Questions and Answers

on EASA's Opinion 04/2012 on flight and duty time limitations and rest requirements

for commercial air transport (CAT) with aeroplanes

Question 1. Why is EASA issuing an opinion with respect to Flight Time Limitations (FTL)?

The European Aviation Safety Agency's (EASA) role is to promote the establishment and maintain of a high uniform level of air safety in Europe within a liberalised aviation market. Among its tasks, EASA assists the European Commission in the preparation of EU air safety legislation.

The International Civil Aviation Organisation (ICAO) mandates its Members to establish regulations for the purpose of managing fatigue. These regulations shall be based upon scientific principles and knowledge, with the aim of ensuring that flight and cabin crew members are performing at an adequate level of alertness.

Regulation 1899/2006 (EU-OPS[1]) established the first mandatory EU flight and duty limitations and rest requirements aimed at addressing safety considerations. These safety rules complement the existing EU social legislation contained in the aviation working time Directive[2].

EU-OPS (Article 8a) mandates EASA to assist the European Commission in the preparation of proposals to modify/revise the current applicable FTL requirements laid down in Subpart Q of EU-OPS. Regulation 216/2008 (EASA's Basic Regulation) (Article 22(2)(a)) also instructs EASA to prepare revised rules including substantive Subpart Q provisions.

EASA is presenting to the European Commission its Opinion concerning how the revised FTL requirements should look like. Based on this Opinion, the Commission should prepare and adopt a Regulation. Such Regulation would be complemented by technical certification and guidance material to be adopted by EASA.

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[1] Commission Regulation (EC) No 1899/2006 of 12 December 2006 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane (Annex III - hereafter referred to as EU OPS).

[2] Council Directive 2000/79/EC of 27 November 2000 concerning the European Agreement on the Organisation of Working Time of Mobile Workers in Civil Aviation concluded by the Association of European Airlines (AEA), the European Transport Workers' Federation (ETF), the European Cockpit Association (ECA), the European Regions Airline Association (ERA) and the International Air Carrier Association (IACA).

Question 2. Why do the existing FTL rules of Subpart Q, which only apply since 2008 have to be changed, yet again?

Article 8a of EU OPS and 22 of the EASA Basic Regulation give the Agency a clear mandate to review Subpart Q in the light of the most recent scientific and medical evidence.

In addition, Subpart Q did not achieve a full harmonisation of FTL requirements throughout the Union. **Today's FTL schemes in individual Member States still differ** due to:

- the possibility for Member States to apply **stricter FTL rules at national level** (Recital 11 of EU OPS),
- **national specificities** (Article 8 of EU-OPS) on areas that have not been addressed by Subpart Q of EU OPS, e.g. extended daily flight duty periods (FDPs) in case of rest on the ground (split duty) or on board planes during a flight (so-called "augmented flight crew", mostly used for long haul flights), particular limits in case of time zone crossing, reduced rest and standby.

Also, the current rules have showed to be unclear on some aspects (for example, on a common formula for calculating the allowable maximum daily FDP) or not fit for addressing some operational practices or international developments, such as multiple-airport bases or operations with more than six sectors (flights) in one day.

Therefore, the Commission mandated the Agency to review current FTL requirements, taking into account all available information and practices, with the aim of taking the harmonisation of existing European requirements one step further in order to ensure an acceptable level of safety and provide a level-playing field for European airlines and aircrew.

Question 3. What was EASA's methodology in drafting the new rules?

On 1st October 2012, the Agency has published the Opinion to the European Commission on implementing rules on FTL. In order to arrive to this stage, EASA has undertaken a long and extensive consultation process, including assessment of a large amount of information and comments with the assistance of a group of experts.

This FTL expert group was composed of representatives from Member States, airlines as well as flight and cabin crew organisations, with an observer of the European Commission. The group met several times between 2009 and 2012 to assist the Agency in drafting its proposal based on the comments received.

