



House of Commons  
Transport Committee

---

# Flight time limitations

---

## First Report of Session 2012–13

*Report, together with formal minutes, oral and written evidence*

*Ordered by the House of Commons  
to be printed 23 May 2012*

**HC 164**  
**Incorporating HC 1838, Session 2010–12**  
Published on 30 May 2012  
by authority of the House of Commons  
London: The Stationery Office Limited  
£15.50

## The Transport Committee

The Transport Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of the Department for Transport and its Associate Public Bodies.

### Current membership

Mrs Louise Ellman (*Labour/Co-operative, Liverpool Riverside*) (Chair)

Steve Baker (*Conservative, Wycombe*)

Jim Dobbin (*Labour/Co-operative, Heywood and Middleton*)

Mr Tom Harris (*Labour, Glasgow South*)

Julie Hilling (*Labour, Bolton West*)

Kwasi Kwarteng (*Conservative, Spelthorne*)

Mr John Leech (*Liberal Democrat, Manchester Withington*)

Paul Maynard (*Conservative, Blackpool North and Cleveleys*)

Iain Stewart (*Conservative, Milton Keynes South*)

Graham Stringer (*Labour, Blackley and Broughton*)

Julian Sturdy (*Conservative, York Outer*)

The following were also members of the committee during the Parliament.

Angie Bray (*Conservative, Ealing Central and Acton*)

Lilian Greenwood (*Labour, Nottingham South*)

Kelvin Hopkins (*Labour, Luton North*)

Gavin Shuker (*Labour/Co-operative, Luton South*)

Angela Smith (*Labour, Penistone and Stocksbridge*)

### Powers

The Committee is one of the departmental select committees, the powers of which are set out in House of Commons Standing Orders, principally in SO No 152. These are available on the internet via [www.parliament.uk](http://www.parliament.uk).

### Publication

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the internet at <http://www.parliament.uk/transcom>. A list of Reports of the Committee in the present Parliament is at the back of this volume.

The Reports of the Committee, the formal minutes relating to that report, oral evidence taken and some or all written evidence are available in a printed volume. Additional written evidence may be published on the internet only.

### Committee staff

The current staff of the Committee are Mark Egan (Clerk), Jessica Montgomery (Second Clerk), David G Davies (Senior Committee Specialist), Tony Catinella (Senior Committee Assistant), Stewart McIlvenna (Committee Support Assistant) and Hannah Pearce (Media Officer).

### Contacts

All correspondence should be addressed to the Clerk of the Transport Committee, House of Commons, 7 Millbank, London SW1P 3JA. The telephone number for general enquiries is 020 7219 6263; the Committee's email address is [transcom@parliament.uk](mailto:transcom@parliament.uk)

# Contents

---

<b>Report</b>	<i>Page</i>
<b>Summary</b>	<b>3</b>
<b>1 Introduction</b>	<b>5</b>
<b>2 Managing fatigue</b>	<b>7</b>
Fatigue in aviation	7
Operator responsibilities	7
Reporting fatigue	9
<b>3 Flight time limitations</b>	<b>11</b>
Flight time limitations	11
Flight duty period at night	11
Commander's discretion	12
Consecutive early starts	13
Maximum flight duty period	14
<b>4 Use of evidence</b>	<b>16</b>
EASA's mandate	16
Use of evidence	16
<b>5 Conclusion</b>	<b>18</b>
<b>Conclusions and recommendations</b>	<b>20</b>
<b>Annex</b>	<b>22</b>
<b>Formal Minutes</b>	<b>23</b>
<b>Witnesses</b>	<b>24</b>
<b>List of printed written evidence</b>	<b>24</b>
<b>List of unprinted evidence</b>	<b>25</b>
<b>List of Reports from the Committee during the current Parliament</b>	<b>26</b>



## Summary

---

Fatigue affects the ability of pilots and crew to operate an aircraft safely. 15–20% of fatal accidents attributed to human error occur as a result of fatigue. 43% of UK pilots have reportedly fallen asleep involuntarily whilst on the flight deck. Flight time limitations are important to help reduce such accidents by preventing fatigue. The regulations cover a number of variables including the number of hours worked, the time of day worked and the allocation of rest periods.

At present, flight time limitations in the UK are determined by the Civil Aviation Authority (CAA). In 2008 the European Aviation Safety Agency (EASA) was mandated to harmonise flight time limitations across the EU. The Government believes this will improve standards of aviation safety for UK passengers travelling abroad. Airlines have welcomed regulatory standardisation as creating a more level playing field. However, crew and pilot representatives have criticised the move, stating that it would have a negative impact on aviation safety in the UK.

The draft proposals published for consultation by EASA in January 2012 require further improvement. The Minister should press for changes in a number of areas during negotiations in Europe. The CAA believes that the proposals will give it more powers to oversee how airlines manage fatigue by setting out operator responsibilities. However, we consider that at present the operator responsibilities outlined in the proposals lack sufficient clarity to be meaningful. In addition, we think that the CAA should collect further data on the number of hours pilots fly, in order to make potential abuses of the flight time regulations transparent. There are also several specific issues relating to limitations on flight time, which we find to be in need of development. In particular, the flight duty period at night should be reduced in accordance with scientific guidance on this matter.

EASA's mandate for updating flight time limitations required that it do so with regard to the available scientific and medical evidence. Yet, there are areas of the proposals in which clear scientific advice appears to have been disregarded. Scientific advice should have a more central role in the development of proposals on flight time limitations.



# 1 Introduction

---

1. Human error is associated with up to 80% of aviation accidents.<sup>1</sup> Pilot fatigue in particular contributes to approximately 15–20% of fatal aviation incidents caused by human error.<sup>2</sup> 43% of UK pilots have reported falling asleep involuntarily whilst on the flight deck.<sup>3</sup> Fatigue affects the mental and physical performance of flight crew. It decreases reaction time, alters concentration and can lead to involuntary lapses in consciousness, or microsleeps.<sup>4</sup> As a result, it impairs the ability of pilots and crew to perform their duties and safely operate an aircraft. Flight time limitations regulate the number of hours that pilots and crew work in order to prevent fatigue. They govern the number of hours worked and the allocation of rest periods to mitigate the risk of a schedule causing fatigue.

2. The European Aviation Safety Agency (EASA) is responsible for ensuring aviation safety across Europe. In 2009 it started a process to update its flight time limitations, taking into account scientific and medical evidence regarding fatigue. In January 2012 EASA published its latest flight time proposals for consultation. Later this year it will issue an Opinion to the European Commission, which will then pass through the EU legislative process before a new European flight time limitations scheme is adopted. As part of this process, Member States will be consulted through the relevant comitology committee.<sup>5</sup>

3. Standardised European flight time regulations may be beneficial both in terms of economics for airlines and safety for passengers. The Department for Transport (DfT) argues that the new standards would offer greater protection to UK citizens flying with non-UK airlines, whose national flight time limitations might not previously have been particularly rigorous.<sup>6</sup> In addition, airlines argue that standardised limitations would offer economic benefits, by creating a level regulatory playing field.<sup>7</sup> However, organisations representing pilots and crew have warned against the potential dilution of UK safety standards during negotiations to harmonise flight time limitations across the EU. They warn that harmonisation could involve accepting a higher level of fatigue than UK rules currently allow, which may result in more aviation accidents.<sup>8</sup>

4. At present, flight time limitations in the UK are set by the Civil Aviation Authority (CAA). This is permissible under current EU regulations as a result of a non-regression clause, which allows higher national standards to be implemented beyond the EU minimum. However, upon adoption of the new EASA proposals such national regulation will not be possible. It is therefore important to ensure that the new regulations meet the

---

1 Ev 49 para 3.5.

2 Ev 54 para 3.1.

3 Ev 49 para 3.3. BALPA commissioned ComRes to carry out a survey about fatigue using a sample of 500 of its members in 2011.

4 Ev w36 [Adrian J Williams].

5 Ev 77 para 6.

6 Q 84.

7 Ev w18 para 29, Ev w20 [DHL Air Ltd], Ev w34 para 3.

8 Qq 3–5.

UK's high aviation safety standards. The Department has summarised its involvement in forthcoming negotiations as follows:

The Department will represent the UK on the comitology committee which will consider the draft Commission Regulation and vote on its adoption. The UK will not vote in favour of the Regulation unless the CAA, which is the Department's technical adviser on aviation safety matters, is satisfied that the implementing rules provide an appropriate level of protection against fatigue.<sup>9</sup>

5. We launched our inquiry shortly after the publication of EASA's flight time limitations proposals in January 2012. Our inquiry set out to review these proposals. We asked for evidence about how the proposals may affect pilot fatigue and aviation safety, how scientific evidence was used in developing the regulations and how the proposals compare to flight time limitations in other countries. We received 19 submissions of written evidence and held two oral evidence sessions. On 22 February we heard evidence from organisations representing pilots and crew (British Airline Pilots' Association, European Cockpit Association, Unite the Union), airlines (British Airways, Thomson Airways, European Low Fares Airline Association), the Civil Aviation Authority (CAA) and Rt Hon Theresa Villiers MP, Minister of State for Transport. We questioned Mick Spencer, flight time specialist, on 6 March. We also travelled to Cologne, where we discussed the proposals with Patrick Goudou, Executive Director, and Jean Marc Cluzeau, Head of Flight Standards, at EASA and scientists including Dr Alexander Gundel at the German Aerospace Centre (DLR). We are grateful to those who provided evidence and hosted our visit to Cologne.

6. Flight time limitations are a complex set of regulations. EASA's proposals comment on: operator responsibilities, crew responsibilities, fatigue risk management, arrangements at the home base, flight duty period, crew acclimatisation, rest periods, split duty, standby, nutrition and training, amongst others. Our witnesses gave differing opinions as to whether the proposals were a welcome evolution of the current regulatory regime or a significant threat to UK aviation safety. The CAA's main objections to earlier versions of the proposals focused on the flight duty period at night, recovery periods and cumulative duty hours. It now considers these issues to have been addressed after EASA lowered the duty period at night by an hour, capped the number of hours worked within 14 days and extended certain recovery periods.<sup>10</sup> We focus in this report on those elements of the regulations that have been highlighted with us as the main areas of contention.

---

9 Ev 77 para 8.

10 Q 78.

## 2 Managing fatigue

---

### Fatigue in aviation

7. In a survey of its members by the British Airline Pilots Association (BALPA) 43% of UK pilots reported involuntarily falling asleep whilst on the flight deck. Of these, 31% awoke to find their co-pilot also sleeping.<sup>11</sup> This is a worrying reflection of existing fatigue management in the UK. The CAA believes the new proposals will provide it with more tools for oversight and management of fatigue.<sup>12</sup> These operator responsibilities are discussed below.

### Operator responsibilities

8. EASA's proposals place certain responsibilities on operators to manage fatigue within their organisations. The CAA currently publishes guidance on crew rostering, but its regulations do not mandate any operator responsibilities.<sup>13</sup> The CAA assured us that these additional requirements placed "a very clear overarching responsibility on operators to provide information and to have a proper risk assessment methodology for managing fatigue."<sup>14</sup>

9. The operator responsibilities proposed by EASA are:

An operator shall, where applicable to the type of operation:

- a) publish duty rosters sufficiently in advance to provide the opportunity for crew members to plan adequate rest;
- b) ensure that flight duty periods are planned in a way that enables crew members to remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety under all circumstances;
- c) specify reporting times to allow sufficient time for ground duties;
- d) take into account the relationship between the frequencies and pattern of flight duty periods and rest periods and give consideration to the cumulative effects of undertaking long duty hours combined with minimum rest periods;
- e) allocate duty patterns which avoid practices that cause a serious disruption of established sleep/work pattern, such as alternating day/night duties;
- f) provide rest periods of sufficient time to enable crew members to overcome the effects of the previous duties and to be rested by the start of the following flight duty period;

---

11 Ev 49 para 3.3.

12 Q76.

13 Ev 40 para 4.2.

14 Q 72.

- g) plan recurrent extended recovery rest periods and notify crew members sufficiently in advance;
- h) ensure that flights are planned to be completed within the allowable flight duty period taking into account the time necessary for pre-flight duties, the flight and turnaround times;
- i) change a schedule and/or crewing arrangements if the actual operation exceeds the maximum flight duty period on more than 33% of the flights in that schedule during a scheduled seasonal period.<sup>15</sup>

10. According to the CAA, under these proposals airlines must “demonstrate that they are managing the impact that the combinations of duties have on the fatigue of the crew member”.<sup>16</sup> Recognising and codifying airlines’ duty to roster their crews responsibly would be a positive development. However, what the responsibilities outlined above mean in practice is ambiguous. The duties are worded in terms of there being “sufficient time”, “a satisfactory level” or something “sufficiently in advance”, without defining these terms. It is also unclear what, if anything, would prevent operators from claiming that these responsibilities were simply not “applicable to the type of operation” at hand.

11. EASA’s explanatory guidance on how these operator responsibilities should be complied with specifies only that rosters should be published at least 14 days in advance.<sup>17</sup> No other requirements or sanctions are set out. It is unclear what combination of duties would be considered fatiguing, who would define this, or what the CAA can do about it. We need clarity on what powers the CAA will have to enforce these responsibilities. **The Government should seek further information on the operator responsibilities proposed by EASA. Additional oversight by the CAA of scheduling practices is welcome, but this new role requires clarification. We recommend that the CAA sets out its strategy for enforcement and how it will ensure that operators comply with the responsibility not to construct fatiguing rotas.**

12. In addition, point (i) above allows operators to create rotas where up to a third of flights during a scheduled seasonal period exceed the maximum flight duty period. We note that the CAA has concerns about this, arguing that the number of flights in a seasonal period exceeding the maximum flight duty period should be limited to 10% or 20%.<sup>18</sup> We agree with this concern. **We recommend that the Government follows up the CAA’s concerns about the frequency with which the maximum flight duty period can be exceeded during a scheduled seasonal period. The Government should seek to restrict this limit during EU discussions on this matter.**

---

15 CRD 2010–14 p 75, ORO.FTL.110 Operator responsibilities, EASA, <http://www.easa.europa.eu/rulemaking/>

16 Ev 40 para 4.2.

17 CRD 2010–14 p 91, AMC1 ORO.FTL.110(a) Operator responsibilities, EASA, <http://www.easa.europa.eu/rulemaking/>

18 CAA consultation response to CRD 2010–14, CAA, <http://www.caa.co.uk/docs/>

## Reporting fatigue

13. The new flight time limitations scheme includes additional duties for operators to encourage reports of fatigue from their employees. The CAA states that under EASA's proposals:

There is a requirement for an operator to develop a non-punitive discretionary fatigue reporting system and have it in their operations manual, which is subject to our oversight.<sup>19</sup>

14. Both airline representatives<sup>20</sup> and crew representatives<sup>21</sup> told us that an open reporting culture is necessary to manage fatigue effectively. Thomson Airways told us about its investment in creating an environment in which crew felt able to report fatigue, both through training and fostering “a just and open culture”.<sup>22</sup> However, we heard from pilot and crew representatives about a culture of under-reporting and that it was often a “better option” not to report fatigue.<sup>23</sup> BALPA told us that pilots are “fearful”<sup>24</sup> of disciplinary action if they report fatigue, Unite stated that such reports are “discouraged”<sup>25</sup> and the European Cockpit Association (ECA) explained that fatigue is “significantly under-reported”<sup>26</sup> as a result. A common theme from organisations representing pilots and crew was that the airline industry, with its associated competitive pressures, is “a very unsympathetic environment”.<sup>27</sup> A change in culture is therefore needed if the proposed discretionary reporting system is to be effective.

15. We heard evidence from the CAA, airlines and crew representatives regarding the level of fatigue in UK aviation. The CAA receives notifications on reportable occurrences in UK airspace. These cover “any incident which endangers or which, if not corrected, would endanger an aircraft, its occupants or any other person.”<sup>28</sup> In 2011 just 20 of these reports cited fatigue as a possible causal factor in an incident.<sup>29</sup> The Confidential Human Factors Independent Reporting (CHIRP) system received 22 fatigue related reports in 2011. However, evidence from airlines and crew representatives suggests that fatigue is a more significant issue than official reports indicate. Last year Thomson Airways received fatigue reports from approximately 400 crew members.<sup>30</sup> The BALPA survey cited 43% of pilots reporting involuntarily falling asleep whilst on duty.<sup>31</sup> The discrepancy between the low numbers of reports received by the CAA and the other evidence we have heard leads us to

---

19 Q 78.

20 Ev 63 para 3.3.

21 Q14.

22 Q 52.

23 Q 15.

24 Q 14.

25 Q 16.

26 Ev 55 para 7.6.

27 Q 27.

28 Ev 82 [CAA].

29 Ibid.

30 Q 52.

31 Ev 49 para 3.3.

suspect that there is a significant amount of underreporting. **We recommend that the CAA publish the number of incidents involving fatigue in its annual report so that trends can be tracked. We also call on the CAA to investigate potential under-reporting of pilot fatigue so that we and the travelling public can gain assurance that the scale of the problem is properly recognised and is being effectively dealt with.**

## 3 Flight time limitations

---

### Flight time limitations

16. The CAA argues that

Crew fatigue has a multitude of causes that interact with each other and therefore it is essential that any set of regulations is reviewed as a whole package rather than as a set of individual isolated requirements.<sup>32</sup>

However, there are certain specific limitations which have raised particular controversy: the flight duty period at night, commander's discretion, limits on consecutive early starts and maximum flight duty period.

### Flight duty period at night

17. Human sleep patterns follow a 24 hour pattern known as the circadian rhythm through which biological processes drive patterns of sleep and wakefulness. There are certain hours of this cycle in which performance is particularly impaired due to the strength of physiological drivers for sleep.<sup>33</sup> Staying awake during these hours can lead to severe fatigue and an increased risk of falling asleep involuntarily.<sup>34</sup> This period is known as the window of circadian low and occurs normally between 0200 and 0600. Flight duties in this period can be particularly fatiguing as a result of the disruption caused by sustaining wakefulness despite the natural desire to sleep.<sup>35</sup>

18. Maximum flight duty period at night was one of the CAA's main areas of concern during the design of EASA's proposals.<sup>36</sup> EASA proposes a maximum overnight flight duty period of 11 hours. This is greater than the CAA's current limit on overnight duties.<sup>37</sup> It compares unfavourably with the regulatory regime in the US, where the Federal Aviation Authority has a 9 hour flight duty period limit on flights after 9pm.<sup>38</sup> In addition, EASA has not matched the CAA's allowances for reducing flight duty period at night according to the number of sectors flown.<sup>39</sup>

19. To help mitigate the effects of an 11 hour duty period at night, the CAA has proposed an additional operator responsibility. This states that duties of over 10 hours between 2200 and 0400 should be "actively managed".<sup>40</sup> That the CAA has suggested this additional

---

32 Ev 40 para 3.6.

33 Principles and guidance for duty and rest scheduling, NASA, p 3 <http://humanfactors.arc.nasa.gov/>

34 Scientific and Medical Evaluation of Flight Time Limitations, Moebus Aviation, p18 <http://www.easa.europa.eu/rulemaking/>

35 Ev 44 [Attachment 3].

36 Ev 39 para 1.2

37 Ev 43 [Attachment 2]. Under current UK regulations the maximum overnight flight duty period is 10:15. In addition, the CAA limits overnight flight duty periods by an additional 45 minutes for each additional sector after the second, whilst EASA would have only a 30 minute reduction for each additional sector after the third.

38 Ev 41 para 6.2.

39 Q 124. A sector is a single flight in terms of the period from take off to landing.

40 CAA consultation response to CRD 2010-14, CAA, <http://www.caa.co.uk/docs/>

requirement on operators would seem to indicate that it is not fully at ease with the loosening of the UK's regulations on flying at night.

20. Each of the independent scientists who provided advice to EASA during the process of drafting its proposals have stated that 11 hours flight duty period at night is too long.<sup>41</sup> All three recommended that EASA limit flight duty periods at night to 10 hours.<sup>42</sup> Their findings echoed that of scientific advice to EASA earlier in the rulemaking process, which also recommended a 10 hour limit.<sup>43</sup> Yet despite this consensus, scientific advice on this matter does not appear to have been heeded in EASA's policymaking process. Instead, EASA claims to have used "operational experience" to define this limit.<sup>44</sup>

**21. The CAA has previously expressed reservations about the proposed flight duty period at night. The scientific advice given to EASA has been clear in recommending that an 11 hour flight duty period at night is too long and should be limited to 10 hours. In our view this advice should be adhered to. We recommend that the Government press EASA for a lower limit for flight duty periods at night in accordance with the scientific evidence on this matter.**

### Commander's discretion

22. Commander's discretion allows a commander to extend their crew's flight duty period by a specified number of hours if unforeseen circumstances arise. Under current CAA regulations, such an extension is possible for up to three hours, provided the commander believes this to be safe. Occasions when this discretion is used must be reported to the commander's employer. Extension of the flight duty period by over two hours by commander's discretion must be reported within 14 days.<sup>45</sup> Similar arrangements exist under EASA's proposals for up to three hours additional flight duty period using commander's discretion.<sup>46</sup> A commander is required to submit a report to the operator when discretion is used. If the resulting increase in flight duty period is greater than one hour, a report must be sent to the CAA within 28 days. It is welcome that the CAA will now be informed of such events, but the justification for extending the reporting period is unclear. **We recommend that the reporting period for incidences of commander's discretion should not be extended beyond that currently set by the CAA in order to increase the likelihood and accuracy of such reports.**

23. The flexibility for a commander to extend a flight duty period is necessary to allow crew to complete their duty in difficult circumstances. EASA's proposals state that "exercise of commander's discretion should be considered exceptional and should be

---

41 Their reports are given in Appendix C of CRD 2010–14.

42 See CRD 2010–14 Appendix C (report 1 p8, report 2 p12, report 3 p4), EASA, <http://www.easa.europa.eu/rulemaking/>

43 Scientific and Medical Evaluation of Flight Time Limitations, Moebus Aviation, p 18, <http://www.easa.europa.eu/rulemaking/>

44 Ev 41 para 5.6.

45 CAP 371 The Avoidance of Fatigue in Flight Crews, CAA, p12 <http://www.caa.co.uk/docs/>

46 Ev 43. Two hours is the usual maximum for both regulatory schemes, with three allowed under certain conditions. Under CAA regulations three hours may be added to a single sector flight or the last sector of a multi-sector flight. Under EASA's proposals three hours may be used if the flight crew is augmented.

avoided”.<sup>47</sup> However, we have heard concerns that this extension is being used as a matter of routine, rather than in exceptional cases.<sup>48</sup> Such claims are difficult to assess as the CAA does not currently collate the information on the use of commander’s discretion.<sup>49</sup> As a result, there may be potential for this responsibility to be misused under pressure from operators to extend the flight duty period to its absolute maximum. **We recommend that the CAA collate the information provided on the use of commander’s discretion, make this publicly available and monitor that this power is used only in exceptional circumstances.**

## Consecutive early starts

24. An early start is defined as commencing between 0500 and 0659 under both EASA’s proposals and the CAA’s current regulations. At present, the CAA does not permit more than three early starts in consecutive days.<sup>50</sup> This is because, as the CAA states:

Sleep deprivation, leading to the onset of fatigue, can arise if a crew member is required to report early for duty, or finishes a duty late, on a number of consecutive days.<sup>51</sup>

However, under EASA’s proposals, there would be no limit on the number of early starts.

25. We have heard differing opinions on the potential for consecutive early starts to exacerbate fatigue in crew. Some operators argue that consistent patterns of early duties allow crew to adjust their sleep patterns accordingly.<sup>52</sup> However, BALPA argues that these duties cause excessive fatigue as a result of the disruption early starts cause to normal sleep patterns.<sup>53</sup> The scientists who advised EASA expressed concerns about the scheduling of large numbers of consecutive early starts, but acknowledged conflicting evidence in this area.<sup>54</sup> For example, Mick Spencer told us that the level of fatigue caused by repeated early starts “depends how the earlies are scheduled and how long they are.”<sup>55</sup> Although the absence of a limit on early starts departs from existing UK regulations, the CAA believes fatigue arising from a potentially increased number of early starts can be managed with the provision of additional rest periods.<sup>56</sup>

**26. Schedules featuring frequent consecutive early starts could prove particularly fatiguing. In order to gain greater understanding of how these should be managed, we recommend that the CAA commissions further research in this area. In the meantime,**

47 CRD 2010–14, GM1 ORO.FTL.1.210(3), p95, EASA, <http://www.easa.europa.eu/rulemaking/>

48 Ev 59 para 2.3, Ev w19 para 14 BMI imply that commander’s discretion could be used to increase length of daily duties.

49 HC Deb, 16 April 2012, col 54w.

50 Ev 43. The CAA also permits four early starts within 7 days or five consecutive early starts, if the flight duty period is no more than 9 hours.

51 CAP 371 The Avoidance of Fatigue in Air Crews, CAA, p 3, <http://www.caa.co.uk/docs/33/CAP371.PDF>

52 Ev w21 [DHL], Ev 71 para 44.

53 Ev 48 para 2.6.

54 See CRD 2010–14 Appendix C (report 2 p21, report 3 p18), EASA, <http://www.easa.europa.eu/rulemaking/>

55 Q 113

56 Ev 82 [CAA]

the Government should press for EASA to include frequent early starts as a factor requiring a fatigue risk management strategy.

