



Notice of Proposed Amendment 2017-17

Development of FTL for commercial air transport operations of emergency medical services by aeroplanes and helicopters and Update and harmonisation of FTL for commercial air transport by aeroplane for air taxi operations and single-pilot operations taking into account operational experience and recent scientific evidence

RMT.0492 & RMT.0493

EXECUTIVE SUMMARY

The objective of this NPA is to develop a harmonised set of flight time limitation (FTL) rules for each of the following types of operation:

- air taxi operations (ATXO) and emergency medical service operations with aeroplanes (AEMS),
- single-pilot operations (scheduled as well as on demand), and
- emergency medical operations with helicopters (HEMS).

This NPA proposes amendments to Subpart FTL of Part-ORO by extending its scope to the aforementioned types of operation. Notably, references to new certification specifications have been introduced to enable the description of detailed safety objectives and prescriptive elements for each type of operation.

For ATXO, the proposed amendments are expected to improve safety, especially during night duties, increase efficiency and at the same time ensure harmonisation across the European Union (EU).

From an FTL perspective, AEMS is a subset of ATXO. Therefore, a transition between air taxi operation and emergency medical operation would be possible within the same duty period. The proposed amendments are mainly expected to improve safety during night duties.

Duties, flight time and rest periods in HEMS operations are currently regulated at national level. Overall, the proposed changes are expected to improve safety where scientific principles have not been used so far and ensure harmonisation across the EU.

All proposed amendments are fully aligned with the ICAO Standards and Recommended Practices (SARPs).

The proposed amendments affect:

- EASA, because the scope of Subpart FTL is extended to cover additional types of operations, thus leading to (1) a potential increase in the number of evaluations of individual flight time specification schemes the EASA is mandated to carry out and (2) extending the scope of the implementation support provided to Member States;
- Competent authorities as they will have to bear the implementation effort;
- Operators (ATXO, AEMS and HEMS) who will have to bear the implementation effort, but will reap efficiency gains and benefit from a level playing field and improved safety;
- Aircrew members who will benefit from improved harmonisation, safety and efficiency.

Action area:	Operators other than airlines	Rulemaking group:	Yes
Affected rules:	Regulation (EU) No 965/2012; Part-ORO; AMC/GM to Part-ORO; CS-FTL.1; CS-FTL.2 (new); CS-FTL.3 (new)	Rulemaking Procedure:	Standard
Affected stakeholders:	HEMS operators; CAT aeroplane operators of air taxi and AEMS operations; aircrew members; competent authorities; EASA		
Driver:	Level playing field		
Impact assessment:	Full		

● EASA rulemaking process milestones

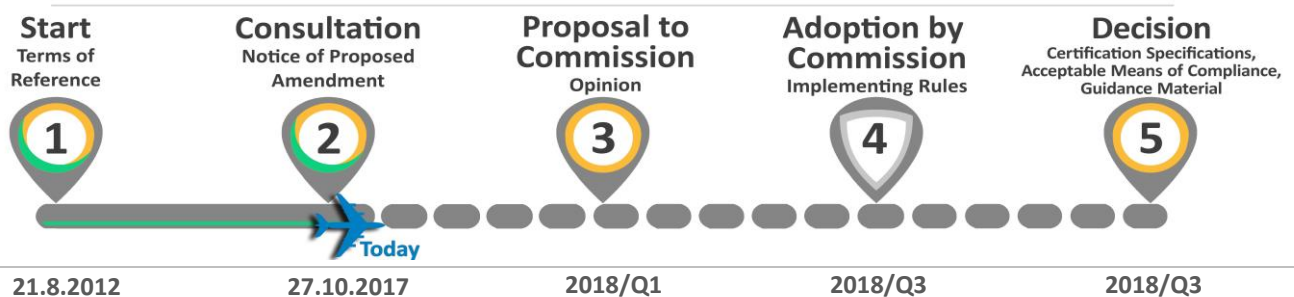


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1. About this NPA

1.1. How this NPA was developed

The European Aviation Safety Agency (EASA) developed this NPA in line with Regulation (EC) No 216/2008¹ (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure². This rulemaking activity is included in the EASA 5-year Rulemaking Programme³ under rulemaking tasks RMT.0492 and RMT.0493. The text of this NPA has been developed by EASA based on the input of the rulemaking groups (RMG) RMT.0492 and RMT.0493, which included representatives from competent authorities and industry. Notably, industry experts provided valuable input for the development of the certification specifications depending on the type of operation such as air taxi (ATXO), aeroplane emergency medical services (AEMS) and helicopter emergency medical services (HEMS). Other sources of data include:

- a 'Data Collection and Comparative Assessment of Existing National FTL Provisions for EMS', commissioned by EASA⁴;
- a 'Preliminary Analysis of Impacts from Future Potential FTL Regulatory Changes for EMS' commissioned by EASA⁵;
- a Preliminary Analysis of Impacts from Future Potential FTL Regulatory Changes for Air Taxi and Single Pilot Operations⁶;
- a scientific study commissioned by EBAA and ECA⁷; and
- a report on the Assessment of proposed FTL tables for Air Taxi and Emergency Medical Services Operations⁸.

This NPA is hereby submitted to all interested parties⁹ for consultation.

1.2. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/>¹⁰.

The deadline for submission of comments is **31 January 2018**.

¹ Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1) (<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=146719701894&uri=CELEX:32008R0216>).

² EASA is bound to follow a structured rulemaking process as required by Article 52(1) of Regulation (EC) No 216/2008. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (<http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure>).

³ <http://easa.europa.eu/rulemaking/annual-programme-and-planning.php>

⁴ Attachment I to this NPA.

⁵ Attachment II to this NPA.

⁶ Attachment III to this NPA.

⁷ Attachment IV to this NPA.

⁸ Attachment V to this NPA.

⁹ In accordance with Article 52 of Regulation (EC) No 216/2008, and Articles 6(3) and 7 of the Rulemaking Procedure.

¹⁰ In case of technical problems, please contact the CRT webmaster (crt@easa.europa.eu).



1.3. The next steps

Following the closing of the public commenting period, EASA will review all comments.

Based on the comments received, EASA will develop an opinion containing the proposed amendments to Regulation (EU) No 965/2012¹¹. The opinion will be submitted to the European Commission, which will use it as a technical basis in order to prepare an EU regulation.

Following the adoption of the regulation, EASA will issue a decision containing the related certification specifications (CSs)/acceptable means of compliance (AMC)/guidance material (GM).

The comments received and the EASA responses thereto will be reflected in a comment-response document (CRD). The CRD will be annexed to the opinion.

¹¹ Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1) (<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0965&rid=1>).



2. In summary — why and what

2.1. Why we need to change the rules — issue/rationale

The FTL requirements laid down in Subpart Q of EU-OPS were, before the adoption of Subpart FTL of Regulation (EU) No 965/2012, applicable to CAT operations by aeroplanes, including scheduled and charter operations, ATXO, single-pilot and emergency medical services.

The European Parliament and the Council, when adopting Regulation (EC) No 1899/2006, specifically requested EASA to conduct a scientific and medical evaluation of Subpart Q [ref. Regulation (EC) No 3922/91 new Article 8(a)] and assist the Commission in the preparation of regulatory proposals.

‘By 16 January 2009, the European Aviation Safety Agency shall conclude a scientific and medical evaluation of the provisions of Subpart Q and, where relevant, of Subpart O of Annex III. Without prejudice to Article 7 of Regulation (EC) No 1592/2002 of the European Parliament and of the Council of 15 July 2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, the European Aviation Safety Agency shall assist the Commission in the preparation of proposals for the modification of the applicable technical provisions of Subpart O and Subpart Q of Annex III.’

The Subpart Q requirements have been reviewed and updated with rulemaking task OPS.055. During the initial phase of rulemaking, taking into account the wide diversity of operations concerned, it was decided to prioritise scheduled and charter operations, and to address ATXO, single-pilot operations by aeroplane and emergency medical service operations at a later stage to allow for collecting scientific evidence of the factors affecting fatigue in those operations.

Subpart FTL implementing rules, certification specifications and acceptable means of compliance are applicable as of 18 February 2016 to CAT scheduled and charter operations by aeroplane.

Still today, Subpart Q requirements apply to a varying extent to ATXO, single-pilot operations by aeroplane and emergency medical service operations by aeroplane. An exception in this respect is the maximum daily flight duty period in single-pilot and emergency medical service operations. Instead, national rules apply. The maximum daily flight duty period constitutes a major element of FTL.

ATXO are on-demand operations, the majority at short notice; they are characterised by frequent standby duties at home, frequent change of schedule, long break periods between duties and time zone crossings. Air taxi pilots on average fly significantly fewer hours per year than scheduled or charter airline pilots. Considerable use is made of positioning of crew and aircraft relative to scheduled flights.

There are two types of EMS: helicopters (HEMS) and aeroplanes (AEMS). Helicopters are used for short-haul, often trauma-related emergency flights, when time is of the essence. Aeroplanes are typically used for medical air transport of patients who need extensive or urgent medical assistance or for the fast transport of live organs.

AEMS pilots are subject to rapid response, often unpredictable, round-the-clock missions, multiple sectors and time-zone crossings. Various studies suggest, however, that block hours and duty time could be relatively low compared to that of airline pilots of typical scheduled and charter CAT operations, who have more days free of duty. In addition, positioning before and after duties appears to be much more common than in typical CAT operations.

There are a lot of similarities in the patterns of work between ATXO and AEMS.

HEMS are also on-demand operations with very short notice, long breaks at the HEMS base, multiple (very) short missions (could be as many as 20 short flights in a few hours), mostly visual flight rules (VFR) operations often in unpredictable operational conditions to unknown landing sites.



Single-pilot operations by aeroplane (SPLO) relate to domestic or intra-European flights, generally shorter than multi-pilot CAT operations, but more challenging than multi-pilot operations. Single pilots often operate under high workload conditions, since the pilot assumes multiple roles. This can make single pilots more vulnerable to fatigue.

In the context of FTL, there are significant differences between ATXO, AEMS, HEMS and SPLO on the one hand, and typical CAT operations on the other. Still, ATXO, AEMS and SPLO are regulated on the basis of duty and flight time limits, and rest requirements of Subpart Q that have been designed for scheduled multi-crew airline operations.

In comparison to flight times and duty periods that apply in CAT, ATXO and AEMS require much more flexibility and ability to accommodate often very demanding duties while managing fatigue to acceptable levels. Today, Subpart Q does not provide that flexibility or the necessary levels of control and mitigation.

Flight times and rest periods in HEMS are today regulated at Member States' level. This often leads in some States to extremely long duty hours — e.g. daily FDPs with extension of over 15–16 hours, as well as to reduced rest times from 6 to 11 hours. There is variability in cumulative duty and block hours, as well as in the way States regulate airport (base) and other standby.

2.2. What we want to achieve — objectives

The objectives of the EASA system are defined in Article 2 of the Basic Regulation. This proposal will in particular contribute to the high uniform level of civil aviation safety, provide a level playing field for all actors in the common European aviation market, and facilitate the free movement of goods, persons and services.

The specific objective of this proposal is to establish an improved and proportionate Europe-wide basis for regulating flight and duty times and rest periods for HEMS, based on scientific knowledge and established best practices.

The attainment of the objective will be measured through the monitoring indicators, mentioned in Section 4.6.

2.3. How we want to achieve it — overview of the proposals

The proposal seeks to adapt, where possible, existing implementing rules (IRs) in Subpart FTL to the specificities of ATXO, SPLO, AEMS and HEMS operations, and to include new operation specific requirements.

To that end, in addition to the scientific studies and analysis mentioned under point 1.1, this proposal builds on the following:

- Member States' national FTL provisions on the maximum daily flight duty period in SPLO and EMS operations, by aeroplanes, as Subpart Q, OPS 1.1105 does not apply;
- Member States' national FTL provisions applicable to ATXO and SPLO, by aeroplane, derogating from those specified in Subpart Q by virtue of Article 8(3) of Regulation (EEC) 3922/1991;
- Member States' national FTL provisions applicable to ATXO and SPLO, by aeroplane, adopted or maintained under Article 8(4) of Regulation (EEC) 3922/1991;



- the Regulatory Impact Assessment (RIA) of [NPA 2010-14](#)¹² as relevant to ATXO, SPLO and AEMS, as well as the [European Commission's impact assessment to Opinion 04/2012](#)¹³;
- safety improvements introduced by Commission Regulation (EU) No 83/2014¹⁴;
- Member States' national FTL provisions and best practices in the field of HEMS operations;
- the (H)EMS philosophy as described in GM1 SPA.HEMS.100(a)¹⁵;
- the particular nature of on-demand operations.

2.4. What are the expected benefits and drawbacks of the proposals

The expected benefits and drawbacks of the proposal are summarised below in Chapter 3.1. For the full impact assessment of alternative options, please refer to Chapter 4.

¹² [NPA 2010-14](#) 'Implementing Rules on Flight and Duty Time Limitations and rest requirements for commercial air transport (CAT) with aeroplanes'.

¹³ http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2014/swd_2014_0024_en.pdf

¹⁴ Commission Regulation (EU) No 83/2014 of 29 January 2014 amending Regulation (EU) No 965/2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 28, 31.1.2014, p. 17) (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2014:028:0017:0029:EN:PDF>).

¹⁵ Annex to ED Decision 2012/019/R 'AMC & GM to Part-SPA' (<https://www.easa.europa.eu/system/files/dfu/Annex%20to%20ED%20Decision%202012-019-R.pdf>).



3. Proposed amendments and rationale in detail

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

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

3.1. Draft cover regulation (Draft EASA opinion)

Article XX

The Agency shall conduct a continuous review of the effectiveness of the provisions concerning flight and duty time limitations and rest requirements contained in Annex III to Regulation (EU) No 965/2012.

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 the Agency not less than once a year after the date of application of this Regulation:

- Number of fatigue reports;
- Impact of disruptive schedules on fatigue;
- Impact of time-zone crossing on fatigue;
- Impact of positioning on fatigue;
- Frequency of exceedances of rostered FDPs compared to actual FDPs;
- Use of commander discretion to extend the FDP or to reduce the rest period;
- Adequacy of sleep opportunities prior to safety related duties;
- Adequacy of recovery periods;
- Adequacy of requirements to control sleep disruption due to:
 - alternating day/night duties;
 - alternating eastward-westward or westward-eastward time zone transitions;
- Adequacy of procedures to control awake time.

No later than in 2025 EASA shall produce a first report on the results of this review.

Article YY

Regulation (EU) No 965/2012 is amended as follows:

Article 8 is replaced by the following:

'Article 8 Flight time limitations

1. CAT operations with aeroplanes, including air taxi, single-pilot operations and emergency medical services, as well as CAT operations with helicopters for the purpose of emergency medical services, shall be subject to the requirements of Subpart FTL of Annex III. Excluded are emergency medical service operations with helicopters conducted exclusively in an operating area, where alternative ground emergency medical services are not possible or are ineffective, as defined by the Member State.



~~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 provisions of national law referred to in Article 8(4) of Regulation (EEC) No 3922/91 and of Subpart Q of Annex III to that Regulation.~~

2.3. ~~By way of derogation from paragraph 1,~~ CAT operations with helicopters, other than emergency medical services, and CAT operations with sailplanes shall comply with the applicable requirements of the national law of the Member State in which the operator has its principal place of business.

3. Non-commercial operations, including non-commercial specialised operations, with complex motor-powered aeroplanes and helicopters, as well as commercial specialised operations with aeroplanes, helicopters and sailplanes with regard to flight time limitations shall comply with the applicable requirements of 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.'

Article ZZ

Subpart FTL of Annex III to Regulation (EU) No 965/2012 is amended as follows:

‘SUBPART FTL
FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS
SECTION 1
General

ORO.FTL.100 Scope

This Subpart establishes the requirements to be met by an operator and its flight, cabin and HEMS crew members with regard to flight and duty time limitations and rest requirements for crew members.