The Agency issued a first proposal in the form of a Notice of Proposed Amendment (NPA) in December 2010 (NPA 2010-14). During the three month consultation phase, the Agency received comments from a large number of stakeholders. Then, in January 2012, the Agency published an amended version of the initial proposals in form of a Comment Response Document (CRD).

Thanks to all commenters who took the time to submit their comments, this CRD contained an updated set of FTL rules, which reflected the comments received and the extensive discussions that took place within the FTL expert group set up by the Agency.

In order to ensure that the review would be comprehensive and that the latest scientific evidence would be the basis of the new proposal, the Agency also contracted three independent scientists to assess the original NPA proposal. The scientific assessments were attached to the CRD and reference has been made to the scientific advice received for each item of the rule.

During the 2 months CRD reaction period the Agency received additional input which was discussed during an additional meeting with the Review Group in May 2012. Although it has not been possible to reach a consensus on all issues, this process allows the Agency to state that the Opinion reflects the majority view of experts and affected stakeholders.

Question 4. Are these proposed rules based on the latest scientific facts?

The Agency took due account of all relevant publicly available scientific studies when drafting its proposal. However, the results of a number of scientific studies conducted in a context significantly different to the European regulatory framework (in particular in term of rest requirements) or in a very specific operational context, could not be taken into account literally, but rather on a qualitative, or even indicative basis.

The changes to Subpart Q have been limited to issues where scientific evidence had identified a clear need for potential safety improvement.

Once the new rules are in place it is important to monitor if the objectives are indeed achieved in an effective and efficient manner. The rule therefore instructs the Agency to conduct a review of the effectiveness of the updated provisions based on operational data gathered on long term basis after entry into force.

Question 5. What are the next steps?

The Agency has now put forward the results of two rounds of extensive public consultation in form of an Opinion to the European Commission.

The Commission will carefully assess the EASA Opinion, and will take a decision on the way forward in due time. This Commission process would most probably comprise the preparation and adoption of a Commission Regulation, with a right of scrutiny by the Member States and the European Parliament (the so-called "Comitology procedure").

Question 6. When will the new rules on FTL apply?

The exact application date will depend on the date of adoption of the Commission Regulation, which could take place in the second half of 2013.

The Agency also proposes transition measures in the form of an application date one year after entry into force of the new requirements. Hereby operators should be given enough time to adapt to the new requirements.

The Regulatory Impact Assessment has identified a potentially more significant cost impact on a specific type of operation relying on the use of economy class seats for in-flight rest. Therefore, only for the provisions describing the conditions under which an FDP may be extended with in-flight rest, Member States may choose to delay the application one additional year on top of that.

Question 7. How does this revised rule differ from EU-OPS Subpart Q?

Implementing the EASA proposals **will result in a significant improvement in safety across the EU as a whole for the following reasons:**

1. This proposal does in no case diminish the level of protection currently established by EU-OPS.

2. The EASA proposal harmonises the protection against fatigue in areas which under EU-OPS where left to be regulated by the Member States. For example, FDP extensions with in-flight rest or with a break on the ground (split duty).
3. The proposal also clarifies certain provisions in the benefit of safety, for example by providing a common table of maximum FDP.
4. Concerning the protection against cumulative fatigue after several days of duty, the Opinion introduces new elements of mitigation, i.e. to compensate for schedules that disrupt the sleep patterns or extensive time zone crossing (see Question 15 below).
5. The rules are more conservative than current EU rules in areas where relevant scientific evidence and operational experience have identified the need of improvement of the safety performance of the existing rules. For example, the time window during which the FDP is limited to 11 hours has been expanded and the possibility to extend an FDP has been removed for night flights.
6. In addition and in alignment with the new ICAO requirements on fatigue risk management (FRM), the proposal develops the objectives of an operator's management system as regards the management of fatigue risks. Under the revised rule operators shall monitor and manage the risks resulting from crew member fatigue as a consequence of certain scheduling practices on top of complying with the established 'hard' numbers. A new requirement introduces fatigue management training for crew members, rostering and concerned management personnel to raise fatigue hazard awareness throughout the entire management structure of commercial air transport operators.
7. Based on the developments mentioned above, the Opinion also ensures a level of safety broadly equivalent to the most stringent national FTL systems in the EU (see questions 9 and 10 below).