### Maximum flight duty period

27. There is a relationship between long duty hours and an increased risk of accidents.<sup>57</sup> We heard from BALPA that EASA’s proposals could lead to pilots landing planes after 22 hours awake, if the period from a pilot waking to finishing duty is considered.<sup>58</sup> This is an extraordinary figure considering that even 17 hours of sustained wakefulness can produce performance deficits equivalent to that displayed when drunk.<sup>59</sup> At present, the CAA does not hold information on average flight duty periods for pilots or their flying hours.<sup>60</sup> It is therefore difficult to assess the extent to which a 22 hour working period would go beyond today’s conditions. However, given that 43% of pilots report involuntarily falling asleep whilst working under the current regulatory regime, there is a clear risk that these proposals will invite further fatigue amongst air crew.

28. The CAA did not contest the 22 hour figure, but argued that “it would be an exceptionally rare event.”<sup>61</sup> There seems to be some confusion over EASA’s drafting of this regulation, with the CAA arguing that EASA’s intention was to design a 21 hour limit.<sup>62</sup> This would operate as follows:

The maximum FDP, including operator extension that can be planned, is 14 hours. The proposals allow a crew member to be on airport standby resting in accommodation (of the same standard as for split duty and will need to be approved by the CAA) for four hours before their FDP must commence, which brings the total duty period to 18 hours. If the Commander determines that the crew is fit to continue they can extend the FDP by one hour, which would have to be reported to the CAA. This would bring the total duty period to 19 hours. There has also been an assumption of two hours from the crew member waking to reporting.

The CAA stressed that duty periods of this length were “very hypothetical” and “not the sort of thing we would expect to happen”. Indeed, the CAA stated that “if it was happening with any regularity, we would have entitlement under the new system to intervene”.<sup>63</sup>

29. The CAA has assured us that any 21 or 22 hour duty period would be extremely rare. We think that they should prove this. We would like to see evidence from the CAA that maximum use of the flight time regulations in this way would be an extremely rare event. **We recommend that any overall duty period which reaches the maximum limit possible under the regulations should be reported to the CAA. The CAA should keep records of such incidents and take action against any operators that schedule duties in this way.**

---

57 Ev 51, Ev 24 para 2.4.

58 Ev 47 para 1.2.

59 Ev w36 [Adrian J Williams].

60 HC Deb, 16 April 2012, col 53w.

61 Q 86.

62 Q 87, Ev 82 [CAA].

63 Q 87.

**The Government should press EASA to amend its proposals to give national aviation authorities the power to monitor the length of flight duties and to ensure that any duties of this length are indeed exceptional, with a view to reducing the maximum flight duty period in line with scientific advice.**

## 4 Use of evidence

---

### EASA's mandate

31. EASA's mandate to review flight time limitations required that it would do so "taking into account the latest scientific and technical evidence".<sup>64</sup> This is reflected in the terms of reference for the flight time limitations rule-making process, which required a scientific and medical evaluation of EASA's existing limitations, which it acknowledges are a result of "long standing negotiations based on operational experience" rather than scientific evidence.<sup>65</sup>

### Use of evidence

32. The way in which scientific evidence has been included, or excluded, from EASA's rulemaking process has proved particularly controversial. Both crew representatives and a number of airlines dispute the robustness of the proposals' evidence base.<sup>66</sup> For example, the European Low Fares Airlines' Association (ELFAA) told us that "EASA, simply because it had allowed itself to become engaged in an industrial relations activity, threw science out of the window."<sup>67</sup> One scientist involved with EASA said that the first draft of the proposals was "certainly not based on scientific studies" and was a "result of operational experience and industrial negotiations".<sup>68</sup> In reviewing its initial proposals, EASA commissioned three independent scientists to each produce a further report on the potential implications of its proposed flight time limitations for fatigue in air crew.

33. The consultation of the three independent scientists was a welcome intervention, albeit a relatively late one in the policymaking process.<sup>69</sup> However, seeking out scientific advice is not in itself sufficient. This advice must be listened to. We have noted in this report a number of areas where EASA's conclusions differ from clear scientific consensus. This leaves EASA open to the allegation that scientific input "had very little executive influence".<sup>70</sup>

34. It is notable that the scientists involved appear to have had no further dealings with EASA after submitting their report. EASA's working group consisted of national aviation authorities, airlines and crew representatives. Whilst each of these may have contributed valuable operational experience, the group could surely have benefitted from the addition of an objective scientific viewpoint. Instead, it appears the science of fatigue has been used merely as the starting point for negotiations in a "social bun fight".<sup>71</sup>

---

64 Commission Regulation (EC) no. 216/2008.EASA Basic Regulation Article 22(2), <http://eur-lex.europa.eu/>

65 Terms of reference for flight time rulemaking task, [http://www.easa.eu.int/rulemaking/docs/tor/ops/EASA-ToR-OPS.055\(a\)\\_OPS.055\(b\)-00-20112009.pdf](http://www.easa.eu.int/rulemaking/docs/tor/ops/EASA-ToR-OPS.055(a)_OPS.055(b)-00-20112009.pdf)

66 Ev 49 para 4, Ev 56 para 8.4, Ev 64 para 5.

67 Q 57.

68 See CRD 2010–14 Appendix C (report 2 p 25), EASA, <http://www.easa.eu.int/rulemaking/>

69 Ev w23 para 6c.

70 Q 35.

71 Q 63.

35. Given the terms of reference for the work involved in revising flight time limitations, we would have expected scientific advice to have had a more prominent role in the rule-making process. The addition of the three independent scientific reports was encouraging but the lack of further engagement with those scientists is hard to understand. The Government should seek to ensure that scientists have a more central role in further work by EASA as it finalises its flight time limitations proposals and if it considers revisions to these proposals in future. The Government should encourage EASA to cultivate an ongoing relationship with experts in this field to keep up to date with developments in the science of fatigue and fatigue management.

## 5 Conclusion

---

36. EASA is mandated to harmonise flight time limitations across the EU. The legislation under which this harmonisation will occur was adopted in 2008, ruling out the possibility of the UK maintaining its own separate regulatory regime.<sup>72</sup> We heard from the Minister that there would be “a significant safety gain”<sup>73</sup> for UK passengers travelling on non-UK airlines which may not be subject to the CAA’s safety standards. There may also be economic benefits to airlines as a result of standardising regulations. However, a lowest common denominator approach to flight time limitations will benefit neither passengers, airlines nor crew. The priority must be to secure the potential safety benefits for passengers and economic benefits for airlines that could arise from harmonisation of flight time limitations across the EU. Such benefits will only be realised if the harmonisation that EASA seeks to achieve is upwards rather than downwards.

37. As the CAA acknowledges, these proposals will require “a considerable amount of change management oversight.”<sup>74</sup> We consider that such oversight would be aided by the collection of further data by the CAA regarding the hours which UK pilots fly. The CAA will have new powers to require data on the use of commander’s discretion. These data should be published so that the number of incidences of its use is transparent. This may also help us understand why 43% of pilots have fallen asleep whilst on duty, even under the current system. Whilst there may be some substance to the CAA’s argument that tiredness and fatigue are different,<sup>75</sup> this distinction will be irrelevant to a passenger.

38. The CAA states that its initial worries about EASA’s proposals have been “wholly met”.<sup>76</sup> Despite this, we share Mick Spencer’s concern that “the new regulations are setting a standard that accepts a higher level of fatigue more generally and, if not managed properly, that could well lead to a situation where the accident risk will increase.”<sup>77</sup> **We therefore conclude that the proposals currently offered by EASA must be improved before adoption.**

39. We understand that specific rules on flight time limitations operate in conjunction with each other and it is difficult to assess the safety of a single rule in isolation. However, there are some regulations where the divergence from scientific recommendations is so blatant that we consider that they deserve additional attention. This is particularly the case with the proposed flight duty period at night. We expect further changes to be made before EASA issues its Opinion and during negotiations on these proposals in the European legislative process. We look to the Minister to ensure that this and the other issues we have highlighted are fully addressed before the new flight time limitations come into effect. **We recommend that the Government keep us informed of developments during**

---

72 HC Deb, 27 March 2012, col 949w.

73 Q 84.

74 Ev 40 para 4.4.

75 Q 73.

76 Q 97.

77 Q 108.

**negotiations and of how our concerns are being addressed during future discussions on EASA's proposals in Europe.**

# Conclusions and recommendations

---

## Managing fatigue

1. The Government should seek further information on the operator responsibilities proposed by EASA. Additional oversight by the CAA of scheduling practices is welcome, but this new role requires clarification. We recommend that the CAA sets out its strategy for enforcement and how it will ensure that operators comply with the responsibility not to construct fatiguing rotas. (Paragraph 11)
2. We recommend that the Government follows up the CAA's concerns about the frequency with which the maximum flight duty period can be exceeded during a scheduled seasonal period. The Government should seek to restrict this limit during EU discussions on this matter. (Paragraph 12)

## Flight time limitations

3. We recommend that the CAA publish the number of incidents involving fatigue in its annual report so that trends can be tracked. We also call on the CAA to investigate potential under-reporting of pilot fatigue so that we and the travelling public can gain assurance that the scale of the problem is properly recognised and is being effectively dealt with. (Paragraph 15)
4. The CAA has previously expressed reservations about the proposed flight duty period at night. The scientific advice given to EASA has been clear in recommending that an 11 hour flight duty period at night is too long and should be limited to 10 hours. In our view this advice should be adhered to. We recommend that the Government press EASA for a lower limit for flight duty periods at night in accordance with the scientific evidence on this matter. (Paragraph 21)
5. We recommend that the reporting period for incidences of commander's discretion should not be extended beyond that currently set by the CAA in order to increase the likelihood and accuracy of such reports. (Paragraph 22)
6. We recommend that the CAA collate the information provided on the use of commander's discretion, make this publicly available and monitor that this power is used only in exceptional circumstances. (Paragraph 23)
7. Schedules featuring frequent consecutive early starts could prove particularly fatiguing. In order to gain greater understanding of how these should be managed, we recommend that the CAA commissions further research in this area. In the meantime, the Government should press for EASA to include frequent early starts as a factor requiring a fatigue risk management strategy. (Paragraph 26)
8. We recommend that any overall duty period which reaches the maximum limit possible under the regulations should be reported to the CAA. The CAA should keep records of such incidents and take action against any operators that schedule duties in this way. The Government should press EASA to amend its proposals to give national aviation authorities the power to monitor the length of flight duties and

to ensure that any duties of this length are indeed exceptional, with a view to reducing the maximum flight duty period in line with scientific advice. (Paragraph 29)

### Use of evidence

9. Given the terms of reference for the work involved in revising flight time limitations, we would have expected scientific advice to have had a more prominent role in the rule-making process. The addition of the three independent scientific reports was encouraging but the lack of further engagement with those scientists is hard to understand. The Government should seek to ensure that scientists have a more central role in further work by EASA as it finalises its flight time limitations proposals and if it considers revisions to these proposals in future. The Government should encourage EASA to cultivate an ongoing relationship with experts in this field to keep up to date with developments in the science of fatigue and fatigue management. (Paragraph 35)

### Conclusion

10. We therefore conclude that the proposals currently offered by EASA must be improved before adoption. (Paragraph 38)
11. We recommend that the Government keep us informed of developments during negotiations and of how our concerns are being addressed during future discussions on EASA's proposals in Europe. (Paragraph 39)

# Annex

---

## **Programme of Cologne visit: Thursday 22 March**

10.00 Meeting with Mr Patrick Goudou and Mr Jean Marc Cluzeau at the European Aviation Safety Agency (EASA)

11.00 Meeting with Mr John Vincent at EASA

12.00 Depart for DLR / Institute of Aerospace Medicine

12.25 Introduction from Executive Board

13.15 Meeting with Dr Alexander Gundel

13.50 Tour of DLR research institutes

# Formal Minutes

---

**Wednesday 23 May 2012**

Members present:

Mrs Louise Ellman, in the Chair

Steve Baker  
Julie Hilling  
Kwasi Kwarteng  
Paul Maynard

Iain Stewart  
Graham Stringer  
Julian Sturdy

Draft Report (*Flight time limitations*), proposed by the Chair, brought up and read.

*Ordered*, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 39 read and agreed to.

Summary agreed to.

*Resolved*, That the Report be the First Report of the Committee to the House.

*Ordered*, That the Chair make the Report to the House.

*Ordered*, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

Written evidence, reported and ordered to be published on 22 February, 28 February, 6 March and 17 April, was ordered to be reported to the House for printing with the Report.

[Adjourned till Tuesday 12 June at 10 am

## Witnesses

---

### Wednesday 22 February 2012

Page

**Dr Rob Hunter**, Head of Safety, British Airline Pilots Association, **Kris Major**, Cabin Crew lead representative from BMI, Unite, and **Jon Horne**, Executive Board Director, European Cockpit Association Ev 1

**Captain Tim Price**, British Airways, **David O'Brien**, Director of Flight and Ground Operations for Ryanair, European Low Fares Airline Association, and **David Lawrence**, Head of Crew Planning, Thomson Airways Ev 6

**Andrew Haines**, Chief Executive, Civil Aviation Authority, **Kathryn Jones**, Manager Flight Operations Policy, Civil Aviation Authority, and **Rt Hon Theresa Villiers MP**, Minister of State, Department for Transport Ev 9

### Tuesday 6 March 2012

**Mick Spencer**, Consultant, M.B Spencer Ltd Ev 15

## List of printed written evidence

---

1	BMI , British Midland International	Ev 18
2	DHL Air Ltd	Ev 20
3	PACTS (Aviation Group)	Ev 21
4	Unite the Union	Ev 24, Ev 26
5	Royal Aeronautical Society	Ev 32
6	Jet2.com	Ev 34
7	Adrian J Williams	Ev 36, Ev 85
8	Captain Dr. W A L Mitchell	Ev 36
9	Thomson Airways	Ev 37
10	Civil Aviation Authority	Ev 39, Ev 82
11	British Airline Pilots' Association (BALPA)	Ev 47, Ev 51
12	European Cockpit Association (ECA)	Ev 54, Ev 58
13	British Airways	Ev 62
14	European Low Fares Airline Association (ELFAA)	Ev 64
15	Department for Transport	Ev 77
16	easyJet	Ev 80
17	Captain Chris Seal	Ev 80
18	Tim Farmer	Ev 82

## List of unprinted evidence

---

The following written evidence has been reported to the House, but to save printing costs has not been printed and copies have been placed in the House of Commons Library, where they may be inspected by Members. Other copies are in the Parliamentary Archives ([www.parliament.uk/archives](http://www.parliament.uk/archives)), and are available to the public for inspection. Requests for inspection should be addressed to The Parliamentary Archives, Houses of Parliament, London SW1A 0PW (tel. 020 7219 3074; email [archives@parliament.uk](mailto:archives@parliament.uk)). Opening hours are from 9.30 am to 5.00 pm on Mondays to Fridays.

Ron MacDonald

## List of Reports from the Committee during the current Parliament

---

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

### Session 2012–13

First Report	Flight time limitations	HC 164, incorporating HC 1838
	Sulphur emissions by ships: Government Response to the Committee's Sixteenth Report of Session 2010–12	HC 87
Second Special Report	Counting the cost: financial scrutiny of the Department for Transport 2011–12: Government Response to the Committee's Fifteenth Report of Session 2010–12	HC 15
First Special Report	Draft Civil Aviation Bill: Pre-Legislative Scrutiny: Government Response to the Committee's Thirteenth Report of Session 2010–12	HC 11

# Oral evidence

## Taken before the Transport Committee on Wednesday 22 February 2012

Members present:

Mrs Louise Ellman (Chair)

Jim Dobbin  
Julie Hilling  
Mr John Leech  
Paul Maynard

Iain Stewart  
Graham Stringer  
Julian Sturdy

### Examination of Witnesses

*Witnesses:* **Dr Rob Hunter**, Head of Safety, British Airline Pilots Association, **Kris Major**, Cabin Crew lead representative from BMI, Unite, and **Jon Horne**, Executive Board Director, European Cockpit Association, gave evidence.

**Q1 Chair:** Good morning, gentlemen, and welcome to the Transport Select Committee. Could you please identify yourselves for our records with your name and the organisation you are representing?

**Dr Hunter:** I am Dr Hunter, Head of Safety, British Airline Pilots Association.

**Kris Major:** I am Kris Major representing Unite.

**Jon Horne:** I am Jon Horne. I am an Executive Board Director of the European Cockpit Association.

**Q2 Chair:** Thank you very much. BALPA tell us in their evidence that 43% of pilots say they fell asleep on the flight deck, and 31%, on waking, found the other pilot asleep. Those are very scary figures. Could you tell us on what that information is based?

**Dr Hunter:** That is based on a poll of our membership conducted by ComRes, a professional polling agency. It is a representative group of our members. It is 500 of the 8,800 members that we have. It specifically relates to two-crew operations, where there are just two pilots on the flight deck. I must say that it probably represents an underestimate of the true figures because, of course, it relies on the pilots having knowledge that they have woken up from a micro-sleep, whereas the nature of micro-sleeps is that people will wake from them and not realise that.

**Q3 Chair:** Are we going to see more accidents if EASA's current proposals go ahead?

**Dr Hunter:** I think so.

**Q4 Chair:** Mr Major, what is your view on that?

**Kris Major:** If you consider the fact that under the new proposals there is a potential for a 17% increase in daily work loads from the early morning flights, the statistics would speak for themselves in that fatigue is much more likely and therefore the increase in accidents is more likely.

**Q5 Chair:** Mr Horne, do you share that view?

**Jon Horne:** I would share that view. You may have seen in our written submission a particular piece of scientific research highlighting that accident rates are five and a half times higher for duty periods over 13 hours. Since these proposals dramatically increase the

duty periods and the time awake pilots may experience, we would expect the accident rate to increase commensurately.

**Q6 Chair:** The current proposals are for uniform safety regulations. Do you not think that might help to keep UK passengers safe flying on non-British airlines?

**Dr Hunter:** Yes. Uniform safety regulations are good, but they should be a uniform high level of safety regulation. At the moment the EASA fatal accident rate for flights is about 55% higher than north American accident rates. There should be uniformity, yes, but at a uniform high standard.

**Q7 Chair:** Why should the UK need stricter regulations than other countries? Why should that be the case?

**Dr Hunter:** The UK might have stricter regulations in countries that perform less well than the UK. The reason why you would want that is for the protection of the public.

**Q8 Chair:** When you say "perform less well", what exactly do you mean?

**Dr Hunter:** That would be our fatal accident rates.

**Q9 Chair:** Can you show that? Is there actual evidence that there is a worse accident rate in countries with lower limits?

**Dr Hunter:** Where it correlates with lower limits, the best data would be the 2003 Goode paper that was referred to earlier that looked at the accident rate with increasing flight time. That demonstrates very clearly that, with longer duty hours, there are a greater number of accidents.

**Q10 Chair:** You also say in your written evidence, Dr Hunter, that the CAA's three main areas of concern about the original proposals have not been fully addressed. Which particular concerns have not been addressed?

**Dr Hunter:** That relates, for example, to the duty periods overnight. The EASA proposal is that it is 11 hours, whereas the CAA wanted 10 hours. In relation

to the number of duty hours allowed over a 14-day period, EASA is proposing 110 hours. The CAA had wanted less time than that. There are also the recovery periods. The rules in that area are quite complicated. In all these areas the CAA's requests have not been fully met.

**Q11 Mr Leech:** Dr Hunter, I remember going to a briefing from BALPA in this building a few months ago where we were told about those quite disturbing figures to which the Chair referred. I do not know whether that was the first time that that information was put into the public domain.

**Dr Hunter:** Yes.

**Q12 Mr Leech:** Do you think that if you had had that information, and that information had been in the public domain some time ago, those things would have been taken into consideration before proposals were recommended that were going to make the situation worse?

**Dr Hunter:** Yes; I think you are right. In a presentation we discussed the risks of pilots involuntarily falling asleep, and, although seemingly alarming, that sort of data is entirely predictable from the CAA-sponsored SAFE program. This is a computer program where you input the rosters and you can predict how tired pilots will get. Up until just a few weeks ago, when we were preparing for this meeting, that program had still not been released so we have not been able to use that program. Had that been available you could easily demonstrate that.

**Q13 Mr Leech:** If I recall, it was suggested that this information was not forthcoming because there was the potential for disciplinary action against pilots if they admitted that they had fallen asleep.

**Dr Hunter:** Yes.

**Q14 Mr Leech:** How could we do things better to make sure that we have the correct data so that, when we are considering changing the regulations, fatigue is properly taken into consideration?

**Dr Hunter:** We need an open reporting culture. Pilots are fearful that if they report fatigue they will face a quasi-disciplinary process. In fact, it is unlawful for a pilot to fly while fatigued. Their concern is that they are effectively writing the evidence for their own prosecution. We need better protection for pilots when they report fatigue and better rules that prevent them getting fatigued in the first place.

**Q15 Mr Leech:** Finally, when pilots have admitted fatigue and that they have fallen asleep, is there any evidence that disciplinary action has been taken against them?

**Dr Hunter:** We commonly receive letters and deal with cases where pilots feel that the process they then get embroiled in is more fatiguing and more stressful for them than the original fatigue and the occurrence of fatigue itself. It becomes the better option for them to put up with a bit of fatigue rather than report it.

**Q16 Chair:** Mr Major, you want to comment on this.

**Kris Major:** Yes. At Unite we receive many reports where fatigued people—cabin crew—who want to report fatigue are discouraged by the airlines involved. In our view it is quite a problem for us.

**Q17 Paul Maynard:** Dr Hunter, it is clear from what has already been said that many European low fares airlines seem to be quite in favour of having standardisation across Europe as a whole. What is your view on the argument that because aviation is now a global business—we do not just fly within Europe—the airlines are putting their economic interests first rather than the safety of passengers?

**Dr Hunter:** It relates to the question of why we have regulation. We have regulation where there is a risk to public safety and a risk that the economic interest of an industry that has the capacity to harm public safety overrules safety. This is the problem. In the United States we see the proposal for a vastly better rule set, but that is against the background of a fatigue-related accident. That accident is mentioned in the preamble to the revision of their fatigue rules, but they are hugely more controlling of the risk of fatigue than we are in Europe at the moment.

**Q18 Paul Maynard:** It is also clear in the evidence that the initial EASA proposals were opposed by the CAA on a number of key criteria, yet now the CAA is giving the impression, as we may well hear in the next evidence session, that it is now content with those proposals. Are you surprised at the CAA's change of opinion? Do you think there is any reason for it or can you explain it?

**Dr Hunter:** The CAA has a difficult role. That role may not be that well understood. It is a dual role of having a safety regulatory responsibility but also an economic regulatory responsibility, where the profitability of the airlines is an issue for the CAA. That is mostly well managed, but in this area you see the problems and the tensions. I have not seen the support for the CAA's position from the CAA's scientific advisers in this regard. I would want to see that. In the absence of that, I am left speculating as to why there would be this change. I must say that these rules are totally outwith the mainstream of scientific evidence in this area. They are totally outwith that.

**Q19 Paul Maynard:** You said you would be speculating. Can I tempt you to speculate?

**Dr Hunter:** I think it is the conflict of economic interest and pressures from airlines.<sup>1</sup>

**Q20 Julie Hilling:** First, let me declare my membership of Unite. Could you help me by describing what happens during a long flight in terms of any ability to get rest for pilots or flight crew and when duty finishes? Does duty finish when you turn the engine off? When does your duty time finish? I am trying to get a handle on where rest times start and finish.

**Dr Hunter:** The terminology is extremely confusing and it is a very big issue in this area. The flight duty period starts when the pilot reports for duty. That is normally to a crew room where they do their pre-flight

<sup>1</sup> See ev 51

---

22 February 2012 Dr Rob Hunter, Kris Major and Jon Horne

---

planning material. They look at the weather and the fuel and so on. That can last an hour or so. Then they go out to the aircraft and start flying the aeroplane. In two-crew operations, where there is just a pilot and co-pilot, normally there would be no rest opportunities. That sort of aeroplane needs both pilots to be awake all the time. However, there can be arrangements where the airlines endorse a napping policy, where one pilot goes to sleep during the flight. We think that is unsafe. In our submission we illustrated why that is unsafe. Often what can happen is that the other pilot, who is meant to be awake, can involuntarily fall asleep. That is not good.

When they land and the brakes go on on the aeroplane, that is the end of their flight duty period, but they still have a further period of duty where they do the post-flight paperwork and put in any maintenance reports and so on. That can go on for about another half an hour.

**Q21 Julie Hilling:** But that would then be included in the rest periods.

**Dr Hunter:** No, it is not. That is part of the duty period. Other operations allow for there to be an extra pilot, and there can formally be arrangements for the pilots to go away from their crew seats, lie down and get some sleep.

**Q22 Julie Hilling:** Presumably, on top of that, there is transfer to a hotel or wherever.

**Dr Hunter:** Yes.

**Q23 Julie Hilling:** But that is not included in duty time.

**Dr Hunter:** Correct.

**Q24 Julie Hilling:** It is just that handle of when you can get rest.

**Dr Hunter:** Yes.

**Q25 Julie Hilling:** Your 10-hour rest period could be a lot less by the time you have travelled in and out, eaten and whatever else.

**Dr Hunter:** I do not think so. I do not think that would be the case. Perhaps my colleagues might correct me on that.

**Kris Major:** Under the current proposal, yes. At the moment under CAP 371, if you are on such minimum rest, we have a ruling that says you must have 10 hours of hotel room availability. That means you can have something to eat, have a shower and then sleep for eight hours. This proposal does not have that in there. It just says it is a 10-hour rest, as long as there is an eight-hour period for sleep. It does not allow for that. It misses the fact of travelling to and from an airport. Some places can be three quarters of an hour to an hour both ways. CAP 371 allows for that.

**Chair:** I too would like to declare membership of Unite, which has already been declared in the Register.

**Graham Stringer:** I will do the same.

**Jim Dobbin:** I will do the same.

**Q26 Iain Stewart:** I would like to pick up on Mr Maynard's question on the economic pressure that

airlines are under in the current climate. Even with the current regulations, do you find that there is constant pressure on your members to squeeze out every last hour that exists?