ORO.FTL.105 Definitions

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

[...]

(5) ‘augmented flight crew’ means 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, or, in the case of on-board rest in air taxi and AEMS operations, allowing each flight crew member to leave the assigned post for the purpose of on-board rest also when the aircraft is on the ground;

(6) ‘break’ means a period of time within a flight duty period, shorter than a rest period, counting as duty and during which a crew member is free of all tasks;

[...]

(13) ‘flight time’ means, for aeroplanes and touring motor gliders, the 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, and for helicopters, the time from the moment a helicopter’s rotor blades start turning until the moment the helicopter finally comes to rest at the end of the flight, and the rotor blades are stopped;



[...]

- (24) 'sector' means the segment of an FDP between an aircraft ~~aircraft~~ aeroplane first moving for the purpose of taking off until it comes to rest after landing on the designated parking position.

[...]

- (29) 'EMS flight' means a flight with an aeroplane (AEMS) or helicopter (HEMS) carrying out emergency medical service operations, the purpose of which is to facilitate emergency medical assistance, where immediate and rapid transportation is essential, by carrying at least one 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 aircraft to the operating base before or after an EMS flight is considered part of that flight.

- (30) 'single-pilot operation' means, in the case of aeroplanes, an operation with one pilot or, in the case of HEMS, an operation with one pilot and one HEMS crew member.

ORO.FTL.110 Operator responsibilities

An operator shall:

[...]

- (j) ~~except for EMS 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) in EMS operations, change a schedule or adapt crew arrangements, if the actual operation exceeds the maximum FDP on any EMS operating base on more than 10 % of the FDPs in any 3 months.

[...]

ORO.FTL.120 Fatigue risk management (FRM)

[...]

- (b) The FRM ~~established, implemented and maintained~~ shall provide for a continuous improvement to the overall performance of the FRM and shall include:

[...]

SECTION 2

Commercial Air Transport Operators

[...]

ORO.FTL.205 Flight duty period (FDP)

- (a) The operator shall:

- (1) establish maximum daily FDP for crew members taking into account the type of operation and relevant certification specifications.



(2)(4) define reporting times appropriate to each individual operation taking into account ORO.FTL.110(c);

(3)(2) establish procedures specifying how the commander shall, in case of special circumstances which could lead to severe fatigue, and after consultation with the crew members concerned, reduce the actual FDP and/or increase the rest period in order to eliminate any detrimental effect on flight safety.

(b) Basic maximum daily FDP without the use of extensions.

(1) The maximum daily FDP without the use of extensions for acclimatised crew members conducting two-pilot operation other than HEMS shall be in accordance with the following table:

Table 2

Maximum daily FDP — Acclimatised crew members — two-pilot operation other than HEMS

[...]

(2) The maximum daily FDP for two-pilot operation other than HEMS when crew members are in an unknown state of acclimatisation shall be in accordance with the following table:

Table 3

Maximum daily FDP — Crew members in an unknown state of acclimatisation — two-pilot operation other than HEMS

[...]

Table 4

Maximum daily FDP — Crew members in an unknown state of acclimatisation under FRM — two-pilot operation other than HEMS

[...]

(4) The maximum daily FDP for acclimatised crew members conducting single-pilot operations, other than HEMS shall be in accordance with the following table:

Table 5

Maximum daily FDP* in hours — Acclimatised crew members — single-pilot operation other than HEMS

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.

(5) The maximum daily FDP for crew members in an unknown state of acclimatisation conducting single-pilot operations other than HEMS shall be 8 hours.

(6) By derogation from (b)(1), flight time specification schemes in air taxi and AEMS operations may specify the maximum daily FDP without the use of extensions for acclimatised crew members in accordance with the certification specification applicable to those operations.

(7) Flight time specification schemes in HEMS operations shall specify the maximum daily FDP without the use of extensions for acclimatised crew members in accordance with the certification specification applicable to those operations.

[...]

(d) Maximum daily FDP for acclimatised crew members in two-pilot scheduled and charter operations with the use of extensions without in-flight rest.

[...]

(d1) Maximum daily FDP for acclimatised crew members in two-pilot air taxi and AEMS operations with the use of extensions without on-board rest

(1) The maximum daily FDP may be extended by up to 1 hour not more than twice in any 7 consecutive days. In that case, the post-flight rest period shall be at least as long as the preceding duty period plus 4 hours or the subsequent extended recovery rest period shall be increased to 60 hours including 3 local nights.

(2) The use of the extension shall be planned in advance, and shall be limited to a maximum of:

(i) 4 sectors; or

(ii) 3 sectors, when the WOCL is encroached by more than 2 hours.

(3) 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.

(4) Flight time specification schemes shall specify the limits for extensions of the maximum basic daily FDP in accordance with the certification specifications applicable to this type of operation, taking into account:

(i) the number of sectors flown; and

(ii) WOCL encroachment.

(e) Maximum daily FDP with the use of extensions due to in-flight or, in the case of AEMS or air taxi operations, on-board rest.

Flight time specification schemes shall specify the conditions for extensions of the maximum basic daily FDP with in-flight rest or, in the case of AEMS or air taxi operations, on-board rest in accordance with the certification specifications applicable to the type of operation, taking into account:

(i) the number of sectors flown;

- (ii) the minimum in-flight or on-board rest allocated to each crew member;
 - (iii) the type of in-flight or on-board rest facilities; and
 - (iv) the augmentation of the basic flight crew.
- (f) Unforeseen circumstances in flight operations — commander's discretion
- (1) The conditions to modify the limits on flight duty, duty and rest periods by the commander in the case of unforeseen circumstances in flight operations other than EMS, which ~~start~~ occur at or after the reporting time, shall comply with the following:
[...]
 - (7) The conditions to modify the limits on flight duty, duty and rest periods by the commander in the case of unforeseen circumstances in EMS operations, which occur at or after the reporting time, shall be established on the basis of the relevant certification specifications.
- [...]

ORO.FTL.210 Flight times and duty periods

- (a) The total duty periods to which an individual crew member may be assigned in scheduled and charter operations and in air taxi and AEMS operations shall not exceed either of the following limits:
 - (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.
- (b) The total duty periods to which an individual crew member may be assigned in HEMS operations is established:
 - (1) in accordance with (a); or
 - (2) in accordance with the limits specified in the certification specifications applicable to HEMS operations.
- ~~(c)~~ (e) The total flight time of the sectors on which an individual crew member is may be assigned as an operating crew member, except for HEMS or mixed AEMS/HEMS, shall not exceed either of the following limits:
 - (1) 100 hours of flight time in any 28 consecutive days;
 - (2) 900 hours of flight time in any calendar year; and
 - (3) 1 000 hours of flight time in any 12 consecutive calendar months.
- (d) The total flight time to which an individual crew member may be assigned as an operating crew member in HEMS or mixed AEMS/HEMS operations shall not exceed either of the following limits:
 - (1) 35 hours in any 7 consecutive days;
 - (2) 90 hours in any 28 consecutive days;
 - (3) 800 hours in any 12 consecutive calendar months.
- (e) The total flight time to which an individual crew member may be assigned in air taxi and AEMS operations is established:

- (1) in accordance with (c). In such case, table 1 in ORO.FTL.205(b)(1) shall apply; or
 - (2) in accordance with the limits specified in the certification specifications applicable to air taxi operations. In such case, CS FTL.2.205 for air taxi shall apply.
- (f)(e) Post-flight duty shall count as duty period. The operator shall specify in its operations manual the minimum time period for post-flight duties.

ORO.FTL.215 Positioning

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

- (a) positioning after reporting but prior to operating shall be counted as FDP but shall not count as a sector;
- (b) all time spent on positioning shall count as duty period;
- (c) flight time specification schemes established in accordance with the certification specifications applicable to air taxi operations shall specify the impact on the maximum FDP of:
 - (1) the duration of positioning; and
 - (2) the mode of transportation.

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 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
 - (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, in the case of air taxi and EMS operations, breaks on the ground, the facilities provided to the crew member to rest and other relevant factors;
- (b) the break(s) on the ground shall count in full as FDP;
- (c) split duty shall not follow a reduced rest.

ORO.FTL.225 Standby and duties at the airport or at the HEMS operating base

If an operator assigns crew members to standby or to any duty at the airport or at the HEMS operating base, the following shall apply in accordance with the certification specifications applicable to the type of operation:

- (a) standby and any duty at the airport or at the HEMS operating base, as applicable, shall be in the roster and the start and end time of standby shall be defined and notified in advance to the crew members concerned to provide them with the opportunity to plan adequate rest;
- (b) a crew member is considered on airport standby or on standby at the HEMS operating base from reporting at the reporting point until the end of the notified standby period;
- (c) airport standby shall count in full as duty period for the purpose of points ORO.FTL.210 (a) and (b) and ORO.FTL.235;



- (d) any duty at the airport or at the HEMS operating base, as applicable, shall count in full as duty period and the FDP shall count in full from the ~~airport~~ duty reporting time;
- (e) the operator shall provide accommodation to the crew member on airport standby or on standby at the HEMS operating base.
- (f) flight time specification schemes established in accordance with the certification specifications applicable to the type of operations shall specify the following elements:
- (1) the maximum duration of any standby;
 - (2) the impact of the time spent on standby on the maximum FDP that may be assigned, taking into account facilities provided to the crew member to rest, and other relevant factors such as:
 - the need for immediate readiness of the crew member,
 - the interference of standby with sleep, and
 - sufficient notification to protect a sleep opportunity between the call for duty and the assigned FDP;
 - (3) the minimum rest period following standby which does not lead to assignment of an FDP;
 - (4) how time spent on standby other than airport standby shall be counted for the purpose of cumulative duty periods.

[...]

ORO.FTL.235 Rest periods

[...]

(c1) Reduced rest for air taxi operations

By way of derogation from point (a) or (b) flight time specification schemes established in accordance with the certification specifications applicable to air taxi operations may reduce the minimum rest periods at home base or away from home base considering all of the following:

- (1) the minimum reduced rest period;
- (2) the state of acclimatisation;
- (3) the number of local nights included in the rest period;
- (4) the time zone crossing;
- (5) the combination of flight time and positioning immediately prior to the reduced rest period; and
- (6) the flight time in the previous 7 consecutive days prior to rest period.

[...]

Rationale for the implementing rules

Article 8 ‘Flight time limitations’ of Regulation (EU) No 965/2012 is extended to now include air taxi, single-pilot and emergency medical service operations, with aeroplanes, as well as CAT operations with



helicopters for the purpose of emergency medical services. It, however, excludes from the scope certain HEMS conducted exclusively in areas where an alternative ground transportation is not possible or is ineffective, to be defined by the competent authority of a Member State. This will allow a number of socially important operations to continue to exist, as any reduction in the duty and flight hours will further reduce the anyway low number of missions. Those impacts are expected to have a detrimental effect on pilots' proficiency, costs for new recruitment and pilot training.

This extension of the scope makes the following amendments to Subpart FTL necessary:

1. ORO.FTL.100 is amended to also include HEMS crew members. HEMS operations, especially daily missions, are typically operated by mixed crews consisting of a pilot and a HEMS crew member who assists the PIC. This justifies the application of the same FTL regime to both.
2. ORO.FTL.105 — the definition of (5) 'augmented flight crew' has been extended to also incorporate the concept of *on-board rest* in air taxi and AEMS operations, when the aircraft is on the ground and the flight crew has been augmented, in addition to in-flight rest.
3. ORO.FTL.105 — the definitions of (13) 'flight time' and (24) 'sector' have been adapted to include both operations with aeroplanes and helicopters.
4. ORO.FTL.105 — a new definition (29) 'EMS flight' is included in analogy to the definition of 'HEMS flight' in Annex I to Regulation (EU) No 965/2012. Thus, the HEMS concept¹⁶ becomes applicable to flight and duty times and rest periods in any EMS operation.
5. ORO.FTL.105 — a new definition (30) 'single-pilot operation' is included to avoid potential misinterpretation, especially as regards daily HEMS operations where a HEMS crew member is needed to assist the pilot.
6. ORO.FTL.110 — a change to point (j) and inclusion of new point (k) to include a responsibility for any EMS operator to adapt scheduling when the planned FDP is exceeded too frequently, to better reflect the nature of EMS operations.
7. ORO.FTL.120(b) — an editorial correction is made to improve readability of the text.
8. ORO.FTL.205(a) — a new point (1) has been included to clarify that operators are now required to establish maximum daily FDP limits for crew members taking into account the type of operation and relevant certification specification. Existing points are renumbered to (2) and (3), respectively.
9. ORO.FTL.205(b) — many adaptations have been introduced to cater for the specificities of the FDP in all types of operations that have been included in the scope of Subpart FTL:
 - the scope of (b) is clarified as it only relates to FDPs without the use of extensions;
 - points (1) and (2) as well as the titles of Table 2, 3 and 4 are amended to reflect the type of operation they relate to, i.e. two-pilot operations other than HEMS;
 - a new point (4) is inserted to introduce a new Table 5 containing FDP values for acclimatised crew members in single-pilot operations with aeroplanes;
 - a new point (5) is inserted containing the maximum FDP value for crew members in an unknown state of acclimatisation in single-pilot operations with aeroplanes;

¹⁶ The HEMS philosophy is described in **GM1 SPA.HEMS.100(a) Helicopter emergency medical service (HEMS) operations**.



- a new point (6) gives air taxi and AEMS operators the option to establish flight time specification schemes in which the maximum daily FDP limits for acclimatised crew members, without the use of extensions, are in accordance with certification specifications specific for on-demand operations;
 - a new point (7) gives HEMS operators the option to establish flight time specification schemes in which the maximum daily FDP limits for acclimatised crew members, without the use of extensions, are in accordance with certification specifications specific for this type of operation;
10. ORO.FTL.205(d) — clarification that this point applies only to two-pilot scheduled and charter operations.
- A new point ORO.FTL.205(d1) is inserted to allow FDP extensions in air taxi and AEMS operations without on-board rest based on a number of conditions such as an increase of the post-flight rest or of the extended recovery rest.
11. ORO.FTL.205(e) — adapted to also include extensions due to on-board rest in AEMS and air taxi operations.
12. ORO.FTL.205(f)(1) — clarification that this point does not apply to EMS operations.
13. A new point ORO.FTL.205(f)(7) gives EMS operators the flexibility to establish flight time specification schemes in which the use of commander's discretion is in accordance with certification specifications specific for this type of operation.
14. ORO.FTL.210 — several adaptations have been introduced to cater for the cumulative duty and flight time limits according to the specificities of each type of operation:
- The scope of point (a) is limited to scheduled and charter operations as well as air taxi and AEMS;
 - Point (b) is replaced by new text providing HEMS operators with the flexibility to choose either the cumulative duty limits of scheduled and charter operations or those that are more adapted to the nature of HEMS operations. The cumulative duty periods in HEMS are governed by Member States' national law, this flexibility will allow the continuation of national practices that are deemed to be safe;
 - Current point (b) becomes point (c) and its scope is limited to scheduled and charter operations;
 - A new point (d) is inserted to introduce cumulative flight time limits for crew members in HEMS or mixed AEMS/HEMS operations;
 - A new point (e) is inserted to allow air taxi operators the choice of either applying the cumulative flight time limits for scheduled and charter operations with a set of more restrictive daily limits or a set of more restrictive cumulative flight time limits in combination with less constraining maximum daily FDP limits. If choosing the first option, the operator must include in its flight time specification scheme the widely known and tested limits that have been applicable in scheduled and charter operations by aeroplanes for many years (under Subpart Q). In view of the nature of scheduled and charter flights, where the workload is usually evenly distributed and cumulative fatigue builds for longer periods, periodic cumulative limits are higher and come in combination with lower daily limits. Air taxi operations might need more flexible daily FDP limits. Therefore, as an alternative to the limits in CS-FTL.1, the operator may define more restrictive cumulative



flight time limits in its specification scheme. These must remain within the margin of CS-FTL.2. The additional flexibility is based on the findings presented in Attachment IV;

— Current point (c) becomes point (f).