Question 8. What are the factors contributing to fatigue of aircrew and how does the rule answer these concerns?

The Agency proposes the following key measures to mitigate the risks arising from major factors affecting human fatigue as stipulated by scientific literature:

1. Limiting the flight duty during a 24h period depending on the sleep patterns, on the number of flight segments and on rest taken,
2. Limiting the duty and flight times per 7, 14, 28 days and per 12 months,
3. Prescribing minimum rest before and after flight duties, and
4. Harmonising further standby rules to ensure that crews are rested when called for a flight.

The table below develops in more detail the most important elements contained in the EASA proposal, the difference with the current EU rules (EU-OPS) (see also questions 7 and 19) and the scientific explanation.

Key measures to mitigate fatigue of updated FTL	***Comparison to current rules (EU-OPS) – see also questions 7 and 19***	**Fatiguing effect**
The daily FDP is limited to 13 hours for favourable starting times.	*Same as in EU-OPS*	*Time of day* Fatigue is, in part, a function of *circadian rhythms*. Human waking and sleep cycles follow a 24-hour cyclical wave pattern known as the internal body clock. Fatigue is most likely and, when present, most severe, during a four hour period between the hours of 2:00 AM and 6:00 AM, the so-called *Window of Circadian Low* (WOCL) when the body is programmed to sleep and during which performance is degraded.
FDP for the most unfavourable starting times (i.e. early morning, evening, night) has been limited to 11 hours.	*Stricter than EU-OPS*	
Extensions of the maximum limits are not allowed for unfavourable starting times and limited to one hour for favourable starting times if crew members are given the opportunity to be well-rested.	*Stricter than EU-OPS*	

Rest provisions are designed to protect an 8-hour sleep opportunity, taking account of the time crew members need to travel to and from their place of rest and other physiological needs. Longer FDPs are compensated by longer rest periods at least as long as the FDP or enough time to protect the 8-hour sleep opportunity, whichever is greater.	*Stricter than EU-OPS for sleep at home base*	*Amount of recent sleep.* If a person has had significantly less than 8 hours of sleep in the past 24 hours, he or she is more likely to be fatigued.
Reduced rest provisions have been tightened compared to existing national regulations and include now a guaranteed 8-hour sleep opportunity.	*Harmonised the reduced rest, which is today left to Member States*	
Standby rules have been amended and a new rule on Reserve has been introduced. A mandatory 10 hour notification period protects the opportunity for undisturbed rest prior to commencing the duty. In other cases the subsequent FDP is limited. Standby duty rules take account of the time awake by reducing the FDP or by limiting the duration of the combination of airport standby and FDP.	*Harmonised the standby rules, which are today largely left to Member States*	
Provisions to extend an FDP with in-flight rest take account of the likelihood to achieve recuperative sleep and the duration of such a sleep opportunity on board.	*Harmonised in-flight rest, which is today left to Member States*	*Time awake.* A person who has been continuously awake more than 17 hours since his or her last major sleep period is more likely to be fatigued.
Provisions to extend and FDP with a break on the ground (split duty) are based on the same principles.	*Harmonised split duty, which is today left to Member States*	