**Dr Hunter:** Yes.

**Q27 Iain Stewart:** This is the context.

**Dr Hunter:** It was Drucker, the management guru or economist, who said that the first duty of an organisation is to survive. Airlines are icons of the low-cost business model. They are very survival-driven. It is intensely competitive. They can be facing decisions where, if they spend on safety today, they might go out of business tomorrow. Survival is a very important force. It is because of that context that it can make it quite inappropriate to deploy safety management strategies such as fatigue risk management and so on because it is in a very unsympathetic environment that these measures are being deployed.

**Q28 Iain Stewart:** Is that across the board for airlines or are there particularly bad offenders? Is there a category difference between low-cost fliers and national flag carriers?

**Dr Hunter:** It is probably across the board. As consumers, you can see this in the way that fares prices have come down. As consumers and passengers, we get a sense of the intense competitiveness in the airline industry.

**Q29 Iain Stewart:** I have a related but separate question. It is for my own clarification. The new proposals are for a uniform standard across Europe. Is that a minimum standard but individual countries could then have their own stricter interpretation, or do they have to abide by the absolute letter of the uniform standard?

**Dr Hunter:** The proposals are for a "standard", and I will explain why that has special meaning. The proposals also allow for risk management arrangements where the countries can vary from the standard if they prove a reasonable case for doing so. When we talk about a "standard", there is no expression of an absolute standard of how tired is too tired. For example, in the case of driving, how drunk is too drunk is defined. In the case of flying it is only really defined through the hourly limits. There could have been opportunities to define it in relation to how tired is too tired; there is a science to do that. That opportunity was not taken and it means that the whole arrangement can be quite woolly. Operators can say that they are safe, but it is a vague definition of safety.

**Q30 Iain Stewart:** To pick up on that, is the test you have referred to uncontroversial in terms of the science? With regard to alcohol in the bloodstream, it is a medical fact that once you have a certain level of alcohol in the bloodstream your ability to co-ordinate diminishes. Is this test for tiredness as robust as that, or can it be challenged?

**Dr Hunter:** It is similar. In the case of alcohol, a number of persons with an equal blood alcohol concentration will have a variable performance decrement. In fact, it is a little bit unfair on some but

more beneficial to others. These measures of fatigue would have a similar effect. Overall, as a public safety measure, it would do a lot to secure public safety in our view, just in the way that the driving alcohol limit does.<sup>2</sup>

**Q31 Graham Stringer:** Dr Hunter, I take you back to what you were saying before about the technical capacity within the CAA. Could you expand on that? Is the technical capacity to assess this sufficient within the CAA? As I understand it, when EASA was set up, they transferred a number of individuals and capacity to EASA. Is that right?

**Dr Hunter:** My comments were in relation to the proposals, which I understand the CAA support, and my knowledge that the CAA's scientific adviser in this regard is the author of a number of publications that would seem to oppose the arrangements in the CRD. I cannot quite understand how the CAA can be advised in a way that I anticipate from the publications of the scientists in this area and yet support this arrangement.

**Q32 Graham Stringer:** Are you saying it is not a capacity issue but a repression of information issue?

**Dr Hunter:** Or choosing not to follow advice.

**Q33 Graham Stringer:** Can you give us the name of that paper and the author?

**Dr Hunter:** I understand that Mick Spencer is the CAA's scientific adviser in this area and he was one of the scientists who advised on the CRD. You will see his report appended to the CRD.

**Q34 Chair:** You can send us any further details.

**Dr Hunter:** Yes. There is also the Moebus Report.

**Q35 Graham Stringer:** I am familiar with that. What lies behind my questions is that, when this Committee looked at EASA and CAA five or six years ago, we said that EASA was not fit for purpose and we were worried about the impact on the capacity within the CAA. Do you have any view as to whether EASA is competent or fit for purpose now?

**Dr Hunter:** I looked at the terms of reference of the EASA 055 Group—a group that would take into account the scientific developments on fatigue. I am mindful of some of the really impressive developments that have gone on in fatigue science, especially in the medical area. When I look at the membership of the 055 Group—and we have not seen their CVs—I do not see a strong scientific presence. It would seem to me that in order to assess the science—because science is about a landscape of evidence and it is important not to cherry-pick things—you have to understand the broad message that the science is giving. It needs scientific qualification and experience to do that and I do not see that within the group. I see that in the reports that were submitted to them, but I do not see that being translated to the decisions of the group. That scientific input did not have any executive influence or seems to have had very little executive influence.

**Q36 Chair:** Do any other members of the panel have any different views on the scientific knowledge available to EASA and how they deal with it?

**Jon Horne:** I would not say that we have a different view, but I would certainly clarify that the regulations that EASA has brought in were required to reflect scientific and medical evidence. Unfortunately, EASA chose to set aside its initial scientific report from 10 of the world's most renowned fatigue scientists—the Moebus Report—and then the three independent scientists, which I think included Mick Spencer, did not have their scientific views taken into account by the CRD. There are a variety of occasions within the document where EASA itself states, "All three scientists agree that the following measure is insufficient or is fatiguing", and EASA in the next sentence goes on to say, "And we propose a rule which breaches those requirements."

**Kris Major:** Just to reinforce what my colleagues have said, it is quite clear that the science has been disregarded for whatever reason on several issues that concern us deeply and are critical to flying an aeroplane. It might look like a very small part, but, for example, with multiple time zone crossings when you return home from several days away, the rest provision that was advised in the scientific reports has been cut between 25% and 50%. There is not one time zone crossing rest period that follows the scientific advice.

**Q37 Jim Dobbin:** We have been talking mainly about the pilots and flying crew. This is probably directed at Mr Major. Are you happy that the rest of the cabin crew are probably going to be working under the same conditions?

**Kris Major:** Sorry; could you repeat that?

**Q38 Jim Dobbin:** Are you happy that the rest of the cabin crew, other than the flight crew, are going to have some of these health and safety regulations and conditions of service applied to them as well?

**Kris Major:** We welcome anything that reflects our importance as a safety employer on board the aircraft. We would welcome anything that standardises that. There are areas where that has happened. However, the overall document reduces the standard that we believe is safe to militate against fatigue.

**Q39 Jim Dobbin:** Do you feel that there has been sufficient dialogue between yourself, representing the staff, and the report authors?

**Kris Major:** No. We would like to have had our position and our considerations taken into account.

**Q40 Chair:** Mr Major, the CAA states that "crew members must make good use of their pre-flight rest periods". What does that entail? Do you think that means the crew should take more responsibility?

**Kris Major:** No. I think it just highlights your responsibility to make good the rest periods that you have as well as the company's responsibility not to roster you duties that are fatiguing. It is just a highlight. Sufficient planned notice of duties and rosters is important to us, and balancing both your recovery time and the ability to maintain what all UK

<sup>2</sup> See ev 51

---

22 February 2012 Dr Rob Hunter, Kris Major and Jon Horne

---

Governments have advised, which is a healthy family life, is important in promoting well-being and the ability to go to work and do your job.

**Q41 Chair:** Is there a problem? Does this imply that the crew are not acting responsibly in rest periods?

**Kris Major:** No, I do not think so. It is just reiterating that, if you feel that the duties being asked of you are fatiguing, questions may be asked about what you have done within your rest period to make sure that you are sufficiently rested.

**Q42 Chair:** I would like to ask each of you to give me, very sharply, what you think the Minister should be doing in discussions on these proposals. What are the key things that she should be looking at?

**Dr Hunter:** I would like to see the Minister direct the CAA to retain CAP 371 in the UK. Even that will need a further review of its safety. I would like to ask that the CRD<sup>3</sup> process is commenced again. If it cannot be commenced again with proper scientific input, I would ask that it is amended so that it is as good as it would have been if it were started in the first place with the proper scientific input.

**Kris Major:** From Unite's perspective, all we would ask of the panel is to remember that the aim of the document is to prevent fatigue in a potentially instantaneous lethal environment. All other concerns have no place in influencing the scheme.

**Jon Horne:** From the position of the ECA, we feel that harmonisation across Europe could be a very good thing as long as it ensures that safety standards are brought up to a safe and high level, as you have in the UK at present, and not dragging every EU member state down to the lowest levels in the European Union. I would very much hope that the Minister would be willing to ensure that her officials require EASA to apply the science that it already has to these proposals in revising them so that they are based on science and not economic or other considerations where safety is at stake.

Furthermore, I would ask that the Minister pushes for the UK to be able to keep its already high standard. That would be of value to many other EU member states that would like to do the same thing. The UK has disproportionate influence in this area as it is the father of flight time limitation schemes. I am quite confident that, if the Minister were to ensure that her officials push for this principle called non-regression whereby member states can keep their high standards, and also require the science to be incorporated in the minimum rules, then it would probably be very successful.

**Q43 Julian Sturdy:** Apologies for arriving slightly late. If this has already been touched on I do apologise, but I want to ask about calibration pilots. I do not know if that has been talked about at all. I am talking about pilots who are flying significantly more approaches into airports, and the calibration that is taken from that is put into the flight system for

controlled landings on normal aircraft. My concern here is whether any consideration has been given to calibration pilots, who are flying a lot more landings and take-offs. That is the more stressful part of the flying and will put more stress on the individual pilot. There is significant responsibility with those pilots because the calibration landings that are put in place are used by other aircraft in future. Has there been any specific consideration given to them within the proposals?

**Dr Hunter:** Not that I am aware of. If I understand you correctly, these are the pilots that are part of the verification of the accuracy of the approaches to airports.

**Julian Sturdy:** That is correct; yes.

**Dr Hunter:** The issue with the landing of an aeroplane is where a lot of the risk is piled up, of course. Unfortunately, it is also at the place where the pilots are most tired because it will always be at the end of the flight. Our consideration has only been in so far as landings are a particular issue and they are very fatigue-critical.

**Q44 Julian Sturdy:** My point is that the information gleaned from the calibration pilots is put into the system, and it is very important that they are at their peak when they are making these approaches and landings so that the system is correct. It is not just their plane that potentially is at risk; it is other planes that rely on the information that is taken from their landings. Am I correct on that?

**Dr Hunter:** You are correct. However, to date, our consideration of where the greatest risk lies is with the way that fatigue increases. It is nearly all categories of human error as well as the risk of involuntary sleep in normal operations. Where any instrument approach is accurately set up, where there has not been a calibration error, we would see the potential for fatigue to cause mischief with that normal operation as being the greater issue.

**Q45 Julian Sturdy:** The calibration pilots have not been singled out at all or anything like that.

**Dr Hunter:** No.

**Q46 Julian Sturdy:** They would be under the same system basically. That is what I am saying.

**Jon Horne:** I do not think calibration pilots would be covered by this regulation. It would be classed as aerial work and this is for commercial air transport. Calibration pilots would not be part of an airline operation. They are a technical role to ensure that instrument approach systems work okay. They are not really related to this particular regulation and what it covers.

**Q47 Julian Sturdy:** Is that a definite?

**Jon Horne:** Certainly, calibration pilots are not part of a commercial airline operation. They are a function that is carried out for the airport to ensure that its instruments are accurate.

**Chair:** Thank you very much, gentlemen, for coming and answering questions.

---

<sup>3</sup> See ev 51

### Examination of Witnesses

*Witnesses:* **Captain Tim Price**, British Airways, **David O'Brien**, Director of Flight and Ground Operations for Ryanair, European Low Fares Airline Association, and **David Lawrence**, Head of Crew Planning, Thomson Airways, gave evidence.

**Q48 Chair:** Good morning, gentlemen. Welcome to the Transport Select Committee. Could you please give us your name and organisation to help our records?

**Captain Price:** Good morning. I am Captain Tim Price from British Airways. I am the Regulations Manager in the Flight Operations Department. I am also an active pilot.

**David O'Brien:** I am David O'Brien representing the European Low Fares Airline Association. I am Director of Flight and Ground Operations with Ryanair.

**David Lawrence:** I am David Lawrence, Head of Crew Planning at Thomson Airways, which is part of the TUI Travel Group.

**Q49 Chair:** Thank you. Are those airlines supporting EASA's current proposals putting profits before safety?

**Captain Price:** No, they are not. I was interested in some of the comments in the previous session about safety. In my understanding there are only two entities responsible for safety in law. One of those is the operator. Usually that is personified in the chief executive; that is for policies and procedures. On the day, the commander of the aeroplane is responsible for the tactical safety. Whatever discussions we are having, ultimately, safety is the responsibility of the operator and then the captain.

**Q50 Chair:** Yes, but this particular inquiry is to do with setting standards and permissible limits. Are those airlines that are supporting the change looking at their own economic interests rather than safety of the passengers?

**Captain Price:** I may not speak for other airlines, but certainly that is not the case in British Airways.

**Q51 Chair:** Mr O'Brien, you take a slightly different view from most of the other airlines, don't you?

**David O'Brien:** I take a different view from some other airlines. The European Low Fares Airline Association, and indeed the other airline associations in general, do not support EASA's proposed changes to the existing standards. There is a misconception that needs to be corrected. The UK operates under CAP 371, some might argue in breach of article 8 of the implementing regulation, but we will park that. Nobody actually believes that CAP 371 is unsafe. Out there in Europe there is a standard set of procedures called Subpart Q. I find myself agreeing with the union contributions to say that EASA has ignored scientific evidence in putting forward some of the changes that it has put forward. Curiously though, the evidence that EASA has ignored from the likes of Mick Spencer, the CAA scientist, bring EASA's procedures closer to the less helpful elements of CAP 371.

CAP 371 is flawed. It is good but it is flawed. Before everybody pats themselves on the back as to how wonderful UK aviation is, the rate of accidents within UK aviation is not remarkably dissimilar on a pro rata basis to that across the rest of Europe. There is a standard safe system. Unfortunately EASA has indeed ignored scientific evidence and regrettably—and again I agree with the unions on this—constituted the rule-making committee incorrectly by turning it into, effectively, an industrial relations bunfight rather than listening to the evidence. You will find that ELFAA has submitted documents early in the process to EASA saying, "We recommend that scientists are included in the group."

My own airline, Ryanair, has operated Subpart Q since 2002 and we have operated over 2,000,000 flights under it. I will not dwell on it, but I could refer you to the document I submitted. You will find that our UK pilots, who had previously operated under CAP 371, prefer the working arrangements available under Subpart Q.

This is not a question about profit before safety or anything of the sort. Safety is absolutely necessary as a business essential. Particularly at our end of the market, where people will wait 100 years to say, "I told you so" if something happens, it is even more crucial to us.

**Q52 Chair:** We are told that some pilots do not feel able to report fatigue. Mr Lawrence, could you comment on that? Why do you think that might be?

**David Lawrence:** Yes, I could comment. Clearly, any kind of safety management system or fatigue system does rely on a just and open culture where people feel able to report fatigue. Certainly in the case of Thomson Airways, we put a huge amount of effort into that. In the regular yearly training that we give to crew, for the last two years we have given fatigue training, which has been very open and encourages people to report fatigue. We regularly get fatigue reports. For example, last year 400 crew members reported fatigue issues to us, which we used to improve our internal systems and processes.

**Q53 Chair:** Are there any other views? Captain Price, what about dealing with fatigue? Why do pilots feel that they cannot report it? Do they feel very vulnerable?

**Captain Price:** No; that is not the case. There are three elements to effective fatigue management. FTL regulations are only a part of an operator's safety management system. Those three elements are: operator accountability; a just culture such that, exactly as you say, people can report if they are fatigued; and effective management of the issue. In the case of British Airways, of course people are able to report if they are fatigued.

May I say that there is a difference between fatigue and tiredness? Clearly, we can all be tired if we have

---

22 February 2012 Captain Tim Price, David O'Brien and David Lawrence

---

missed a night's sleep. Fatigue is the cumulative effect of a series of duties affecting people's ability to recover from tiredness. They are different issues. If people report they are fatigued, then our process is to tend to refer people to occupational health specialists to help assess why that is the case, but it is certainly not punitive.

**Q54 Iain Stewart:** One of our previous witnesses made the point that there is a test available for fatigue, in the same way that there is a test for alcohol in the bloodstream, and that test has not been assessed properly in the new regulations. I would be grateful for your perspective on that point.

**David O'Brien:** I am not familiar with the specific test that you are talking about. Reference was made to what is called the CAA SAFE Model, which, curiously, when presented at the EASA meetings, demonstrated that consecutive earlies were actually a good thing rather than a bad thing. That is also what Mick Spencer, the scientist, confirmed. None the less, EASA has seen fit to move to the UK model of penalising consecutive earlies. Where the test has been applied—and the only test I am aware of is the SAFE test—it demonstrates that EASA has made a mistake by moving closer to the UK system.

I am curious as to the pilots' contribution to these tests because these pilot organisations are the same organisations that oppose random drug and drink testing. They oppose random drug and drink testing, the effects of which are absolutely manifest and clear, and instead seem to support and invoke a different test—which, by the way, we would support too if it exists; don't get me wrong.

**David Lawrence:** I am not aware that there is a precise test for fatigue. As David said, there is the SAFE model, which is a way of scientifically or theoretically evaluating fatigue. It is a model that we use at Thomson Airways at times when people have reported fatigue. I would say that 99% of the time it shows on that model that we are within acceptable bounds of fatigue. It is not a precise science. It is one piece of evidence that we use. It is not a yes/no: you are fatigued or you are not. It is not that exact or precise. It is just one additional piece of information that can be used.

**Q55 Chair:** Can that be correct? If fatigue is not exact or precise, how can we assess whether the introduction of different standards is in the public's interest and is about safety?

**David Lawrence:** One of the key issues with fatigue is that we are all different as individuals. It is very hard to have a model that would describe all of us in every instance. That is why these hard limits are one part of how we manage fatigue, but they are not the only part of it. That is why fatigue risk management is important. That is why feedback from individual crew members is important. There are many other ways we also manage fatigue on a day-to-day basis. It is not just about hard limits or rules that come out. They are one important part of it but only one part of it.

**Captain Price:** I am aware that Qantas, the Australian carrier, modelled their rosters using a software model.

I don't know what the model is. That will flag up if there are areas of concern at report, but it only takes into account the flying element—in other words, what time the companies control. It does not take into account what the pilots are doing in their own time.

**Q56 Chair:** The CAA says that the proposals will require “a considerable amount of change management oversight”. What do you understand that to mean? What would you be able to do?

**Captain Price:** It is hard to assess that without knowing the scope of the change, if you pardon me for stating the obvious. Hopefully it won't be overnight. I understand that we are going to have at least two years to change from when the rules are published. It will be necessary to assess the difference from the current set of operations. Clearly, everything we do depends upon how we roster the crews, the aeroplanes and so on. The whole schedule depends on that. It would be necessary to assess the scope of the change and the rules and react accordingly.

From my point of view—I don't want to put words into David's mouth, although I think it is probably a slightly different inference—it would seem like evolution, not revolution.

**Q57 Chair:** Mr O'Brien, what do you think that means and do you think it can be done?

**David O'Brien:** Very little, in fact. The main changes and effect, such as they occur—and again I draw your attention to the letter from Ryanair UK-based pilots on the subject—will be on pilot rosters in that they will become less desirable. I will give you one very specific example, if I may, of the natural effect of rostering. If you take the UK rule regarding consecutive earlies, which discourages consecutive earlies, that leads people for the first three days on earlies into a middle and on to a late. That may sound fine in theory, but it turns out not to be very convenient for individuals and not very sensible. On the fourth day you are still going to wake up at 6.00 in the morning, having educated yourself in that way for the previous three days, and you have to wait until your duty occurs much later.

If airlines are forced into contorting themselves to meet new rules, then contort themselves they must do. In the case of the organisation I work for and those organisations I represent, I can see it as having unhappy, unintended consequences for the pilots themselves, with no safety benefit. I draw your attention to Mick Spencer's comments on consecutive early starts. He says they do not show fatigue increasing; in fact, fatigue decreased. I agree with the unions here on this subject. EASA, simply because it had allowed itself to become engaged in an industrial relations activity, threw science out of the window.

What we have at the moment is Subpart Q with some gaps, which I agree should be filled, but not many. It has been the work of the European Parliament, and Brian Simpson MEP in particular, for about 17 years. Suddenly it is reopened on a non-scientific basis after two months of operation generally across Europe.

**Q58 Chair:** Why do you think this has happened?

**David O'Brien:** I think there is naivety within EASA. I think that EASA, as a European institution, falls prey to many of those European institutional foibles, which is that the social element precedes all other elements and it is seen as horse trading in the social sense from a platform of knowing that pretty much all of the existing European flight time limitation systems are in fact safe. You can have esoteric debates beyond that and satisfy social imperatives as they see it.

**Q59 Chair:** But there is some support for the change, isn't there? We have received evidence in support.

**David O'Brien:** In general there is support for the change, mostly because, as I have said, it is relatively meaningless. Remember the change that I am talking about is not from CAP 371, which our pilots and scientists believe to be flawed. The change is from Subpart Q, as it is, coming closer to CAP 371. We see that as flawed.

**Q60 Graham Stringer:** I have been listening carefully to your statements. Can you give us a pecking order for CAP 371, Subpart Q and the proposed regulations?

**David O'Brien:** Subpart Q

**Q61 Graham Stringer:** Which is the safest or least safe?

**David O'Brien:** I think they are all safe and they are all packages as well. It is a bit like issuing medication. If you increase this and increase that, you may well change the effect of the entire medication. There are a series of balances within each system. I am not for a moment going to say that CAP 371 is unsafe or that any of these are unsafe. I am simply saying there are consequences.

**Q62 Graham Stringer:** You were saying previously that the new regulations have walked away from the scientific evidence base, as CAP 371 did in certain instances. Are you saying that after all that discussion there is no difference between these three systems in terms of the likelihood of accidents?

**David O'Brien:** Yes; I am saying that. I am saying that it degenerated into a social bunfight. The basis for me saying that is you have Brian Simpson—

**Q63 Chair:** What is a "social bunfight"?

**David O'Brien:** A social bunfight is where people are horse trading working conditions rather than talking about safety, where discussions involve whether or not a pilot might be so tired after his work that he might crash his car on the way home. The difference between a pilot crashing his car on the way home and a factory worker crashing his car on the way home is no different, I think, except I suspect that the car might be a bigger car in the case of a pilot. That is what I mean by the social element.

Coming back to the point you make, Subpart Q as it exists now is the product of 17 years' work, as it turns out by a British MEP. We believe it to have been reasonable work. It came into being in 2008. However, my company, Ryanair, took Subpart Q as the operating model from 2002 following consultation with the CAA and accepting scientific observations

from the world's leading scientist at the time on the subject, Dr Mark Rosekind, who is now on the NTSB in the United States, the former Head of the Safety Regulation Group in the CAA, Mr Michael Willett, and Dieter Horst, who is the head of the German LBA, the safety authority. We did this with no knowledge and no sense that there was about to be, 10 years later, a quasi-political, quasi-social discussion about these regulations. We did it because it was the right thing to do. All of these independent experts said that it was a good system.

In 2008 the system comes in, and then EASA naively, instead of doing what they were asked to do, which was to carry out a scientific study and to fill in five specific pretty non-controversial points within Subpart Q, opened the whole thing up to a silly debate.

**Q64 Chair:** Would each of you tell us briefly what you think the Minister should be doing now in the discussions on these proposals in Europe? Captain Price, what should the Minister be doing?

**Captain Price:** The key to effective implementation of the flight time limitations regulations across Europe will be standardisation, certainly in a couple of years when EASA moves to more or less a standardisation body rather than a regulatory body. The Minister should be insisting on standardisation of implementation across Europe. We are broadly supportive of the proposal as an evolution from CAP 371. Standardisation will be the key.

**Q65 Chair:** Mr O'Brien, what is the most important thing the Minister should be doing?

**David O'Brien:** I would refer the Minister to page 4 of the ELFAA submission, which is the joint position paper of all the airline associations. It is that EASA is a safety regulator and not a social mediator. FTLs are an established safety system and not a social tool. I would make the point that EU-OPS Subpart Q in its current form, complete with all existing definitions, limits and delegated national variants, is and must remain available to all European airlines as an acceptable FTL system.

**Q66 Chair:** Mr Lawrence, what should the Minister be doing?

**David Lawrence:** As part of the TUI Group, where we have seven different airlines across Europe and quite a few operating under Subpart Q, we are supportive of having a standardisation of flight time limitations across Europe. I am broadly supportive of the proposal that is being put forward by EASA, although I would also point out that there are some areas in there that are more restrictive than CAP 371 at the moment. We have put those into our written submission. We would still challenge why, when we have such an excellent track record within the UK, we are becoming more restrictive in certain areas, such as duties starting in late afternoons. They are more restrictive under the proposal than they are in CAP 371. There are some examples in there.

**Captain Price:** Mr Sturdy, in relation to your question about calibration pilots, they would normally fly approaches coupled to the autopilot, with automatic

---

22 February 2012 Captain Tim Price, David O'Brien and David Lawrence

---

data recording down the back. So the pilots would not be hand-flying them.

**Q67 Julian Sturdy:** What you are saying is that the stress that they would incur would be no different from a normal pilot.

**Captain Price:** The point you made about the number of take-offs and landings is correct, but they would not actually be hand-flying the approach, generally speaking. That is just as a clarification.

**Chair:** Thank you very much.

---

### Examination of Witnesses

*Witnesses:* **Andrew Haines**, Chief Executive, Civil Aviation Authority, **Kathryn Jones**, Manager Flight Operations Policy, Civil Aviation Authority, and **Rt Hon Theresa Villiers MP**, Minister of State, Department for Transport, gave evidence.

