.210(a1) as follows:

(i) 25 %, if the response time of is 90 minutes or more;

(ii) 50 %, if the response time is between 89 and 60 minutes;

(iii) 100 %, if the response time of is less than 60 minutes.

(4) Standby in suitable accommodation, if not leading to the assignment of duty, is followed by not less than 10 hours rest period, unless during the standby period a sleep opportunity of not less than 8 hours is provided, between 22:00 and 08:00, during which the flight crew member is undisturbed and is able to remain at his or her place of rest at the local time where the flight crew member is acclimatised.

(5) Standby in suitable accommodation ceases when the flight crew member reports at the designated reporting point.

GM1 CS.FTL.2.225 Standby

AWAKE TIME

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

The operator should apply duty assignment procedures, in the planning phase and on the day of operation, designed to avoid that an FDP taking place immediately after a period of standby in suitable accommodation does not result in more than 18 consecutive hours awake time. For that purpose, the operator should consider, among other things, the time of the day in which the standby takes place.

The operator should take into account the frequency of long awake periods in its operations and the severity of their impact on flight crew member fatigue levels.

GM2 CS.FTL.2.225 Standby

RESPONSE TIME

Response time is the time between the communication of a duty assignment (activation) during standby in suitable accommodation and the reporting time, and is reflected in the operator's IFTSS. Response time allows flight crew members to prepare themselves for work, from the time of activation to leaving the place of rest, and to arrive from their place of rest to the designated reporting point within a reasonable time.

When arranging for a local transfer from the flight crew member's suitable accommodation location to the designated reporting point, the operator should avoid transfers that exceed 90 minutes and, if possible, should provide suitable accommodation at or near the flight crew reporting point.

Rationale

The proposed CS FTL.2.225 and in particular its point (b) on standby in suitable accommodation was subject to modifications following the feedback received with the consultation of NPA 2017-17.

Many operators claimed that the 'raison d'être' of air taxi and AEMS operators and their flight crew members is to make themselves available to provide service to people in need e.g. a rapid medical assistance or air taxi service. Hence, flight crew members are assigned by the operator for some 20 % to 40 % of their duty days as standby days without being called for an FDP. During standby in suitable accommodation, flight crew members may rest at e.g. home or hotel and dispose of their time at their own discretion until called to report for an FDP.

AEMS aircraft are manned 24 hours a day, 365 days a year with a continuous standby readiness. Crews are typically divided such that one crew covers the day shift and another crew the night shift. After completion of a mission, the crew returns to standby readiness on the ground at the designated AEMS base. Therefore, AEMS operators requested that the duration of standby in suitable accommodation is extended to 24 hours to fit the 24-hour calendar day and that a subsequent 24-hour standby period commences without the need to assign a minimum rest period in between.

NPA 2017-17 proposed that the duration of standby in suitable accommodation is either 16 hours or more than 16 hours if it includes certain periods at night and/or in the afternoon during which the crew is not disturbed. In practice, if the standby period starts at 23:00 and the crew member can sleep for the next 8 hours without being disturbed, the entire duration of other standby can reach 24 hours. However, NPA 2017-17 also proposed that

this type of standby is followed by no less than 10 hours of rest period. Such condition would break the series of standby days and might put into question the viability and efficiency of AEMS or air taxi services.

In order to simplify the scheduling process and avoid disruption of existing operations, the proposed point b(1) was amended so as to set the maximum period of other standby to 24 hours. The proposed point (b)(4) is also amended to subsequently reflect the changes in (b)(1). As a result, there will be two options: the operator either provides minimum 10 hours of rest period following the standby in suitable accommodation if no duty has been assigned out of this standby period or provides a sleep opportunity of minimum 8 hours within the 24-hour standby period, in suitable accommodation, between 22:00 and 08:00, during which the crew member is undisturbed and can have a restorative rest period.

The period at night allowing for sleep opportunity is changed to 22:00-08:00 for consistency, to match the definition of local night.

It is the operator's responsibility to plan and manage adequately aircraft and crew availability. It is believed that in the context of standby in suitable accommodation, the mitigation available under point (b)(2), namely that the 'operator's standby procedures are designed to avoid that the combination of standby and FDP leads to more than 18 consecutive hours awake time', would allow for the control of sleep/awake balance. Avoidance of more than 18 hours awake time is based on scientific research and advice and is aimed at safety enhancement.

Points (6), (7), (8), (9) and (10) of CS FTL.2.225 as proposed by NPA 2017-17 are now removed to avoid adding complexity to scheduling. Stakeholders' feedback suggested that these provisions would in many cases lead to situations where the flight crew would not have enough FDP remaining to conduct an AEMS mission even within the European region.

Point (b)(11) of CS FTL.2.225 as proposed by NPA 2017-17 is now partly merged with point (c) and partly moved to GM to cater for the response time.

A Union representing crew members asked for the amendment of the definition of 'response time' and of the percentages according to which standby is counted for the purpose of cumulative duty limits. This Union believed that the response time is the time interval between activation and leaving the place of rest, thus excluding the travelling time to the reporting point.