An extended recovery rest period of 36 hours including two full night's sleeps must be provided after 7 days. This extended recovery rest period is increased by 12 hours to two days twice a month.	*Stricter than EU-OPS*	*Cumulative sleep debt.* Sleep debt refers to the impact of receiving less than a full night's sleep for multiple days. For the average person, cumulative sleep debt is the difference between the sleep a person has received over the past several days, and the sleep they would have received if they had obtained 8 hours of sleep per night.
The revised rules acknowledge the fatiguing effect of disruptive schedules (i.e. starting early in the morning or finishing late at night) and propose increasing the (weekly) extended recovery rest to give crew members the opportunity to recover their sleep debt.	*Stricter than EU-OPS*	
A more comprehensive set of rules compensates the sleep disruption resulting from long-distance transmeridian travel (jet lag).	*Harmonised rules on crossing of multiple time sectors, which is today left to Member States*	

The maximum FDP is reduced depending on the amount of take-offs and landings, which are considered to be more tiring.	*Stricter than EU-OPS for operations with more than 6 flight segments in one FDP*	*Time on task.* The longer a person has continuously been doing a job without a break, the more likely he or she is to be fatigued.
Provisions for extended FDP with in-flight rest rely on newly introduced minimum standards for in-flight rest facilities and prescribe a minimum duration of in-flight rest.	*Harmonised in-flight rest, which is today left to Member States*	
Provisions for split duty rely on newly defined minimum standards for the rest facilities on the ground and include provisions to protect a minimum duration of the sleep opportunity.	*Harmonised split duty, which is today left to Member States*	
Rest requirements depend on the length of the previous duty to ensure that the crew is well-rested for the subsequent FDP. Extended FDPs are compensated by additional rest.	*Same as in EU-OPS*	

Question 9. What will be the impact of the new EASA FTL rules on national rules?

The EASA Basic Regulation aims at developing harmonised aviation safety regulation in order to ensure a high and uniform level of protection of the European citizen, mutual recognition and a level playing field. Under the new system, the elements of subsidiarity existing today under EU-OPS on FTL (see question 2 above) should not be allowed anymore. The impact of the EASA system on national rules is therefore twofold:

- Firstly, the possibility to apply national FTL rules is removed.
- Secondly, new rules fill the gaps that were left by EU-OPS to Member States and will therefore harmonise all aspects of FTL across Europe.

Question 10. This rulemaking task has attracted many comments from the UK. How will the new rules affect operations under the UK's CAP371 rules?

The UK is currently not applying Subpart Q based on the possibility (see question 2 above) to keep stringent national FTL rules. For this reason, the Agency's proposal has been perceived by many UK based crew members as a significant change. This was not the case in other Member States, where Subpart Q is already widely implemented.

When drafting the new rules, the Agency took a close look at national FTL rules covering the areas that were left to Member States' discretion. The Agency believes that the proposed rules provide a robust and realistic basis for European operators, whether they are based in the UK or in any other EU Member State. They UK Government has recently stated*: "The Government believes that the current draft of the European Aviation Safety Agency's (EASA) proposals will not lead to a diminution of safety in the UK. The proposals are more conservative than current EU rules which were introduced in 2008 and will result in a significant improvement in safety across the EU as a whole.*

Question 11. What is the maximum Flight duty period (FDP) and how does the proposal distinguish between FDPs for long-haul and short-haul operators?

For short-haul operations:

Similar to Subpart Q, the Agency's proposed rule establishes the maximum FDP depending on the following three scenarios:

a) for unaugmented crew operations depending on the most favourable starting time (0600 to 1329) of the flight duty, the basic maximum allowable FDP is 13 hours.

b) in line with scientific advice, this basic FDP for unaugmented crew operations can be increased to a maximum of 14 hours depending on the most favourable starting time (0700-1329) and only if pre- and post-flight rest is increased by a minimum of 2 hours or post-flight rest is increased by 4 hours. These extensions are only permitted twice a week, are subject to a number of limitations and must be planned.

c) finally, the proposed rule also caters for the operational reality of a complex aviation network and allows extensions to the FDP by the commander in case of unforeseen circumstances under certain conditions. Under the provisions on commander's discretion that have been transposed from Subpart Q, the commander may increase the basic FDP by 2 hours for unaugmented crews. For augmented, crews the commander may decide to increase the FDP up to 3 hours. In addition, the proposed rule introduces new provisions on delayed reporting allowing operators to inform crew members of operational delays whilst they still are at their place of rest. This provision not only offers operators flexibility but also protects crew members from excessive levels of fatigue.