15. ORO.FTL.215 — a new point (c) is added requiring the operator to specify, in its flight time specification scheme, the impact of positioning on the maximum FDP depending on the duration of positioning and the mode of transport. As described in Attachment IV to this document, the duration of positioning and the mode of transport seem to have a higher impact on fatigue in air taxi compared to scheduled and charter operations.
16. ORO.FTL.220 — several editorial changes to allow for more than one break during the maximum basic daily FDP in case of split duties in air taxi and EMS operations.
17. ORO.FTL.225 — several editorial changes are prompted by the extension of the scope of Subpart FTL to cover also HEMS operations. HEMS operating bases¹⁷ are not always located at airports. The rules for airport standby shall, however, also be applicable at the HEMS operating base.
18. ORO.FTL.235 — a new point (c1) is added to allow the certification specification applicable to air taxi operations to establish reduced rest requirements at home base or away from home base adapted to that type of operation.

3.2. Draft certification specifications (Draft EASA Decision)

CERTIFICATION SPECIFICATIONS

AND GUIDANCE MATERIAL

FOR COMMERCIAL AIR TRANSPORT BY AEROPLANE

SCHEDULED AND CHARTER OPERATIONS

BOOK 2

[...]

~~GM1 CS FTL.1.200 Home base~~

TRAVELLING TIME

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

[...]

~~GM1 CS FTL.1.225 Standby~~

MINIMUM REST AND STANDBY

¹⁷ See definition (62) in Annex I to Regulation (EU) 965/2012.



~~(a) If airport or other standby initially assigned is reduced by the operator during standby that does not lead to an assignment to a flight duty period, the minimum rest requirements specified in ORO.FTL.235 should apply.~~

~~(b) If a minimum rest period as specified in ORO.FTL.235 is provided before reporting for the duty assigned during the standby, this time period should not count as standby duty.~~

~~(c) Standby other than airport standby counts (partly) as duty for the purpose of ORO.FTL.210 only. If a crew member receives an assignment during standby other than airport standby, the actual reporting time at the designated reporting point should be used for the purpose of ORO.FTL.235.~~

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

~~STANDBY OTHER THAN AIRPORT STANDBY NOTIFICATION~~

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

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

~~AWAKE TIME~~

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

~~[...]~~

~~GM1 CS FTL.1.230 Reserve~~

~~RESERVE NOTIFICATION~~

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

~~GM2 CS FTL.1.230 Reserve~~

~~NOTIFICATION IN ADVANCE~~

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

~~GM1 CS FTL.1.230(c) Reserve~~

~~RECURRENT EXTENDED RECOVERY REST~~

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

~~[...]~~

~~GM1 CS FTL.1.235 (b)(3) Rest periods~~



TIME ELAPSED SINCE REPORTING

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

Rationale for CS-FTL.1

18. The above GM to CS-FTL.1 has been considered as relevant for all types of operations and moved, therefore, to its corresponding IR.



CERTIFICATION SPECIFICATIONS

AND GUIDANCE MATERIAL

FOR COMMERCIAL AIR TRANSPORT BY AEROPLANE

AIR TAXI OPERATIONS AND AEMS OPERATIONS

CS-FTL.2

CS FTL.2.100 Applicability

The following certification specifications are applicable to commercial air transport operations by aeroplanes for the purpose of air taxi and AEMS operations.

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 after the patient is unloaded from the aeroplane to enable it to return to a suitable location for the next AEMS flight.

CS FTL.2.200 Home base — air taxi and AEMS

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

CS FTL.2.205 Flight duty period (FDP) — air taxi and AEMS

Night duties in air taxi and AEMS operations under ORO.FTL.205(b)(6) and (d1)

Night duties in air taxi and AEMS operations comply with the following:

- (1) When establishing the maximum FDP for consecutive night duties, the number of sectors is limited to 4 sectors per duty.
- (2) The operator applies appropriate fatigue risk management to actively manage the fatiguing effect of night duties of more than 10 hours in relation to the surrounding duties and rest periods.

CS FTL.2.205 Flight duty period (FDP) — air taxi and AEMS

Maximum daily FDP without extensions under ORO.FTL.205(b)(6)

The maximum daily FDP without the use of extensions for acclimatised crew members in two-pilot air taxi and AEMS operations is limited to the values specified in the table below:



Table 1

Maximum daily FDP in hours — Acclimatised crew members in two-pilot air taxi and AEMS operations

Start of FDP at reference time	1–3 Sectors	4 Sectors	5 Sectors	6 Sectors	7 Sectors	8 Sectors	9 Sectors	10 Sectors
0600–0814	13:00	12:30	11:30	11:00	10:30	10:00	09:30	09:00
0815–0829	13:15	12:45	11:45	11:00	10:30	10:00	09:30	09:00
0830–0844	13:30	12:30	12:00	11:00	10:30	10:00	09:30	09:00
0845–0859	13:45	13:15	12:15	11:00	10:30	10:00	09:30	09:00
0900–1159	14:00	13:30	12:30	11:00	10:30	10:00	09:30	09:00
1200–1229	13:30	13:30	12:30	11:00	10:30	10:00	09:30	09:00
1230–1259	13:00	13:00	12:30	11:00	10:30	10:00	09:30	09:00
1300–1329	13:00	12:30	12:30	11:00	10:30	10:00	09:30	09:00
1330–1359	12:45	12:15	11:15	10:45	10:15	09:45	09:15	09:00
1400–1429	12:30	12:00	11:00	10:30	10:00	09:30	09:00	09:00
1430–1459	12:15	11:45	10:45	10:15	09:45	09:15	09:00	09:00
1500–1529	12:00	11:30	10:30	10:00	09:30	09:00	09:00	09:00
1530–1559	11:45	11:15	10:15	09:45	09:15	09:00	09:00	09:00
1600–1629	11:30	11:00	10:00	09:30	09:00	09:00	09:00	09:00
1630–1659	11:15	10:45	09:45	09:15	09:00	09:00	09:00	09:00
1700–0459	11:00	10:30	09:30	09:00	09:00	09:00	09:00	09:00
0500–0514	12:00	11:30	10:30	10:00	09:30	09:00	09:00	09:00
0515–0529	12:15	11:45	10:45	10:15	09:45	09:15	09:00	09:00
0530–0544	12:30	12:00	11:00	10:30	10:00	09:30	09:00	09:00
0545–0559	12:45	12:15	11:15	10:45	10:15	09:45	09:15	09:00

CS FTL.2.205 Flight duty period — air taxi and AEMS

Maximum daily FDP with extensions without on-board rest under ORO.FTL.205(d1)(4)

The maximum daily FDP with extensions without on-board rest for acclimatised crew members in two-pilot air taxi and AEMS operations is limited to the values specified in the table below:

Table 2

Maximum daily FDP in hours — Acclimatised crew members in two-pilot air taxi and AEMS operations with extensions without on-board rest

Start of FDP at reference time	1–3 Sectors	4 Sectors
0615–0629	13:15	12:45
0630–0644	13:30	13:00
0645–0659	13:45	13:15
0700–1329	14:00	13:30
1330–1359	13:45	13:15
1400–1429	13:30	13:00
1430–1459	13:15	12:45
1500–1529	13:00	12:30
1530–1559	12:45	Not allowed
1600–1629	12:30	Not allowed
1630–1659	12:15	Not allowed
1700–1729	12:00	Not allowed
1730–1759	11:45	Not allowed
1800–1829	11:30	Not allowed
1830–1859	11:15	Not allowed
1900–0614	Not allowed	Not allowed

CS FTL.2.205 Flight duty period — air taxi and AEMS

Extension of the maximum basic daily FDP due to on-board rest under ORO.FTL.205(e)

The maximum basic daily FDP in air taxi or AEMS operations may be extended due to on-board rest for flight crew:

- (i) with one additional flight crew member:
 - (A) up to 15 hours with class B rest facilities; or
 - (B) up to 16 hours with class A rest facilities;
- (ii) with two additional flight crew members:
 - (A) up to 16 hours with class B rest facilities; or
 - (B) up to 17 hours with class A rest facilities,

provided all the following conditions are met:

- (1) the FDP is limited to 3 sectors;
- (2) the minimum on-board rest period is a consecutive 90-minute period for each crew member and 2 consecutive hours for those flight crew members at control during the last landing.
- (3) The on-board rest facilities comply with one of the following descriptions:

- a. 'Class A rest facility' means a bunk or other surface that allows for a flat or near flat sleeping position. It reclines to at least 80° back angle to the vertical.
- b. 'Class B rest facility' means a seat in an aircraft cabin that reclines 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.
- (4) The operator describes means to provide darkness and noise mitigation in the operations manual and ensures that these means are available to all crew members during on-board rest. The operator establishes a procedure in the operations manual to ensure that crew members are not disturbed during on-board rest.
- (5) The minimum on-board rest in Class A or B on-board rest facility for each cabin crew member is:

Maximum extended FDP (in hours)	Minimum on-board rest (in hours)
up to 14:30	1:30
14:31–15:00	1:45
15:01–15:30	2:00
15:31–16:00	2:15
16:01–16:30	2:45
16:31–17:00	3:15
17:01–17:30	3:45
17:31–18:00	4:15

- (6) The limits for pilots may be increased by 1 hour, if the FDP includes a consecutive 150-minute on-board rest period for each flight crew member.
- (7) All time spent in the rest facility is counted as FDP.
- (8) The minimum rest at destination is at least as long as the preceding duty period, or 14 hours, whichever is greater.
- (9) The first sector of an FDP requiring an augmented flight crew may be accomplished with two flight crew members, if that sector does not exceed 01h30.

CS FTL.2.205 Flight duty period (FDP) — AEMS

Unforeseen circumstances in AEMS operations — commander's discretion

The conditions to modify the limits on flight duty, duty and rest periods by the commander in AEMS operations in the case of unforeseen circumstances that occur at or after the reporting time, or at the end of the FDP, comply with the following:

- (a) The maximum basic daily FDP may be increased for AEMS by up to 1 hour unless the flight crew has been augmented, in which case the maximum FDP may be increased by up to 2 hours;

- (b) If on the final sector within the FDP the allowed increase of up to 1 hour or up to 2 hours as applicable is further exceeded because of unforeseen circumstances after take-off, the flight may continue to the planned destination or alternate aerodrome. If unforeseen circumstances occur just before take-off for the final sector, the allowed increase may only be exceeded to transport the patient.
- (c) The rest period following the FDP may be reduced away from base but can never be less than 10 hours.

CS FTL.2.205 Flight duty period (FDP) — air taxi and AEMS

Unforeseen circumstances in air taxi and AEMS — delayed reporting

- (a) The operator may delay the reporting time in the event of unforeseen circumstances, if procedures for delayed reporting are established in the operations manual.
- (b) The operator keeps records of delayed reporting.
- (c) Delayed reporting procedures establish a notification time allowing a crew member to remain in his/her suitable accommodation when the delayed reporting procedure is activated.
- (d) If the crew member is informed of the delayed reporting time, the FDP is calculated as follows:
 - (1) one notification of a delay leads to the calculation of the maximum FDP according to (c) or (d);
 - (2) if the reporting time is further amended, the FDP commences 1 hour after the second notification or at the original delayed reporting time if this is earlier;
 - (3) when the delay is less than 4 hours, the maximum FDP is calculated based on the original reporting time and the FDP starts counting at the delayed reporting time;
 - (4) when the delay is 4 hours or more, the maximum FDP is calculated based on the more limiting of the original or the delayed reporting time and the FDP starts counting at the delayed reporting time;
 - (5) As an exception to (a) and (b), when the operator informs the crew member of a delay of 10 hours or more in reporting time and the crew member is not further disturbed by the operator, such delay of 10 hours or more counts as a rest period.

CS FTL.2.210 Flight times and duty periods — air taxi operations

The total flight time of the sectors on which an individual crew member in air taxi operations is assigned as an operating crew member under ORO.FTL.210(e) shall not exceed:

- (1) 80 hours of flight time in any 28 consecutive days;
- (2) 210 hours of flight in any 84 consecutive days; and
- (3) 625 hours of flight time in any 12 consecutive calendar months.

CS FTL.2.215 Positioning — air taxi operations

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

- (b) If self-driving in a motor vehicle is chosen as a method to position crew members, the maximum daily FDP is reduced for those crew members by:
- (i) 30 min, if the driving time is between 30 min and 60 min; and
 - (ii) twice the duration of the self-driving time in excess of 60 minutes.

CS FTL.2.220 Split duty — air taxi operations and AEMS

The following applies in the case of split duty with one or more breaks on the ground in air taxi and AEMS operations:

- (a) one break on the ground has a minimum duration of 3 consecutive hours;
- (b) any additional break on the ground has a minimum duration of at least 2 consecutive hours;
- (c) the time allowed for post- and pre-flight duties and travelling is excluded from each break; the minimum total time for post- and pre-flight duties and travelling is 30 minutes; the operator shall specify the actual times in its operations manual;
- (d) accommodation or a Class A facility is provided;
- (e) for any break of 6 hours or more or for a break that encroaches the window of circadian low (WOCL), suitable accommodation is provided;
- (f) an extension of the maximum basic daily FDP due to split duty is not combined with an extension due to on-board rest;
- (g) an operator may extend the basic maximum daily FDP specified in CS FTL.2.205 by up to 50 % of the combined duration of all breaks on the ground, with the exception of the time exceeding 6 hours or encroaching the WOCL, if spent in other than suitable accommodation.

GM CS FTL.2.220(c) Split duty — air taxi operations and AEMS

Post-, pre-flight duty and travelling times

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

CS FTL.2.225 Standby — air taxi operations and AEMS

The limits on flight duty, duty and rest periods in air taxi operations or AEMS are modified in accordance with the following:

- (a) Airport standby
 - (1) When an airport standby does not lead to the assignment of a FDP, airport standby is followed by a rest period as specified in ORO.FTL.235.
 - (2) If an assigned FDP starts during airport standby, the following applies:
 - (i) the FDP counts from the start of the FDP. The maximum FDP is reduced by any time spent on standby in excess of 4 hours;
 - (ii) the maximum combined duration of airport standby and assigned FDP as specified in ORO.FTL.205(b) and (d1) is 16 hours, unless split duty applies.

(b) Standby other than airport standby:

- (1) The maximum duration of standby other than airport standby is 16 hours. This limit may be extended by the number of hours between 23:00 and 07:00 or between 13:00 to 17:00 during which the crew member is undisturbed and is able to remain at his/her place of rest at the local time where the crew member is acclimatised, if the standby encompasses that period;
- (2) 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;
- (3) Time spent on standby duty counts as duty time for the purpose of CS.FTL.2.210(a), as follows:
 - (i) 25 % for standby duty with a response time of 90 minutes or more;
 - (ii) 50 % for standby duty with a response time between 89 and 60 minutes;
 - (iii) 100 % for standby duty with a response time of less than 60 minutes.
- (4) standby is followed by not less than 10 hours rest period;
- (5) standby ceases when the crew member reports at the designated reporting point;
- (6) if standby ceases within the first 6 hours, the maximum FDP counts from reporting;
- (7) if standby ceases after the first 6 hours, the maximum FDP is reduced by the amount of standby time exceeding 6 hours;
- (8) if the FDP is extended due to on-board rest according to CS FTL.2.205(e) or split duty according to CS FTL.2.220, the 6 hours of points (6) and (7) are extended to 8 hours;
- (9) if standby starts between 23:00 and 07:00 at the local time where the crew member is acclimatised, the time between 23:00 and 07:00 does not count towards the reduction of the FDP under points (7) and (8) until the crew member is contacted by the operator;
- (10) if a crew member is undisturbed and is able to remain at his/her place of rest between 13:00 and 17:00 at the local time where the crew member is acclimatised, the time spent before 13:00 does not reduce the maximum FDP. In such case, the maximum FDP is only reduced by the amount of standby after 17:00 in excess of 6 hours (or 8 hours for augmented crew or split duty);
- (11) the response time established by the operator allows the crew member to arrive from his/her place of rest to the designated reporting point within a reasonable time.