**Q68 Chair:** Good morning and welcome to the Transport Select Committee. We do expect the Minister to be joining us. We will make a start and hopefully she will arrive shortly. Would you identify yourselves for the record?

**Andrew Haines:** My name is Andrew Haines. I am the Chief Executive of the UK Civil Aviation Authority.

**Kathryn Jones:** I am Kathryn Jones. I am a Manager within the Flight Ops Policy Department and responsible for flight time limitations.

**Q69 Chair:** The UK has a good aviation safety record. Why then does the CAA want to support changes to the regulations that must help to reduce that good safety record?

**Andrew Haines:** There are two quite distinct reasons. The first is that EASA has been set up and has been given a very clear remit by the European Commission to harmonise safety standards across Europe. We believe that there are benefits for UK citizens, a very significant minority of whom fly with non-UK airlines. We get many non-UK airlines flying into this country. Harmonisation is a potential safety benefit for UK citizens.

The second thing is that, unlike the FAA in America, which has not changed its rules since 1957, the CAA has progressively reviewed and revised flight time limitations provisions about every 10 years. They were last reissued in 2004, so we would in any case be reviewing them at this stage. As we have already heard from various witnesses, that is because there is no exact science that gives a definitive answer to fatigue. It is important that you keep on top of emerging research, medical evidence, practical experience and investigations and tests on limitations. So it is for that combined reason.

There are many things I would like to correct from the previous sessions but there is one in particular. The CAA has no economic duty towards airlines. There is no conflict in terms of our oversight between safety and economics with airlines. We economically regulate three airports in this country but we have no economic duty to airlines. The idea that our stand in this issue is for anything other than the safety of UK citizens is simply without any foundation whatsoever.

**Q70 Chair:** What has driven this proposal for change?

**Andrew Haines:** The proposal has been driven by the need for harmonisation, very clearly, and the fact that

all the time there is emerging information. For example, evidence has already been given that, with low cost airlines, there is now good evidence to suggest that consecutive earlies do not have the same detrimental effect that has been previously identified and, actually, there is some benefit because it avoids the disruptive pattern that Mr O'Brien mentioned. Whereas in CAP 371 the current flight time limitations in the UK would require a degree of disruption in the shift, in future, under the EASA proposition, you can have more consecutive earlies but then you are required to have an extended rest period at the end of those.

**Q71 Chair:** How can harmonisation downwards create a safer system?

**Andrew Haines:** I don't believe that this is a harmonisation downwards. If it was a harmonisation downwards, the UK CAA would not be supporting it and we would not be advising Ministers to support it either.

**Q72 Mr Leech:** Following on from that, why is it not a harmonisation downwards? Everyone else that we have heard from seems to believe that it is. Why is it that the CAA has a different view?

**Andrew Haines:** I do not think you heard from the airlines that it was a harmonisation downwards. It is a package of measures. In some areas it is less restrictive than CAP 371. In other areas it is explicitly more restrictive. As well as that, it has a very clear overarching responsibility on operators to provide information and to have a proper risk assessment methodology for managing fatigue. That is the way that safety management has been going across the world for the last 20 years, and not just in aviation. People have learned from repeated accidents that simply relying on compliance with rules has not been sufficient. You need to have a risk management system as well that requires people to say, "Are these rules having the desired effect they were intended to have?" The new EASA proposition covers that in a way that the existing UK regulations do not do.

**Q73 Mr Leech:** We have heard from BALPA about their survey of pilots, where 31% of pilots were saying that they had woken up to find out that their co-pilot was asleep at the same time. Do you seriously think that these proposed changes will improve that situation?

**Andrew Haines:** I am concerned by the findings. I am concerned because they have happened within the existing regime for a start. The findings do not identify the difference between tiredness and fatigue. We do not know if that is the case because the pilot has been up all night because of a sick child or because he did not take enough rest beforehand. There is nothing in that survey that identifies that what the pilots have experienced is to do with fatigue in either the roster or the pattern of work they do. I am also concerned because they are not reporting that through all the channels. There are confidential reporting lines at the moment. There is something called CHIRP, which is entirely distinct from either the CAA or the employer for people to report to. They get very few reports.

**Q74 Mr Leech:** But the evidence that they have provided suggests that there are faults with the current system. Are you suggesting that these changes will result in a reduction in the number of pilots who are waking up and finding out that their co-pilot is asleep?

**Andrew Haines:** First of all, I cannot accept that it produces evidence that the current system is not working. As I said, it does not distinguish between tiredness and fatigue, and that is very important.

**Q75 Chair:** I would have thought that a pilot falling asleep is bad, whether you call it tiredness or fatigue.

**Andrew Haines:** I completely agree with that, but that is not to say that that is a fault of the existing system. You can have a perfect system, and if the pilot chooses not to go to bed for 24 hours beforehand he could fall asleep. There is no rule that will govern pilot behaviour before he turns up to work. I am not suggesting it is not concerning; I am simply saying it is not evidence of a failure in the system.

**Q76 Mr Leech:** But my question was whether or not you thought that the proposed new system would improve on those worrying statistics.

**Andrew Haines:** It gives us more tools to oversee it and manage it. It gives the CAA better access to data. It requires the industry to monitor it and so we will be able to take appropriate action.

**Q77 Mr Leech:** With respect, that was not the question. It may well be that under the new system you are able to monitor it better, but do you believe that the proposed changes will result in less pilots waking up and finding out that their colleague is asleep?

**Andrew Haines:** It is quite finely balanced. I do not believe it will result in a deterioration. I do not believe that what is proposed by EASA is a deterioration in the UK's standards.

**Q78 Paul Maynard:** When EASA first brought out its proposals, the CAA had a number of concerns that it expressed to EASA. We then had a subsequent reissue of the proposals in January, which, from your evidence, you appear to be supporting. What is not clear is how the proposals have specifically changed so that you now feel the level of safety is appropriate, whereas it was not before. Can you explain some of

the finer detail of why you are now happy and you were not before?

**Andrew Haines:** I will kick off and then maybe pass to Ms Jones as well. There are three areas. First of all, there is the maximum duty period during a disruptive period. EASA was proposing 12 hours. The science referred to 10 hours. EASA have now settled on 11 hours. Under CAP 371, our existing arrangements allowed for up to 11 hours 15 minutes in any case. We have concluded with a further study that we have been doing with Loughborough University and an existing operator that 11 hours is a safe limit. We would not have been happy with 12 hours. We are happy with the revised proposition of 11 hours.

The second issue was that there was no cap on the number of hours worked within 14 days. There was one for seven days and 28 days but not for 14 days. EASA has now produced a cap. It is a higher cap than we have currently, but it is a cap that we believe is acceptable because it is supported by extended recovery periods. That was the third element in the package as well. We believe that EASA has moved on each of those three areas sufficient for us to be content with the proposition.

**Kathryn Jones:** To support that, we have been doing some research, as was said, with Loughborough University and a large operator looking at long single sectors. That was supported by the flight crew as well. While it is still an ongoing piece of research, the preliminary findings support 11 hours as the outer limit for a planned duty.

The issue with the proposals as well was that, again, there were no methods of managing recovery time. Duties between midnight and seven in the morning are known to be disruptive. The more irregular work you do within that time creates more fatigue because of the level of disruption to the human body clock. By adding the 60 hours off, after operating not consecutively but four or more of those duties, within a work block provides that opportunity for greater recovery. The addition of two two day-off periods within the regulations as further recovery also makes sure that the balance is achieved by not having those hard limits. The prescriptive hard limits can create fatigue in themselves.

The new regulations now give us more oversight responsibilities. There is a requirement for an operator to develop a non-punitive discretionary fatigue reporting system and have it in their operations manual, which is subject to our oversight. With those elements and also, again, the use of discretion, it comes to us after an hour under the new regulations. Under our current regulations it comes to us under two hours. Under the current regulations with the UK, cabin crew rest is 11 hours; flight deck rest is 12 hours. Under the EASA proposals, cabin crew will get the same amount of rest as the flight crew. The addition of the extra hour for cabin crew is now being managed within EASA regulations.

As a whole package there are some issues where there may be seen to be some increases such as early mornings, but in terms of circadian rhythm and time awake that would be the better time to do more work, and restrictions in the afternoon where the research shows, and we support, that you should not be able to

---

22 February 2012 Andrew Haines, Kathryn Jones and Rt Hon Theresa Villiers MP

---

do as much in the afternoon. As a total package we believe that what is being currently proposed meets our requirements.

**Q79 Paul Maynard:** Just to be clear, although it is less restrictive in certain elements, the current proposals represent more up-to-date scientific evidence than when CAP 371 was put together. Would you also agree therefore that understanding the fatigue and the scientific evidence base has improved since CAP 371?

**Kathryn Jones:** It has improved since CAP 371. Some significant research was done in 2002 and 2003 with the Flight Safety Foundation in the US looking at how we solve the problem of flying sectors of 20 hours. We have managed that by looking at fatigue risk management and operator responsibilities. That new approach of making people responsible and training people about fatigue awareness has now become a key in global fatigue management. It is an essential element that those operator responsibilities that are now in EASA Ops, and the safety management system requirements that are coming in this year with the rest of the EASA regulations, now actively manage that and place that responsibility.

Under CAP 371, our current regulations, the only responsibility was for compliance. We very much support a performance-based measure that operators have to demonstrate how they manage the work and how they manage putting that together.

**Q80 Iain Stewart:** I would be grateful if you could give me your perspective on an issue that both our previous panels of witnesses have raised. The witness from BALPA suggested that there was a test that could be applied to identify fatigue in a pilot, in the same way that a test can be done to measure alcohol in the bloodstream, and that that evidence should inform the new regulatory process. That was disputed by the following panel of witnesses, who said that such a test is not well established and it could not influence it. What is your perspective?

**Andrew Haines:** There is no simple test. There is a range of scientific opinion. The CAA has worked with QinetiQ for something like 10 years now on a model called SAFE, which effectively evaluates different fatigue patterns. That is one way of evaluating predictors of the likely outcome of certain roster patterns. As part of that, the CAA asked to see whether or not you could do a comparison with blood alcohol limits, for example. That was done. It demonstrated that you could not make a comparison because the blood alcohol limits were done in laboratory conditions and the effects of blood alcohol on behaviour were very different from those of fatigue. The scientist who has been referred to several times, Mick Spencer, and whose advice we have been accused of disregarding, said it would be a "gross misuse" of that index to make a comparison between blood alcohol index and fatigue. He was very clear and unequivocal about the fact that you cannot correlate between blood alcohol index and fatigue.

If we could get definitive science on this, it would be much more of a science and less of an art. The reality is that, over time, rules have been built up using

medical research, scientific advice and operator experience in test conditions because there is no absolute science. If there was, then we would be very keen to embrace it. I think EASA would be prepared to consider it in due course as part of an ongoing process, but it is not there at the moment. It is a nirvana that simply is not an option available to EASA or any other safety authority in the world.

**Q81 Graham Stringer:** I would like to ask you the same question that I asked the previous panel. We are having a lot of debate and discussion about three different systems. Are there any differences in safety?

**Andrew Haines:** In the UK we took a view that Subpart Q had some deficiencies and it was not as robust as CAP 371, which is why we stayed with it when we had the option in 2008 to move to it. We believe that the EASA proposals as now amended mean that they will give a broadly equivalent level of safety to our existing arrangements. We think there is nothing really to choose between them. That is why my answer to Mr Leech may have sounded a little bit equivocal. They are very similar systems as a package. There are pluses and minuses, but, on balance, we believe the evidence is that it will be very broadly similar.

**Q82 Graham Stringer:** To be clear, you are saying that CAP 371 and the proposed system are better than the Subpart Q system.

**Andrew Haines:** We believe they have better protection.

**Q83 Graham Stringer:** When I say "better", I mean safer.

**Andrew Haines:** Yes. We believe that there are some risks in Subpart Q, such as, for example, the disruptive period of 11.45 hours. It is lower in this proposition.

**Q84 Chair:** Minister, I welcome you. We are pleased to see you back.

**Mrs Villiers:** First, apologies for the mix-up about timing this morning.

**Chair:** Yes, there was some confusion.

**Mrs Villiers:** Many thanks also for postponing this session for a couple of weeks because I was unable to make the last one. I would be very pleased to jump in here. One of the areas where it is very clear to me that the package proposed by EASA would be better for passengers travelling in the UK is when they are travelling on airlines that are not currently regulated by CAP 371 but are regulated in other countries that have lower levels of safety. We do not know as yet what the end result of the process will be, but the package of proposals for EASA, if it goes ahead, will undoubtedly bring up the standards in a number of European countries, as Andrew has said, to a broadly equivalent level of the package that is now contained in the UK regulations. I think that will be a significant safety gain for UK passengers when they get on planes, as many of them do, that are regulated by the European countries.

**Q85 Graham Stringer:** The reverse of that policy is that, if there is a levelling up throughout Europe, does it imply a levelling down of UK standards?

**Mrs Villiers:** I do not believe so. Clearly, the CAA is the expert in this matter. I am happy with its conclusion that, when you look at the packages as a whole, there is, overall, a broadly equivalent level of protection, and the EASA proposals, as they currently are, would not lead to a deterioration of safety as compared to CAP 371.

**Q86 Graham Stringer:** I quote to you what BALPA say in their evidence. They say that pilots could be landing their aircraft having been awake for 22 hours. Is it true? Does it happen under the current systems? Is that a deterioration in the regulations?

**Andrew Haines:** It is strictly true on an interpretation. It would be an exceptionally rare event. It would require quite a perverse combination of circumstances. It could technically happen today with split turns. The rule effectively caps the maximum length of a turn at 13 hours. Scientists, interestingly, said it could be 14 hours. EASA said 13 hours, but twice a week you could extend it to 14 hours. It assumes that the commander of the aeroplane believes that he can continue for two more in a disruptive circumstance; and it assumes that that person has been brought in four hours early for the limited amount of turns that they can be brought in for standby. It also assumes that it took them 90 minutes to drive to work. That set of circumstances or broadly parallel could happen today, but they very rarely do. The critical part is that the last two hours of that is the commander saying, "Do I believe it is safe to carry out this duty on behalf of myself and my passengers?" He has absolute control over that element. That is a critical component.

**Q87 Graham Stringer:** I do not want to interrupt, but are you saying there is no difference in the possibility of having 22 hours and landing an aircraft between the current system and the previous system?

**Andrew Haines:** The circumstances might be slightly different, but it is technically possible now for that to have happened in those sorts of circumstances with a split shift. I am looking to Kathryn because she is the expert. We think EASA's intention is that it is not possible in future, but, because of a drafting error in the current draft, it has one hour more. We think EASA's intention is 21 hours. It is a very hypothetical scenario. It is not the sort of thing we would expect to happen. If it was happening with any regularity, we would have entitlement under the new system to intervene and say, "Whoa." We have no such entitlement at present. We would have to have that reported because commanders' use of discretion must be reported to the CAA under the new system. That is not there currently. We would have much greater visibility. If anything, that is an area where we will be safer going forward than we currently are.

**Kathryn Jones:** As I said before, the requirement will now be that the company has a non-punitive reporting system that is part of the manual and therefore will be part of our approval. The concern about the commander being able to use two hours of discretion

post an operator-extended flight, in actual fact, appears to be at odds with the information that I have given to national authorities. The EASA regulations state it should be the basic regulation. That is 13 hours plus two hours. I will be challenging EASA that this is a drafting error in its proposal because it is not supported by any conversation that we had in the rule-making group, nor is it supported by the information that was sent to national authorities. With that element I will go back, but we believe that that would not be possible. With regard to the situation there of that long period of rest, they would have had accommodation to rest in. They would not have been sitting in the crew room or busy environment. They would have had a quiet room to rest in, the same as we do with split duty now, and achieve similar results.

**Q88 Graham Stringer:** The low cost airlines basically said that part of the final recommendations on the new rules is due to a horse trade with the trade unions, effectively, and not to do with the best scientific advice available on safety regulations. Do you agree with that? Can these regulations be further improved?

**Andrew Haines:** I would not want to comment on whether or not they were a horse trade. The reality was that the group consisted of five national experts, of whom Kathryn was one, and she attended 20 plus meetings, five airline representatives and five representatives of trade union associations. It was a balanced group. That reflected the sort of characteristics we would have historically done within the CAA to get a mix of views and opinions. Where Mr O'Brien was referring to EASA contradicting with the scientists, that is not my understanding at all. The scientists support an extension of the number of consecutive early duties, but they have also supported an extended recovery at the end of that. The scientists have supported the EASA recommendation in both elements.

**Q89 Chair:** Minister, is it not of concern to you that the UK would not be able to have higher standards if it wants to? Why can we not take the EU standards as a minimum standard, looking at safety levels, and the UK could be permitted to have higher standards if it wishes to, as indeed it does now? What is wrong with that concept? Are you arguing the UK's corner in this respect?

**Mrs Villiers:** It was the previous Government that opted to go forward with this approach to the creation of EASA and the push for harmonisation.

**Q90 Chair:** It did, but now we are discussing what happens next. Have you taken up the cudgels for the UK to argue the case that we can have higher standards if we want to?

**Mrs Villiers:** There is a case for seeking consensus on high standards right across the European Union. As I mentioned in my remarks before, one of the potential benefits of this whole process is that others bring their standards up to meet the very high standards that are implied by CAP 371. The key thing is to make sure that we have a safe outcome for UK passengers. Whether that is a topped-up one or a uniform one

---

22 February 2012 Andrew Haines, Kathryn Jones and Rt Hon Theresa Villiers MP

---

across the EU is not the issue. The issue is ensuring that we maintain the highest standards in the UK.

**Q91 Chair:** Are you confident that we do, because it looks as if our standards will be reduced? It might be that the standards of other countries are increased, but it looks as if our high standards will be reduced. Does that not concern you?

**Mrs Villiers:** As I said, I think the CAA is right to conclude, after some very careful assessment, that the package on offer from EASA is broadly equivalent to the package that we currently use in this country.

**Q92 Chair:** Is this a question that you have put to the CAA? There does seem to be some dispute about the scientific or other evidence on which EASA's proposals are based. We have received conflicting evidence. We have heard conflicting statements this morning. Is this an area that you have pursued as a Minister? Are you concerned about this?

**Mrs Villiers:** Certainly, I have followed this issue very carefully. The DfT has worked very closely with CAA, which has been taking the lead on this so far because it has the expertise. It is never going to be possible to get complete scientific consensus on an issue like this. It is never going to be possible to get complete consensus across airlines and unions. After a detailed process, which has involved the unions, the airlines and the regulators of the member states, we have got to a position where the concerns that we had with EASA's initial approach have largely been dealt with. We are convinced that, if this package goes ahead, it will not lead to a deterioration in safety for UK passengers.

**Q93 Chair:** Have you accepted what the CAA has said to you without questioning it?

**Mrs Villiers:** Of course we have worked with the CAA and questioned it. I think it has come to a correct conclusion in the way it has assessed the EASA proposals.

**Q94 Chair:** The Danish Transport Minister is pressing for changes. Why is that a different situation?

**Mrs Villiers:** Perhaps the Danish Minister was commenting on previous iterations of the proposals. We asked for changes to those and those changes have been made, as we have heard. In the Comitology Committee we will clearly be listening to the views of other member states. The initial discussions indicate that it is not likely that the other member states will be looking for very major changes, but we have an open mind if they want to press down some of the limits. We do not rule that out completely, though we will have to bear in mind the usual careful assessment that needs to be made in terms of the proportionality of any changes to be made to the proposals.

**Q95 Chair:** I would like to pursue this issue of the evidence on which the proposals are based and the different views of it. There are three reports from scientists published with the revised proposals. How are they different from the assessment of the evidence by the Moebus Committee? What is the difference and

how would people like ourselves, whose prime concern is public safety, make an assessment of these different sorts of evidence?

**Kathryn Jones:** The Moebus Report and the scientists were asked a set number of questions. The Moebus Report was asked to do an evaluation of scientific research and to form a basis of opinion by which EASA would then move on with their rule-making task. There is no scientific research in areas within aviation such as standby and split duty. There were many areas that the scientists were unable to deal with because they were asked to evaluate the available research. What EASA then chose to do was to take that piece of evaluation that Moebus gave and use that as one of the documents that they used with their rule-making group. Again, this is the way that we in the UK would develop the rule making, by having a multi-stakeholder group, and then by asking the three scientists to come back and evaluate the proposals that they had then assessed using the Moebus Report or the other different science and the information on operational best practice, which was also part of EASA's remit to evaluate. They were then asked to evaluate those current provisions. They stated that 12 hours was too much at night and we agreed with them on that.

Where they had real science that had been done in the operational environment, they were able to give some robust views. Where no science in that operational environment had been conducted, they gave their advice in those areas. That advice was taken with that of operational experience and best practice throughout all the member states. Much of it closely follows in those missing areas the regulations that we have and that the rest of Europe have in terms of standby, airport standby and home standby, split duty and that sort of thing.

The evaluation was done, but when you are covering so many different market sectors—measuring a long haul against a multi-sector short haul operation—you have to assess it and bring it together for the best generic rule set, which is why it is so essential that those regulations also include those operator responsibilities. It is not only the duty length that is an issue; it is how the duties are put together. Those regulations now require the operators to demonstrate that. Our rules do not do that. That is a significant benefit and we now have the authority to go in and require the operator to demonstrate that to us. We see that as a significant gain.

**Q96 Chair:** This is complex and we have heard very differing views on what all of this means. Our prime concern must be safety. Mr Haines, you said that the CAA's objections had been largely met. Which areas have not been met?

**Andrew Haines:** They have been met. They were not met exactly in the way that we originally intended.

**Q97 Chair:** Are you saying they have been wholly met, because there was a statement that they had been mainly met?

**Andrew Haines:** They have been wholly met but not in the way we originally intended.

---

22 February 2012 Andrew Haines, Kathryn Jones and Rt Hon Theresa Villiers MP

---

**Q98 Chair:** Does that mean there is no further change that you are seeking?

**Andrew Haines:** There are some points of clarification. It is use of detail that we are seeking. We also need to bear in mind that, on the back of representations, EASA may choose to make further variations. We need to keep on top of this. This is not yet definitive.

**Q99 Chair:** But you, as the CAA, the regulator here, are not seeking any further changes?

**Andrew Haines:** Not material changes. We are seeking clarification on wording and drafting issues, but we are now content that the substantive conditions are a safe system of work. They are broadly equivalent to the existing mechanism. They would not represent a diminution of safety standards and would have benefits.

**Q100 Chair:** I will ask the Minister. Do you have any remaining concerns about the proposed changes after becoming aware of the volume of representations that we have received, and I know you will have received in other ways? Do you have any concern about the changes and whether they might reduce safety standards for this country?

**Mrs Villiers:** As I have said, I think the CAA is right to conclude that the package now on offer from EASA is broadly equivalent to current UK standards and it would have the benefit of bringing other nations' regulatory practices up to a level that is broadly equivalent to the UK's. Of course we have looked very carefully at all the representations made by MPs, and a very detailed process has been undergone through the consultation process, meaning that these proposals now on the table are considerably different from those that were aired initially. We will continue to listen to representations as the debate takes place within the Comitology Committee, but as things stand at the moment we think that what is on offer would not lead to a deterioration in the high levels of safety that we currently have in the UK.

**Q101 Chair:** Did you at any stage in all the negotiations that have taken place seek to maintain the UK's ability to have higher standards than those that

were going to be agreed overall? Did you at any stage seek to do that?

**Mrs Villiers:** As I have said, the decision was made by the previous Government to opt for a system where there was a uniform—

**Q102 Chair:** Did you seek to change that?

**Mrs Villiers:** I continue to believe that there are some advantages to a harmonised approach.

**Q103 Chair:** But did you seek to change that?

**Mrs Villiers:** No; I did not personally seek to revert to a system where the UK could continue to top up the safety standards set by the European Union. I thought the key thing was to ensure that the safety standards that were eventually produced by the process continue to protect UK air passengers to the highest levels.

**Q104 Graham Stringer:** I have a final very general question. Since EASA was set up there have been criticisms from this Committee and other places of EASA. Are you now satisfied that it is fit for purpose?

**Andrew Haines:** EASA started off on some very rough ground. It had a very large task. It had very limited resources. It is now resourced up. I think it is much better at consulting and engaging with national authorities. It utilises our resources, and I am confident that EASA is now a properly functioning organisation. Of course we would want it to do a little better, just as we would for ourselves, but it is a good safety regulator, which is working well.

**Q105 Graham Stringer:** Can you be more detailed about where you would like to see it improve?

**Andrew Haines:** It has to develop its competence. It is on a journey. These operational standards, for example, are just being introduced now. It needs to continue to be able to fund and develop research so that we can continue with the science. When it comes to air traffic management, that is a whole new territory again. It is going to need to develop its competence. We are very keen that it continues to work with national authorities such as ourselves to draw on collective expertise.

**Chair:** Thank you very much.

---

**Tuesday 6 March 2012**

Members present:

Mrs Louise Ellman (Chair)

Steve Baker  
Jim Dobbin  
Mr Tom Harris  
Julie Hilling

Mr John Leech  
Paul Maynard  
Iain Stewart  
Julian Sturdy

### Examination of Witness

*Witness:* **Mick Spencer**, Consultant, M.B. Spencer Ltd, gave evidence.

**Q106 Chair:** Good morning, Mr Spencer, and welcome to the Transport Committee. Do you think that there will be more accidents if EASA's proposals are implemented as they are currently drawn up?

**Mick Spencer:** I cannot possibly say that there will be more accidents, but there could be. The problem is that we just do not know. We can judge what the levels of fatigue might be in different situations. We presume that the accident rate will be related to increased levels of fatigue, but we do not have scientific information that would demonstrate that because we do not have information on the accidents as a result of our very good accident experience over the years.