To take account of the workload induced fatigue, depending on the numbers of sectors (i.e. flights comprising take-off and landing) within a single FDP, the maximum allowable FDP is reduced by 30 minutes for each sector from the third sector onwards.

For long-haul operations:

For augmented crew operations, i.e. three-pilot or four-pilot operations, the extensions to the basic maximum FDP depend on the length of the in-flight rest taken during the flight and whether the rest has been taken in one of the following rest facilities:

- **class 1 facility** : similar to a bunk allowing a flat or near flat sleeping position,
- **class 2 facility** : a seat in an aircraft cabin that reclines at least 45° back angle to the vertical, has at least a pitch of 55 inches (137,5 cm), a seat width of at least 20 inches (50 cm) and provides leg and foot support, is separated from passengers by at least a curtain to provide darkness and some sound mitigation, and is reasonably free from disturbance by passengers or crew members; or
- **class 3 facility :** a seat in an aircraft cabin or flight crew compartment that reclines at least 40° from the vertical, provides leg and foot support and is

separated from passengers by at least a curtain to provide darkness and some sound mitigation, and is not adjacent to any seat occupied by passengers

In line with scientists' views, the Agency is not convinced that in-flight rest arrangements in economy seats would allow for enough recuperative sleep which could justify an FDP extension due to in-flight rest. The proposed rule ensures that FPD extensions depend on the quality of the in-flight rest arrangements.

Question 12. Why does the EASA CRD allow a Flight Duty Period (FDP) of 11 hours at night, if some scientific advice advocates a maximum Flight Duty Period of only 10 hours?

The proposed basic FDP limit is set to 11 hours at unfavourable starting times between 17:00 and 04:59. This limit is more protective than the current regime as the restriction to 11 hours is applied during a broader time window and extensions are not allowed. From the third sector onwards (i.e. from the third take-off and landing), the FDP is again reduced by 30 minutes for each sector, down to 9 hours from the 6th sector onwards and additional restrictions are placed on consecutive night duties.

The scientists contracted by the Agency have indeed advised a maximum FDP limit of 10 hours for overnight operations. This recommendation is however, resulting from a literature-based review of isolated FTL elements and relies on data stemming from research with only limited relevance for the case at hand. The Agency has therefore decided to limit the FDP to 11 hours for overnight operations, but also to remove the possibility of a 1 hour extension on the basis of the recognition of the impact of the circadian factor on fatigue. This decision is supported by the operational experience of many Member States operating safely 11 hours of FDP at night for many years.

The Agency nonetheless acknowledges that the impact of the surrounding duties should be considered and advises operators to carefully monitor and manage long overnight FDPs.

Question 13. Some stakeholders have stated that under the proposed standby provisions pilots could be at the controls of a plane landing after over 20 hours of being awake. How does the revised rule address the issue of excessive awake times resulting from standby?

The EASA proposal introduces a 'cap' of 16 hours for the combined duration of **airport** standby and assigned FDP. This is valid unless the assigned FDP includes a sleep opportunity, which is the case for extended FDPs with in-flight rest or a break on the ground.

The revised rule limits the duration of standby in a **hotel or at the crew member's residence** (standby other than airport standby) to 16 hours and any time spent on standby in excess of 8 hours will reduce the maximum FDP by the time exceeding 8 hours.