(c) The response time is the time between the communication of a duty assignment and the reporting time and is reflected in the operator's flight time specification scheme.

CS FTL.2.230 Reserve — air taxi operations

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

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

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



- (c) The operator specifies a number of consecutive reserve days within the limits of ORO.FTL.235(d).
- (d) To protect an 8-hour sleep opportunity, the operator rosters a period of 8 hours, taking into account fatigue management principles, for each reserve day during which a crew member on reserve is not contacted by the operator.
- (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.

GM1 CS.FTL.2.230(d)

Fatigue management principles mean in the context of a rostered 8-hour sleep opportunity that crew members should be able to maintain a consistent sleep pattern with surrounding days.

CS FTL.2.235 Rest periods — air taxi and AEMS**(a) Disruptive schedules**

- (1) If a transition at home base is planned from a late finish/night duty to an early start,
 - (i) the rest period between the 2 FDPs includes 1 local night, or
 - (ii) the second FDP is limited to 11 hours and the rest period after the second FDP includes 1 local night.
- (2) For a crew member performing 4 or more night duties, early starts or late finishes between 2 extended recovery rest periods as defined in ORO.FTL.235(d) the extended recovery rest period following the disruptive schedules is extended to 60 hours.

(b) Time zone differences

- (1) For the purpose of ORO.FTL.235(e)(1), 'rotation' means a duty or a series of duties, including at least one flight duty, and 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 crew member.
- (2) Time zone differences are compensated by additional rest, as follows:
 - (i) At home base, if a rotation involves a 4-hour time difference or more, the minimum rest is as specified in the following table:

Minimum consecutive local nights of rest at initial reference time of the first FDP involving at least a 4-hour time difference to the reference time to compensate for time zone differences



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

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

(3) For eastward-westward or westward-eastward transitions, covering 6 or more time zones in one direction followed by four or more time zones in the opposite direction, at least 3 local nights of rest at home base are provided between alternating rotations.

(4) The monitoring of combinations of rotations is conducted under the operator's management system provisions.

(c) Reduced rest

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

(2) the crew member is acclimatised;

(3) the rest period includes a local night;

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

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

(6) the FDP prior to the rest is limited to 4 sectors and

(7) the total flight time in the previous 7 consecutive days prior to rest period is no more than 24 hours.'

Rationale for CS-FTL.2

20. The extension of scope of Subpart FTL makes it necessary for EASA to issue certification specifications that also address air taxi and EMS. Therefore, This NPA proposes a new set of certification specifications, CS-FTL.2, to cover air taxi and EMS operations.

It should be noted that not all flights performed for medical reasons are considered EMS flights. A flight is considered AEMS flight, if its purpose is immediate and rapid transportation to facilitate emergency medical assistance or life organs for transplant. That means that a flight with a patient where such purpose is not evident is considered an air taxi operation (e.g. an injury such as a simple bone fracture that has already been treated and where the patient prefers to spend the convalescence in his/her home country).

It is possible that the same crew member operates consecutively air taxi and AEMS flights during the same FDP. Furthermore, a mission that has started as a normal CAT flight may suddenly turn into an EMS flight, because e.g. the condition of the patient has in the meantime deteriorated and an urgent transportation becomes necessary. This specificity calls for a full compatibility between the FTL regime for air taxi operations and that for AEMS operations. It would be impracticable to apply different sets of FTL limits to the same individual crew member unless all measures intended to mitigate cumulative fatigue, such as e.g. cumulative duty and flight time limits, were the same. It should therefore be possible to manage all limits for a combined air taxi and AEMS operation under one regime whilst allowing the flexibility needed because of the urgency of the AEMS flight.

Transient fatigue, resulting mainly from extended awake times and the window of circadian low, may be controlled by having enough rest. A rest period must be long enough to allow a crew member to obtain a high quality sleep to report fully rested for duty. Limiting the duration of the FDP depending on its starting time is intended to mitigate excessive awake times for those FDPs that take place at night. An effective system to control crew member fatigue may only be achieved by the appropriate combination of the following elements:

- minimum requirements for the duration of rest periods;
 - limits on the duration of the FDP depending on the time of the day it takes place considering the circadian rhythm; and
 - measures to control cumulative fatigue resulting from previous duties.
21. CS FTL.2.100 defines the scope of the new set of certification specifications addressed to air taxi and AEMS operations. Despite many similarities between air taxi and AEMS operations and the need to apply compatible FTL regimes within a single FDP, still some CS are only applicable to air taxi and some others to AEMS.
22. GM1 CS FTL.2.100 explains that for the sake of regulatory continuity, positioning of the aeroplane after the patient is offloaded should still be considered an AEMS operation.
23. CS FTL.2.200 — same requirements as regards ‘home base’ apply to air taxi and AEMS.
24. CS FTL.2.205:
- to ORO.FTL.205(b)(6) and (d1) — no change as regards night duties in air taxi and AEMS operations compared to CS-FTL.1;

- to ORO.FTL.205(b)(6) — a new Table 1 introduces specific values of the maximum daily FDP without extensions for acclimatised crew members in two-pilot air taxi and AEMS operations. ORO.FTL.205(b)(6) allows air taxi and AEMS operators to specify in their flight specification schemes FDP limits within the limits of CS FTL.2.205. These limits are presented in Table 1 under CS FTL.2.205. The maximum pre-planned FDP is set to 14 hours in a 3-sector FDP at the most favourable time of the day. For on-demand operations the workload is measured in a number of sectors; thus the FDP reduction due to workload starts at the fourth sector and not as in CS-FTL.1 at the third sector. Table 1 is based on the recommendations of Attachment IV and has been scientifically assessed as presented in Attachment V. Due to the nature of on-demand air taxi and AEMS operations, pre-planning is not always practicable.
- to ORO.FTL.205(d1)(4) — a new Table 2 introduces specific values of the pre-planned maximum daily FDP with extensions without on-board rest for acclimatised crew members in two-pilot air taxi and AEMS operations. The values in this table are based on the table in CS FTL.1.205(b). It must also follow the conditions contained in ORO.FTL.205(d1).
- to ORO.FTL.205(e) — now includes the concept of on-board rest specific for FDPs in air taxi and AEMS where the basic flight crew may be augmented by one or two additional flight crew members. As opposed to the concept of in-flight rest, here the time that the aeroplane is on the ground is also available as relief period for fatigue mitigation. The time that the aeroplane is on the ground may, however, only be counted as on-board rest if certain conditions, as stipulated in CS FTL.2.205, are met. Notably, the operator must establish a procedure to ensure that crew members are not disturbed during on-board rest. In CS-FTL.1 rest facilities located separately from the flight crew compartment and from the passenger cabin are deemed to achieve the maximum extension of the FDP. This separation is, however, not possible in smaller aeroplane types that are often used for air taxi and AEMS operations. Therefore, the definitions of in-flight rest facilities in CS-FTL.1 have been adapted to the size of aeroplanes normally used for air taxi and AEMS operations. The lack of separation is compensated by requiring:
 - means to provide darkness and noise mitigation; and
 - a procedure that ensures that resting crew members are not disturbed.The values of minimum on-board rest for cabin crew in air taxi and AEMS operations are adapted to the specificities described above. They are based on the provisions in CS-FTL.1.
- to ORO.FTL.205(f) — is only applicable to AEMS operations; it includes the possibility to develop specific conditions to modify the limits on flight duty, duty, and rest periods by the commander in the case of unforeseen circumstances, which occur at or after the reporting time based on CS FTL.2.205. In AEMS operations it should be possible to exceed the maximum allowed FDP based on the commander's discretion in order to be able to continue a flight to its destination or alternate aerodrome *after* take-off also if unforeseen circumstances occur *just before* take-off for the final sector. This is, however, only allowed if a patient is on board.
- to ORO.FTL.205(g) — delayed reporting in the event of unforeseen circumstances in air taxi and AEMS — no change compared to CS-FTL.1.

25. CS FTL.2.210 sets more restrictive cumulative limits in case the operator has chosen, under ORO.FTL.210(e), to apply more flexible daily FDP limits in its air taxi operations.
26. CS FTL.2.215 — based on the findings contained in Attachment IV, ORO.FTL.215 requires operators to specify in their flight time specification schemes the impact of positioning and the mode of transport on the maximum FDP in air taxi operations. Therefore, CS FTL.2.215 stipulates that:
- the maximum daily FDP is reduced by 30 minutes, if the positioning time is over 1 hour.
 - the maximum daily FDP is reduced by 30 min, if the self-driving driving time is between 30 min and 60 min, and by twice the duration of the self-driving time in excess of 60 minutes.
27. CS FTL.2.220 — applies to both air taxi operations and AEMS. As explained here above, it is possible to start an FDP as an air taxi operation and continue and finalise it as an AEMS. Therefore, certain elements are common for both air taxi operations and AEMS. That is the case for split duty. CS FTL.2.220 is based on CS-FTL.1. However, the specific nature of air taxi and AEMS operations make the following adaptations of split duty requirements necessary:
- flexibility in the number of breaks: it is possible to apply more than one break on the ground during one split duty, provided one break has a minimum duration of 3 consecutive hours and any additional break on the ground has a minimum duration of at least 2 hours. This is without reducing the possibility and time available to sleep during the break e.g. excluded from each break is the time for disembarking passengers before the break and embarking passengers after the break and other duties on the ground;
 - flexibility in rest facilities: either in the accommodation on the ground or in a Class A facility on board of the aeroplane as long as each crew member has one rest facility available during the entire break. This additional flexibility is necessary to allow for operations to distant airports that do not have accommodation in the vicinity.
28. CS FTL.2.225 — applies to standby in both air taxi operations and AEMS to allow operators to carry out both types of operations. Typically, crew members in these types of operations spend more time on standby other than airport-standby than crew members in scheduled and charter operations. Therefore, CS FTL.2.225 introduces certain flexibility, based on operational experience and best practices, without compromising the level of safety:
- In air taxi and AEMS operations the likelihood to be called out of standby with short notice for a departure in the early morning hours (e.g. before 07:00) is rather low. Crew members are supposed to remain within their day-night rhythm in the time zone where they are acclimatised. In these types of operations and due to the high number of standby days, it is paramount for crew members to manage their sleeping behaviour in order to prepare themselves for duty calls. In this context, fatigue management training is crucial to explain which are the most appropriate sleeping and napping strategies for the specific type of operation in line with sleep science. The maximum duration of standby remains 16 hours as in CS-FTL.1. It may be extended by the number of hours between 23:00 and 07:00 or between 13:00 and 17:00, if crew members are undisturbed and able to remain at their place of rest, if the standby encompasses that period.
 - Following that same logic, a reduction of the FDP does not apply if crew members are undisturbed and able to remain at their place of rest during the time intervals mentioned in the

paragraph above. In all other cases the FDP must be reduced by any time spent on standby in excess of 6 hours (8 hours for augmented crew operations or split duty).

- It is difficult to quantify the effect on cumulative fatigue of standby. It may be reasonably assumed that the shorter the response time is, the higher the impact is on the crew members' ability to manage their rest. Therefore, 100 % of time spent on standby with a response time of less than 60 minutes shall count as cumulative duty time for the purpose of CS FTL.2.210(a). For response times between 60 and 89 minutes 50 % shall count and 25 % for response times of 90 minutes or more. These values have been agreed by consensus in the rulemaking group.

A new point (c) defines the meaning of response time and requires operators to establish a response and reflect it in their flight time specifications scheme.

29. CS FTL.2.230 — only applies to air taxi operations. It is based on CS-FTL.1, but, for clarity, it includes some elements from the definition and the GM. GM1 CS FTL.2.230(d) is new and explains what fatigue management principles means in the context rostering sleep opportunities when crew members are on reserve.
30. CS FTL.2.235 — applies to air taxi and AEMS operations. It is based on CS-FTL.1, but adapted to the specific operational context, as follows:
- to mitigate disruptive schedules, an additional option is offered to mitigate transitions at home base from a late finish to an early start. Operators may choose to:
 - offer 1 local night of rest between the 2 FDPs as known from CS-FTL.1; or
 - limit the second FDP to 11 hours and defer the rest period including 1 local night after it.
 - the requirements to compensate for time zone crossing are the same as in CS-FTL.1. Only editorial improvements have been made to the text.
 - specific reduced rest provisions allow rest periods no shorter than 10 hours out of base and 12 hours at home base, provided:
 - the crew member is acclimatised;
 - the rest period includes a local night;
 - the rest period takes place at a location no further than 3 time zones away from the place of departure;
 - the flight time in the FDP prior to the rest period does not exceed 8 hours;
 - the FDP prior to the rest is limited to 4 sectors; and
 - the total flight time in the previous 7 consecutive days prior to rest period is no more than 24 hours.

These provisions are based on the findings presented in Attachment IV.



CERTIFICATION SPECIFICATIONS

AND GUIDANCE MATERIAL

FOR COMMERCIAL AIR TRANSPORT BY HELICOPTER

— EMERGENCY MEDICAL SERVICE OPERATIONS BY HELICOPTERS (HEMS)

CS-FTL.3

CS FTL.3.100 Applicability

The following certification specifications are applicable to emergency medical service operations by helicopters (HEMS).

GM1 CS FTL.3.100 Applicability

To ensure regulatory continuity for the full duration of a HEMS flight, a HEMS flight may include positioning the helicopter after the patient is unloaded from the helicopter to enable it to return to the HEMS operating base for the next HEMS flight.

CS FTL.3.200 Home base — HEMS

- (a) The home base is assigned to each crew member with a high degree of permanence and may either be:
- (1) a single HEMS operating base; or
 - (2) multiple HEMS operating bases if the travelling time between any of these HEMS operating bases does not exceed 60 minutes under usual conditions.
- (b) In the case of a change of home base, the recurrent extended recovery rest period prior to starting duty at the new home base is increased once to 72 hours, including 3 local nights. Travelling time between the former home base and the new home base is positioning or flight duty period.

CS FTL.3.205 Flight duty period (FDP) — HEMS

Maximum basic daily FDP in HEMS operations under ORO.FTL.205(b)(7)

The maximum basic daily FDP without the use of extensions for acclimatised crew members in HEMS operations is established as follows:

- (a) For two-pilot HEMS operations, the basic maximum daily FDP and the maximum flight time within that FDP are established in accordance with Table 1 and comply with the following conditions:
- (1) For FDPs of over 12 hours, the operator ensures at least one break of minimum 60 consecutive minutes or more within each FDP at the HEMS operating base at times that ensure likelihood of sleep and provides suitable accommodation for the purpose of breaks at the HEMS operating base;



- (2) The time for breaks constitutes 50 % of the time over 12 hours and excludes the necessary time for post- and pre-flight duties; and
- (3) The operator specifies in the operations manual a minimum of 30 minutes for the first pre-flight duties performed at the beginning of the FDP and a minimum of 15 minutes for post-flight duties for every flight returning to the HEMS operating base.