The Union claimed that the travelling time differs considerably according to where the crew member standby location is; at his or her residence or hotel. According to them, whilst the time to prepare for work after an activation call is relatively independent from the crew member's ability to rest during standby, a prolonged travelling time will penalise the percentage according to which the standby duty is counted for the purpose of cumulative limits. In practice, the travelling time would make all the difference as the crew member's ability to rest and the impact on fatigue would be identical. The Union believes that it makes little sense that a duty counts 100 % or 25 % depending on the travelling time.

EASA partially agrees. The time to reach the designated reporting point from a private place of rest (e.g. residence) is the travelling time for which the crew member bears responsibility. Crew members should consider making arrangements for temporary accommodation closer to their home base if the travelling time from their residence to the home base exceeds 90 minutes (see previous GM1 CS FTL.1.200, now GM1 ORO.FTL.200). To arrive at work fit for duty and not exhausted due to long hours of travelling to the airport of departure, crews are advised to arrange for a temporary accommodation (hotel room, rented apartment or the like). This is the main reason why a response time of 90 minutes or more will only be accounted at 25 %, and response times of less than 90 minutes are rated at higher percentages.

Unlike travelling time, however, the time for a local transfer from a place of rest (hotel) to the reporting point is typically the operator's responsibility. Indeed, it makes no sense to penalise the crew members' standby duty

times by applying a lower percentage just because the operator did not manage to arrange for a rest facility closer to the airport.

These two situations and associated responsibilities need to be balanced, as well as arranging for a rest facility closer to the reporting point and shorter travelling/local transfer times should be incentivised.

Therefore, the percentages and definition of response time proposed with NPA 2017-17 remain unchanged, but new guidance material (GM2 CS.FTL.2.225) recommends that when arranging for a local transfer from the crew member's standby location to the designated reporting point, the operator should avoid transfers that exceed 90 minutes and, if possible, should provide suitable accommodation at or near the crew reporting point. This GM mirrors the recommendation addressed to crew members (GM1 ORO.FTL.200).

CS FTL.2.230 Reserve

When an operator assigns flight crew members to reserve under point ORO.FTL.230, its IFTSS specifies the following:

(a) An assigned FDP after reserve counts from the reporting time.

(b) Reserve times do not count as duty periods for the purpose of points ORO.FTL.210 and ORO.FTL.235.

(c) The number of consecutive reserve days within the limits of point 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 flight crew member on reserve is not contacted by the operator.

(e) Minimum notification time for any duty is 10 hours that may include the 8-hour sleep opportunity under (d).

(f) Reserve time does not count as recurrent extended recovery rest.

(g) Which method is used for communication with the flight crew member.

GM1 CS.FTL.2.230(d) Reserve

PROTECTED SLEEP OPPORTUNITY

The application of fatigue management principles to protect an 8-hour sleep opportunity for each reserve day means that flight crew members should be able to maintain a sleep pattern consistent with surrounding days.

GM1 CS.FTL.2.230(d); (g) Reserve

METHOD FOR COMMUNICATION

The method for communication with a flight crew member during reserve should avoid interference with sleeping patterns if possible.

Rationale

No changes are made in relation to the certification specification on reserve (CS FTL.2.230) proposed in NPA 2017-17. The concept of reserve was largely misunderstood by many commentators as they confused reserve with standby in suitable accommodation and proposed to reduce the notification time of 10 hours, possibly attracted by the possibility to not count reserve time for the purpose of rest and cumulative limits. One commentator even claimed that reserve makes no sense unless it is used to shorten the rest time at home.

The essence of reserve is the long notification time of 10 hours or more. Reserve does not count towards cumulative limits or rest, exactly due to the long notification and response times. The well-established principle in air taxi and AEMS of transforming pilots' readiness into a duty applies to reserve as well.

Operators who wish a shorter notification time, can instead opt for standby. Operators who do not use reserve in their operations are not forced to implement this CS.

CS FTL.2.235 Rest periods

(a) Disruptive schedules

(1) If a transition at home base is planned from a late finish/night duty period to an early start duty period:

(i) the rest period between the two duty periods includes 1 local night; or

(ii) the second duty period is limited to 11 hours and the rest period after the second duty period includes 1 local night.

(2) For a flight crew member performing four or more night duties, early starts or late finishes between two extended recovery rest periods, as defined in point ORO.FTL.235(d), the second extended recovery rest period is extended to 60 hours.

(b) Time zone differences

(1) For the purpose of Table 12 below, 'rotation' means a duty or a series of duties, including at least one flight duty, and one or more rest periods out of home base, starting at home base and ending when returning to home base for a rest period where the operator is no longer responsible for the accommodation of the flight crew.

(2) Time zone differences are compensated for by additional rest, as follows:

(i) At home base, when returning to home base after a rotation which includes at least one duty period crossing at least four 1-hour time zones, the minimum rest is as specified in the following Table 12.