In addition, the avoidance of fatigue is a shared responsibility of the operator and the individual crew member. During a standby period, unless a duty has been assigned, the crew member may remain resting and should manage his/ her time allowing to take an additional nap(s) throughout the standby period if no duty is assigned at the beginning of the standby. The potential effect on cumulative fatigue of this form of standby is taken into account by counting 25% of the time spent on this form of standby as cumulative duty. Granting a minimum rest period with its 8-hour sleep opportunity between the end of the standby period, even if no duty is assigned, and the subsequent FDP, guarantees that crew members are able to report fully rested for their next duty.

Question 14. The amount of rest plays an important role in mitigating against fatigue. How does the proposal take account of minimum rest requirements?

The proposal maintains different rest requirements at home (minimum 12 hours) and out of home base (10 hours) as known from Subpart Q. However, the length of the minimum rest must always be at least as long as the preceding duty period, must include an 8 hour sleep opportunity and must take into account the time for travelling and physiological needs. The actual rest period can therefore be longer than 12 or 10 hours respectively.

Question 15. How does the proposal address the additional need to mitigate against cumulative fatigue?

Besides the accumulation of duty hours, cumulative fatigue can be caused by many factors, including disruptive schedules (for example, starting early in the morning or ending late in the evening), extensive time zone crossings or combinations of rotations (for example, flying first the east and then to the west or vice-versa). In all these cases, EASA proposes additional rest in comparison with current Subpart Q.

An additional limit for cumulative duty hours in 14 days has been introduced to avoid the fatiguing effect of too many duty hours in a short period of time.

The Subpart Q provisions for a weekly extended recovery rest period are improved by prolonging such periods, which must occur at least every 7 days, by 25% twice per month.

Question 16. Reduced rest is an important element of flight time specification schemes across Europe. How does the new proposal address reduced rest?

The Agency has proposed harmonised provisions concerning reduced rest that ensure a minimum 8-hour sleep opportunity and contain a number of limitations such as:

- the requirement to use Fatigue Risk Management (FRM);
- an extension of the subsequent rest period by the shortfall of the basic minimum rest;
- the reduction of the FDP following the reduced rest by the shortfall of the basic minimum rest; and
- a limit of a maximum of 2 reduced rests per week (i.e. between 2 recurrent extended recovery rest periods, which means a 7 day period).

Question 17. Does the proposed rule apply to different types of operations, e.g. charter operators or cargo operators?

The proposed rules will apply to scheduled, charter and cargo operations, but will exclude on demand (air taxi) operations, emergency medical services and single pilot operations by aeroplanes. All helicopter operations are also excluded from the proposal. Separate EASA Rulemaking tasks will cover these operations. In the meantime, the current set of FTL regulations (i.e. EU-OPS) will continue to apply for these operations.

Question 18. Why has EASA decided to have, next to Implementing Rules, also Certification Specifications for FTL rules? Wouldn't a set of prescriptive "hard law" be better to ensure a level-playing field?

The Agency has indeed translated Subpart Q into Implementing Rules (i.e. hard law), with some amendments were scientific evidence has identified a clear need for safety improvement. Only for those areas that had previously been left to the national legislator by Article 8(4) of EU OPS, the Agency has introduced Certification Specifications (so called "CS", which are technical certification matrix adopted by EASA and used by Member States to certify airlines). These CSs concerns mainly certain aspects of standby, additional rest to compensate for time zone differences, reduced rest and the extension of flight duty period due to in-flight rest. The proposed CSs are inspired by existing national rules, operational experience and based on scientific principles.

Since both Implementing Rules and Certification Specifications have to be complied with in their entirety, the proposed rule structure promotes a level-playing field. Both the IRs and CSs will be the basis of operators' FTL schemes. However, an Operator may deviate from a CS provided that an equivalent level of safety can be demonstrated, the request proposed by the operator has been endorsed by its competent authority and has passed the Agency's technical assessment based on a scientific and medical evaluation. In summary, the CS provides for "controlled flexibility". This process is described in detail in Article 22(2) of the EASA Basic Regulation.

Question 19. What are the key features and safety improvements of the EASA proposal?