Table 1

Maximum basic daily FDP in hours — Acclimatised crew members in two-pilot HEMS operations

Start of FDP at reference time	Two-pilot maximum basic daily FDP at HEMS base	Maximum FT with autopilot	Maximum FT without autopilot
0630-0659	12:30	7:30	5:30
0700-0729	13:00	8:00	6:00
0730-0959	14:00	9:00	7:00
1000-1059	13:30	8:30	6:30
1100-1159	13:00	8:00	6:00
1200-1359	12:30	7:30	5:30
1400-0629	12:00	7:00	5:00

- (b) For single-pilot HEMS operations, the basic maximum daily FDP and the maximum FT within that FDP are limited in accordance with Table 2, and comply with all the following conditions:
- (1) Continuous FT is limited in all cases to 4 hours with autopilot and to 2 hours without autopilot;
 - (2) For FDPs of over 10 hours, the operator ensures at least one break of minimum 60 consecutive minutes within each FDP at the HEMS operating base at times that ensure likelihood of sleep and provides suitable accommodation for the purpose of breaks at the HEMS operating base;
 - (3) The time for breaks constitutes 50 % of the time over 10 hours and excludes the necessary time for post- and pre-flight duties;
 - (4) The operator specifies in the operations manual, a minimum of 30 minutes for the first pre-flight duties performed at the beginning of the FDP and a minimum of 15 minutes for post-flight duties for every flight returning to the HEMS operating base.

Table 2

Maximum basic daily FDP in hours — Acclimatised crew members in single-pilot HEMS operations

Start of FDP at reference time	Single-pilot Maximum basic daily FDP at HEMS base	Maximum FT with autopilot	Maximum FT without autopilot
0630–0659	12:30	05:30	03:30
0700–0729	13:00	06:00	04:00
0730–0959	14:00	07:00	05:00
1000–1059	13:30	06:30	04:30
1100–1159	13:00	06:00	04:00
1200–1359	12:30	05:30	03:30
1400–0629	12:00	05:00	03:00

- (c) If the rest period before reporting for the FDP is taken at the HEMS operating base, the limits of Table 1 for reporting times between 0730-0959 also apply for reporting times between 0630–0729.
- (d) The operator may assign a block of up to 4 consecutive FDPs of more than 12 hours, but less than 14 hours, if the following conditions are met:
- (1) the rest period preceding the first FDP is at least 36 hours including 2 local nights; and
 - (2) the rest period provided after completion of the series of consecutive FDPs is at least 60 hours including 3 local nights.

CS FTL.3.205 Flight duty period (FDP) — HEMS

Unforeseen circumstances in flight operations — commander's discretion in HEMS under ORO.FTL.205(f)

The conditions to modify the limits on flight duty, duty and rest periods by the commander in the case of unforeseen circumstances in HEMS flight operations which occur at or after the reporting time, or at the end of the FDP, comply with the following:

- (a) The maximum basic daily FDP may be increased for HEMS by up to 1 hour for single-pilot operation or by up to 2 hours for two-pilot operation.
- (b) If on the final sector within the FDP the allowed increase under (a) is further exceeded because of unforeseen circumstances after take-off, the flight may continue to the planned destination or alternate aerodrome. If unforeseen circumstances occur just before take-off on the final sector, the allowed increase may only be exceeded to transport the patient.
- (c) If commander discretion is used in any HEMS operating base more than 10 % of the total FDP over a 3-month period, the schedule and crew resources of the HEMS operating base are reviewed and adapted.

CS FTL.3.210 Flight times and duty periods — HEMS*Duty periods in HEMS operations under ORO.FTL.210(b)*

The total duty periods to which an individual crew member in HEMS operations may be assigned under ORO.FTL.210(b) does not exceed either of the following limits:

- (1) 110 duty hours in any 14 consecutive days, on the condition that:
 - i. the maximum daily FDP specified in CS FTL.3.205(a) or (b) does not exceed 14 hours;
 - ii. the operator ensures at least one break of minimum 60 consecutive minutes within each FDP at the HEMS operating base at times that ensure likelihood of sleep;
 - iii. for each FDP of more than 12 hours, the total break time constitutes 50 % of the time above 12 hours;
 - iv. the time for breaks excludes the necessary time for post- and pre-flight duties;
 - v. the operator provides suitable accommodation for crew members at the HEMS operating base for the purpose of breaks;
 - vi. the minimum recurrent extended recovery rest period required under ORO.FTL.235(d) shall be increased to include 4 local nights.
- (2) 190 duty hours in any 28 consecutive days, spread as evenly as practicable throughout that period.

CS FTL.3.220 Split duty — HEMS

The following applies in the case of split duty with one or more breaks on the ground in HEMS operations:

- (a) A break on the ground at the HEMS operating base is at least 60 consecutive minutes, if taken in a suitable accommodation, or at least 2 consecutive hours, if taken in accommodation.
- (b) If not taken at the HEMS operating base, the break on the ground has a minimum duration of 3 consecutive hours.
- (c) For any break of 6 hours or more or for a break that encroaches the window of circadian low (WOCL), suitable accommodation is provided;
- (d) Time allowed for post- and pre-flight duties and travelling is excluded from each break; the minimum total time for post- and pre-flight duties and travelling is 30 minutes or 15 minutes if at a HEMS operating base; the operator shall specify the actual times in its operations manual;
- (e) An operator may extend the basic maximum daily FDP specified in CS FTL.3.205 by up to 50 % of the combined duration of all breaks on the ground, with the exception of the time exceeding 6 hours or encroaching the WOCL if spent in other than suitable accommodation.

GM1 CS FTL.3.220(b) Split duty — HEMS*Post-, pre-flight duty and travelling times*

The operator should specify post- and pre-flight duty and travelling times taking into account the aircraft type, the type of operation and the conditions of the airport, landing site or HEMS operating base, as applicable.

CS FTL.3.225 Standby and duties at the HEMS operating base

The limits on flight duty, duty and rest periods in HEMS operations may be modified in accordance with the following:

- (a) The maximum duration of standby duty is 16 hours.
- (b) Standby is followed by a rest period in accordance with ORO.FTL.235. In case of consecutive standby duties not leading to an assignment of FDP, the applicable minimum rest period may be reduced to 8 hours, if the response time specified by the operator is 60 minutes or more.
- (c) Standby ceases when the crew member reports at the designated reporting point.
- (d) If standby ceases within the first 6 hours of standby, the maximum FDP counts from reporting;
- (e) If standby ceases after the first 6 hours, the maximum FDP is reduced by the amount of standby time exceeding 6 hours except in case of split duty; or
- (f) Time on standby duty is not counted for the reduction of the maximum allowable FDP in the following cases:
 - (1) if the standby starts between 23:00 and 07:00 and the crew member is not contacted by the operator during that period;
 - (2) if the assigned FDP includes a break on the ground; and
 - (3) the response time established by the operator allows the crew member to arrive from his/her place of rest to the designated reporting point within a reasonable time.
- (g) The response time is the time between the communication of a duty assignment and the reporting time and is reflected in the operator's flight time specification scheme.

CS FTL.3.230 Reserve — HEMS

The operator, when assigning duties to a crew member on reserve as provided for by ORO.FTL.230, complies with the following:

- (a) A crew member may be assigned to a maximum of 21 days on reserve per calendar year.
- (b) Any FDP or standby duty, assigned after the reserve, counts from the reporting time.
- (c) Reserve times do not count as duty period for the purpose of ORO.FTL.210(a) or (b) and ORO.FTL.235.
- (d) The operator specifies a number of consecutive reserve days within the limits of ORO.FTL.235(d).
- (e) To protect an 8-hour sleep opportunity in accordance with fatigue management principles, the operator rosters/pre-notifies for each reserve day a period of 8 hours during which a crew member on reserve cannot be contacted by the operator.

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

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

GM1 CS.FTL.3.230(d)

Fatigue management principles means, in the context of a rostered 8-hour sleep opportunity, that crew members should be able to maintain a consistent sleep pattern with surrounding days.

CS FTL.3.235 Rest periods — HEMS

(a) Reduced rest in HEMS operations complies with the following:

(1) The minimum rest period may be reduced to 10 hours, only if taken at the HEMS operating base with a suitable accommodation provided by the operator.

(2) Reduced rest is used under FRM.

(3) The recurrent extended recovery rest following a reduced rest period is increased to include 4 local nights.

(b) Disruptive schedules

(1) When a transition from a late finish/night duty to an early start is planned at home base, the rest period between the 2 FDPs, includes 1 local night.

(2) For a crew member performing 4 or more night duties, early starts or late finishes between 2 extended recovery rest periods as defined by ORO.FTL.235(d), the second extended recovery rest period is extended to include 3 local nights.'

Rationale for CS-FTL.3

31. The inclusion of HEMS FTL rules in Subpart FTL makes the development of specific certification specifications for HEMS necessary. HEMS operations, from an FTL perspective, are currently not at all harmonised at EU level contrary to HEMS from an air operations perspective. Subpart J of Annex V (Part-SPA) to Regulation (EU) No 965/2012 is entirely dedicated to HEMS and reflects the philosophy of HEMS flights. This NPA proposes a new set of certification specifications that are in line with the HEMS philosophy, CS-FTL.3, to cover HEMS operations. The CS-FTL.3 requirements are developed on the basis of input from the rulemaking group and data presented in Attachments I and II.
32. FTL.3.100 sets the scope of CS-FTL.3. GM1 CS FTL.3.100 explains that, for the purpose of regulatory continuity, positioning of the helicopter after the patient is offloaded should still be considered HEMS operation if the flight was started as HEMS flight.
33. CS FTL.3.200 refers to HEMS operating base instead of airport, because HEMS helicopters are often not based at an airport. 'HEMS operating base' is defined in Annex I to Regulation (EU) No 965/2012. It is possible to assign multiple HEMS operating bases to one crew member as home base, provided the travelling time between any of these HEMS operating bases does not exceed 60 minutes under usual conditions. This proposal is based on a consensus amongst rulemaking group members.

34. CS FTL.3.205:

- to ORO.FTL.205(b)(7) — currently, duty period limits in HEMS operations across EU Member States vary considerably. The data collection and preliminary impact assessment commissioned in 2012 by EASA (see Attachments I and II) showed that there was a wide range of national practices. The majority of rulemaking group members therefore agreed, for the purpose of defining common FDP limits for HEMS, to build on those national practices that include scientific principles and are based on extensive operational experience. They aim at ensuring an appropriate balance between wake and sleep times in a 24-hour cycle in combination with the minimum rest requirements. A block of consecutive duty days must be followed by an off-duty period that is long enough to fully dissipate cumulative fatigue from the duty days before.

CS FTL.3.205 establishes FDP limits in tables for two-pilot and single-pilot HEMS operations. The FDP limits range from:

- 12 hours when the FDP encroaches the night hours; and
- up to 14 hours when the FDP starts at the most favourable time of the day.

Basic maximum daily FDPs of more than 12 hours are possible only if crew members can benefit from at least one break of at least 60 consecutive minutes. Fatigue due to workload is controlled by limiting the flight time during the FDP depending on the time of the day and on whether the helicopter is equipped with an auto pilot. A similar approach is proposed for maximum basic FDP for single-pilot HEMS operations. The maximum flight time for the maximum daytime FDP is limited to 7 hours with autopilot and 5 hours without autopilot. During the least favourable hours of the circadian rhythm the maximum flight time is limited to 5 hours with autopilot and 3 hours without autopilot.

For FDPs following a rest period that has been taken at the HEMS base, the maximum FDP for a start of the FDP between 0730 and 0959 may be applied 1 hour earlier. This will not have an impact on the crew members' ability to sleep because crew members will not spend any time on travelling from their place of rest to the HEMS base.

It is possible to roster a block of up to 4 consecutive FDPs of more than 12 but less than 14 hours, only if the block is surrounded by extended recovery rest periods: 36 hours including 2 local nights before and 60 hours including 3 local nights after, to ensure that there is enough time to dissipate potential cumulative fatigue. Thus, a current operational practice in some Member States may continue under the common rules allowing 4 consecutive 14-hour FDPs with rest periods at the HEMS base of 10 hours, on the condition that each FDP of more than 12 hours includes at least 120 minutes break time of which 60 minutes are consecutive.

- to ORO.FTL.205(f) — commander's discretion in the case of unforeseen circumstances after reporting may be applied to extend flight duty and duty periods in HEMS, on the condition that it is limited to 1 hour for single-pilot operations and 2 hours for two-pilot operation. Where unforeseen circumstances occur after take-off on the final sector, the flight may continue to the planned destination or alternate aerodrome. If unforeseen circumstances occur just before take-off on the final sector, the allowed increase may only be exceeded to transport the patient. The use of commander's discretion must be monitored per HEMS operating base. Crew resources and schedule of a HEMS operating base must be reviewed, if commander's discretion is applied in more than 10 % of the FDPs operated at one HEMS operating base in a 3-month period.

35. CS FTL.3.210 allows for 110 duty hours in 14 consecutive days under certain conditions as an alternative to the 60 hours of duty in 7 consecutive days required under ORO.FTL.210. This is necessary to enable the continuation of an existing safe working model consisting of a block of 5 12-hour FDPs followed by 5 rest periods of 12 hours at the HEMS operating base, including a buffer for commander's discretion. Otherwise, the 7-day limit of 60 hours would be exhausted already on the fourth day, considering the need of certain buffers for unplanned extensions during the first 4 days. This is, however, only possible if the following mitigation is applied: the operator ensures at least one break per FDP of minimum 60 consecutive minutes at the HEMS operating base, provides suitable accommodation and increases the extended recovery rest period to include 4 local nights.
36. CS FTL.3.220 sets the conditions for split duty (break on the ground) in any other case, irrespective of the length of the FDP or cumulative duty period. It is an adaptation of the CS-FTL.1 split duty provisions to the HEMS operating environment
37. CS FTL.3.225 is an adaptation of the CS-FTL.1 airport standby provisions to the HEMS operating environment. The FDP assigned when a crew member is on standby will in most cases be reduced except when:
- the standby has started between 23:00 and 07:00 and the crew member is not contacted by the operator during that period of 8 hour sleep opportunity;
 - the assigned FDP includes a break on the ground; and
 - the response time established by the operator allows the crew member to arrive from his/her place of rest to the designated reporting point within a reasonable time.

These conditions are intended to ensure that the time on standby does not increase the awake time before the start of the FDP. A new point (g) defines the meaning of response time and requires operators to establish a response time and reflect it in their flight time specifications scheme.

38. CS FTL.3.230 is an adaptation of the CS-FTL.1 Reserve provisions, but for clarity includes some elements from the definition and the GM. The prescriptive limit of 21 days of reserve per crew member and per calendar year is based on the comparison of existing practices and the consensus of the rulemaking group. In the HEMS operating environment it is often found that crew members have considerable commuting distances between their residence and the HEMS operating base. Therefore, an excessive number of reserve days could negatively impact on the cumulative fatigue resulting from commuting between the residence of the crew member and the HEMS operating base. GM1 CS FTL.3.230(d) is new and explains what fatigue management principles means in the context rostering sleep opportunities when crew members are on reserve.
39. CS FTL.3.235 establishes reduced rest provisions that are tailored to the HEMS environment. The reduced rest periods in HEMS operations are provided on the HEMS operating base. That means, crew members do not spend any time on travelling between the HEMS operating base and the place of rest. Therefore, the minimum rest period at the HEMS operating base is set to 10 hours. This allows for an 8-hour sleep opportunity. The FDP following a reduced rest period does need to be reduced because the workload in HEMS is limited by limiting the number of flight hours per FDP and by prescribing a protected break(s) during the FDP.

3.3. Draft acceptable means of compliance and guidance material (Draft EASA Decision)

'SUBPART FTL

FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS

SECTION 1

General

GM1 ORO.FTL.105(1) Definitions

ACCLIMATISED

- (a) A crew member remains acclimatised to the local time of his/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 tables 1 of ORO.FTL.205(b)(1) or of the certification specifications applicable to the type of operation 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.

[...]

GM1 ORO.FTL.105(10) Definitions

ELEMENTS OF STANDBY FOR DUTY

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.

[...]