Table 12. Minimum consecutive local nights included in a period of rest at home base to compensate for time zone differences

Time difference (h) between the time zone of last acclimatisation and the time zone with the greatest displacement from it where the flight crew member rested during a rotation	Time elapsed (h) since reporting for the first duty period that crosses at least four 1-hour time zones during a rotation (*)				
	< 48	48–71:59	72–95:59	96–119:59	>120
≥4 and ≤ 6	2	2	3	3	3
≤ 9	2	3	3	4	4
≤ 12	2	3	4	5	5
	Minimum consecutive local nights				

Note:

(*) The time elapsed since reporting stops counting when the flight crew member returns to his or her home base for the compensatory rest period during which the operator is no longer responsible for the accommodation of the flight crew.

(ii) Away from home base, if a duty period crosses at least four 1-hour time zones, the minimum rest following that duty period is at least as long as the duty period duration, or 14 hours, whichever is greater. By way of derogation from point (b)(2)(i) and only once between two recurrent extended recovery rest periods as specified in point ORO.FTL.235(d), the minimum rest provided under this point (b)(2)(ii) may also apply to home base if the operator provides suitable accommodation to the flight crew.

(3) In the case of an eastward-westward or westward-eastward transition at home base, at least 3 local nights of rest at home base are provided between alternating rotations.

(4) The operator monitors rotations and combinations of rotations under its safety risk management process and adapts flight crew schedules as necessary.

(c) Reduced rest

(1) Reduced rest is used if the operator has established an FRMS under point ORO.FTL.120;

(2) The minimum reduced rest periods under reduced rest arrangements are 12 hours at home base and 10 hours out of base;

(3) The flight crew member is acclimatised;

(4) The rest period includes a local night;

(5) The rest period takes place at a location no further than 3 time zones away from the place of departure;

(6) The flight time in the FDP prior to the rest period is no more than 8 hours;

(7) The FDP prior to the reduced rest is limited to four sectors; and

(8) The operator schedules nutrition opportunities such that the sleep opportunity at night is not further reduced and provides meal and drink.

Rationale

A number of changes have been made to the certification specification on rest periods (CS FTL.2.235) as proposed in NPA 2017-17, as follows:

— *in point (a)(1) the term 'FDP' is replaced by 'duty period' since the rest period may be, for example, between a positioning duty when not counted as an FDP and an early start FDP, or between a training duty in a flight simulator and an early start;*

— *points (b)(1) and (b)(2) are amended to cater for complex rotations which include more than one rest period out of home base;*

— *the title of Table 12 is modified to indicate that the compensatory rest following time zone crossings consists of consecutive local nights, as experience so far shows that interpretations departing from the original intention of this requirement are possible.*

Table 12 as proposed by NPA 2017-17 is also amended to facilitate its application to complex rotations which include three or more duty/rest periods and which start with one or more duties not involving any time zone crossings before the duty that crosses at least four 1-hour time zones.

The heading of the first column, first row, is reworded as 'Time difference (h) between the time zone of last acclimatisation and the time zone with the greatest displacement from it where the flight crew member rested during a rotation'. The reason is to account for complex rotations lasting for several days and including subsequent duty periods starting and returning to a new location which the crew member gradually becomes acclimatised to after spending enough time there; hence, the need to account for the greatest displacement from the time zone of last acclimatisation.

The heading of the second column is also reworded to 'Time elapsed (h) since reporting for the first duty period that crosses at least four 1-hour time zones during a rotation'. The previous wording containing the expression '… the first FDP in a rotation involving at least 4 hour time difference' was found confusing when applied to complex rotations where the duty that crosses time zones with more than a 4-hour time difference is not the first, but the second or the third and so on. The calculation of the time elapsed should start from the duty that crosses time zones regardless of its sequence in the rotation, because this is the duty that causes de-synchronisation. The

purpose of the compensatory rest is to allow flight crew to re-synchronise to the home base after their circadian rhythm has been de-synchronized. It is therefore necessary to associate the 'time elapsed since reporting' with the duty that caused de-synchronisation.

Generally, the compensatory rest requirements attracted the majority of the stakeholders' comments. Some commentators referred to the so-called international practice claiming that during the consecutive local night's compensatory rest period at home base, the flight crew member should be able to fly i.e. be on duty.

Subpart FTL requirements are based on the fundamental principle that rest is a period free from all duties and this is reflected in the definition. EASA nevertheless asked the Review Group (RG) whether they agree on not following this principle. No one supported the proposed change. Moreover, in order to avoid any potential future misunderstanding, the RG proposed to clarify the title of Table 12 as follows: 'Minimum consecutive local nights included in a period of rest at home base to compensate for time zone differences.'

In the context of reduced rest (CS FTL.2.235(c)) a stakeholder commented that one impact of the reduction of minimum rest to 10 hours is that it will reduce the opportunity to have a proper evening meal and still have 8 hours available for sleep. This makes the scheduling of nutrition opportunities all the more important. EASA agrees that the nutrition opportunity in the context of reduced rest should not interfere with or further reduce the sleep opportunity. An additional condition under point (8) on the provision of nutrition opportunities is therefore included.