**Q107 Chair:** Your report was very critical of the original proposals and talked about increased danger of accidents, particularly in relation to increased competitiveness in the aviation sector. Are you retracting that?

**Mick Spencer:** No. I answered your question from a purely scientific point of view. We do not have direct evidence that would say, yes, we will have a higher accident rate.

**Q108 Chair:** Is there more danger of accidents happening?

**Mick Spencer:** There is a greater risk when the level of fatigue increases and the judgment then is how fatigue will be affected in the new situation. My concern is that by relaxing some of the limits—particularly some of the duty time limits, overnight limits and so on—the new regulations are setting a standard that accepts a higher level of fatigue more generally and, if not managed properly, that could well lead to a situation where the accident risk will increase.

**Q109 Chair:** When you issued your report on the original proposals, you were pretty clear; you said that safety concerns should be addressed. You thought that the evidence was there then. Are you of the same view now?

**Mick Spencer:** Yes.

**Q110 Chair:** Do you think that the current proposals are based on science at all, or are they more to do with negotiations and pragmatism?

**Mick Spencer:** The original Subpart Q was not based on science at all; there was no scientific input into that. Since that time, advice has been taken from

scientists, including myself, and as a result there is some scientific element in the new regulations—in some parts but not in others.

**Q111 Chair:** Which are the parts where is it not—where it is absent?

**Mick Spencer:** I would say that the basic FDP limits overnight do not fully take into account the increased levels of fatigue that you see overnight compared with during the day. I am particularly worried about the 11-hour limit overnight and that the allowance for multiple sectors is not sufficient. I am also worried about some aspects of the regulations for augmented crew, particularly for overnight operations, where you can now do, I think, 15 hours with just a class 3 seat on an overnight—this is for the third crew member.

**Q112 Chair:** Is that an area of concern for you?

**Mick Spencer:** It is a concern if people take advantage of that. We do not know whether, in practice, the limits will be taken advantage of, but we presume that they will. If so, I think that fatigue levels will be greater than they are at present.

**Q113 Chair:** Should there be a limit to the number of consecutive early, late or night duties that a pilot or crew can undertake?

**Mick Spencer:** The issue of consecutive earlies and lates is a particularly difficult one to give a clear answer on, because it depends how the earlies are scheduled and how long they are. One of the risks is changing the start time for an early; you move it a bit later and then you move it earlier again, and there is not the consistency. I am concerned, I suppose, particularly with the current regs, that the basic maximum FDP for earlies is longer than I would really prefer. It is 12 hours for a 5 o'clock start and 13 hours for a 6 o'clock start, and that is for a one or two-sector duty. That is quite a lot. If you are putting those together, then fatigue is bound to build up. If you look at a 5 o'clock start, by the very nature of things that is going to entail crews losing at least one and a half hours' sleep every night. The problem is that even if you go to bed early, you cannot get to sleep. That is for physiological reasons. That loss of sleep is inevitable, and it will continue. The more earlies you do, so the loss of sleep builds up. The only question is when the effect will hit you. It will hit you eventually and will cause a considerable problem.

The current proposals suggest that you have a 60-hour rest after a schedule that has involved a lot of earlies

and lates. That is a very good proposal, which will prevent cumulative fatigue from building up, but I would be worried about the acute effects of having these very long earlies over four or five days.

**Q114 Chair:** You think it is a problem with the cumulative effect over a number of days. Is that what you are saying?

**Mick Spencer:** I am saying that I would be worried about the cumulative effect going on beyond the five days if they did not have the 60-hour provision. It is the more short-term effect over those three, four or five days that I would be concerned about if the proposed limits were used to their maximum.

**Q115 Chair:** Would it be a reasonable assumption to say that, if those limits are there, in a commercial environment they may well be used to the maximum if they are actually there as part of the regulations?

**Mick Spencer:** It is possible that they would be used—I might even say likely—but I would not know for certain.

**Q116 Julian Sturdy:** We have talked about the overnight question and about fatigue, but is there a clear evidence base for measuring how overnight fatigue builds up? We realise that it is a much more stressful environment and there are obviously sleep limitations as well, but is there some clear scientific evidence that can be put into this? You said that evidence has not been taken, but is it a fact that we do not have clear scientific evidence on how fatigue can build up on overnight operations?

**Mick Spencer:** We have a lot of evidence that, taken together, gives us concern on these long nights. We obviously have evidence from laboratory studies, which looked at a whole range of measures on fatigue and how they vary with the time of day; so we know how the basic physiology changes. We also have studies from aircrew in various conditions. Many studies of aircrew rely on subjective data and on fairly basic physiological data, because by their nature such studies are difficult. Certainly there have been studies done in great detail on the flight deck, looking at the EEGs of aircrew. The original studies done in the 1990s by a German group on two consecutive nights showed extreme levels of fatigue as measured by an EEG.

**Q117 Julian Sturdy:** I do not come from a science background. How do you measure that? Is it based on reaction times?

**Mick Spencer:** There are various ways to estimate fatigue. A simple one is to ask people how fatigued they feel; that is a subjective measure. The next one is to look at how they perform various tasks, and there is a whole range of tasks that we look at routinely in the lab. There are simple reaction times and more complicated hand-eye co-ordination tasks. It is quite difficult to look at very complex tasks, but that has been done, and it shows that decision making is affected by fatigue.

The next level is to look at the physiological measures. That is both the so-called spontaneous EEG, which looks at what the electro-activity of the

brain is under normal conditions, and then looking at it under controlled conditions, because you get less interference that way and then you can measure fatigue. There are also other things, such as the so-called evoked potentials, where you give people a stimulus—visual, oral or whatever—and you look to see how the brain is responding in the period immediately after that stimulus, the fraction of a second after. Here you can pick up when fatigue is arising, because the pressure for sleep interferes with the process of reacting to the stimulus.

**Q118 Julian Sturdy:** Fatigue naturally affects people differently, depending, I suppose, on their age and their physical state and so on. Obviously, pilots can register with their employer that they are feeling fatigued, but do you feel that there is a concern out there, given the nature of the business and with the changes, that things will naturally be pushed to the limits and pilots will feel that if they do register the fact that they are fatigued when coming towards the end of their session it might impact on their future employment prospects? Is that something that you feel is out there as well?

**Mick Spencer:** There is always a concern that if in future we take our eye off the ball, we could be in a situation where it will be very difficult for crews to report problems. Commercial pressures could drive the operations, or we either do not have the regulatory framework or the regulators could be taking a light-touch approach to regulation. We have seen that it can go wrong in other areas and there is a worry that in the future it could be wrong in aviation. We are not there yet, and it is up to us all to make sure that we do not get to that position.

**Q119 Paul Maynard:** The Transport Committee journeyed to Cologne to meet EASA and examine many of these issues. Concerns have been expressed that EASA is not taking sufficient note of medical evidence when it is being submitted and is not putting scientists at the heart of its policy making. Do you have any views or opinions on this, or do you want to make any statements regarding EASA's use of scientific evidence?

**Mick Spencer:** EASA has brought in three scientists, who contributed to the process in the middle of last year. It somewhat surprised me that we have not been involved on a more continuous basis, and I do not know why that is. We gave our opinions and produced a report, and I imagined that they might want to come back and engage with us on some of the details and perhaps explain some of the areas where they had concerns themselves, but we have not heard anything. They have gone ahead without further input, which is a shame, because we could have made a positive difference.

When I say that, I mean not only that there are areas where we would propose or suggest that the limits should be reduced, but there are other areas. For instance, it was brought out in an earlier session that there are areas where the operators are concerned that the regulations make it difficult for them to carry out their operations. There are some areas where restrictions have been put in, but it is difficult to see

---

6 March 2012 Mick Spencer

---

the basis for them. There is a bit of give and take on both sides. Had we been engaged, I feel that we could have got to a better overall solution and everyone would have been a bit happier—not completely happy but happier than they are at the moment.

**Q120 Chair:** You have spoken to us about some of your areas of concern. Are there any other areas of concern in relation to the current proposals?

**Mick Spencer:** There are areas of detail. I would need a bit of notice to go through all of them, but I would draw to your attention the one that BALPA mentioned about the 22-hour issue. That arises because of the rules for airport standby and the four-hour allowance given to the FDP, which does not seem reasonable to me. In my report, I made it fairly clear that I could not see the reason for that. It is not necessary and I cannot see the reason for it. I presume that there is pressure from some airlines somewhere in Europe for that.

**Q121 Chair:** In coming to the conclusions that they have, do you think that they were based not only on scientific evidence but other pressures and other aspects may be involved?

**Mick Spencer:** Yes of course; that is inevitable. I do not suggest that science is the only driver. You have to take the operation as a whole into account, and there are questions of competition. Science can go only so far. It can give guidance. As I said at the beginning, we cannot say that we are definitely going to have an increase in accidents if this goes through. We can only caution against what people are doing and make sure that the overall framework of the regulations is reasonable.

**Q122 Chair:** One of the issues put to us is that the 13-hour flight duty limit is not based on scientific evaluation. Can you tell us anything about that?

**Mick Spencer:** Is this the 13-hour daytime limit?

**Chair:** Yes, the 13-hour flight duty period.

**Mick Spencer:** I am fairly relaxed about the 13-hour flight duty period during the day, as this is at favourable times. Indeed, in my report I made it clear that I was happy even with an extension at some times. This is because the levels of fatigue at the end of a 14-hour duty during the day are far less than they are at the end of an 11-hour overnight duty or even a 10-hour duty overnight. It would be unreasonable to restrict the daytime duties and certainly unreasonable to restrict them while you have such a high overnight limit.

**Q123 Chair:** Is it the night limit that you are more concerned about?

**Mick Spencer:** Yes, night limits, and it goes into early starts as well.

**Q124 Chair:** There is still discussion to take place on the proposals. Are there any specific areas that you want to draw to our attention on where official changes could be made in addition to the points that you have already made to us?

**Mick Spencer:** There are obviously areas of detail, but at this stage it is probably not appropriate to go into them because they are detailed ones. I would concentrate on the main issues. Those are the 11-hour duty periods overnight and the lack of recognition for the science in terms of the additional sectors, because each additional flight in a duty is associated with an increase in fatigue and the way that that is allowed for in the regulations is far from sufficient. That has been made clear all the way through by the scientists, and they have not taken any notice of it. There are also issues, as I say, with overnight duties for augmented crew. If those areas were addressed, we would be close to a set of regulations that would be generally acceptable.

**Chair:** There are no further questions. Thank you very much, Mr Spencer. That has been very helpful to us. Thank you.

# Written evidence

---

## Written evidence from British Midland International

### BACKGROUND

1. The aviation community in the United Kingdom has proudly regarded itself as having led the world in the field of fatigue management in aircrew through the use of Flight Time Limitations (FTL) since the publication of the Bader report in 1973 and the adoption of the first edition of CAP371 (*The Avoidance of Fatigue In Aircrews—Guide to Requirements*) in 1975.

2. The development of a pan-European FTL scheme has been tortuously slow, but with the change to EU-OPS the majority of Europe adopted the FTL scheme laid out in Subpart-Q with some country to country variation. The UK remained on CAP371 as an acceptable means of compliance, citing the scientific research conducted over the years, and the lack of such research to support the development of Subpart-Q, a document mainly created by negotiation and discussion between interested parties.

3. EASA have now proposed a standardised Pan-European scheme for adoption by all EASA operators, the Notice of Proposed Amendment (NPA 2010–14) was published in December 2010 and received some 49,000 responses, with 98.6% of the responses coming from the UK. The NPA is based largely on Subpart Q, but also includes new regulations that were not previously covered by Subpart Q, such as augmented crew, standby, split duty and reduced rest. Additionally there were some changes as a result of scientific evaluation of Subpart Q including the reduction of the maximum allowable Flight Duty Period (FDP) at the most unfavourable starting times, the increase of the minimum rest for disruptive operations such as early starts, late finishes and night duties, and a much more comprehensive ruling on the effects of significant time zone shifts.

4. It should be noted that the solutions to a number of the missing regulations in Subpart Q was the adoption of the relevant sections of CAP371.

### SCIENTIFIC RESEARCH AND FATIGUE RISK MANAGEMENT

5. As a condition of publishing the original Subpart Q EASA was required to undertake scientific verification of the proposal. This requirement led to the flawed Moebus Aviation report into “Scientific and Medical Evaluation of Flight Time Limitations” (Ref TS.EASA.2007.OP.08, issue 1.0). In writing the report Moebus asked 18 questions on open issues of Flight Time Limitations (FTL) to ECASS (European Committee for Aircrew Scheduling and Safety). The report simply answered the questions asked without undertaking any new scientific research or studies and used previously gathered data in isolation to provide answers. In many cases the conclusions drawn failed to take into account mitigating policies already in use and established as safe practice. Other questions were based on opinions not supported by research and a lowest common denominator solution. Finally the Moebus report recommended that all airliners should immediately introduce a Fatigue Risk Management System (FRMS), regardless of the nature or size of their operation.

6. The latest proposal from EASA, CRD 2010–14 is supported by three independent reports, which although limited by failing to gather new data, make significantly more extensive use of previously gathered information on the subject of fatigue in aircrew than the Moebus report. By using reports written by leading figures in the world of fatigue there is confidence that the EASA proposed FTL scheme is as safe as CAP371.

7. The reports also give confidence that it is acceptable to focus on a robust prescriptive set of rules rather than non-prescriptive rules associated with FRMS. The operators wishing to derogate from certain regulatory provisions will need an FRMS, but for the remaining EU Operators will be required to have a Safety Management Systems (SMS) capable of managing all risks including managing the risk of crews being fatigued.

### COMMENT RESPONSE DOCUMENT CRD 2010–14

8. As a result of feedback to NPA 2010–14 EASA published a further document for comment including the Scientists’ Reports in January 2012. Further feedback has been invited with responses due by 18 March 2012. Whilst the whole proposal will bring a marked change for UK operators it is the opinion of bmi that certain sections will prove most relevant:

#### *ORO.FTL.105 Definitions*

9. Acclimatised table—This table offers a significant change to the current CAP371 which assumes that regardless of the number of time zones crossed a crew member is acclimatised after three local nights in the new time zone. Whilst likely to have an impact on the operation of bmi the new table adds realism to planning. For short layovers there is a benefit from the crew not acclimatising, but remaining on base local time, this corresponds to the current advice given to bmi crew members.

10. Further clarifications will need to be sought for instances “X” when a crew member is in an unknown state of acclimatisation. Unknown acclimatisation represents a significant loss of available Flying Duty Period

(FDP) versus the existing CAP371 Table B, but this will in part be offset by fewer time zone shifts and the advantages in how quickly you acclimatise under EASA.

11. “Late finish” means a duty period finishing in the period between 0000 and 0159 hours in the time zone to which the crew is acclimatised. EASA defines as 0000–0159 instead of CAP371 0100–0159. This is a more restrictive rule and would have an impact on the bmi operation and a cost effect.

12. “Window of Circadian Low (WOCL)” is the concept around which Subpart Q is designed, and will be unknown to many UK crews, although it’s effect has always been written into the U.K. FTL scheme.

13. The Flight Duty Period (FDP) table has significant reductions in available crew hours versus the CAP371 Table A for one or two sector days, for example bmi wouldn’t be able to do a day return flight between London Heathrow and Damascus. However, there are increases in the allowable FDP for three or four sector days.

14. Some of the issues of the long days from the table can be offset by the use of Extension of FDP. This can be planned by operator two days in any seven for up to one hour, but commander’s discretion is limited to a maximum two hours, not the existing three under CAP371.

15. The most significant change is that Cabin Crew have lost the extra hour of FDP which the currently have above the flight crew and the requirement for an hour less rest; they are now aligned with the pilots. This will have potentially serious implications, whilst we can compensate with extra hour through the operator extension this must be designated in advance, can only be used twice per week and comes with associated additional rest requirements.

#### *ORO.FTL.215 Flight times and duty periods*

16. The changes to the accumulated allowable flight and duty periods a crew member can work will result in some reductions in allowable hours for cabin crew, but an increase for pilot accumulated hours.

#### *ORO.FTL.225 Split duty*

17. We cannot take any extra credit for a split duty rest period of more than six hours, compared to the current criteria which are capped at anything below the minimum rest period, although the credit applies to a maximum of 10 hours. Operators can specify an alternate scheme but a full FRMS would be required to support this together with CAA approval of the variation.

#### *ORO.FTL.235 Rest periods*

18. The new rules allow for a minimum rest period which is eight hours allotted for sleep plus an hour for physiological needs, and 30 minutes travel each way between hotel and airport. Consequently, if the travelling time to the suitable accommodation is more than 30 minutes, the operator should increase the rest period by twice the amount of difference of travelling time above 30 minutes. Thus versus CAP371 the away from base rest rule is better for the operator as we can now plan 10 hours providing sleep period of eight-hours plus travel and physiological needs should be allowed for.

19. A new restriction in the regulations is that away from home base, if the FDP encompasses four time zones or more, the minimum rest provided is at least as long as the preceding duty period, or 14 hours, whichever is greater. This regulation would generate a significant issue for bmi in the event of disruption to our Central Asian fly-on services. For example if our London-Baku-Tbilisi flight or the London-Almaty was to divert to say Astana or Bishkek where no bmi slip crew are available the aircraft and passengers would be grounded for at least 16 hours instead of the current 12.

20. Minimum rest rules at home base have also been changed to compensate for time zone differences and crew re-acclimatisation.

21. Additional restrictions in this section of the regulation means that operators can no longer reduce cabin crew rest at base to 11 hours without having a full FRMS in place, together with a requirement to pay back the rest next night. This will have an impact on bmi.

#### UNION POSITION

22. The pilot’s union, BALPA, has run a highly effective campaign to ensure EASA was flooded with responses to the proposals contained in NPA 2010–14, with some 47,000 responses coming from pilots. Many pilots followed standard wording provided by BALPA.

23. However, the following is worth noting as a general comment posted by one Mr Jim McAuslan in response to the original proposal NPA 2010–14. Jim McAuslan is the General Secretary of BAPLA.

*I know what it is like to get up early; after a few I am wrecked! And I don’t fly an aircraft. Indeed if I’m a passenger on a 0600 departure I don’t want the breakfast—I want to sleep ... But I don’t need science to tell me what is proposed is wrong; my own experience tells me.*

24. BALPA’s reaction is to simply demand the retention of CAP371, this is incompatible with EASA’s mandate to update Flight and Duty Time Limitations and rest requirements for commercial air transport with

aeroplanes while taking into account recent scientific and medical evidence, and to further harmonise existing European requirements in order to provide a level-playing field for European airlines.

25. BALPA's second objective if they are unsuccessful in avoiding any change is the adoption of a pick and mix solution where parts of CAP371 are maintained together with sections from Subpart Q, the Union may also seek this as part of the negotiations with the operators as soft rules. However it should be noted that the mixing of rule sets can increase risk as there is a risk in changing one parameter of a complex system.

#### CONCLUSION

26. It is my opinion and that on bmi, that the proposal represents a quantum shift for UK operators. EASA argues that what has been presented is a well-balanced set of rules, which can only raise safety levels across Europe whilst ensuring the competitiveness of Europe's airline industry.

27. It does appear operators will potentially lose productivity in some areas of the proposed FTL scheme, whilst gaining in others.

28. There will be significant cost to bmi in terms of system changes to our crew scheduling system and revised rostering practices will likely increase the number of crew required, but the impact could have been significantly worse.

29. We would support that the new proposal will not have a negative effect on flight safety as a robust and scientifically supported scheme now appears to have been defined. That a UK airline will now be operating to the same flight time rules as one from Belgium or Eastern Europe can only be good for the aviation industry.

February 2012

---

#### Written evidence from DHL Air Ltd

The Transport Committee asked for written comment on the effects of new EASA rules to harmonise European Flight Time Limitations in particular regard to:

##### *How the new EASA proposals compare to the UK's current regulations*

The new rules will align the UK regulations with European regulations (currently JAA Sub Part Q limits). This will provide a more level playing field for UK Airlines whilst at the same time maintaining safety standards.

##### *The potential effects of the proposals on pilot fatigue and Aviation safety*

Whilst both scientific and social comment has been made on the EASA proposals the effects on Pilot fatigue in the UK will not be truly seen until the new rules are implemented. It is anticipated that the Airlines Safety Management Systems, assisted by Fatigue Management plans and or social agreements will manage any areas of concern. The UK CAA will also be involved through its monitoring processes as well as training of key personnel during the implementation stages. Any Pilot concerns of increased fatigue can only be perceived at this stage.

##### *The use of scientific and medical evidence in developing the regulations*

The use of scientific and medical evidence in developing the regulations is an important area. Aircrew must understand the benefits of such and contribute fully to the best practice requirements of Fatigue Risk Management—this will allow studies to support and develop current regulations.

DHL Air completed a study in the effects of consecutive Night Duties in 2004 (Qinetiq/CR040976) and is currently completing a Sleep Study in conjunction with the Sleep Research Centre at Loughborough University on the effects of two crew long-range Transatlantic Operations, time zone crossings, time zone adaptation, short-haul night operations across Europe and a new variation that allows six night duties in nine consecutive days. This variation is outside the current JAA Sub Part Q limits and as such requires a scientific study to support it.

The variation is managed by the CAA, Airline and its Pilots representatives in a tripartite agreement.

##### *How the new regulatory regime compares to that in other countries*

In most cases the new EASA FTL limits are more generous although in some cases (mid afternoon departures) more limiting. It is, important to note the wider benefits are for the European community in general as those countries with more flexible limits will be restricted.

In the case of DHL Air our main issues with CAP371 (UK regulations) are the limits on early/late/night duties (whereas there are none in EASA or JAA Sub Part Q) and the factorization of sectors over seven hours when on two crew long range operations (whereas there are none in EASA or JAA Sub Part Q).

In the case of consecutive early/late's (Easyjet) and consecutive nights (DHL Air) both Airlines have scientific evidence to support that it is better to stay on patterns on early/late's/nights rather than a mixture of duties forced by the regulations.

DHL Air fully supports the move to EASA Flight Time Limitations.

February 2012

### Written evidence from PACTS (Aviation Group)

#### INTRODUCTION

1. The overall assessment of these new proposals by the European Aviation Safety Agency (EASA) is that they are overly and unnecessarily complicated. As such, it is very difficult to understand the intent in places and they will be open to mis-interpretation, either inadvertently or deliberately. Whilst a number of individual sections are dealt with in some depth, they fail to inter-relate to other sections that may have an impact and this will lead to confusion and mis-understanding by all concerned. It is evident that the main reason for these shortfalls is the almost total lack of any regulatory oversight and FTL implementation experience by those EASA personnel directly involved in the 055 working group. Furthermore, there has been very little recent scientific or medical research into measuring the actual fatigue levels currently being encountered by airline crews and what little medical research that has been carried out does not appear to feature in these most recent EASA proposals.

2. Therefore, we ask the Transport Committee to:

- (i) Ensure EASA addresses the apparent gaps in their experience and background knowledge of FTL implementation before they finally assume responsibility for the overall regulatory oversight of FTL throughout the EU.
- (ii) Ensure further scientific research is urgently carried out by EASA and incorporated within these proposals before the UK government considers changing from CAP 371.
- (iii) Perhaps most importantly, ensure in the meantime the retention of the non-regression clause that will allow the UK to continue using CAP 371 until these proposals have reached a clear, unambiguous and mature stage and are considered to be at least of an equivalent standard of safety to that of CAP 371. Bear in mind the substantial costs involved by all the UK Operators of changing their computer programming to incorporate any new proposals. In 1990, with the introduction of CAP 371 (3rd Edition), British Airways assessed their cost of changing as some £10 million. We believe that the UK Government would be ill-advised to abandon the well-tried and tested practices contained within CAP 371. Only once the scientific and medical research data can verify the safety of the EASA proposals should the UK airlines be forced into implementation. Maintaining the status quo must remain an option for the UK.

Failure to achieve the above will lead to the abandonment of 37 years of experience and "best practice" contained within CAP 371. We believe that to do so will substantially decrease to a wholly unacceptable level the overall safety of UK passengers, crews and, of course, to that of the general public over whom they will continue to fly.

#### COMMENTS

3. FTL is undoubtedly one of the most contentious issues in aviation, as it affects both the commercial aspirations and viability of the operators and the working lifestyle and well being of all flight and cabin crew members concerned. A sound, mature and robust FTL scheme consists of a complex matrix of inter-relating rules and, however compiled, there will never emerge a scheme that:

- (a) cannot ever be misinterpreted, solely due to the nuances of the English language; and
- (b) will ever totally satisfy and be agreed by both Operators and Flight and Cabin Crew members.

It is a fact, therefore, that any FTL scheme produced by any Regulatory Authority, normally in consultation with both crew member and operator representatives, will ultimately and inevitably end up as a compromise with neither side being totally satisfied. It is therefore absolutely essential that any Regulatory organisation producing, managing and overseeing FTL has both the FTL background and experience together with the regulatory oversight and implementation knowledge of such issues. This is an essential pre-requisite so that sound judgements can be made to separate the purely commercial arguments from the safety arguments and to ensure, as far as possible, that known loopholes and ambiguities can be successfully addressed.