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 as 'carrying out duties'. The crew member remains an operating crew member during in-flight rest or on-board rest, as applicable. In-flight rest or on-board rest, as applicable, counts in full as FDP, and for the purpose of ORO.FTL.210.

[...]

AMC1 ORO.FTL.110(a) Operator responsibilities

PUBLICATION OF ROSTERS IN CAT SCHEDULED AND CHARTER OPERATIONS

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

AMC2 ORO.FTL.110(a) Operator responsibilities

PUBLICATION OF ROSTERED REST PERIODS IN AIR TAXI, AEMS AND HEMS OPERATIONS

Rostered extended recovery rest periods should be published at least 7 days in advance.



AMC3 ORO.FTL.120(b)(4) Fatigue risk management (FRM)**HEMS OPERATORS IDENTIFICATION OF HAZARDS**

In addition to AMC1 ORO.FTL.120(b)(4), HEMS operators should also take into account hazards specific to HEMS operations, such as the following:

- (a) The mission rate of the HEMS operating base;
- (b) Any particular conditions of the HEMS operating site or HEMS operating base;
- (c) The workload and stress levels of single-pilot operations;
- (d) The permanent hands-on flying on aircraft not equipped with autopilot;
- (e) Operations to unmonitored landing sites or unknown destinations; and
- (f) Particular environmental circumstances such as extreme temperatures, smells, noises, air dryness, humidity, as well as vibrations, absence of lavatories, and wearing a helmet/survival suit.

[...]

AMC1 ORO.FTL.120(b)(7) Fatigue risk management (FRM)**CAT OPERATORS FRM PROMOTION PROCESS**

FRM promotion processes should support the on-going development of FRM, 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 FRM:

- (a) training programmes to ensure competency commensurate with the roles and responsibilities of management, flight crew, and cabin crew, technical crew and all other involved personnel under the planned FRM; and
- (b) an effective FRM communication plan that:
 - (1) explains FRM policies, procedures and responsibilities to all relevant stakeholders; and
 - (2) describes communication channels used to gather and disseminate FRM-related information.

[...]

AMC1 ORO.FTL.125(a) Flight time specification schemes**SINGLEPILOT OPERATIONS BY AEROPLANE**

- (a) The flight time specification scheme for single-pilot scheduled and charter operations by aeroplane should be established on the basis of the certification specifications of CS-FTL.1.
- (b) The flight time specification scheme for single-pilot air taxi or AEMS operations by aeroplane should be established in accordance with the certification specifications of CS-FTL.2.

[...]



SECTION 2

Commercial Air Transport Operators

GM1 ORO.FTL.200 Home base

TRAVELLING TIME

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

GM1 ORO.FTL.205(a)(1) Flight Duty Period (FDP)

REPORTING TIMES

The operator should specify reporting times taking into account the type of operation, the size and type of aircraft and the reporting airport conditions of the reporting airport or HEMS operating base as applicable.

[...]

AMC1 ORO.FTL.210(c)(f) Flight times and duty periods

POST-FLIGHT DUTIES

The operator should specify post-flight duty times taking into account the type of operation, the size and type of aircraft and the airport conditions of the airport or the HEMS operating base, as applicable.

[...]

AMC1 ORO.FTL.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 an FDP, 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(a) or (b) only. If a crew member receives an assignment during standby other than airport standby, the actual reporting time at the designated reporting point should be used for the purpose of ORO.FTL.235.

GM1 ORO.FTL.225 Standby

STANDBY OTHER THAN AIRPORT STANDBY NOTIFICATION



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

GM1 ORO.FTL.225 Standby

AWAKE TIME

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

GM1 ORO.FTL.230 Reserve

RESERVE NOTIFICATION

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

GM2 ORO.FTL.230 Reserve

NOTIFICATION IN ADVANCE

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

GM1 ORO.FTL.230 Reserve

RECURRENT EXTENDED RECOVERY REST

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

[...]

GM1 ORO.FTL.235 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 for the acceptable means of compliance and guidance material

40. GM1 ORO.FTL.105(1) 'ACCLIMATISED' is complemented with references to the FDP tables under ORO.FTL.205(b) and the certification specifications applicable to specific types of operations in view of the expanded scope. It explains how the maximum FDP is determined in operations that entail crossing more than two time zones.
41. GM1 ORO.FTL.105(10) 'ELEMENTS OF STANDBY FOR DUTY' is complemented with a reference to the certification specifications applicable to the type of operation.
42. GM1 ORO.FTL.105(17) 'OPERATING CREW MEMBER' is amended to refer also to on-board rest in the case of air taxi and AEMS operations.

43. AMC1 ORO.FTL.110(a) 'PUBLICATION OF ROSTERS IN CAT SCHEDULED AND CHARTER OPERATIONS' is not appropriate for the specific on-demand nature of air taxi and EMS operations. The title is therefore complemented to specify that it only refers to *scheduled and charter* operations. On-demand operations do normally allow to pre-plan FDPs.
44. AMC2 ORO.FTL.110(a) 'PUBLICATION OF ROSTERED REST PERIODS IN AIR TAXI, AEMS AND HEMS OPERATIONS' — a new AMC that requires pre-planning and publishing of extended recovery rest periods 7 days in advance. The 7-day advance is based on the consensus of the rulemaking group. The purpose of pre-planning is to allow crew members to manage their sleep periods and allow for an appropriate work-life balance, referring in particular to being able to plan visits to administration, doctors, dentists etc.
45. AMC3 ORO.FTL.120(b)(4) 'HEMS OPERATORS IDENTIFICATION OF HAZARDS' — a new AMC specifically addressed to HEMS operators in view of the specific fatigue hazards in HEMS operations. A non-exhaustive list of elements that should be taken into account when assessing fatigue in HEMS operations gives examples of these specificities.
46. AMC1 ORO.FTL.120(b)(7) 'CAT OPERATORS FROM PROMOTION PROCESS' is complemented with a reference to HEMS crew members in view of the extended scope of the regulation to HEMS operations.
47. AMC1 ORO.FTL.125(a) 'SINGLE-PILOT OPERATIONS BY AEROPLANE' clarifies which set of certification specifications apply to single-pilot operations with aeroplanes depending on how those operations are taking place — as scheduled, charter or as on-demand (air taxi or AEMS).
48. GM1 ORO.FTL.200 'TRAVELLING TIME' is moved from GM1 CS FTL.1.200 to the implementing rules as it is considered relevant for all types of operations. It recommends crew members to make arrangements to avoid commuting times of more than 90 minutes (travelling from their residence to their home base).
49. GM1 ORO.FTL.205(a)(1) 'REPORTING TIMES' is complemented with a reference to the HEMS operating base as crew members in HEMS operations usually report for and finish their duties at HEMS operating bases.
50. AMC1 ORO.FTL.210(f) 'POST-FLIGHT DUTIES' now includes a reference to the HEMS operating base. This AMC previously addressed ORO.FTL.210(c).
51. Moved from CS-FTL.1 to the implementing rules as they are considered relevant for all types of operations are the following AMC/GM:
- AMC1 ORO.FTL.225 'MINIMUM REST AND STANDBY' (previously GM1 CS FTL.1.225);
 - GM1 ORO.FTL.225 'STANDBY OTHER THAN AIRPORT STANDBY NOTIFICATION' (previously GM1 CS FTL.1.225 (b));
 - GM1 ORO.FTL.225 'AWAKE TIME' (previously GM1 CS FTL.1.225(b)(2));
 - GM1 ORO.FTL.230 'RESERVE NOTIFICATION' (previously GM1 CS FTL.1.230);
 - GM2 ORO.FTL.230 'NOTIFICATION IN ADVANCE' (previously GM2 CS FTL.1.230);
 - GM1 ORO.FTL.230 'RECURRENT EXTENDED RECOVERY REST' (previously GM1 CS FTL.1.230(c));
 - GM1 ORO.FTL.235 'TIME ELAPSED SINCE REPORTING' (previously GM1 CS FTL.1.235(b)(3)).

4. Impact assessment (IA)

4.1. What is the issue

4.1.1. EMS operations in EASA Member States

Overall Scale of EMS Activity

Based on the data that could be collated, approximately 200 000 HEMS and AEMS missions are flown annually in Europe. HEMS represent 90 % of these operations. There are over 360 HEMS helicopter bases in Europe with additional fixed-wing air ambulance bases chiefly providing cross-border or intercontinental services such as medical repatriation (<http://www.ehac.eu/index.html>).

Extra details about activity levels were sought from the eight States surveyed are presented in Attachment I. This data was supplemented by data available on public websites. The number of annual missions per State are summarised in Table 2.1 below. Not all the surveyed States were able to provide data. The values in Table 2.1 account for about 75 % of the estimated 200 000 missions per year in Europe.

Table 1: Annual Missions By State (partial picture only) — Year 2012

MEMBER STATE	HEMS MISSIONS	AEMS MISSIONS	TOTAL MISSIONS	COMMENTS
FRANCE	15000 private +11800 public			Minimum estimate for HEMS, AEMS data difficult to obtain
GERMANY	84671	1020	85691	Based on data from 3 operators
NETHERLANDS	4200			Data based on only 1 operator. Assuming 2 flights = 1 mission.
NORWAY	10663	8988	19651	Data based on 1 operator and military missions. Another operator probably contributes about half as much again in Norway.
POLAND	4417	327	4743	Assuming 2 flights = 1 mission.
SWITZERLAND	10797	1052	11849	Data based on 1 operator. 2 other operators in State.
UK	17500	1500	19000	Minimum value for AEMS
TOTAL (ROUNDED)	157000	13000	170000	

Source: DNV Study for EASA¹⁸ — Deliverable 2

Cross-border services

Table 2: Examples of operators with cross-border services

MEMBER STATE	OPERATOR	ADDITIONAL MEMBER STATE *	NUMBER OF HEMS BASES	CROSSBORDER SERVICES WITH
GERMANY	HSD Luftrettung gemeinnützige		3	Poland, Czechia, Austria, Switzerland, Netherlands

¹⁸ Attachment I to this NPA.

	GmbH			
GERMANY	ADAC	Austria	3	Belgium France Austria Netherlands
ITALY	INAER		31	Austria
	Aviation Italia (Rotor Wing Department)			
LUXEMBURG	Luxemburg Air Ambulance S.A.		3	Germany, Belgium, France
NORWAY	Lufttransport		3	Sweden, Finland
NORWAY	Norsk Luftambulanse	Denmark	8	Sweden
SWEDEN	Norrlandsflyg Ambulans		1	Norway, Denmark
SWEDEN	Scandinavian MediCopter	Finland, Denmark	Total:10 SE: 6, FI: 3, DK: 1	Norway
SWITZERLAND	Air-Glaciers SA		2	France, Italy
SWITZERLAND	Base hélicoptère des HUG		1	France
SWITZERLAND	HUG		1	France
SWITZERLAND	REGA		12	Germany, France

Source: EHA, year 2015

*Additional Member State is the place where the operator has additional bases outside the territory of the Member State where the operator has its principle place of business.

Business models

The following was extracted from Attachment I.

There are many different EMS operators in Europe, as indicated in the DNV Appendix 3. These operators have a variety of business models which affect their costs. The different EMS business models in Europe include the following options, sometimes in combinations:

- *Government funded (via Civil and Military), examples include:*
 - *Scottish Ambulance Service is the UK's only government funded air ambulance service.*
 - *Poland's LPR is funded by the government through the Ministry of Health but run independently.*
 - *Helicopters operated by the Ministry of the Interior in Germany are staffed by German Police pilots performing emergency responses when required.*
 - *Royal Norwegian Air Force provides an air ambulance service.*
 - *Norwegian Luftambulanse is funded primarily by grants from four regional health authorities.*
- *Donation/ Charity based, e.g.:*
 - *The air ambulance service in England and Wales is funded by charities organized into regions.*
 - *REGA in Switzerland is non-profit receiving no government subsidies and obtains funds from patrons and donations as well as fees for service from insurance companies and liable parties.*
 - *The DRF's AEMS and HEMS operations in Germany are not completely covered by public health insurance and also need the support of sponsoring members and donations.*



- *Fee based – in this model operators charge fees for their EMS services. These fees can be covered by travel or health insurance companies, liable parties or public health services. Some organisations mix this model with additional donations as noted above.*
- *Independently supported – a business or outside organization can fund the EMS service. An example of this is ADAC, Germany’s largest automobile club, which funds the operation of many air ambulances.*
- *Shared cost model – some EMS operators share aircraft, pilots and facilities with other organisations. Examples include the UK’s Wiltshire and Sussex Air Ambulance services which part share their helicopter operations with the Police.*

As well as the different business models there are other factors that will affect operating costs around Europe and between different operators:

- *Different types of mission in different States (e.g. aiding a ski injury as compared to a road traffic accident);*
- *Different utilisation of crews – for example, in some locations close to areas with high population density and dense road infrastructure pilots may fly more missions than a pilot based in a remote location;*
- *Whether medical staff are included within the overall personnel costs of an EMS operator or whether they are outside funded within health care services;*
- *Whether crew and facilities are shared with other operators (e.g. police) and whether crew are leased or are full time personnel.’*

Estimated relative share of crew costs versus the total operating costs

Considering Attachment I (Table 2.2: Estimates of Crew Costs As Percentage of Overall Operating Costs) the share of crew costs¹⁹ in comparison to the total operating costs varies from 11 to 32 %. There were only a limited number of answers from the contacted Member States and operators.

4.1.2. Air taxi operations in EASA Member States

Air taxi flights in EASA Member States

Source: Attachment III section 2.2.2.1

‘There were 654,514 movements of Business Aviation (BA) in 2011 in Europe based on EUROCONTROL data. 45 %²⁰ of BA traffic was found to be “non-scheduled commercial” and all this traffic involved aircraft with 19 or less passenger seats. Commission Regulation (EU) No 965/2012 defines Air taxi operation as “Non-scheduled, on demand commercial operations with an aeroplane with a passenger seating configuration of 19 or less.”

Thus, it is estimated that in 2011 there were $654,514 \times 0.45 = 295,000$ air taxi movements in Europe. It is estimated that this represents approximately 3% of all movements in the EASA Member States; BA traffic in total represents just over 7% of all movements (EBAA, 2012).’

¹⁹ Crew costs cover salary and non-salary such as pensions.

²⁰ EUROCONTROL’s analysis of 2009 BA data (EUROCONTROL, 2010).



General operational data from some Member States

Table 3: Air Taxi Operational Data from States

State	Air Taxi Operational Data				
	Flights/ hours	Flight	No. of Operators	No. of Aircraft	No. of Pilots
Poland	6697 flights/ 8230 flight hours		5	27	61
Spain	71 631 flight hours		27	102	Not available
UK	Not available		60 approx.	Not available	Not available

Source: Table 2.1, Attachment III

Size of Operators

'The EBAA commissioned Alertness Solutions to examine fatigue factors in European Business Aviation Operations (Alertness Solutions, 2011). As part of that study a survey of several hundred Business Aviation pilots was conducted. One of the background questions asked was how many pilots are employed by your company. The responses are shown below which provide an indication of the distribution of operator sizes in Europe.'

Table 4: Distribution of Pilot Numbers for Business Aviation Operators

	Number of pilots employed by BA operator				
	10 or less	11-30	31-60	61-100	More than 100
Number of pilot responses	160	239	117	88	52
% of pilot responses	24%	36%	18%	13%	8%

Single-Pilot Operation with Air Taxi

EBAA has no specific data on single pilot operations within air taxi or BA operations. It was considered a marginal activity by EBAA within their membership.