One commentator pointed out that with regard to CS FTL.2.235(c)(8) there was no objective evidence backing the proposed 24-hour total flight time limit in the previous 7 consecutive days prior to the reduced rest period. EASA therefore removed it, all the more as such restriction does not exist in Subpart Q.

Draft amendments to Acceptable Means of Compliance and Guidance Material to Subpart FTL of Annex III (Part-ORO)

GM ORO.FTL.105 Definitions

DEFINITIONS NOT INCLUDED IN POINT ORO.FTL.105

Further relevant definitions can be found in Annex I, including the definition of flight time.

GM1 ORO.FTL.105(1) Definitions

ACCLIMATISED

~~(a) A crew member remains acclimatised to the local time of his or her reference time during 47 hours 59 minutes after reporting no matter how many time zones he/she has crossed.~~

~~(b) The maximum daily FDP for acclimatised crew members is determined by using the appropriate table 1 of ORO.FTL.205(b)(1) with the reference time of the point of departure. As soon as 48 hours have elapsed, the state of acclimatisation is derived from the time elapsed since reporting at reference time and the number of time zones crossed.~~

~~(c) A crew member is considered to be in an unknown state of acclimatisation after the first 48 hours of the rotation have elapsed unless he or she remains in the first arrival destination time zone (either for rest or any duties) in accordance with the table in ORO.FTL.105(1).~~

~~(d) Should a crew member's rotation include additional duties that end in a different time zone than his or her first arrival destination's time zone while he or she is considered to be in an unknown state of acclimatisation, then the crew member remains in an unknown state of acclimatisation until he or she:~~

~~(1) has taken the rest period required by CS FTL.1.235(b)(3) at home base;~~

~~(2) has taken the rest period required by CS FTL.1.235(b)(3) at the new location; or~~

~~(3) has been undertaking duties starting at and returning to the time zone of the new location until he or she becomes acclimatised in accordance with the values in the table in ORO.FTL.105(1).~~

~~To determine the state of acclimatisation, the two following criteria should be applied:~~

~~(i) the greater of the time differences between the time zone where he or she was last acclimatised or the local time of his or her last departure point and the new location; and~~

~~(ii) the time elapsed since reporting at home base for the first time during the rotation~~.

The switch from daylight to standard time or vice versa is not accounted for in this Regulation. It would be reasonable for the air operator to assume, on the first day of the time change, that a crew member is not acclimatised by 1 hour and apply that when determining the permitted flight duty period. On the second day following the time change, the crew member would be acclimatised.

Rationale

It is proposed to delete the current text of this GM since the amended definition of acclimatisation provides the necessary clarifications.

At the same time, new text is proposed to be added for greater clarity and better management of crew acclimatisation issues.

~~GM3 ORO.FTL.105(1) Definitions~~

~~**ACCLIMATISED 'TIME ELAPSED SINCE REPORTING AT REFERENCE TIME'**~~

~~The time elapsed since reporting at reference time for operations applying CS FTL.1.235(b)(3)(ii) at home base refers to the time elapsed since reporting for the first time at home base for a rotation.~~

Rationale

It is proposed to delete this GM since 'the time elapsed since reporting at reference time' is no longer referenced to the home base and the start of the rotation in Table 8 and Table 12.

~~GM1 ORO.FTL.105(2) Definitions~~

~~**REFERENCE TIME**~~

~~(a) Reference time refers to reporting points in a 2-hour wide time zone band around the local time where a crew member is acclimatised.~~

~~(b) Example: A crew member is acclimatised to the local time in Helsinki and reports for duty in London. The reference time is the local time in London.~~

Rationale

It is proposed to delete this GM since the new proposed definition of 'acclimatised' explains better the acclimatisation status within a 2-hour time zone band.

GM1 ORO.FTL.105(10) Definitions

ELEMENTS OF STANDBY FOR DUTY

Points ORO.FTL.225(c) and (d) and ~~CS FTL.1.225 (b)(2)~~ the certification specifications applicable to the type of operation determine which elements of standby count as duty.

Rationale

This GM is proposed to be amended to take account of the enlarged scope of the provision, including air taxi and AEMS operations.

GM1 ORO.FTL.105(17) Definitions

OPERATING CREW MEMBER

~~A person on board an aircraft is either a crew member or a passenger. If a crew member is not a passenger on board an aircraft, he/she should be considered 'carrying out duties'.~~ The crew member

remains an operating crew member during in-flight rest or on-board rest, as applicable. In-flight rest and on-board rest count in full as FDP, and for the purpose of point ORO.FTL.210.

Rationale

It is proposed to delete the first two sentences of this GM, since they do not provide a clarification as to who the operating crew member is, but merely split the persons on board in two main categories (crew and non-crew), without defining who in the group of crew members is an operating crew member.

GM1 ORO.FTL.105(33) Definitions

ON-BOARD REST

On-board rest takes place:

(a) in the air or on the ground, in the context of an extended FDP with augmented flight crew; or

(b) during a break on the ground, in the context of split duty with non-augmented flight crew.