4. The EASA 055 Working Group tasked with reviewing EU OPS 1 Subpart Q, the FTL scheme that the EU introduced in 2008, spent two years in their deliberations. The Group was chaired by Mr Claude Chene who knows very little, if anything, about any aspect of FTL. The Secretary also admitted to a lack of background knowledge or any operating experience in FTL matters, which was not a very auspicious start to the task. Only recently did EASA recruit anyone onto the 055 group with any actual operating experience as a cabin crew member. He had a wide background experience dealing with FTL, although not, unfortunately, from a regulatory oversight viewpoint. EASA were in effect working entirely in the dark and allowing

themselves to be persuaded by the various arguments that evolved around the table during the discussions, without, I suspect, fully appreciating the safety implications. This oversight by EASA in not allocating sufficiently experienced flight and/or cabin crew members, ideally with a regulatory background, to oversee the 055 Group led to two fundamental errors under Mr Claude Chene's chairmanship:

- (a) Despite numerous requests by Flight Crew representatives, he resolutely refused and opposed any specific discussions relating to the basic and fundamental core of any FTL scheme, the Definitions. Without establishing a full, clear and unambiguous meaning of various terms and phrases to be used within the proposed FTL scheme, there could be no full understanding of precisely what was being discussed and this basic, elementary flaw has seriously undermined the clarity of the scheme.
- (b) He refused to comply fully with the specific Terms of Reference of the 055 Group relating to the inclusion and involvement in the debate of the Scientists and Medical personnel experienced in Human Factors and FTL issues. Again, only after repeated requests from Flight Crew representatives were three of the original *Moebus Report* scientists again contracted and tasked towards the end of 2011 to answer a further 14 specific questions, thus leaving very little time for their considered input and for any subsequent meaningful discussions. EASA had largely ignored the *Moebus Report*, mentioned above, which had contracted 10 eminent scientists to review the 2008 Subpart Q by answering 18 specific questions. The scientists had totally fulfilled their Terms of Reference and reached unanimous consensus in their responses to all the questions posed. However, following intense lobbying from operators who, at the outset categorically stated there should be no change to the current (deeply flawed) Subpart Q, EASA was persuaded to largely ignore this crucial scientific input. It should perhaps be mentioned that at least three of the scientists concerned had previously been contracted by the UK CAA and were very closely involved in the early research and development of the UK CAP 371 FTL scheme. Their knowledge, background experience in all FTL issues and integrity are beyond dispute.

5. The end result of what can only be described as mis-management is the new proposal issued on 18 January 2012. Compared to CAP 371, it is overly and needlessly complicated, will permit excessive duty and flight duty hours at certain times of the day and will be open to mis-understanding, mis-interpretation and potential abuse along similar lines that have become evident within EU member states who are following the current 2008 Subpart Q. The limits imposed will become a target for unscrupulous and purely commercially oriented operators to aim for, in order to achieve full utilisation of all their crew members right up to the legal limits. Couple this with recent huge numbers of new aircraft being ordered to expand the global aviation industry and one must question where the very large numbers of new pilots will be found to fly them. In the meantime, as is already evident, current industrial agreements will be under threat in order to make current crews work to the legal limits. If the FTL scheme is not based upon science and is not biased towards a cautious safety approach, then the Transport Committee can expect safety related incidents to start to emerge, as was evident within the UK in the late 1980s when a similar shortage of crews and an expansion of the industry caused the CAA Medical section to detect serious signs of fatigue in crew members renewing their medicals. This resulted in a tightening up of the UK CAP 371 (2nd Edition) in order to protect the safety of both crews and passengers. The 3rd Edition was issued in May 1990 and, with minor amendments that were issued with the 4th Edition, has stood the test of time now for some 22 years, or indeed some 37 years since the 1st Edition was issued following the Bader Report in 1975. It is probably the most advanced and comprehensive FTL scheme in the world, which many countries such as Bangladesh, the UAE, Cyprus, Mauritius, Hong Kong and Singapore, for example, have copied, adopted and now comply with.

6. In answer to the specific questions raised by the Transport Committee:

(a) *How do EASA's proposals compare to the UK's current regulations?*

It is evident that these proposals as drafted, suffer from a lack of current FTL drafting expertise coupled with very little if any regulatory oversight and implementation background knowledge by those EASA personnel involved in the 055 group. Whilst, undoubtedly, following the input from the scientists, there are a number of significant improvements in these proposals compared to the totally flawed 2008 Subpart Q version, the complexity of this draft will lead to mis-understanding and confusion by those front line crew members tasked to comply. The Flight Duty hours permitted in these proposals are significantly higher than CAP 371 in places. For example, with a start time of 05.45 am, a planned four sector flight with a two pilot crew, these proposals allow a Flight Duty Period of 11 hours 45 minutes compared to a maximum of nine hours under the UK rules. The main criticism, therefore, centres upon the ill defined terms and phrases used within the scheme together with the fact that a number of essential definitions are missing altogether. It lacks the clarity necessary and will not prevent some of the known current mis-interpretations and abuses from continuing.

(b) *What are the potential effects of the proposals on pilot fatigue and aviation safety?*

The key to answering this question will depend entirely upon how, precisely, the FTL scheme is likely to be interpreted and implemented by individual operators and how competently EASA and the EU member state's National Aviation Authorities (NAAs) will monitor and oversee that implementation. An additional problem

will become evident in that probably less than half of the EU's NAAs have the necessary knowledge and expertise to monitor the implementation of such a complex FTL scheme. The worst case scenario envisaged is that of widely different interpretations of different parts of the scheme being made across the EU leading to a total lack of standardisation. Couple that with the anticipated shortage of pilots that will become evident over the next few years and in order to compete commercially, operators will be aiming to work all their crew members right up to the legal limits permitted by these proposals. New start up companies will probably employ mainly contract pilots with no industrial agreements in force to prevent the legal limits from having to be followed. This is likely to continue right up to the first major EU fatigue related accident, as has occurred in the USA with Colgan Air and which has led to a complete review of the FAA's FTL rules.

(c) *The use of scientific and medical evidence in developing the regulations*

As mentioned, the 10 eminent scientists originally contracted to review the 2008 Subpart Q produced the *Moebus Report* which addressed 18 specific questions. Unusually, all 10 scientists reached unanimous conclusions and consensus. Unfortunately, the operators, whose stated intention at the outset was for no changes at all to the 2008 version, lobbied hard and tried to rubbish the *Moebus Report*. They were largely successful in that EASA did tend to ignore the final report. It was only through repeated requests from crew member representatives that they finally permitted the 055 group to meet with three of the scientists involved who had by then been contracted to respond to a further 14 specific questions. In effect therefore, most of the 055 group's deliberations lacked direct input and discussions with scientists and medical expertise and, inevitably, this led to a lack of understanding amongst the group members of the human factors and medical fatigue elements involved in day to day flight operations. What did very quickly become clear was that more research is going to be necessary in those areas where the scientists could only give their considered opinions, as opposed to backing up those comments with hard scientific and medical evidence. Items such as excessive commuting to/from work and the maximum length of standby allowed, which may then be followed by a long flight duty period. After more than 16 or more hours awake, alertness levels will undoubtedly be affected and fatigue may become evident. It is very hard to measure the physiological symptoms of fatigue and most studies have focused on subjective self-assessments—a largely unsatisfactory approach to scientific validation of planned rosters and FTL. This area needs to be addressed by the development of objective and scientifically-accepted metrics of fatigue assessment that can be used by crews to gather data that will validate the working practices and life-style issues of UK pilots and cabin crews.

(d) *How the new Regulatory regime compares to that in other countries?*

Currently all EU member states must follow the 2008 Subpart Q unless they have a more restrictive FTL scheme in place and invoke the non-regression clause. UK has been permitted to continue using CAP 371 as it is far more restrictive than Subpart Q. The non-regression clause is due to end when these new proposals become law and, at that time no state will be permitted to use a more restrictive FTL scheme than Subpart Q. The 2008 Subpart Q contains a significant number of flaws that permits various abuses of the scheme. Unfortunately not all of those flaws have been addressed properly and a number of known abuses and loopholes will continue to be exploited when these proposals are introduced and become law. Meanwhile throughout the world there are a number of countries, mainly Commonwealth countries, that have adopted CAP 371 and use it to ensure a safe FTL scheme is followed. The USA has now drafted a long overdue update to their regulations which can roughly be compared with the new EASA proposals. CAP 371 continues to form the template after 37 years of operational experience and ongoing scientific and medical development for any country so inclined to adapt and implement. It is a pity that EASA could not have made that the starting point for these proposals although there are a number of areas within CAP 371 that EASA has accepted. However, cherry picking parts of a long established and mature FTL scheme with all its intricate and inter-related parts cannot be readily achieved unless the total package is taken onboard. A change to any single part of a scheme or even any single definition will inevitably alter the meaning in any number of other inter-related areas elsewhere in the scheme.

## 7. CONCLUSIONS

- (a) These proposals are overly complex, ambiguous in places and lacking in clarity. They will lead to mis-interpretation, confusion and potential abuse. The whole aviation industry within the EU will require extensive and on-going training in order to fully understand the intent and to standardise the implementation. It badly needs to be simplified and re-drafted to improve the overall understanding, provide clarity and to include those essential definitions that are missing at present.
- (b) The introduction of a Fatigue Risk Management System (FRMS) is a concept relatively new to the aviation industry and whilst in theory it should address all fatigue related issues, from a practical point of view again it will require extensive training and total commitment not only of the operators introducing it but also, and more importantly, the NAA personnel tasked with the oversight, implementation and standardisation of the scheme.
- (c) Overall, we do not have confidence in the proposals and are unconvinced that EASA has the experience and knowledge to oversee their implementation. Moreover, there has not been enough scientific research into the actual physical and mental fatigue encountered by airline crews to verify the proposed regulations. This needs to be addressed and incorporated before any new FTL scheme is accepted on behalf of the UK aviation community. If the current EASA proposals are accepted at

---

face-value without such verification then we believe the safety of crews and passengers in British aircraft will be severely compromised, as will that of the general public over whom the aircraft will continue to operate. We have some of the busiest airspace in the world and it is not the place for fatigued crews.

February 2012

---

### Written evidence from Unite the Union

#### 1. INTRODUCTION

1.1 This response is submitted by Unite the Union, the UK's largest trade union with 1.6 million members across the private and public sectors. The union's members work in a range of industries including manufacturing, financial services, print, media, construction, transport, local government, education, health and not for profit sectors. The Civil Air Transport (CAT) membership of Unite, comprises of over 62,000 members working across the aviation sector.

1.2 Of particular interest to this enquiry, Unite represents around 20,000 cabin crew and a number of pilots which will be directly affected by these changes.

1.3 Whilst the pilot's role is critical in directing and monitoring the aircraft's flight, it is the cabin crew's role to become all three of the emergency services should there be an incident on board. It is therefore critical that all crew on board are not fatigued before commencing duty.

#### 2. MEDICAL EFFECTS

2.1 In 2007 the CAA produced a paper entitled "*Aircrew Fatigue: A Review of Research Undertaken on Behalf of the UK Civil Aviation Authority*".<sup>1</sup> As a result of the European Aviation Safety Agency (EASA) proposals to amend these rules, scientific expertise was also sought which not only reviewed these papers but other scientific studies into fatigue.

2.2 These reports highlighted that the assessment of fatigue and its effects on air safety were difficult to correlate given the relatively small number of accidents occurring in the industry. The CAA reports highlighted a report drafted for the US Federal Aviation Administration<sup>2</sup> demonstrating a relationship between accident risk and distance travelled based on an analysis of 55 accidents over more than 20 years.

2.3 The CAA report also highlighted the results of an earlier study which suggested that after a 10 hour eastward flight some individuals took six days to recover. This finding was echoed in the scientific report commissioned for EASA which concluded that adaptation to the new time zone would not be complete after spending 36 hours free of duty or 72 hours conducting duties at the layover destination. The three scientists agreed in their reports that acclimatisation occurs gradually and depends on the time difference and the direction of the time zone transition. Normally, adaptation to westward time zone transitions is easier.

2.4 Both reports pointed to a study by Van Dongen in 2003<sup>3</sup> which suggested that fatigue was known to build up in a cumulative manner over consecutive days as well as work by Tassi and Muzet in 2000<sup>4</sup> relating to the duration of time it took to wake up from a period of disturbed sleep. In 2003 Goode<sup>5</sup> demonstrated an increased relationship between the risk of aircraft accidents and long duty hours. Paradoxically, work by Foushee in 1986,<sup>6</sup> Thomas and Petrelli in 2006<sup>7</sup> suggested that with an increase in fatigue levels in pilots increased the level of cross checking, use of automation etc increasing awareness once the pilot became aware of the high level of fatigue they were suffering from.

2.5 Highlighted in the EASA study were factors such as the distance crew need to travel from their home to the respective airport home base of operations and the duration of any pre flight activities/briefings prior to commencing duty.

#### 3. PROBLEM AREAS

3.1 The new scheme is supposedly designed to mitigate and prevent fatigue from operating as crew. No measures are included, however, to consider the social welfare of crew. Analysing the EASA proposals and comparing them to the UK's CAP371<sup>8</sup> limitations, Unite is concerned over the provision of minimum standards relating to flight duty periods, night duty, home base, standby and rest provisions.

---

<sup>1</sup> [http://www.caa.co.uk/docs/33/CAAPaper2005\\_04.pdf](http://www.caa.co.uk/docs/33/CAAPaper2005_04.pdf)

<sup>2</sup> Goode, J H. Are Pilots at Risk of Accidents due to Fatigue? *J Safety Res* 34(3): 309-313, 2003.

<sup>3</sup> Van Dongen, H P A, Maislin, G, Mullington, J M, Dinges, D F. The cumulative cost of additional wakefulness: dose-response effects on neurobehavioral functions and sleep physiology from chronic sleep restriction and total sleep deprivation. *Sleep* 2003; 26:117-26.

<sup>4</sup> Tassi, P; Muzet, A. (2000) "Sleep inertia". *Sleep Medicine Reviews* 4(4):341.

<sup>5</sup> Goode, J H (2003). Are pilots at risk of accidents due to fatigue? *Journal of Safety Research* 34 309-313.

<sup>6</sup> Foushee, H, Clayton, J K, Lauber, M M, Baetge and D B Acomb (1986) : Nocturnal Sleep and Daytime Alertness of Aircrew after Transmeridian Flights. *Aviation, Space and Environmental Medicine*, 57, (12 suppl) B43-552.

<sup>7</sup> Thomas, M J W, Petrilli, R M, Lamond, N, Dawson, D and Roach, G D (2006). Australian Long Haul Fatigue Study, In *Enhancing Safety Worldwide: Proceedings of the 59th Annual IASS*. Alexandria, Virginia, US.: Flight Safety Foundation.

<sup>8</sup> <http://www.caa.co.uk/docs/33/CAP371.PDF>

3.2 *Flight duty periods (FDP)*. Under the EASA proposals it would allow FDPs of up to 1 hour 45 minutes longer than is recommended by the scientific reviews equating to a 17% increase during the most dangerous hours of the day.

In addition, the proposals offer only vague guidance to operators that fatigue inducing rosters could be deemed permissible. Unite therefore believe a higher degree of specification is needed on additional limits on flying.

3.3 CAP 371 7.1 states “*Sleep deprivation, leading to the onset of fatigue, can arise if a crew member is required to report early for duty, or finishes a duty late, on a number of consecutive days. Therefore, not more than three consecutive duties that occur in any part of the period 0100 to 0659 hours local time can be undertaken, nor may there be more than four such duties in any seven consecutive days. Any run of consecutive duties (Late Finishes or Nights or Early Starts) can only be broken by a period of not less than 34 consecutive hours free from such duties. This 34 consecutive hours may include a duty that is not an Early, Late or Night duty.*”

3.4 The proposals allow extensions to an FDP without sufficient provisions for mitigating fatigue. Under CAP371 Annex F there are highly detailed mitigation measures which will not be replicated in such detail. If exploited fully, however, the EASA proposals encourage regular working weeks of increased duty periods which will induce cumulative fatigue and work significantly longer hours than employees covered under the Working Time Directive. Equally the direction on defining reporting times and off duty times is very imprecise as opposed to that used under CAP 371 B 13.1.

3.5 *Standby* provisions which may result in the crew member being in uniform at the airport, effectively on duty, for up to 12 hours before joining a flight. If they then commence a flight, none of the first six hours spent on standby count towards their flight duty period. Under these provisions FDP’s are limited to a maximum of 14 hours but may result in a total duty period which could exceed 20 hours despite the science recommending an FDP should not be more than 10 hours in duration.

3.6 *Rest provisions* are not compulsory whilst on duty resulting in the possibility of crew being expected to work a whole flight without having a break. The provision of rest breaks is down to the discretion of senior member of staff on-board but when flights operate with a single cabin crew member, uninterrupted breaks are often impossible to achieve.

3.7 Additionally the proposals contain a caveat which allows a 25% reduction in the rest period between flights below that which is recommended and the current reduced minimum rest. Although the proposal talks about 10 hours rest it does not state that the room needs to be available for this period. As a result crew may end up sitting in the lobby of a hotel for several hours before they can relax. This is a common problem experienced by crew which is covered by CAP371.

3.8 The proposals provide insufficient rest periods on return from flights with many time zone crossings. This is in blatant disregard of the scientific recommendations.

3.9 *Night duty*: The changes reduce the amount of rest a crew member might receive before returning to the home base and may result in the crew member receiving less than eight hours sleep with a duty start time of 6.00 am local time. These proposals would allow a FDP 10% longer than is scientifically recommended.

3.10 *Home Base* and crew who may be called upon to treat a range of airports as their home base, as there is no limitation on the number of changes that can be made to their allocation or even the number of home bases. This could result in excessive commuting to these locations prior to the commencement of a shift or crew needing to relocate their families with just three days off to achieve this. The relaxation of the rules increase the likelihood of operators globally transferring employees at will.

3.11 Following British Airways and other carriers cull of regional bases ie Belfast, Manchester, Glasgow, staff based here have to commute to Heathrow before they start work primarily on long haul flights. As the EASA proposals remove the current definition of positioning flights, crew face long commutes by car, plane, train etc before starting their duty.

3.12 The use of an empty aircraft for use as crew accommodation is specifically not excluded from these proposals but at least the proposals include provision for food and drink to be provided to crew which were not present previously.

#### 4. IMPROVEMENTS

4.1 The changes from the current CAP371 rules are not all negative. EASA proposals improve the working conditions by clearly defining:

- *Acclimatised*—As flying between time zones has been shown to disrupt the internal body clock or circadian rhythms. Although referred to by CAP371 it was not previously defined.
- *Eastward-Westward/Westward-Eastward*—recognition that flying in one direction is better for your circadian rhythms than flying in the other.

- *Late finish*—unsurprisingly representatives of the operators had called for this definition to be deleted but EASA instead followed the scientific recommendation in stating that this will be midnight.
- *Rest facility*—makes it clear an economy seat onboard a flight does not fulfil the criteria for a rest facility to enable crew to would allow to gain enough restorative sleep to justify an FDP extension. Although the definition of a rest facility specifies that it must be separate from the flight crew compartment and the passenger’s cabin, in an area that allows the crew member to control light, and provides isolation from noise and disturbance, the proposals do not include the provision of temperature controls. It is therefore possible for the area to be unheated and therefore below zero.
- *Ultra long range operations*—now clearly defined as means long range flights having a planned flight duration greater than 16 hours or a flight duty period that exceeds 18 hours.
- *Window of Circadian Low (WOCL)*—equally the definition has now been clearly defined as the period between 0200 and 0559 hours in the time zone to which the crew is acclimatised. This is the period of the night when sleep is most critical in averting fatigue.

4.2 There are some additional benefits to the proposed FDP table which are significantly better than the original proposal in several areas. Pilot and cabin crew will now be working to the same FDP in the vast majority of situations. The differences for pre-flight duties will now result in the FDP being the same.

February 2012

---

### Supplementary written evidence from Unite the Union

#### 1. INTRODUCTION

1.1 This further evidence is submitted by Unite the Union, the UK’s largest trade union with 1.5 million members across the private and public sectors. The union’s members work in a range of industries including transport, manufacturing, financial services, print, media, construction, local government, education, health and not for profit sectors. The Civil Air Transport (CAT) membership of Unite, comprises of over 62,000 members working across the aviation sector.

1.2 As highlighted in our previous response to the enquiry, Unite is the only trade union representing cabin crew in the UK with around 20,000 members in that profession. Together with a number of members who are pilots, these members will be directly affected by the changes to the flight time limitations as proposed by the European Aviation Safety Agency (EASA).

1.3 Several unpublished studies have shown that fatigue levels of cabin crew have reached levels considerably higher than those of pilots towards the end of flights even under current provisions. This is likely to be because physical workload is significantly greater than seated pilots.<sup>9</sup>

#### 2. RESPONSE TO THE COMMENTS MADE BY INDUSTRY AND THE CAA

2.1 In the evidence presented by Andrew Haines, CAA Chief Executive, he highlighted the need to review legislation periodically in light of developing understanding of fatigue, and that the legislation should reflect scientific understanding. In the same breath, however, he accepted that the EASA proposals ignored scientific evidence.

2.2 Captain Tim Price from British Airways and David Lawrence, Head of Crew Planning at Thomson, stressed the difference between being tired and being fatigued and that the decision over what was and what was not fatigue was very subjective.

2.3 Unite believes that fatigue is a state of mind where the crew member, be they a pilot or cabin crew, feels that due to their lack of adequate rest provisions, they are potentially unfit for duty. When you consider that duty periods can be up to 20 hours in duration, a person who is feeling even the slightest bit fatigued when they begin their duty will considerably worse toward the end of it.

2.4 Flight time limitation schemes are the aviation industry’s scientifically and experience based system of preventing individual and cumulative duties that would cause sufficient fatigue that an aircraft and its occupants would be in grave danger through fatigue induced human error at the end of a long duty or series of duties. Either the fatigue itself creates the accident or a crew’s inability to cope with adverse weather or an aircraft malfunction results in an entirely avoidable incident. *Human error has been associated with 708–0% of aviation accidents.* (J. Reason 1990 NY)

2.5 The EASA proposals in their present form are neither specific enough in its rules nor a comprehensive scientific scheme to prevent fatigue. The net result of selectively disregarding much of the science and leaving many rules subject to interpretation will render the scheme unfit for purpose.

---

<sup>9</sup> NPA MB Spencer Pg 11

---

2.6 CAP 371 is already a set of *minimum* required standards to operate safely and *not* a target. Unite agrees that evolution of CAP 371 is to be encouraged through inclusion of new scientific evidence but not if that evidence is fundamentally flawed.

### 3. REPORTING DIFFICULTIES

3.1 Mr Haines suggested in his evidence that when presented with the results of a pilots survey<sup>10</sup> that this took no account of pilots' private life activities prior to commencing duty. He also indicated that the level of reported fatigue incidents would not support this situation. Is the CAA seriously suggesting that 31% of pilots are that irresponsible and if so why have they and their employers not picked up on this?

3.2 Unite has experienced, first hand, the difficulties crew members have in reporting fatigue to their line managers (in one case a line manager suggested that if the crew member could lift a tea urn, they were just tired and not fatigued!). Additionally, if crew members stand firm and state that they simply can not perform their duties, they are often subjected to a disciplinary hearing, where there is a presumption of guilt on behalf of the crew member, rather than looking at the rostering process.

3.3 David O'Brien from the European Low Fares Airline Association (ELFAA) suggested that the debates at EASA over these proposals had deteriorated into a bun fight, suggesting that the committee was not properly constituted. He supported Unite's position that the proposals needed to take more notice of the science.

3.4 David O'Brien also suggested that the science had indicated that multi-sector flights of the type operated by members of ELFAA were less tiring. As highlighted by the BALPA survey, pilots can obtain some rest while on duty, but for cabin crew this is less likely to be the case. When the studies were conducted on multiple sector flight duties, cabin crew were able to grab a few minutes rest between the disembarkation of passengers and the collection of the next set of passengers. Due to economic pressures, the role performed by aircraft cleaning companies who would service a flight during this period has been replaced by transferring this role to the cabin crew on a number of airlines, especially in the low cost sector. As a consequence, the natural break in the crew's duty, away from passengers, is removed. Consequently, the observation by David O'Brien, suggesting that this type of operation would be less tiring would clearly be undermined.

3.5 Currently, despite this difference between access to rest, pilots are not permitted to work the same number of hours as cabin crew and it is not unusual for pilots to be replaced on longer multi sector flights leaving cabin crew behind to work the entire flight. Harmonisation of hours between the flight deck and the cabin will remove this disparity but would clearly affect pilots more than cabin crew.

3.6 Currently, under CAP 371 crew can already operate a five day block of early starting flights (before 0559). To protect from fatigue there is a daily limit of nine duty hours, giving a weekly total of 45 hours. The proposal will increase this daily limit to a 11 hrs 30 min FDP (flight duty period) plus 30 minutes off duty. Consequently, the same block of five early starting shifts would allow for a 60 duty hour week—a 33% increase on the current limit. Incidentally, neither of these limits legally define any rest period during any daily duty.

3.7 Despite this 33% increase in cabin crew flight duty periods, which will provide airlines with a considerable economic benefit in terms of crew costs, all the witnesses from the airlines and from the CAA went to great lengths to stress that the current system and the EASA proposals were safe. Mr Haines highlighted that the new proposals would provide them with a greater level of oversight. Unite is concerned, however, that given the prescriptive nature of the EASA proposals regarding activities between shifts, if a crew member becomes genuinely fatigued they will not report it through fear of being disciplined.

3.8 The Scientific report recommends an FDP that encroach on the Window of Circadian Low (02000–559) should not be more than 10 hours. The EASA proposals ignore this limit resulting in fatigue not only being likely but, Unite believes, a certainty.

3.9 The evidence submitted by the airline representatives solely focussed on short haul operations. They did not explore the implications for mixed mode flying. There cannot be any suggestion that a 33% increase in hours which are already considered a scientifically agreed minimum safe standard, could be monitored through fatigue risk management especially given the level of underreporting.