Table 5: Operational Data on SPLO for Air Taxi

State	Single Pilot Air Taxi Operational Data				
	Flights/ hours	Flight	No. of Operators	No. of Aircraft	No. of Pilots
Poland	Approx. 1560 flights/ 950 flight hours		4	15	35
Spain	Only one operator is authorised for conducting single pilot operations. However, it has not operated air taxi services up to now. It has been conducting aerial services.				
UK	Not available		Approximately: 15 operators have aircraft that only require a single pilot for CAT work 5 operators <u>only</u> have aircraft that need a single pilot	Not available	Not available

Source: Attachment III, Table 2.3: Operational Data on SPLO for Air Taxi

'In Poland about half the aircraft and pilots involved in air taxi are involved in single pilot operations. In Spain there are no current air taxi single pilot operations. In the UK, about 25 % of air taxi operators have aircraft capable of single pilot operations. Thus, based on the limited received data the picture is varied in different European States. Further data collection on single pilot operations would be desirable.'

Scheduled Operations

Source: Attachment III, Section 2.2.2.2

'In France, single pilots are involved in some scheduled operations. Examples include:

- *Finist'air an airline providing scheduled passenger flights between Brest and Quessant as well as air taxi operations and freight transport. The airline operates Cessna 208 Caravans.*
- *St. Barth Commuter an airline based in the Caribbean operating Cessna 208 Caravans and Britten-Norman Islanders.*

In the UK single pilot operations apply to scheduled services around the Highlands and Islands (e.g. Loganair and Hebridean Air Services) and the Channel Islands.

No other data on scheduled single pilot operations were obtained during the survey of NAAs and relevant associations.'

4.1.3. AEMS

Source: Attachment III, Section 2.2.2.3

'During the preparation of report D2 on EMS [Attachment II], data were received from France and UK that single pilot AEMS operations take place in those States and that relevant FTL provisions are in place. Poland stated that single pilot AEMS operations did not occur in that State. No other specific information on single pilot operations in AEMS was obtained during the EMS survey.'



4.1.4. Safety risk assessment

4.1.4.1 EMS Safety risk assessment (DNV assessment)

Attachment II Section 7, page 90

'EMS operations have certain higher risk characteristics relative to other aircraft operations such as time pressures to reach and transport patients and flights made at short notice with potentially challenging topographical features and weather conditions. In addition there are aspects of flight time limitations and rest provisions that could lead to fatigue and increased risk, e.g. requirements to extend a duty period to respond to an emergency.'

Attachment II, page 4

'Two European EMS accidents reports which refer to fatigue (or the possibility of fatigue) are described in Appendix 1 from public domain sources. In addition EASA's Safety Analysis Section conducted a search of the EASA copy of the ICAO ADREP data base. This uncovered one further European accident and 2 non-European EMS occurrences where fatigue appears to have been a factor. [Over the period 1971 – 12 January 2012] These 5 events equate to 1.3% of the 395 EMS occurrences in the data base. Four of these five events were fatal accidents. 28% of the 395 EMS occurrences in the data base were fatal accidents. Thus fatigue appears to be a contributory cause in 3.6% of fatal EMS accidents. These relatively low percentages for the contribution of fatigue to overall occurrence and accident rates should be treated with some caution for the reasons noted above; in particular reports may not identify fatigue even though it could have been a factor to some degree.'

One event from 2005 in the UK (described in Appendix I) reveals the potential difficulty of pilots on home standby managing their rest so that they do not become excessively fatigued when they are called out, particularly at night. Another occurrence was also related to a pilot remaining awake all day before a helicopter nighttime shift.

Even with the caveats about under-reporting of fatigue as a causal factor it would appear from the occurrence data that the controls that have been in place to manage fatigue in European EMS have generally been effective. Compared to the social benefits from EMS operations in terms of patient safety and health (see below), the overall safety balance (flight safety v patient safety) is very positive.'

In the period between 1 March 2012 and 31 August 2017, 59 accidents and 12 serious incidents in EMS operations are recorded in the EASA ADREP Database. Of these, 13 accidents and 5 serious Incidents occurred in the EASA Member States. In the entire dataset, 49 helicopters and 24 fixed-wing aircraft were involved in these occurrences. In two of these accidents, both fatal, fatigue was identified as a possible contributory factor.

- F-GXES, French Antilles, 2012-05-05, fatal accident, 4 fatalities, aircraft crashed in sea shortly after take-off: 'The causes of the accident cannot be determined with any certainty. However, the almost permanent standby status used in single-pilot operations and the underlying risk of fatigue can be considered a contributing factor.'
- EC-IBA, Spain, 2012-08-02, fatal accident, 2 fatalities, aircraft crashed on approach in heavy fog condition: 'The ultimate cause of the accident could not be determined. [...] The contributing factors were: [...] the fatigue built up over the course of working at a time when they should have been sleeping after an unplanned duty period.'

4.1.4.2 Air Taxi safety risk assessment

The EASA ADREP database contains 100 accidents and 22 serious incidents in air taxi operations in the period between 1 March 2012–31 August 2017. Of these, 66 involved fixed-wing aircraft while 56 involved helicopters.

12 accidents and 9 serious incidents occurred in the EASA Member States. None of these occurrences were found to contain any information as to whether fatigue was a factor in the occurrence.



4.1.5. Who is affected

- Operators of single-pilot operations with aeroplanes,
- Air taxi operators,
- AEMS operators,
- HEMS operators,
- Air taxi and AEMS crew members,
- HEMS crew members,
- NAAs,
- EASA.

4.1.6. How could the issue/problem evolve

HEMS

Currently, there are few HEMS bases in additional States and limited cross-border services. Furthermore, there is no indication of specific urgent safety issues. Nonetheless, due to the differences in FTL HEMS in the different Member States (detailed information in Attachment I, 3.2), it is difficult to estimate how effective national fatigue mitigations would be under operational circumstances specific for another MS (i.e. number and length of missions, service obligations such as response time, on the ground facilities for rest and other national legislation that has an impact on crew member fatigue). Therefore, the current situation would remain acceptable, if HEMS operations were conducted predominantly in the Member State that issued the AOC. However, HEMS flights have only recently been harmonised at EU level from an air operations regulation perspective. It can reasonably be expected that the situation will change in the near future in terms of number of HEMS bases to be established across Europe and the number of services to be available cross-border. Since purely national FTL provisions are often a result of social negotiation and adapted to the specific operational circumstances of the Member States, discrepancies between national FTL regimes might make it difficult for operators to conduct HEMS outside their principal home base.

Air Taxi

As specified in Section 4.1.4.2 **Error! Reference source not found.**, scheduled and charter CAT operations with aeroplanes and air taxi operations are very similar in terms of safety risks resulting from crew members' fatigue. Therefore, the reader is invited to refer to [NPA 2010-14](#).

4.2. What we want to achieve — objectives

Please refer to Section 2.2.

4.3. How it could be achieved — options

The following options only focus on the HEMS operations.



Table 6: Selected policy options HEMS

Option No	Short title	Description
0	No policy change	No change in the existing situation; HEMS continue to be regulated under MS national rules
1	Flexible approach	Prescriptive EU rules combined with performance-based options, to allow for flexibility, subsidiarity and proportionality (please refer to rationale for CS-FTL.3)
2	Fully prescriptive approach	Prescriptive EU rules for HEMS operators

It has to be noted that the scope of the HEMS rules exclude the remote bases that are open on a 24-hour basis. This decision has been taken after an analysis of the potential high negative economic impacts which could, as a side effect, reduce the availability of such remote bases and limit the availability of emergency medical services. For the future more research needs to be done in order to assess the fatigue risks in remote basis.

The analysis shows that the impact of the new HEMS rules would be highly negative on certain remote bases:

- 1) If additional pilots are not recruited this would lead to higher workload for the pilots. In addition, if this is not compensated by a corresponding increase in salary, this could lead to social tensions or pilots finding a more lucrative job elsewhere (e.g. offshore in Norway).
- 2) If additional pilots are recruited this would lead to fewer flights per pilot. Consequently, this would lead to a loss of practical experience due to the limited number of HEMS flights per pilot. This loss could be compensated by additional training hours. However, this has not the same value as real HEMS flights.
- 3) If additional pilots are not recruited this would lead to less service for the public

The following table provides the justifications with an estimate of the impacts.

Case Study — Remote bases open 24/24 (e.g. case in Norway)

Items for calculations	Current situation	Project situation* : Max duty period = 9 to 14h per day EASA draft rules						
		Comment	Solution 1: Change in pilot workload			Solution 2: Change in crew members		
			Impact	Change (%)	Comment	Impact	Change (%)	Comment
For one crew member (1 crew = 1 pilot + 1 HEMS crew member)								
Mandatory maximum duty hours per year	2000		2000			2000		
Hour buffer for training	200		200			200		
Max target duty hours	1800		1800			1800		
Number of days of work per week	7		7	0 %		7	0 %	
Number of hours per day	14 14 hours/day plus 10 hours rest, all spent at the base, over 7 consecutive days		12	-14% Day and night shifts are introduced to cope with EASA rules		12	-14% Day and night shifts are introduced to cope with EASA rules	
Number of work weeks	15 1 work week/2 week off - 1ww/3wo		21	40 % Increase of 40 % of work weeks: there are 2 possibilities: 1) HEMS pilots may go for CAT helicopter offshore operations where they would get a higher salary relevant for the higher work weeks in offshore 2) HEMS pilots may request higher salary to compensate the increased working weeks Note: risk of social conflicts with HEMS crew member which could request higher salary		15	0 %	
Number of crew member	1		1			1.4	40 % Increase of 40 % of crew member: the consequence is a decrease of flight hours per crew as the number of missions will remain the same	



Additional training hours to compensate decrease of mission flight hours per crew member			70	35%	Increase of 35% of training hours
Additional staff to compensate additional training			not quantified here, see comments		Additional training hours means that more crew shall be recruited to compensate the staff on training. A total impact is calculated for Norway in the table below.
Total number of hours per year	1470	1764	20 %	1470	0 %

Items for calculations	Current situation	Project situation* : Max duty period = 9 to 14h per day EASA draft rules 30.10.2013						
		Comment	Solution 1: Change in pilot workload			Solution 2: Change in crew members		
			Impact	Change (%)	Comment	Impact	Change (%)	Comment
Global impact on crews in Norway								
Total number of helicopters (only 1 base with 2 helicopters)	13 including 1 new							
Average crew per helicopter	3.5							



Items for calculations	Current situation Comm ent	Project situation* : Max duty period = 9 to 14h per day EASA draft rules 30.10.2013					
		Solution 1: Change in pilot workload			Solution 2: Change in crew members		
		Impact	Change (%)	Comment	Impact	Change (%)	Comment
Total number of crews	45.5 There are also additional senior staff to support the crews: instructors, chief pilots, ...		Increase of 40 % of work weeks: there are 2 possibilities: 1) HEMS pilots may go for offshore operations where they would get a higher salary relevant for the higher work weeks in offshore 2) HEMS pilots may request higher salary to compensate the increased working weeks Note: risk of social conflicts with HEMS crew member which could request higher salary Additional impacts: travel time and living arrangements due to day/night shifts: not monetarised for the moment		64	19.5 additional crews	
Total number of crews					2	2 additional crews to compensate additional training	
					66	21.5 additional crews	

More information is contained in Attachment VI.



Table 7: Selected policy options air taxi and AEMS

Option No	Short title	Description
0	No policy change	No change in the existing situation; air taxi and AEMS continue to be regulated under Subpart Q plus national rules
1	Flexible approach	Prescriptive EU rules combined with performance-based options, to allow for flexibility, subsidiarity and proportionality (please refer to rationale for CS-FTL.2)
2	Fully prescriptive approach	Prescriptive EU rules for air taxi and AEMS operators

4.4. What are the impacts

4.4.1. Safety impact

4.4.1.1 HEMS

Option 0 — No policy change (HEMS)

As specified in the Section 4.1.3, ‘Even with the caveats about under-reporting of fatigue as a causal factor, it would appear from the occurrence data that the controls that have been in place to manage fatigue in European EMS have generally been effective.’

Options 1 & 2 (HEMS)

In the absence of evidence of specific safety risks requiring an urgent action or a new approach to manage potential high risks, it can only be considered that Options 1 or 2 could provide some positive low benefits. Safety risks could, however, arise if there are changes to the current situation where operations remain predominantly in the Member State that issues the AOC.

A general positive impact is to be expected from the introduction of scientific principles to managing long duties and reduced rest, operators’ responsibilities to monitor and manage fatigue and to implement mandatory fatigue management training for their crew members, rostering staff and managerial staff involved in the operation.

Summary table for HEMS

<i>HEMS Options</i>	<i>Safety impact</i>
Option 0 — No policy change	Neutral, if operations remain predominantly in the MS that issues the AOC
Option 1 — Flexible approach	Positive low benefits
Option 2 — Fully prescriptive approach	Positive low benefits

4.4.1.1 Air taxi and AEMS

Option 0 — No policy change

The Regulatory Impact Assessment (RIA) of NPA 2014-14 highlighted areas where safety improvements were recommended for CAT operations with aeroplanes in scheduled and charter operations. Notably, it was

recommended to remove the possibility to allow extensions of the FDP to 11:45 during the most unfavourable time of the day. That means, Option 0 has the potential of not addressing known safety concerns. Please refer to the RIA of NPA 2010-14 for further details on safety improvements for those elements of FTL that were not harmonised under Subpart Q.

Options 1 & 2

A positive safety impact is to be expected from the reduction of fatigue for operations taking place at the most unfavourable time of the circadian rhythm. With regard to the proposed harmonisation of the provisions for standby, split duty and the measures to control the fatigue related risks resulting from time zone crossing, a positive impact is to be expected in those Member States that currently apply less stringent measures. A further positive impact is to be expected from the strengthened operator responsibilities and the introduction of mandatory fatigue management training for crew members, rostering staff and managers, and measures to compensate the fatigue resulting from disruptive schedules. Please refer to NPA 2010-14 for more detailed information.

Summary table for air taxi and AEMS

<i>Air taxi & AEMS Options</i>	<i>Safety impact</i>
Option 0 — No policy change	Minor negative
Option 1 — Flexible approach	Positive low benefits
Option 2 — Fully prescriptive approach	Positive low benefits

4.4.2. Environmental impact

Not relevant.

4.4.3. Social impact

4.4.3.1 HEMS

Option 0 — No policy change

There is no negative impact in terms of employment or working conditions because Option 0 does not introduce new rules.

Option 1 — Flexible approach

Overall, a neutral impact in terms of employment or working conditions because Option 1 allows implementing an individual flight time scheme for each operator that may or may not remain within the specified limits. The social impact could vary from negative to positive depending on the FTL scheme of the operator.

It is expected that some HEMS operators will continue with their specific operations, including consecutive, 15-16 hours FDPs, combined with reduced rest periods at HEMS operating base, if proven safe. In those cases no social impact is expected.

Some operators will have to improve their working conditions, while others will have to recruit new pilots. If additional pilots are recruited, this is likely to result in fewer flights per pilot. This may in turn lead to a loss of practical experience. This loss could be compensated by additional training hours in a simulator. However, this has not the same value as real HEMS flights.



Option 2 — Fully prescriptive approach

Despite that the rules are developed to provide better working conditions for the pilots by reducing the risk of fatigue, the impact would be negative:

- 1) If additional pilots are not recruited this would lead to higher workload. In addition, if this is not compensated by a corresponding increase in salary, this could lead to social tensions or pilots finding elsewhere more lucrative jobs (e.g. offshore in Norway).
- 2) If additional pilots are recruited this would lead to fewer flights per pilot. Consequently this would lead to a loss of practical experience due to the reduced number of HEMS flights per pilot. This loss could be compensated by additional training hours in a simulator. However this has not the same value as real HEMS flights.
- 3) If no additional pilots are recruited this would lead to less service for the public.

Summary table for HEMS

<i>HEMS Options</i>	<i>Social impact</i>
Option 0 — No policy change	Neutral
Option 1 — Flexible approach	Neutral
Option 2 — Fully prescriptive approach	Highly negative

4.4.3.2 Air taxi and AEMS

Option 0 — No policy change

A negative social impact is to be expected. Crew members cannot easily change from air taxi/AEMS operations to scheduled and charter operations due to the rolling 1 000-flight-hours-per-12-consecutive-calendar-months limit.