Rationale

New GM is proposed to further clarify the notion of 'on-board rest'.

AMC1 ORO.FTL.110(a) Operator responsibilities

PUBLICATION OF ROSTERS IN SCHEDULED AND CHARTER OPERATIONS

Rosters should be published at least 14 days in advance in scheduled and charter operations.

Rationale

The changes proposed to this AMC are intended to clarify that it only applies to scheduled and charter operations.

AMC2 ORO.FTL.110(a) Operator responsibilities

PUBLICATION OF ROSTERED EXTENDED RECOVERY REST PERIODS IN AIR TAXI AND AEMS OPERATIONS

Rostered extended recovery rest periods in air taxi and AEMS operations should be published at least 7 days in advance.

Rationale

This new AMC provides for the publication of rostered extended recovery rest periods in air taxi and AEMS operations. This proposal was already included with NPA 2017-17, and it raised some concerns with air taxi operators. They explain that if, for example, flight crew are rostered on an aircraft for 2 weeks 'ON' and on day 2 the aircraft faces a problem serious enough to prevent it from flying (aircraft on ground ((AOG)) and is down for 3 days, these non-productive days are typically classed as extended rest as long as the flight crew have been notified as such. Otherwise, the aircraft will be down for 3 days and only available for another 2 days before being unavailable for another 2 days due to flight crew in extended rest. Therefore, air taxi operators asked that no fixed periods are proposed for roster notifications.

However, a 7-day advance publication does not prevent an operator from introducing changes to the rostered extended recovery rest when circumstances so require, as in the example given. Therefore, EASA decided to keep

the original proposal for a 7-day advance publication which will apply in normal circumstances, and to propose new AMC and GM to deal with roster changes both in scheduled and in on-demand operations (see AMC3 ORO.FTL.110(a) and GM1 ORO.FTL.110(a) below).

AMC3 ORO.FTL.110(a) Operator responsibilities

NOTIFICATION OF ROSTER CHANGES AND DUTY ASSIGNMENTS

The operator should establish in its IFTSS a procedure and method for communication (active and passive) with crew members through which changes to the rostered duties and rest periods, as well as duty assignments, are notified. The method of communication should, as much as possible, avoid disruption of the crew member's prior sleep opportunity.

The procedure and method for communication should be in a form that is clear and readily available to the operator's employees who are involved in rostering activities, as well as to affected crew members.

Rationale

See the rationale behind the amendments proposed to AMC2 ORO.FTL.110(a) above. The text proposed is based on a suggestion received from an operator[19]: 'The operator should establish a procedure for the notification of roster changes that minimises the disruption to the crew member's ability to obtain appropriate sleep and rest.'

GM1 ORO.FTL.110(a) Operator responsibilities

METHOD FOR COMMUNICATION OF ROSTER CHANGES AND DUTY ASSIGNMENTS

Examples of passive contact are emails; facsimile transmission; SMS or voice message, etc.

Rationale

The new proposed GM is intended to provide examples of methods of communication of roster changes and duty assignments.

AMC1 ORO.FTL.110(j); (k) Operator responsibilities

OPERATIONAL ROBUSTNESS OF ROSTERS

The operator should establish ~~and monitor~~ performance indicators for operational robustness of rosters to monitor and control all exceedances of FDP limits and the number of cases failing to meet planned rest periods, as a minimum, in order to ensure that the planning of duty periods and rest periods is effective.

Rationale

AMC1 ORO.FTL.110(j) is proposed to be amended to include air taxi and AEMS operators (additional reference to point ORO.FTL.110(k) in the title), and to specify what parameters should be monitored and controlled as a minimum.

[19] Comment #202, CRD to NPA 2017-17 (Air Taxi/AEMS).

GM1 ORO.FTL.110(j) Operator responsibilities

OPERATIONAL ROBUSTNESS OF ROSTERS IN SCHEDULED AND CHARTER OPERATIONS

Performance indicators for operational robustness of rosters should support the operator in the assessment of the stability of its rostering system. Performance indicators for operational robustness of rosters should at least measure how often a rostered crew pairing for a duty period is achieved within the planned duration of that duty period and how often the planned rest period is achieved in actual operations. Crew pairing means rostered positioning and flights for crew members in one duty period.

Rationale

The proposed new text is intended to clarify the applicability of the GM (only for scheduled and charter operations). The proposed amendments also add the stability of planned rest periods versus actual rest periods as a robustness criterion, as proposed by one operator.

GM1 ORO.FTL.110(k) Operator responsibilities

OPERATIONAL ROBUSTNESS OF ROSTERS IN AIR TAXI AND AEMS OPERATIONS

Performance indicators for operational robustness of rosters may include the following measurement tools: fatigue reports; commanders' discretion reports; and delay reports due to customer's plan changes, technical reasons, commercial reasons or ATC instructions.

Rationale

The new proposed GM1 ORO.FTL.110(k) is intended to help small/medium-size air taxi and AEMS operators to implement the requirement for monitoring and controlling roster robustness, in view of the specificities of these operations.