The following table provides an **overview of the key features and main safety improvements.** A complete explanation of the rule as proposed can be found in the explanatory note and regulatory impact assessment of the Opinion.

Key safety improvements	**More restrictive than current EU FTL**
General	
▪ Harmonized safety standards of a high level across all EU-27 + 4 by introducing uniform safety requirements for all FTL aspects.	✓ *Harmonised*
Home base	
▪ A single airport location assigned with a high degree of permanence.	✓ *New*
▪ Increased extended recovery rest period prior to starting duty after a change of home base.	✓ *New*
▪ Travelling between the former and the new home base counts as duty (either positioning or FDP).	✓ *New*
▪ Records on assigned home base to be kept for 24 months.	✓ *New*

Cumulative fatigue	
▪ Improved requirement for extended recovery rest by removing the possibility to have an earliest reporting time after the extended recovery rest before 06:00.	✓ *Harmonised*
▪ Additional cumulative duty limit per 14 days.	✓ *New*
▪ Additional rolling limit per 12 calendar months.	✓ *New*
▪ Prolonged extended recovery rest period twice a months.	✓ *New*
▪ Increased extended recovery rest to compensate for disruptive schedules.	✓ *New*
Maximum basic daily FDP	
▪ Time window during which the maximum FDP is limited to 11 hours is extended to cover 12 hours between 17:00 and 05:00.	✓ *New*
Planned FDP extensions	
▪ The possibility to plan extensions for most unfavourable starting times has been removed.	✓ *New*
FDP extension due to in-flight rest	
▪ Extension based on quality of in-flight rest facility.	✓ *Harmonised*
▪ No extension due to in-flight rest in economy seats.	✓ *New*
Commander's discretion	
▪ Non-punitive reporting process.	✓ *New*
Split duty	
▪ Defined minimum standards for accommodation and suitable accommodation.	✓ *New*
▪ Protection of useful break duration by excluding post and pre-flight duties and travelling from the break.	✓ *Harmonised*
Airport standby	
▪ Defined minimum standards for accommodation during airport standby.	✓ *New*
▪ FDP reduced for time spent on airport standby in excess of 4 hours.	✓ *Harmonised*
▪ Limited duration of combination of airport standby plus FDP when called out (for FDPs with unaugmented crew and if no	✓ *Harmonised*

break on the ground is planned).	
Standby other than airport standby	
▪ Duration limited to 16 hours.	✓ *Harmonised*
▪ 25% of standby time counts for the purpose of cumulative duty time calculation.	✓ *Harmonised*
▪ FDP reduced for time spent on standby in excess of 8 hours.	✓ *Harmonised*
▪ Reasonable response time between call and reporting time to be established by operator.	✓ *Harmonised*
▪ Standby has to be followed by a rest period.	✓ *New*
Reduced rest	
▪ Protected 8-hour sleep opportunity.	✓ *Harmonised*
▪ Impact on cumulative fatigue mitigated by extension of the minimum rest period and reduction of the maximum FDP following the reduced rest.	✓ *Harmonised*
▪ Continuous monitoring of the performance of the rule with FRM.	✓ *New*
Rest to compensate for time zone differences	
▪ Increased rest at destination.	✓ *Harmonised*
▪ Monitoring of fatiguing effects of rotations.	✓ *New*
▪ Additional rest after alternating rotations east-west / west-east.	✓ *New*
▪ Minimum rest at home base measured in local nights with a minimum of 2 local nights after significant (4 or more) time zone transitions depending on the number of time zone crossed and the duration of the time spent away.	✓ *Harmonised*
Fatigue management training	
▪ Mandatory initial and recurrent training for crew members, crew rostering personnel and concerned management personnel.	✓ *New*
Other elements	
▪ Operator requirement to specify how nutrition is ensured in the Operations Manual.	✓ *New*
▪ Improved requirements on record keeping.	✓ *New*