Option 1 — Flexible Approach

A positive social impact is to be expected for crew members due to the harmonisation of standby, rest requirements to compensate for time zone crossing and disruptive schedules.

Option 2 — Fully prescriptive approach

A positive social impact is to be expected for crew members due to the harmonisation of standby, rest requirements to compensate for time zone crossing and disruptive schedules.

Summary table for air taxi and AEMS

<i>Air taxi and AEMS Options</i>	<i>Social impact</i>
Option 0 — No policy change	Negative
Option 1 — Flexible approach	Positive
Option 2 — Fully prescriptive approach	Positive

4.4.4. Economic impact

This section is broken down per type of stakeholder: HEMS operators, air taxi and AEMS operators, and EASA.

4.4.4.1 HEMS

Option 0 — No policy change

There is no negative economic impact because Option 0 does not introduce new rules. For operators performing HEMS outside certifying State there might be a slight negative impact as those operators have to deal with different FTL regimes which would lead to additional costs and would prevent free movement of persons and services in EU.

Option 1 — Flexible approach

Option 1 allows for implementing an individual flight time specification scheme. The individual scheme may deviate from or remain within the certification specifications. It may reasonably be assumed that for HEMS operators it will also take approximately 2 000 working hours to develop and document an individual scheme that deviates from the certification specifications as has been reported by CAT aeroplane scheduled and charter operators. However, these are one-off costs.

The economic impact of Option 1 on HEMS operators is unclear due to the lack of data on the economic performance of these operators and their diversity in EASA Member States. Under the obligations of their management system, operators have been collecting data on their economic and safety performance, including their FTL schemes, since the implementation of Regulation (EU) No 965/2012 in October 2014.

The HEMS operators are invited use the following link to provide feedback on cost estimates for Option 1 and other general information: <https://ec.europa.eu/eusurvey/runner/NPAFTLHEMS>.

Option 2 — Fully prescriptive approach

There are 2 main types of negative economic impacts which have been identified and estimated:

- 1) Impacts only for HEMS operators. They would address the impacts by either:
 - a) recruiting additional pilots;
 - b) increasing the working time of pilots;
 - c) increase of service cost, or
- 2) in order to continue their current way of operations, the number of derogation would increase which would require an additional work for operators, competent authorities, DG MOVE and EASA.

No economic benefits have been identified.

A case study for HEMS base with day operations has been performed to quantitatively estimate the impacts.



Case Study — Base with day operations (e.g. Germany)

Items for calculations	Current situation example Bremen					Projected situation : Max duty period = 9 to 14h per day								
						Change in workload and crew								
	Pilots in schedule	average work days	average work hours per day	Sum per pilot	Sum per base	Impact	Pilots in schedule	average work days	average work hours per day*	Sum per pilot	Change (%)	Sum per base	Change (%)	Comment
Mandatory maximum hours per year	2000					2000								
Max target hours	2000					2000								
January	3	10	9	91	274		3	10	9	91	0 %	274	0%	
February	3	12	11	124	373		3	12	11	124	0 %	373	0%	
March	3	15	12	180	539		3	15	12	180	0 %	539	0%	
April	3	14	14	198	593		4	18	16	145	-27 %	677	14%	calculated 2h overlapping
May	3	12	15	176	527		4	16	17	134	-23 %	597	13%	for handing over, servicing
June	3	10	16	155	465		4	15	18	131	-15 %	525	13%	and waiting for helicopter
July	3	13	16	197	591		4	17	18	151	-23 %	667	13 %	dto
August	3	10	15	151	452		4	16	17	129	-14 %	516	14 %	dto
September	3	12	13	165	496		3	12	13	165	0 %	496	0 %	
October	3	15	11	168	504		3	15	11	168	0 %	504	0%	
November	3	10	9	95	284		3	10	9	95	0 %	284	0%	
December	3	10	8	86	258		3	10	8	86	0 %	258	0%	



Items for calculations	Current situation example Bremen					Projected situation : Max duty period = 9 to 14h per day								
						Change in workload and crew								
	Pilots in schedule	average work days	average work hours per day	Sum per pilot	Sum per base	Impact	Pilots in schedule	average work days	average work hours per day*	Sum per pilot	Change (%)	Sum per base	Change (%)	Comment
Number of work days/Pilot/year		143	13	1785	5355			166	9	1427	-20%	5709	7%	
Number of work hours/Pilot/year				1785						1427	-20%			
Total number of hours per year per pilot				231						173	-25%			
Global impact on crews in Germany														
Total number of bases with that routine	32					32								
Average pilots per base				3						4				
Total number of Pilots				96						128				

*The average working hours per day in the table include the FDP and post-flight duties, where some overlap between the shifts is calculated.



Summary table for HEMS

<i>HEMS Options</i>	<i>Economic impact</i>
Option 0 — No policy change	Neutral
Option 1 — Flexible approach	Medium negative
Option 2 — Fully prescriptive approach	Highly negative

4.4.4.2 Air taxi and AEMS

Option 0 — No policy change

Option 0 does not introduce changes to the FTL regulatory framework. As a consequence, ATXO and AEMS operations would continue to be less efficient compared to Option 1, which will allow for more effective operations at certain times of the day due to the flexible approach in Option 1.

As such there is no economic change if Option 0 remains the baseline, however, there is an economic situation which is less cost-effective in comparison with Option 1.

Option 1 — Flexible approach

Option 1 allows for implementing an individual flight time specification scheme. The individual scheme may deviate from or remain within the certification specifications.

A positive impact is to be expected from the additional flexibility in FDP limits for air taxi operations. Furthermore, proven safe practices may continue under individual flight time specifications schemes.

It may reasonably be assumed that for air taxi and AEMS operators, it will also take approximately 2 000 working hours to develop and document an individual flight time specification scheme that deviates from the certification specifications as has been reported by CAT aeroplane scheduled and charter operators. However, these are one-off costs.

The two types of impacts may compensate each other, it is estimated that this would provide a minor positive impact overall.

Option 2 — Fully prescriptive approach

A negative impact is to be expected for some operators. This option is a ‘one-size-fits-all’ approach. The additional flexibility in FDP limits is not available. Therefore, operators cannot reap the positive impact from efficiency gains for certain FDPs.

Summary table for air taxi and AEMS

<i>Air taxi and AEMS Options</i>	<i>Economic impact</i>
Option 0 — No policy change	Neutral
Option 1 — Flexible approach	Minor positive
Option 2 — Fully prescriptive approach	Negative

4.4.4.3 Economic impact for EASA with HEMS, Air taxi and AEMS options**Option 0 — No policy change**

The economic impact is neutral for EASA.



Option 1 — Flexible approach

EASA has experience with implementation of the FTL rules for CAT scheduled and charter operations. Since October 2014 until now 14 individual flight time specification schemes deviating from the certification specifications or derogating from the implementing rules have been evaluated. The Commission is involved only when a scheme derogates from the implementing rules. Under the flexible approach, requirements that could trigger a need for an individual scheme are placed in the certification specifications.

It is expected that several operators will apply for schemes that deviate from the certification specifications, as was the case for scheduled and charter operations.

In order to assess the future workload for EASA, the experience gained with assessing derogations/deviations with scheduled and charter operations needs to be considered. Thus, the potential workload with HEMS, AEMS and air taxi derogations/deviations is estimated for the 3 first years starting from 2019 (the first year of implementation).

EASA assessment for a derogation/deviation from the current FTL rules:

- Workload between 50 and 800 hours, depending on the complexity of the case
- Number of evaluations: in average 5 per year for the past 3 years
- Average workload per evaluation: 100 hours
- EASA implementation support: 200 hours in 2017
- Ex post evaluation of the current FTL rules: 300 hours for 2017, same for 2018

EASA assessment for a deviation from future HEMS and air taxi FTL rules

- number of evaluations per year:
 - during the first year: 8 for HEMS, 3 for air taxi
 - during the second year: 5 for HEMS, 2 for air taxi
 - during the third year: 3 for HEMS, 1 for air taxi
- EASA implementation support from 2019
 - during the first year: 800 hours
 - during the second year: 400 hours
 - during the third and following years: 100 hours
- Ex post Evaluation of the current HEMS FTL rules: 300 hours in 2021, same in 2022

Note: The impact on the workload of the Commission and the Member States is not estimated here due to lack of data.



Table 8: Overall workload impact for EASA

Cost items	Unit	2015	2016	2017	2018	2019	2020	2021	2022
CAT FTL									
Number of derogations	Number	5	5	5	5	5	5	5	5
average workload	hours	150	150	150	150	150	150	150	150
Total derogation workload	hours	750	750	750	750	750	750	750	750
Implementation support workload	hours	800	600	200					
Ex post evaluation of the current CAT FTL rules	hours			300	300	300	300	300	300
Total workload	hours	1 550	1 350	1 250	1 050	1 050	1 050	1 050	1 050
Additional workload with HEMS and Air Taxi FTL									
HEMS FTL									
Number of derogations	Number					8	5	3	3
average workload	hours					150	150	150	150
Total derogation workload	hours					1 200	750	450	450
Air Taxi FTL									
Number of derogations	Number					3	2	1	1
average workload	hours					150	150	150	150
Total derogation workload	hours					450	300	150	150
Total derogation workload for HEMS and Air Taxi	hours					1 650	1 050	600	600
HEMS and Air Taxi FTL support									
Rulemaking activity	hours	300	200	100	100				
Implementation support workload	hours					800	400	100	100
Ex post evaluation for HEMS/Air Taxi & AEMS FTL rules	hours								300
Total additional workload HEMS and Air Taxi	hours	300	200	100	100	2 450	1 450	700	1 000
Equivalent FTEs	FTEs	0.2	0.1	0.1	0.1	1.5	0.9	0.4	0.6
All FTL activities									
Total workload	hours	1 850	1 550	1 350	1 150	3 500	2 500	1 750	2 050
Equivalent FTEs	FTEs	1.2	1.0	0.8	0.7	2.2	1.6	1.1	1.3

The implementation of Option 1 would require 1.5 **additional** FTEs in 2019²¹ and between 0.4 and 0.9 **additional** FTEs in the following years.

Option 2 — Fully prescriptive approach

Option 2 is considered to have a stronger negative impact for EASA workload than the Option 1 impact. Experience shows that processing a request for derogation from FTL implementing rules is more time-consuming than the assessment of a deviation from certification specifications due to additional administrative work.

²¹ 3.6 FTEs in the last line of the table above minus 1 current FTE in EASA.

Summary table for EASA

<i>Options</i>	<i>Economic impact for EASA</i>
Option 0 — No policy change	Neutral
Option 1 — Flexible approach	Medium negative
Option 2 — Fully prescriptive approach	Highly negative

4.4.4.4 Overall conclusion for the economic impacts per type of options and stakeholders

<i>Options</i>	<i>HEMS</i>	<i>Air taxi & AEMS</i>	<i>EASA</i>
Option 0 — No policy change	Neutral	Neutral	Neutral
Option 1 — Flexible approach	Medium negative	Minor positive	Medium negative
Option 2 — Fully prescriptive approach	Highly negative	Negative	Highly negative

Question to stakeholders on economic impacts:

Stakeholders are invited to provide quantified justification elements on the possible economic impacts of the options proposed, or alternatively to propose another justified solution to the issue.

4.4.5. General Aviation and proportionality issues

Not relevant.

4.5. Conclusion**4.5.1. Comparison of options**

Summary of impacts for all criteria and options:

<i>Options</i>	<i>Safety impact</i>	<i>Social impact</i>	<i>Economic impact</i>
HEMS			
Option 0 — No policy change	Neutral	Neutral	Neutral (minor negative)
Option 1 — Flexible approach	Positive low benefits	Neutral	Medium negative
Option 2 — Fully prescriptive approach	Positive low benefits	Highly negative	Highly negative
Air Taxi & AEMS			
Option 0 — No policy change	Minor negative	Negative	Neutral
Option 1 — Flexible approach	Positive Low benefits	Positive	Minor positive
Option 2 — Fully prescriptive approach	Positive Low benefits	Positive	Negative

In addition, the implementation of Option 1 would require for EASA 1.5 additional FTEs in 2019 and between 0.4 and 0.9 additional FTEs in the following years.



The impact of Option 1 on the Member States has not been assessed due to lack of data. Any feedback Member States can provide would improve the quality of this impact assessment and will allow for adequate conclusions to be drawn regarding future FTL requirements.

Following this assessment, Option 1 would be the preferred option. However, it is expected that the RIA will be updated **if** the stakeholders' comments on this NPA, and especially the survey indicated in Section 0 (economic impacts), require this.

Question to stakeholders

Stakeholders are also invited to provide any other quantitative information they may find necessary to bring to the attention of EASA.

As a result, the relevant parts of the RIA might be adjusted on a case-by-case basis at the Opinion stage.

4.6. Monitoring and evaluation

EASA, with the support of the competent authorities and industry, shall conduct a continuous monitoring of the provisions concerning flight and duty time limitations and rest requirements.

The monitoring shall encompass different aspects of the rules implementation, however as minimum criteria:

- Number of fatigue reports;
- Impact of disruptive schedules on fatigue;
- Impact of time zone crossing on fatigue
- Impact of positioning on fatigue;
- Frequency of exceedances of rostered FDPs compared to actual FDPs;
- Use of CD to extend the FDP and to reduce the rest period;
- Adequacy of sleep opportunities prior to safety related duties;
- Adequacy of recovery periods;
- Adequacy of requirements to control sleep disruption due to:
 - alternating day/night duties
 - alternating eastward-westward or westward-eastward time zone transitions;
- Adequacy of procedures to control awake time.

The industry is expected to collect data on the above criteria, analyse them and share the results with the competent authority. The operators are invited to add more criteria, depending on the specificity of their work.

The data shall be further aggregated by the competent authorities and transmitted, not less than once a year, to EASA which will use it to assess the level of implementation of the rules.

In particular EASA will assess how well the adopted rules function, taking account of the overall objectives and earlier predictions made in impact assessment. Based on this assessment EASA will provide an evidence-based judgement of the extent to which the proposal has been relevant, given the needs and its objectives, effective and efficient, coherent and has achieved EU added-value.

A first evaluation will be done 5 years after the rules apply. The evaluation report will justify whether the rules should be modified, simplified or repealed.



5. Proposed actions to support implementation

EASA proposes the following actions as implementation support:

- A dedicated workshop with stakeholders in Cologne after the consultation of the NPA when all comments have been processed.
- Providing supporting clarifications through electronic communication tools to the competent authorities.
- Thematic workshops with stakeholders organised during a potential transition period.



6. References

6.1. Affected regulations

- COMMISSION REGULATION (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1)

6.2. Affected decisions

- Executive Director Decision 2014/017/R of 24 April 2014 'AMC and GM to Part-ORO'

6.3. Other reference documents

- The Regulatory Impact Assessment (RIA) of [NPA 2010-14](#)
- [European Commission's impact assessment to Opinion 04/2012](#)
- ['Data Collection and Comparative Assessment of Existing National FTL Provisions for EMS'](#), commissioned by EASA (Attachment 1)
- ['Preliminary Analysis of Impacts from Future Potential FTL Regulatory Changes for EMS'](#) commissioned by EASA (Attachment 2)
- [Preliminary Analysis of Impacts from Future Potential FTL Regulatory Changes for Air Taxi and Single Pilot Operations](#) (Attachment 3)
- [Scientific study commissioned by EBAA and ECA](#) (Attachment 4)
- [Report on the Assessment of proposed FTL tables for Air Taxi and Emergency Medical Services Operations](#) (Attachment 5)
- ICAO Annex 6, Part I