GM1 ORO.FTL.110(l) Operator responsibilities

ICAO DOC 9966 (MANUAL FOR THE OVERSIGHT OF FATIGUE MANAGEMENT APPROACHES)

Further guidance on appropriate fatigue management and fatigue risk management processes may be found in ICAO Doc 9966 *Manual for the Oversight of Fatigue Management Approaches*.

Rationale

The text of this proposed GM is moved from GM1 ORO.FTL.120, which is proposed to be deleted. The move follows the new text of point ORO.FTL.110(l), which now deals with the operator's responsibility to implement fatigue management, including appropriate FRM where required, through its SMS and related SRM process in accordance with point ORO.GEN.200, or through an FRMS, where required, in accordance with point ORO.FTL.120.

AMC1 ORO.FTL.110(m) Operator responsibilities

STANDARDISED FORM

OPERATOR'S REPORT
in accordance with point ORO.FTL.110(m) of Commission Regulation (EU) No 965/2012

Operator
Name:
Name and contact details of the accountable manager:

Fatigue reports:
Total number: ☐
As per:

- Type of operation:

Scheduled	
Charter	
Air taxi	
AEMS	

- Flight crew configuration:

Single pilot	
Two pilots	
Augmented flight crew	

- Type of FDP:

Basic	
Split duty	
Extended with in-flight rest	
Extended without in-flight rest	
Extended with commander's discretion	

- Type of rest period:

Longer than minimum rest	
Minimum rest	
Reduced rest	

Frequency of exceedances of rostered basic FDPs compared to actual FDPs:
Total frequency: ☐
As per:

- Type of operation:

Scheduled	
Charter	
Air taxi	
AEMS	

- Flight crew configuration:

Single pilot	
Two pilots	
Augmented flight crew	

Number of cases where commander's discretion to extend the FDP is used:
Total number: ☐
As per:

- Type of operation:

Scheduled	
Charter	
Air taxi	
AEMS	

- Flight crew configuration:

Single pilot	
Two pilots	
Augmented flight crew	

- Type of FDP:

Basic	
Split duty	
Extended with in-flight rest	

Number of cases where commander's discretion to reduce the rest period is used:
Total number: ☐
As per:

- Type of operation:

Scheduled	
Charter	
Air taxi	
AEMS	

- Flight crew configuration:

Single pilot	
Two pilots	
Augmented flight crew	

- Type of rostered rest period:

Longer than minimum rest	
Minimum rest	
Reduced rest	

•
Statements
☐ The operator confirms that the information disclosed in this report is correct.
Date, name and signature of the accountable manager

Rationale

The proposed form aims to support competent authorities with the implementation of the proposed point ORO.FTL.110(m), following the suggestion by some Member States.

AMC1 ORO.FTL.115 Crew member responsibilities

RESPONSIBILITIES OF CREW MEMBERS

To be able to comply with the requirements of point ORO.FTL.115, crew members should:

(a) use rest periods effectively in order to be adequately rested and fit for duty;

(b) deport for duty well-rested to be able to safely perform their duties;

(c) alert management when fatigued to perform their flight duties safely;

(d) decide when to use strategies to lessen the risks of personal fatigue while on duty;

(e) complete FRM-related training;

(f) report fatigue, fatigue hazards and fatigue-related events; and

(g) participate when fatigue and alertness levels need to be measured for fatigue risk management purposes.

Rationale

This new AMC is proposed to clarify the expectations under point ORO.FTL.115.

~~GM1 ORO.FTL.120 Fatigue risk management (FRM)~~

~~**ICAO DOC 9966 — MANUAL FOR THE OVERSIGHT OF FATIGUE MANAGEMENT APPROACHES**~~

~~Further guidance on FRM processes, appropriate fatigue management, the underlying scientific principles and operational knowledge may be found in ICAO Doc 9966 (Manual for the Oversight of Fatigue Management Approaches).~~

Rationale

See the rationale for GM1 ORO.FTL.110(l) above.

AMC1 ORO.FTL.120(b)(1) Fatigue risk management system (FRMS)

CAT OPERATORS FRMS POLICY

(a) The operator's FRMS policy should identify all the elements of the FRMS.

(b) The FRMS policy should define to which operations the FRMS applies.

(c) The FRMS policy should:

[…]

(2) state the safety objectives of the FRMS;

[…]

(6) declare management commitment to the provision of adequate resources for the FRMS;

(7) declare management commitment to continuous improvement of the FRMS;

[…]

AMC1 ORO.FTL.120(b)(2) Fatigue risk management system (FRMS)

Reserved

AMC2 ORO.FTL.120(b)(2) Fatigue risk management system (FRMS)

CAT OPERATORS FRMS DOCUMENTATION

The operator should develop and keep current FRMS documentation that describes and records:

(1) the FRMS policy and objectives;

(2) the FRMS processes and procedures;

(3) the accountabilities, responsibilities and authorities for these processes and procedures;

(4) the mechanisms for ~~on-going~~ ongoing involvement of management, flight and cabin crew members, and all other involved personnel;

(5) the FRMS training programmes, training requirements and attendance records;

(6) the scheduled and actual flight times, duty periods and rest periods with deviations and reasons for deviations; and

(7) the FRMS outputs including findings from collected data, recommendations, and actions taken.