3.10 We would ask that there is further specification within the FDP rulings that either reflect CAP 371 or offer the same degree of protection from fatigue and include greater specification. We would also encourage an additional limit of 100 duty hours over 14 days as protection against cumulative fatigue from consecutive weeks of long duties.

3.11 The proposal to increase extended rest periods (days off) to 60 hours if more than four early starts late finishes, night duties will not mitigate against cumulative fatigue at the end of a working week.

---

<sup>10</sup> which suggested that 31% of pilots had woken up from a sleep while in the cockpit to find their co-pilot also asleep, with nobody at the controls.

4. ECONOMICS OVER SAFETY

4.1 The Committee rightly highlighted the economic benefits to airlines of these proposals. Despite assurances from the airlines, Unite is convinced that the EASA proposals do not go as far as they should, due to economic considerations.

4.2 In the current economic environment with the decline in UK passenger numbers,<sup>11</sup> high fuel costs<sup>12</sup> and hence airlines struggling to survive, Unite fears that the introduction of the EASA provisions will result in the unemployment of a significant number of airline crew with a consequential decline in safety for the travelling public. Unite is concerned that with job security already precarious, it is therefore highly unlikely that the level of reported fatigue will increase even if the actual instances go up. The lack of reported cases should not therefore be taken as confirmation that the current provisions should be relaxed.

4.3 Due to economic pressures, airlines are also reducing the number of cabin crew onboard. As the volume of fuel required is proportionate to the landing weight of the aircraft, reducing crew numbers saves not just on wages but fuel and accommodation costs. Unite believes, however, that such activities inevitably lead to a lack of capacity to take breaks during flights and, combining additional flight duty duration, a reduction in the safety of the flight.

4.4 Under the current provisions operators can and do manipulate situations for extra productivity. A planned four flight duty that reports at 0550, 1hr before take-off, would have an FDP of 11hrs 45min. If the report time was given as 0600 instead, yet the take-off slot was not changed from 0650 the FDP would now be 12hrs. This practice will result, however, in crew rushing their pre flight procedures and checks.

4.5 An operator understandably can and will exploit any opportunity to gain the maximum productivity from their crew. Responsible employees understand this. A scheme that has clearly defined limitations is the only protection that passengers have to stop the gradual erosion of standards that will ultimately result in a fatal accident with the contributing factor of fatigue. The following crash investigation would show that this scheme should have acknowledged its part in preventing fatigue and was remiss in its assessment that allowed a lowering of some standards with its belief that they would be offset by a raising of standards in other areas and member states particularly when those that actually operate on aircraft have strenuously raised such concerns. This is not an industrial argument between employees resisting change and employers wishing to exploit an opportunity for cost cutting (by requiring less crew). This is the view of highly experienced safety focussed stakeholders being asked to go against everything they know.

5 REST PERIODS

5.1 Currently, CAP 371 states that a crew member must have a room available to them for no less than 10 hours. It is proposed that the Minimum Rest period should be no less than 10 hours and an opportunity for 8 hours sleep should be available.

5.2 Bearing in mind this is a commonly faced problem when flights are delayed, which also makes for a long day, the crew subsequently have to reduce their planned rostered rest. With CAP 371, the 10 hours start from when a room is available. Everyone including the company then knows earliest report time for the following day. Under this new proposal where and when does the rest period start and therefore when is the earliest next report time? No other caveats contained in the CRD counter this omission. Whilst this may seem a trivial concern on paper, the practical effect will actually be very dramatic. A defining starting point for the commencement of reduced rest needs to be included.

5.3 The provision for recuperative rest after duties that cross multiple time zones over several days fall woefully short of the scientific recommendations. As a minimum the advice is for 25% more rest and this rises to 50% less than advised in the tables found in M.B. Spencer’s scientific evidence on Page 21.

5.4 CS FTL.1.235—2 (b)(1)

<i>Max TZ crossed</i>	<i>Duration of rotation (hrs)</i>	
	<i>&lt;60</i>	<i>&gt;60</i>
5	36	36
6	36	36
7	36	42
8	36	48
9	36	54
10	40	60
11	44	66
12	48	72

<sup>11</sup> See Appendix 1

<sup>12</sup> See Appendix 2

<i>LAYOVER</i>	<i>Maximum Time Difference</i>		
	<i>&lt;5</i>	<i>5–7</i>	<i>8–12</i>
<36	1	2	2
36–60	2	3	3
60–84	3	3	3
84–132	3	4	5
>132	3	5	6

#### 9.4.3. (M.B.Spencer Page 21)

5.5 Unite believes that the alarming possibility of spending several days in a differing time-zone of between five—seven hours and then being deemed fit to fly 36 hours later is distinctly unsafe; eg return home on Saturday lunchtime and be back at work at 0600 on Monday morning when the scientific recommendation is Tuesday lunchtime. Unite believes that irrespective of any further directives on rest periods after duties, this proposal is unsound. Particularly as many operators rely upon their crew “selling” days off to operate. It is possible that an unwittingly fatigued crew member may “sell” after being deemed fit to fly under direction from this table.

5.6 Under these proposals It is possible that a crew member could land back from New Zealand on Saturday morning and be deemed fit to fly by Tuesday morning rather than the advised Friday morning. Unite believes the gulf between the science and the proposal is appallingly wide and we consider that this must be addressed as a matter of vital importance.

## 6. EFFECTS OF FATIGUE

6.1 Aircraft crew already have an often difficult working environment where they have to deal with disruptive passengers, technical problems with aircraft systems and medical emergencies, which can be extremely stressful over several hours. The CAA statistics highlight the increasing frequency of instances of disruptive passengers,<sup>13</sup> bird strikes<sup>14</sup> and flights having to take avoiding actions due to proximity<sup>15</sup> requiring crew to be alert at all times. Whilst a sudden surge of adrenalin may assist a crew member through an incident of limited duration, the level of fatigue faced by a crew member may be the difference between life and death.

6.2 Under the current proposals it is technically possible for a crew member to be required to perform their duties for 60 hours in one week. However unlikely this may be, it cannot be right that in such a safety critical role such working time provisions should be allowed.

6.3 Additionally, whilst CAP 371 permits the use of a one hour flight duty period extension, it does so in exceptional circumstances. The EASA proposals indicate that the hourly extensions are an inclusive and central element of the scheme. As such the total duration a crew member can be expected to work can be extended even further than stated previously.

## 7. CONCLUSION

7.1 Unite does not agree with the conclusions of industry and of the CAA that the EASA proposals are safe. We therefore strongly disagree with the Secretary of State’s view that there is no need to retain a higher, safer standard.

7.2 It needs to be remembered that the EASA proposals set the minimum acceptable standard and there is nothing to prevent a more stagnant regime from being in place for UK operated flights.

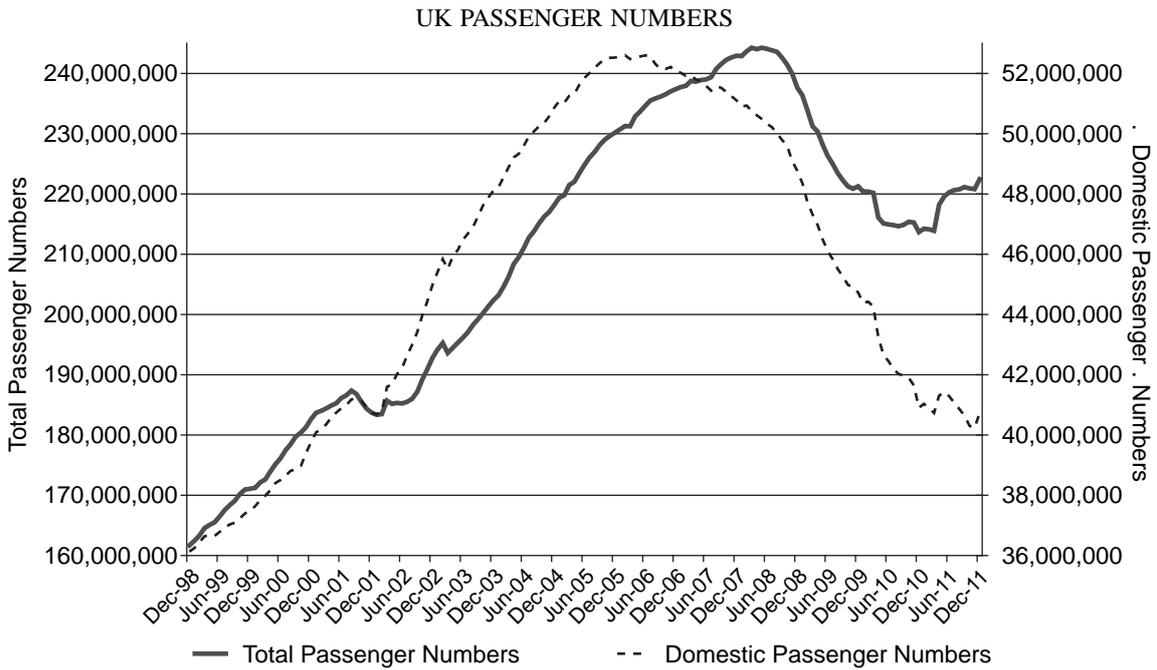
*March 2012*

<sup>13</sup> Data from the CAA highlight that between 2002–2003 there were 648 reported incidents of disruptive passenger behaviour. By 2005–06 this figure had doubled to 1,359 incidents. By 2008–09 this figure had more than doubled again to 3,529. This data is no longer collated by the CAA but indications from members suggest the situation is not improving.

<sup>14</sup> See Appendix 3

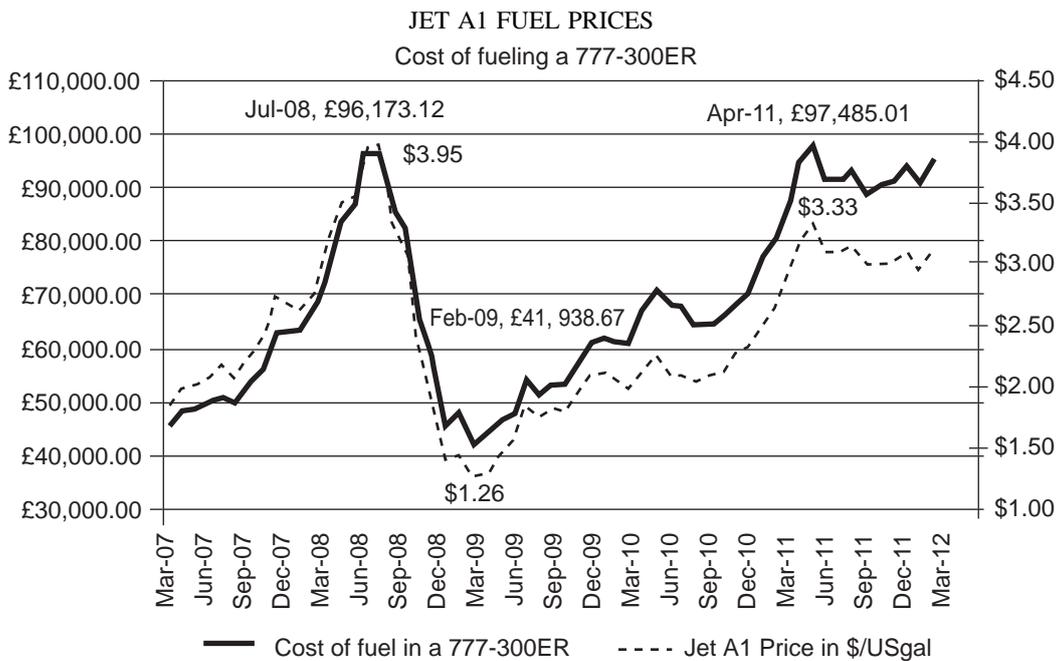
<sup>15</sup> See Appendix 4

**APPENDIX 1**



The decline in domestic aviation since 2005 has been driven primarily by lack of capacity at London airports causing connecting flights to the UK hub to be reduced or cancelled. As a result these passengers are now flying internationally to rival European hub airports instead. The above figures are rolling twelve month totals, which explain why there is a year long depression in the figures commencing with the volcanic ash crisis, when all flights were grounded.

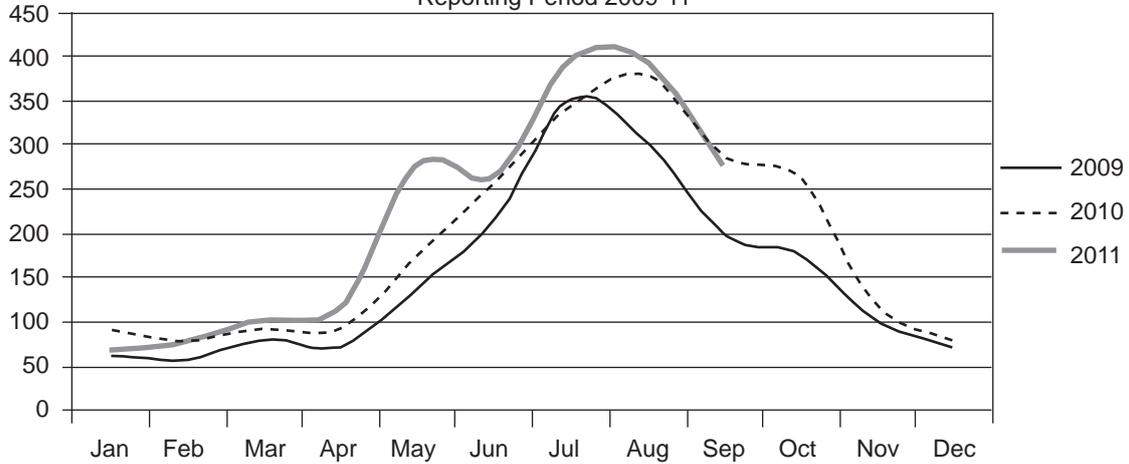
**APPENDIX 2**



Whilst most airlines advance purchase fuel to combat such increases in the cost of fuel, the increase in price of crude oil has climbed dramatically of late due to the crises in the middle East driving the price of Jet A1 fuel. This combined with currency fluctuations in the relative strength of sterling and the dollar has resulted in a near perfect storm of economic pressures on the UK airline industry.

**APPENDIX 3**

**BIRD STRIKES REPORTED TO THE CAA**  
 Per Month: Birdstrikes Reported to CAA  
 Reporting Period 2009-11

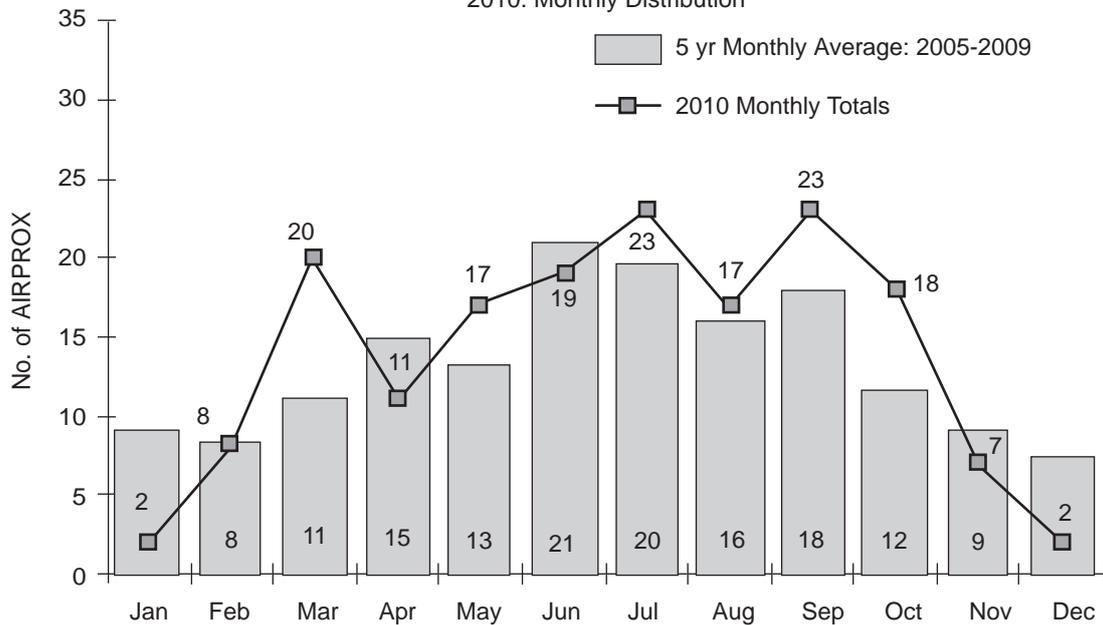


The statistics portrayed here do not necessarily represent the total number of bird strikes for the period. The statistics are compiled from all reports sent to the CAA, containing confirmed, unconfirmed and near-miss birdstrike occurrences. The CAA disclaims all responsibility for any interpretation which might be made by others in receipt of this data.

Given that a single bird strike can destroy an aircraft's engine and cause it to make an emergency landing, the increasing occurrence of such incidents highlights the need for pilots to be more alert, not less.

**APPENDIX 4**

**PROXIMITY INCIDENTS**  
 2010: Monthly Distribution



## Written evidence from the Royal Aeronautical Society

### INTRODUCTION

1. The Royal Aeronautical Society (RAeS) is the world's only professional body dedicated to the entire aerospace and aviation community. Established in 1866, the society has 16,000 members in over 100 countries (including 3,500 classified as young members), and is a leader and provider of foresight within the aerospace community. Its work is supported by a number of Specialist Groups, including a Flight Operations Group.

2. Throughout this submission, reference is made to the contents of a Comment-Response Document (CRD) released by EASA on 18 January 2012 that contains draft Implementing Rules (IRs) and guidance material amended from texts first published in Notice of Proposed Amendment (NPA) 2010–14 in December 2010, together with an Explanatory Note. The CRD contents are referred to as “the EASA proposals”.

### OPERATOR ACCOUNTABILITY

3. Accountability for the safe operation of aircraft registered in the United Kingdom that are flown under and in accordance with the terms of an AOC is vested in the operator. This follows regardless of limitations specified in an approved FTL scheme that has been based on IRs such as are currently proposed by EASA; the operator will remain responsible to the CAA for publishing duty rosters that are both bounded by the relevant limitations and take proper account of other ways in which fatigue can develop. The CRD defines other risks that an AOC holder must take into account when administering an approved FTL scheme.

4. The limitations contained in these new draft IRs will fail to achieve their intended purpose if an operator constructs rosters that are compromised by efforts to obtain maximum efficiency from a crew. On the other hand, limitations should not be made so restrictive that they deny operators reasonable flexibility to achieve commercial efficiency. It follows that much will depend upon an operator rostering crews in a practical and level-headed manner, but always conscious of the need to prevent fatigue irrespective of the limits permitted by IRs, and to avoid abusing such flexibility as a scheme may in principle allow.

5. These principles and concerns are also applicable to FTL schemes currently applied by UK AOC holders, although an effective safeguard does exist in that the CAA is empowered to apply administrative sanctions where it observes abuse. It is important that the CAA, which will be required to approve flight time specification schemes proposed by operators when compliance with the EU Regulations has been demonstrated, will continue to be empowered to apply sanctions on occasions where abuse is shown to have endangered safety.

6. The CAA should remain adequately staffed by persons trained and experienced in this field so as to enable it to function effectively to act as a final arbiter of safety in respect of crew rostering and hours.

### EASA PROPOSALS VERSUS CURRENT UK FTL SCHEMES

7. The EASA proposals appear to reflect all of the main points published by the International Civil Aviation Organization (ICAO). These are to be found in Annex 6 Part I *International Commercial Air Transport—Aeroplanes*, Standards and Recommended Practices (SARPs) for flight and cabin crew, and most of those shown in a sample FTL scheme. The proposals also include many of the main contents of the guidance material on which UK AOC holders base the FTL schemes that they submit to the CAA for approval (Civil Air Publication (CAP) 371).

8. The EASA proposals contain some numerical limitations that exceed those specified in CAP 371; for example, maximum flight duty periods that begin in the early hours, and cumulative duty hours arising over periods of seven and 14 consecutive days. The proposals also omit some limitations such as the cap on the number of consecutive early starts that may be rostered. Higher limitations and/or omissions need not be a cause for concern provided the operator rosters his crews such that these values are rarely achieved.

9. However, experience has shown that sympathetic rostering cannot always be relied upon. In the past, the CAA has responded to systemic abuses by lowering the limitations, but clearly this remedy will no longer be available once the IRs have been adopted by the Commission. AOC holders will be able to complain if any National Aviation Authority (NAA) attempts to impose restrictions that are deemed likely to inhibit fair competition between airlines.

### PRESUMPTION THAT FOR COMPANY FTL SCHEMES, LIMITATIONS WILL BE REDUCED THROUGH NEGOTIATIONS (SCHEDULING AGREEMENTS)

10. EASA alludes in its Explanatory Note and in some of the reports submitted by three independent scientists, to a presumption that in negotiations with employers, crew organisations can expect to obtain concessions from a Company so that some limitations may be reduced to below those prescribed in the IRs. If such a presumption does indeed underlie any of the proposed limitations it might explain why relatively high limitations have been included. This would provide a small margin that employers might be prepared to concede in the course of negotiations.

11. If this is indeed the case, such a strategy would be a disservice to all those employees who have no meaningful representation or whose negotiating powers are weak, and would leave open the possibility that

these crews might be exploited in the length of flight duty periods they are tasked to perform. Limitations prescribed in IRs should reflect both operational experience and scientific evidence, where available, and not include margins that cannot be justified.

#### INTERNAL AUDITING, SAFETY OVERSIGHT, AND CONFIDENTIAL REPORTING

12. To assist operators to monitor the effectiveness of their FTL schemes to limit fatigue, EASA is placing significant emphasis upon the benefits of Fatigue Risk Management (FRM) as part of an operator's Safety Management System, and the Agency prescribes or specifies how this should be applied. This self-audit facility should be of value firstly to AOC holders who will use the results to assist with viable rostering and fatigue mitigation, and furthermore to the NAA whose safety oversight role it will facilitate.

13. Experience gained within the industry has revealed that rosters that come within prescribed limitations are not always effective in preventing the build-up of fatigue. Crew members who are so affected will want to bring their safety concerns to the attention of their employer or, if they feel unable to do so due because of fear of sanction, to another party. For many flight and cabin crew within the UK aviation industry there may be recourse to their employee representatives or directly to them in confidence to the CAA.

14. In practice, this has not proven entirely satisfactory. In the UK an alternative option is available, the Confidential Human Factors Incident Reporting Programme (CHIRP). Supported by the CAA. This has functioned effectively for more than 10 years to address a wide range of safety concerns brought to its attention by pilots, cabin crew, maintenance engineers and air traffic control staff, and has assisted responsible agencies (the DfT, CAA, NATS, and the operators themselves) to frame guidance and instructions to correct identified problems before they become potentially dangerous. The administration of FTL schemes feature prominently and consistently in these reports.

15. Problems with EASA's proposed IRs on flight and duty time limitations and rest requirements will inevitably arise after they have been adopted by the Commission and implemented by operators of commercial air transport aeroplanes. To this end, viable internal auditing, external safety oversight and a secure channel for individuals to report safety concerns in confidence will continue to be needed in the United Kingdom.

#### USE OF SCIENTIFIC EVIDENCE

16. EASA has accepted the ICAO Annex 6 Part I Standard that obliges States where available to take account of scientific knowledge and principles to ensure that flight and cabin crew members are performing at an adequate level of alertness. The engagement of three scientists (with their teams) tasked with addressing specific questions independently has provided valuable guidance to EASA on how best to address issues where widely differing views have been voiced. Whilst the scientific advice has not always been harmonious, it has for the most part been similar if not consistent, and as a result has made a valuable contribution to the Agency's proposals.

#### AVIATION SAFETY IN THE UK

17. Any effect that EASA's proposals may have upon aviation safety in the UK is difficult to quantify in absolute terms. This is principally because the EASA proposals are not presented in the same format as those in CAP 371 or—to some extent—as those in the European Union-Operations (EU-OPS) Subpart Q that they are intended to replace.

18. Some elements that are not found in CAP 371 but which would be beneficial include: a strong emphasis on the attributes of Fatigue Risk Management; the applicability of limitations and rest requirements hitherto applied in their entirety only to pilots but now extended to cabin crew; and the need to address nutrition such that a crew member's performance should not be impaired. Following representations, EASA has removed some of the less sustainable proposals and has incorporated additional material from CAP 371.

19. In general, unless the perceived shortcomings are not addressed by EASA, the safety of commercial air transport operations as practised by UK AOC holders—whilst unlikely to be affected adversely in the short term, could be compromised in the future. Therefore EASA should seek to resolve all identified points of contention before it submits a final text to the Commission.

#### AVIATION SAFETY IN OTHER COUNTRIES

20. EASA's proposals are likely to be viewed in a positive light by some other countries. Although ICAO SARPs have for many years obliged Contracting States to publish FTL schemes for adoption and implementation by their national commercial air transport operators, some European members of the Joint Aviation Authorities (JAA), but not necessarily members of the European Union, had no, or minimally constructed FTL schemes, some of which failed even to reflect ICAO SARPs.

21. EASA's proposals, once adopted by the Commission, will replace all EU and EASA State FTL schemes—however adequate or inadequate they might be. In this respect, the new IRs have the potential to improve aviation safety across Europe and elsewhere where States look to Europe for guidance.

## SUMMARY CONCLUSIONS

22. EASA's proposals for flight and duty time limitations for crew members employed by commercial air transport operators of aeroplanes should prove adequate for the intended purpose provided:

- all remaining points of contention—including those perceived to be shortcomings—are resolved before a final text is submitted to the Commission for adoption;
- there is no presumption inherent in the numerical values prescribed in IRs that negotiations between crew organisations and their employers will necessarily take place to establish scheduling agreements that provide easement from the more extreme limitations; and
- Fatigue Risk Management is applied by each operator to assure compliance with all essential requirements and to monitor the effectiveness of his FTL scheme to contain fatigue.