GM1 ORO.FTL.120(b)(3) Fatigue risk management system (FRMS)

SCIENTIFIC METHOD

[…]

AMC1 ORO.FTL.120(b)(4) Fatigue risk management system (FRMS)

CAT OPERATORS IDENTIFICATION OF HAZARDS

[…]

AMC2 ORO.FTL.120(b)(4) Fatigue risk management system (FRMS)

CAT OPERATORS RISK ASSESSMENT

[…]

AMC1 ORO.FTL.120(b)(5) Fatigue risk management system (FRMS)

CAT OPERATORS RISK MITIGATION

[…]

AMC1 ORO.FTL.120(b)(6) Fatigue risk management system (FRMS)

CAT OPERATORS FRMS SAFETY ASSURANCE PROCESSES

The operator should develop and maintain FRMS safety assurance processes to:

(a) provide for continuous FRMS performance monitoring, analysis of trends, and measurement to validate the effectiveness of the fatigue safety risk controls. The sources of data may include, but are not limited to:

[…]

(b) provide a formal process for the management of change which should include, but is not limited to:

(1) identification of changes in the operational environment that may affect the FRMS;

(2) identification of changes within the organisation that may affect the FRMS; and

(3) consideration of available tools which could be used to maintain or improve the FRMS performance prior to implementing changes; and

(c) provide for the continuous improvement of the FRMS. This should include, but is not limited to:

[…]

AMC1 ORO.FTL.120(b)(7) Fatigue risk management system (FRMS)

CAT OPERATORS FRMS PROMOTION PROCESS

FRM promotion processes should support the ongoing ~~on-going~~ development of the FRMS, the continuous improvement of its overall performance, and attainment of optimum safety levels.

The following should be established and implemented by the operator as part of its FRMS:

(a) training programmes to ensure competency commensurate with the roles and responsibilities of management, flight and cabin crew, and all other involved personnel under the planned FRMS; and

(b) an effective FRMS communication plan that:

(1) explains the FRMS policies, procedures and responsibilities to all relevant stakeholders; and

(2) describes the communication channels used to gather and disseminate FRMS-related information.

AMC1 ORO.FTL.125(a) Individual flight time specification schemes (IFTSS)

CONTENT OF THE IFTSS

The IFTSS should specify as a minimum:

(a) the choice for early or late type of disruptive schedule;

(b) the home base(s) used by the operator;

(c) the reporting times used by the operator;

(d) the operator's procedure for delayed reporting;

(e) the pre-flight duty time used by the operator;

(f) the minimum time period for post-flight duties used by the operator;

(g) in the case of split duty, the minimum duration of a break on the ground used by the operator;

(h) in the case of standby:

(1) the maximum duration of any standby;

(2) the impact of the time spent on standby on the maximum FDP that may be assigned;

(3) the minimum rest period following standby which does not lead to the assignment of an FDP;

(4) how time spent on standby in suitable accommodation shall be counted for the purpose of cumulative duty periods;

(5) the operator's procedure to prevent more than 18 hours awake time;

(i) in the case of reserve:

(1) the maximum duration of any single reserve period;

(2) the number of consecutive reserve days that may be assigned to a crew member;

(j) the recurrent extended recovery rest period used by the operator;

(k) the additional rest periods as required by point ORO.FTL.235(e) when used by the operator; and

(l) how the operator ensures the crew members' nutrition during the FDP.

Rationale

This new AMC is proposed to facilitate the implementation of IFTSS-related requirements by operators, gathering in one place various items that appear in different parts of the regulation.

AMC2 ORO.FTL.125(a) Individual Flight time specification schemes (IFTSS)

SINGLE-PILOT OPERATIONS BY AEROPLANE

The IFTSS for single-pilot scheduled and charter operations should be established in accordance with the implementing rules of Subpart FTL and the certification specifications applicable to scheduled and charter operations.

Rationale

This AMC is proposed to be added to address several commentators' requests for clarification. As the implementing rules do not cover all aspects of single-pilot operations, the operator needs to use CS-FTL.1 for its IFTSS.

GM1 ORO.FTL.200 Home base

TRAVELLING TIME

Where appropriate to the type of operation, 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.

Rationale

This GM is currently under CS-FTL.1 but is relevant for air taxi operations (not for AEMS, though) as well, and consequently it is proposed to be placed under the corresponding implementing rule.

This regulation does not regulate people's social life. Crew are not required to change their residence. For the sake of safety of flight operations, in order to arrive at work fit for duty and not exhausted due to long hours of travelling to the airport of departure, crews are advised to arrange for a temporary accommodation (hotel room, rented apartment or the like).

AMC1 ORO.FTL.205(d) and (d1) Flight duty period (FDP)

EXTENSIONS PLANNED IN ADVANCE

FDP extensions allowed under points ORO.FTL.205 (d) and (d1) should be planned before the duty has started and should be notified to the crew member sufficiently in advance to allow him or her to plan

adequate rest before such duty. The minimum notification time of an extended duty period should be established in the IFTSS and should not be less than the minimum rest period preceding that duty.

Rationale

This new AMC is intended to provide clarity. Experience so far with airlines shows that various interpretations exist that undermine a harmonised approach.

AMC1 ORO.FTL.205(f) Flight ~~D~~duty ~~P~~period (FDP)

UNFORESEEN CIRCUMSTANCES IN ~~ACTUAL FLIGHT~~ SCHEDULED AND CHARTER OPERATIONS — COMMANDER'S DISCRETION

[…]

(c) The non-punitive element of the operator's policy should cover any possible combination of use or non-use of commander's discretion.

Rationale

The proposed change aims to align AMC1 ORO.FTL.205(f) with the proposed new text of point ORO.FTL.205(f).

GM1 ORO.FTL.205(f)(1)(i) Flight ~~D~~duty ~~P~~period (FDP)

COMMANDER'S DISCRETION — SCHEDULED AND CHARTER OPERATIONS

The maximum basic daily FDP that results after applying point ORO.FTL.205(b) to scheduled and charter operations should be used to calculate the limits of commander's discretion, if commander's discretion is applied to an FDP which has been extended under the provisions of point ORO.FTL.205(d).

Rationale

The proposed change aims to keep this GM applicable to scheduled and charter operations as for air taxi and AEMS, commander's discretion policy and requirements differ.

AMC1 ORO.FTL.220 Split duty

BREAKS IN UNFORESEEN CIRCUMSTANCES

The extension of the maximum daily FDP in accordance with point ORO.FTL.220(a)(3) should be made prior to the beginning of the break on the ground and after the operator's decision to insert the split duty.

Rationale

The purpose of this new AMC is to ensure the proper accounting of break periods due to unforeseen circumstances on the day of operation as they play an important role in calculating the FDP length.

GM1 ORO.FTL.220 Split duty

BREAKS ON THE GROUND

Multiple breaks on the ground are relevant for air taxi and AEMS operations.

Rationale

This proposed new GM is intended to clarify that the reference in the rule of possible multiple breaks on the ground is relevant only for air taxi and AEMS operations.

AMC1 ORO.FTL.225 Standby

MINIMUM REST AND STANDBY

(a) If initially assigned airport standby or standby in a suitable accommodation is reduced by the operator during actual standby that does not lead to an assignment to an FDP, the minimum rest requirements specified in point ORO.FTL.235 should apply.

(b) If a minimum rest period as specified in point ORO.FTL.235 is provided before reporting for the duty assigned during the standby, this rest period terminates the standby. The duty assigned during the standby may be another standby period.

(c) Standby in suitable accommodation counts (partly) as duty for the purpose of point ORO.FTL.210 (a) or (b) only. If a crew member receives an assignment during such standby, the actual reporting time at the designated reporting point should be used for the purpose of point ORO.FTL.235.

Rationale

This proposed new AMC contains text previously included under GM1 CS FTL.1.225. Since these provisions are relevant for all types of operation, it makes more sense to include them here.

In addition, some small changes are proposed to the current text in GM1 CS FTL.1.225, specifically to point (b). In the current point (b) of GM1 CS FTL.1.225, the text 'this time period should not count as standby duty' is confusing as it seems to contradict the definition of standby ('standby' means a pre-notified and defined period of time during which a crew member is required by the operator to be available to receive an assignment for a flight, positioning or other duty without an intervening rest period.'). A minimum rest period, if introduced, will obviously stop the standby running. Thus, a sequence of a standby, minimum rest and another standby period is possible.

GM1 ORO.FTL.225 Standby

STANDBY IN A SUITABLE ACCOMMODATION — NOTIFICATION OF DUTIES

Operator procedures for the notification of assigned duties during standby in a suitable accommodation should avoid interference with sleeping patterns if possible.

Rationale

Similarly to the proposed new AMC1 ORO.FTL.225, the text of this proposed new GM was previously included under GM1 CS FTL.1.225(d) and is proposed to be moved here since it applies to all types of operations.

GM1 ORO.FTL.230(a) Reserve

ROSTERING OF RESERVE

Including reserve in a roster, also referred to as 'rostering', implies that a reserve period that does not result in a duty period may not retrospectively be considered as part of a recurrent extended recovery rest period. By definition the rest period explicitly excludes reserve.

Rationale

The addition of the new sentence is intended to clarify an aspect where experience shows that there are different interpretations.

Appendix I

1. EBAA Report Modelling schedules and regulatory limits – Tables 9 and 9a:

Table 9 and 9a

2. Analysis of Table 10 (variant 1):

Table 10 v.1

3. Analysis of Table 10 (variant 2):

Table 10 v.2

Appendix II

Appendix II IBR SAFTE-FAST Report.