23. Within the UK, it is considered imperative that:

- the CAA maintains a robust audit and inspection regime; and
- flight and cabin crews who have safety concerns relating to matters associated with fatigue have the means by which they can report such concerns in expectation that these will be addressed without fear of recrimination.

February 2012

---

## Written evidence from Jet2.com

### 1. OVERVIEW

As a leading UK leisure airline, headquartered in the north of England, Jet2.com welcomes the opportunity to respond to the Transport Select Committee call for evidence on "Flight Time Limitations".

Jet2.com can trace its roots back to 1971 when it was established as Carpenter's Air Services Limited. In 1983, the company was purchased by the Group's current Chief Executive, Philip Meeson, and renamed as Channel Express Group Limited, enabling the development of a highly successful cargo airline.

In 2003, Jet2.com, was established at Leeds Airport as a low cost leisure airline, and has now grown to carry over four million passengers per annum from eight UK bases. Over 30,000 flights are operated per annum, including services from Belfast, Blackpool, East Midlands, Edinburgh, Glasgow, Leeds, Manchester and Newcastle, serving a network of over 160 city-pairs. In addition to scheduled services, the airline is a major provider of air services to the Royal Mail, flying time-sensitive over-night flights from six UK bases, enabling the Royal Mail to meet its universal services obligations.

Our services primarily cover destinations across Europe, including services to Greece, Portugal, Spain and Turkey. In addition, until recently we operated leisure flights to Sharm el Sheikh in Egypt. A small series of transatlantic services are flown during the winter and we have an extensive charter programme.

Jet2.com is a member of the British Air Transport Association and European Low Fare Airlines Association.

### 2. JET2.COM—OPERATIONAL INFORMATION

Jet2.com is a UK AOC holder, operating under AOC number GB598, with approval to operate Boeing 757 (229 seats), Boeing 737-800 (189 seats) and Boeing 737-300 (148 seats) including eight QC convertible aircraft. In peak summer, we employ in excess of 400 flight crew and 600 cabin crew.

Since commencing air services, Jet2.com has operated under the UK Civil Aviation Authority CAP371 rules for flight time limitations. Since July 2008, all EU member states have had to operate under the new "EU-OPS" regulation Subpart Q. The UK's CAP317 conforms to and in many instances is more restrictive than Subpart Q, and certain UK carriers, including Jet2.com, continue to operate under CAP371 rules under approval from the UK Civil Aviation Authority and EASA.

### 3. EASA—DRAFT NEW RULES

The proposals from the European Aviation Safety Agency (EASA) to harmonise European flight time limitations is welcomed by Jet2.com.

We believe, this proposal is an important step in the process to introduce a level playing field across the EU member states, and very importantly, to ensure that all operators based in Europe are working to consistent safety standards. To support this process, we have actively participated in the review of these proposals through our ELFAA membership.

While we welcome the overall direction of the new rules, there are a number of specific issues within the proposals that we wish to draw the Committee's attention to:

*(a) Key Differences between EASA's Proposals and UK's Current Regulations**Duty hours per 14 days up from 95 to 110 hours*

Jet2 supports this change which introduces flexibility to working practices and is one measure that has the potential to alleviate possible fatigue issues with crew, as referenced in paragraph 312, page 41, CRD 2010–14 EASA document.

*Duty hours per seven days increased from 55 to 60 hours*

This change will bring the rule in this area into line with existing EU JAROps SubPartQ and is a sensible means to standardise across the EU region. See Annex 3, Section 2 ORO.FTL.215, page 80, CRD 2010–14 EASA document.

*Maximum daily allowable FDP (Flying Duty Periods)*

Changes are proposed to reduce the allowable FDP's under CAP371 to a lower limit for FDP start periods between 1430 and 1659 local times. A comparison table is shown below highlighting these periods:

	<i>2 sectors</i>		<i>4 sectors</i>	
<i>Start of FDP</i>	<i>EASA</i>	<i>371</i>	<i>EASA</i>	<i>371</i>
1330–1359	12:45	12:15	11:45	10:45
1400–1429	12:30	12:15	11:30	10:45
1430–1459	12:15	12:15	11:15	10:45
1500–1529	12:00	12:15	11:00	10:45
1530–1559	11:45	12:15	10:45	10:45
1600–1629	11:30	12:15	10:30	10:45
1630–1659	11:15	12:15	10:15	10:45

EASA proposals will introduce additional restrictions to FDP's from the current CAP371 without any justified rationale for change. This has the potential to make certain two sector operations unworkable in the future.

*(b) Potential Effects of the Proposals on Pilot Fatigue and Aviation Safety*

The UK has an excellent safety record and Jet2.com, like all UK AOC holders, places safety as our number one priority. A Safety Management System (SMS) operates across our business reporting directly to our CAA Accountable Manager's structure.

Current regulations on flight time limitations have contributed to this excellent safety record in the UK, and in our opinion, the current rules and regulations enable a safe working environment.

As part of the Jet2.com safety culture, we support the importance of monitoring Pilot and cabin crew fatigue levels and we are actively promoting the use of Fatigue Risk Management systems in identifying any areas of concern, and taking appropriate action to alleviate, in full co-operation with our flight and cabin crew community.

Concern has been raised over the validity and quality of the scientific research conducted as part of the Moebus report into Flight Time Limitations. Given the importance of this area, we would recommend that further work is conducted into this topic.

We therefore support the work of EASA in promoting the importance of this area.

*(c) Specific proposal comments**Single Base—CS FTL.1.205, Page 85 of CRD 2010–14*

The proposal by EASA to nominate a single base for crew is an unnecessary restriction relative to the current CAA CAP 371 Rules.

Jet2.com has successfully operated dual bases for a number of years at airports in close proximity. We currently utilise this policy at both Edinburgh/Glasgow and Blackpool/Manchester.

Dual basing enables crew at smaller bases to fly a wider variety of services and routes, thereby improving safety by reducing the instances of repetitive flying on the same services.

It is also viewed positively by our flight and cabin crew who are able to have greater flexibility in terms of their working and home life, eg certain Jet2 bases have limited winter services due to the nature of their customer base and operating network, hence, crew are able to continue flying during this period from their alternative base.

EASA's proposals will mean this is no longer possible and crew changing base will have to have three days off prior and any travelling will be included in their duty time.

The current regulations provide flexibility and if managed in line with an FRM (Fatigue Risk Management) Policy will mitigate the Fatigue that may be associated with Dual/Alternative base.

We therefore recommend the retention of the current CAP371 definition of an alternative base to include the ability for flight and cabin crew to be dual based.

#### 4. SUMMARY AND CONCLUSIONS

Jet2.com supports measures that will bring harmonisation of operating procedures and rules across European airlines, and specifically ones relating to safety management.

We are therefore actively participating in the important work EASA is undertaking in the important area of establishing common rules for flight and duty time limitations and rest requirements for commercial air transport.

In general, we support the conclusions and work of the Draft Opinion document (CRD to NPA 2010–14, issued 18 January 2012), however, we have highlighted certain concerns regarding the items raised in section 3 (a) and 3 (c) of this response document.

It is important that if new Rules and Regulations are approved and implemented, this process must be applied consistently and concurrently across all member States.

February 2012

---

#### **Written evidence from Adrian J Williams, Professor of Sleep Medicine, King's College London**

I am aware it is the intention of the EASA in some circumstances to extend the Flight Duty Period of pilots, and believe there may be potential effects on pilot fatigue and aviation safety, hence these comments.

My interest stems from knowledge about the major impact that experimental lack of sleep has on performance, as well as consequences in the clinical arena of insufficient sleep and interrupted sleep.

The evidence that driving skills can be impaired by lack of sleep is extensive. Experimental sleep restriction leads to more simulator errors, and clinical sleep disruption in the form of sleep apnoea is associated with more than seven times the rate of motor vehicle accidents with treatment of these disorders improving this accident rate. It is believed that increased pressure to sleep leads to lapses or microsleeps with a decline in optimal levels of response according to time-on-task. The critical feature of a task sensitive to sleepiness is “a relentless requirement for sustained attention” ie driving (or flying). Driving is of course a complex task involving distinct cognitive, perceptual, motor and decision making skills, and because sleepiness or fatigue can affect some or all of these it is not surprising that excessive sleepiness (not necessarily falling asleep) would be associated with more accidents (and it has been estimated that 20% of all motor vehicle accidents are due to driver fatigue).

The extent of sleepiness or fatigue experienced by sleep deprived individuals is assessed by measuring reaction times which progressively worsen with increasing sleep loss (ie sleep restriction). Equally importantly, this decline in performance is known to occur with increasing time awake after a normal sleep opportunity, with a particular watershed at 16 hours of wake at which point these measures decline exponentially. This fact was embraced by the Institute of Medicine in the USA which recommends that resident physicians have no more than 16 hours of wake time without fully protected sleep (and not rest) time Coincident with this time frame is the report by Dawson (*Nature 1997*) that 17 hours of sustained wakefulness produces performance deficits equivalent to a blood alcohol level of 0.05% ie legally drunk (on the road).

These comments are based on knowledge and experience acquired during some 35 years of research and practice in the field of Sleep Medicine which seem to me to have a relevance to your deliberations.

February 2012

---

#### **Written evidence from Captain Dr W A L Mitchell**

##### 1. EXECUTIVE SUMMARY

1.1 The UK CAA has long experience of producing, in conjunction with pilots and scientists, FTL schemes dating from the 1970s, published as the periodically revised CAP 371. EASA, which seeks to promote the highest common standard of safety in Europe, has now produced an FTL proposal which seeks to substantially increase the prevalence of fatigue producing duties.

1.2 Commercial issues such as the economic return of the aviation industry should not be permitted to trump long-standing safety regulation, endorsed by a consensus of scientific opinion.

1.3 The EASA proposals do not acknowledge the scientific advice its working group received.

1.4 International concern regarding fatal public transport accidents where fatigue has been cited has caused other Authorities to draft new more stringent FTL schemes. EASA should take note and not seek to introduce lower standards.

## 2. THE HIDDEN ADDITIONS IN THE EASA PROPOSALS

Pilots are not automatons who can be scheduled for unlimited duty. Fatigue will occur if care is not taken to allow adequate sleep opportunities. The most sensitive period is the overnight Circadian Low and if a pilot is required to remain alert over this period such as an overnight flight, or to regularly terminate natural sleep early, fatigue which compromises safety will occur. Additionally the maximum Flying Duty Period (FDP), proposed by EASA is not the true maximum since to this value can be added an extension which may be an additional hour, and to that can be added a further two hours of discretion. This can all be in addition to a four hour period of standby at the start of the duty.

## 3. PILOT FATIGUE IS A FLIGHT SAFETY ISSUE

Fatigue has many effects on mental and physical performance, but the main risk is that of involuntary sleep. It is unsafe to have both pilots asleep at the same time. However, unplanned rest periods are permitted at times of low workload as a fatigue countermeasure. This countermeasure should be rarely required but reports of the Confidential Human Factors Incident Reporting Programme (CHIRP) indicate that even under the current CAP 371, fatigue risks are inadequately controlled and that use of this countermeasure is becoming routine. The effect of the EASA proposals is to increase the likelihood that pilots are more tired more often, leading to increased risk of human error and the continuing risk that emergency countermeasures become routine and ingrained leading to lower overall safety.

## 4. SCIENTIFIC OPINION REJECTED BY EASA

The EASA working group's Terms of Reference were to review and extend the proposals of EU-OPS Sub Part Q and to apply a Regulatory Impact Assessment. A scientific evaluation was commissioned, which then criticised the proposals with respect to the maximum FDP, the overnight permitted FDP and the discounting of standby duty. In spite of this, EASA has produced proposals that allow a maximum FDP of 20 hours, maximum night duty hours of 11 hours and airport standby considered as rest.

## 5. FEDERAL AVIATION AUTHORITY (FAA) PROGRESS TO IMPROVE FTL REGULATION

FTL schemes set limits, which should not be the targets of computer generated scheduling rather they should guide planners to ensure that pilots are kept away from those limits. In the United States, the FAA has recently published its own new FTL scheme. Comparisons with the EASA proposals are striking with night time flight sector limited to eight hours and no inclusion of standby time in the FDP. The two crew, two sector maximum is 16 hours whereas in the EASA proposal it is 20 hours. The FAA noted that "preventing a single catastrophic accident with 61 people on board would cause this rule to be cost beneficial".

## 6. CONCLUSION

The UK should retain and continue to improve its national arrangements while a robust scientific based review of the EASA proposal is concluded. A true regulatory impact assessment should look at the potential cost of relaxing the current UK FTL safety standards. The UK regulator should promote the many years of work it has already completed with regard to fatigue and flight safety and rise above concerns it may harbour with regard to its funding from the UK industry.

*Captain Dr W A L Mitchell*

*former consultant in anaesthesia and airline Captain Boeing 747, specialist in aviation medicine*

*February 2012*

---

### Written evidence from Thomson Airways

Thomson Airways appreciates the opportunity to respond to the Transport Select Committee hearing into Flight Time Limitations (FTL's). Thomson Airways is the UK's third largest airline, operating from 19 UK airports with a fleet of 63 Boeing and Airbus aircraft, carrying approximately 12 million passengers each year. Thomson Airways operates on behalf of its in-house and third party tour operators to short haul, mid-haul and long-haul destinations, thus the effect of the recently published EASA FTL's will affect Thomson Airways across all of its operations. Additionally as part of the TUI Travel group of airlines, Thomson Airways is uniquely positioned to see how the FTL's compare with those currently in operation within Europe as compared to the revised provisions.

## INTRODUCTION

The EASA FTL's are in line with, or more restrictive than EU Ops Sub Part Q, which is the FTL scheme used by most European Countries. Thomson Airways has continually questioned where the empirical safety evidence is that requires UK airlines to operate a more restrictive FTL regime than our sister airlines operating in Sweden, Netherlands, Belgium, Germany, France and Morocco that all have exceptional safety records. Additionally Thomson Airways has its own in-house "collective agreement" on some additional restrictions to enhance the flight crew life/work balance. Thomson Airways also operates a fatigue risk management system that allows crew to raise issues regarding fatigue, including withdrawing from a duty on the grounds of fatigue. The reasons and roster are then analysed to inform our future rostering.

In most areas the proposed EASA FTL's are less restrictive, or in line with CAP 371, the current UK FTL scheme. The most significant area that is less restrictive is that there is no requirement for a third pilot on the flight, unless used in conjunction with the provision of in-flight rest (eg a bunk facility). We believe this to be a sensible development based upon evidence available.

There are some areas where the proposed EASA FTL's are more restrictive than the UK CAP 371, yet CAP 371 restrictions have operated for years without any safety instances. We do not understand why these have been made more restrictive, based upon the evidence available.

## SPECIFIC DIFFERENCES

We will give some specific examples of some of the differences:

### *1. FTLs for Cabin Crew are identical to those for Flight Crew*

In CAP 371 this is not the case, with Cabin Crew being able to operate for slightly longer and requiring slightly shorter rest periods. This is primarily to allow for Cabin Crew to report for a duty earlier and end a duty later than Pilots, to allow for passenger boarding//disembarking duties, etc. Hence, the EASA FTLs will mean that there are some duties that Pilots will be able to operate but Cabin Crew will not be able to operate. We do not understand the logic that has led to this revision of FTL's.

### *2. Maximum Flying Duty Period (FDP) for duties starting in the afternoon are up to 1 hour 15 minutes shorter*

For duties that start in late afternoon, the maximum allowed flying duty is more restrictive, meaning that some flights will have to be re-timed or may become un-viable because of the need for crews to layover for their rest period at the destination, whereas under the current regime they can complete the round trip. We are not aware that there is evidence to support that the existing FTL for afternoon departures are unsafe.

### *3. Maximum Flying Duty Period (FDP) for two sectors is 14 hours*

This is 15 minutes more restrictive than under CAP 371 Level 2 alleviation. This will mean that for some mid-haul destinations such as Egypt, crew will have to night stop, potentially making some routes un-viable.

### *4. More restrictive for eastbound trips with a large time zone difference*

For eastbound trips with a significant time zone change, the amount of rest required for a crew member to adjust to the local time zone (known as acclimatisation) and therefore be allowed to have the longest possible Flying Duty Period (FDP) is significantly longer than in CAP 371.

### *5. Captains discretion limited to two hours*

In times of operational disruption, Captains have the discretion to increase an FDP by up to two hours. In CAP 371, this can be up to three hours, allowing for more flexibility to complete a flight and minimise disruption to passengers.

Whilst the safety and security of our passengers, crew and aircraft remains our number one priority, the changes to EASA FTL's that go beyond CAP 371 will add significantly to our costs, or conversely make routes financially un-viable and remove choice of destination for the consumer.

Once again Thomson Airways appreciates the opportunity to respond to the select committee and would be pleased to elaborate further if required.

February 2012

---

---

## Written evidence from the Civil Aviation Authority

### EXECUTIVE SUMMARY

1.1 The Civil Aviation Authority (CAA) is the UK's specialist aviation regulator. We are committed to enhancing aviation safety performance by pursuing targeted and continuous improvements in systems, culture, processes and capability.

1.2 The European Aviation Safety Agency (EASA) proposals for modifications to Flight Time Limitations regulations are still in the consultation phase. Following publication of the Notice of Proposed Amendment (NPA) 2010–14<sup>16</sup> (Flight Time Limitations for commercial air transport (CAT) with aeroplanes), we raised a number of comments. In particular, we had three major objections to the maximum permissible Flying Duty Period at night, recovery periods and cumulative duty hours.

1.3 The latest proposals, set out in the EASA Comment Response Document (CRD)<sup>17</sup> of 18 January 2012, have significantly improved on the previous proposals, and have sufficiently addressed our major objections, as well as taking account of recent scientific evidence. We will make further comments on the CRD, but believes that, together with the mandated performance requirements, the proposals will deliver an acceptable system for managing crew member fatigue. They will also ensure a more stringent regime for many non-UK airlines on which UK citizens fly.

### BACKGROUND

2.1 FTL schemes introduce limitations to the way crews can be scheduled by airlines in order to mitigate fatigue risks. FTL rules regulate the flight time, flight duty periods, duty times and rest periods of flight crew (ie pilots) and cabin crew. A short précis of the history of the development of European FTL requirements is at Attachment One (page 7).

2.2 The EASA proposals for the modifications of the FTL regulations are still in the consultation phase. The EASA CRD, with changes to the proposed regulations as presented in the original NPA 2010–14, was published on 18 January 2012. EASA will review the comments on the CRD and make any further amendments it deems necessary in order to produce an Opinion for the European Commission. The Opinion then has to pass through the EU legislative process before being finally agreed. It will be necessary to see the final regulations in order to confirm their impact.

2.3 We are continuing to assess the detail of the regulation as proposed in the CRD, but are able to give a view on the overall impact of the proposals as they currently stand.

2.4 EASA has made a number of improvements to the proposals based on scientific knowledge and has addressed our major objections to an acceptable level. We will submit comments on the proposals presented in the CRD (mainly in areas of clarity and intent to ensure a correct and common understanding of the proposals). However, we believe that the proposals, when taken as a whole package with the introduction of additional performance requirements, would produce an acceptable system for managing crew member fatigue. This view is based on the scientific evidence, our experience with our current regulations, information on fatigue management in other countries gained through our involvement with the International Civil Aviation Organization (ICAO), and our involvement with EASA during its rulemaking task.

2.5 The proposals do introduce a different approach to fatigue management than is currently used in the UK and implementation of the new regulations will therefore have to be proactively managed.

2.6 The EASA advisory group approach to the rulemaking task permitted the views, experience and information of all its stakeholders to be raised and discussed. EASA has used a risk-based approach to develop the regulations and is aware of the need to continue to refine and develop the regulations. It has indicated within its proposals the need for more research in areas where there is currently none available. We will continue to work with EASA to refine and develop the regulations in the light of developing scientific knowledge and operational experience.

### *EASA's proposals and how they compare to the UK's current regulations*

3.1 EASA's role is to establish and maintain a high uniform level of air safety in Europe within a liberalised aviation market. EASA has had the double mandate of updating FTL requirements for commercial air transport with aeroplanes taking into account recent scientific and medical evidence, and of further harmonising existing European requirements in order to provide a level playing field for European airlines.

---

<sup>16</sup> EASA Notice of Proposed Amendment (NPA) No 2010–14 Draft Opinion of the European Aviation Safety Agency for a Commission Regulations establishing the implementing rules on Flight and Duty Time Limitations and rest requirements for commercial air transport (CAT) with aeroplanes  
<http://www.easa.europa.eu/rulemaking/docs/npa/2010/NPA%202010-14.pdf>

<sup>17</sup> EASA Comment Response Document (CRD) CRD to 2010–14  
<http://easa.europa.eu/rulemaking/docs/crd/2011/CRD%202010-14/CRD%202010-14.pdf>

3.2 FTL requirements for aeroplanes are currently set at the European level by EU-OPS Subpart Q. This provides a set of legally binding minimum requirements. However, the Commission Regulation<sup>18</sup> adopting EU-OPS permitted Member States to maintain stricter national provisions on FTL. Member States were also permitted to apply national provisions in areas not covered in Sub-Part Q. As the requirements of CAP 371<sup>19</sup> were equal to or higher than the requirement of EU-OPS the UK notified the Commission in September 2008 that it would continue to use CAP 371 and this was accepted as a derogation.

3.3 EU OPS legislation will be repealed with the introduction of the EASA implementing rules on Air Operations, made under the EASA Basic Regulation (Regulation (EC) No (216/2008)).<sup>20</sup> The Basic Regulation mandates the requirement for fully harmonised aviation safety regulations and as a result the possibility to apply stricter FTL rules at national level will be removed. Whilst the Basic Regulation does contain some limited and strictly controlled flexibility provisions the proposals set out in the CRD are such that we do not believe it would be appropriate or credible to attempt to use them.

3.4 The requirements also permitted Member States to apply for derogations to the provisions under Article 8 of the regulations. The UK notified the Commission that it would continue to use CAP 371 as permitted under the legislation, by use of the particular recitals and by derogation from some aspects of Subpart Q.

3.5 In order to meet the European Commission mandate to update the FTL requirements following a scientific and medical review of Subpart Q, EASA set up a multi-stakeholder advisory group to assist with its rulemaking task. The group included representatives from five European National Authorities (which included one from the CAA), five operator organisations and five crew member associations, and included one observer from the European Commission.

3.6 Crew fatigue has a multitude of causes that interact with each other and therefore it is essential that any set of regulations is reviewed as a whole package rather than as a set of individual isolated requirements. The main areas, as agreed by the EASA FTL advisory group, are time of day the duty starts, length of duty, type of task (duty type or intensity), impact of time zone crossing and rest periods. A comparison of the key areas of the EASA proposals and the UK current regulations is included as Attachment Two.

#### *The potential effects of the proposals on pilot fatigue and aviation safety*

4.1 Rather than relying solely on traditional prescriptive numbers, where crew members meet or do not meet a prescribed limit in the requirements, the EASA proposals, as well as having prescriptive limits, have incorporated a number of fatigue mitigation requirements that are based on the type of work that is being conducted. These include provisions to mitigate cumulative fatigue due to disruptive schedules (ie those operating between 0000 and 0659, or having extensive time zone crossings and/or combinations of blocks of Flight Duty Period that cross several time zones in differing directions). These additional requirements for extended rest periods immediately following schedules that are known to create fatigue in crew members are an improvement to aviation safety.

4.2 It is not only the length of duty, the time at which the day starts or the number of sectors<sup>21</sup> that are operated that can either create fatigue or be used to manage fatigue. Of mutual importance is the way that the work and rest periods are combined. Although we have some published guidance on areas to consider when creating a crew member's roster, there have never been any mandated requirements in this area. EU-OPS Subpart Q's mandatory operator responsibilities to demonstrate that they are managing the impact that the combinations of duties have on the fatigue of the crew member have been transferred into the EASA proposals, thus making them a compulsory element of the regulations. This is a significant improvement on current UK requirements and meets the requirements of Safety Management Systems that are now required by ICAO as a standard.

4.3 The EASA proposals also require initial and recurrent fatigue management training for all staff associated with, or whose work might have an impact on, crew fatigue. This should improve fatigue awareness and fatigue management strategies, which, when combined with more robust operator responsibilities, should lead to a better educated approach to fatigue management rather than unthinking regulatory compliance within prescriptive limits.

4.4 The proposals will require a considerable amount of change management oversight to ensure that the new regulations are correctly applied. Specific consideration will need to be given to where the regulations are more permissive, such as the increased amount of FDP allowable on an early start, when there could be a lack of understanding of the regulations, in particular to the operator's responsibilities to demonstrate that they manage their own fatigue risks within the prescriptive limits.

---

<sup>18</sup> Commission Regulation (EC) No. 859/2008 of 20 August 2008 amending Council Regulation (EEC) No. 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane (Annex III—commonly referred to as EU-OPS).

<sup>19</sup> CAA Publication CAP 371, The Avoidance of Fatigue in Aircrews, as applied under the UK Air Navigation Order.

<sup>20</sup> Regulation (EC) No 216/2008 of the European Parliament and of the Council on common rules in the field of civil aviation and establishing a European Aviation Safety agency, and repealing Council Directive 91/679/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC.

<sup>21</sup> Sector is from aircraft first moving from its parking place until arriving at its next parking place after landing.

4.5 The responsibility for managing crew fatigue cannot rest solely with the operator. Crew members must make good use of their pre-flight rest periods. CAP371, EU OPS and EASA OPS place responsibilities on the individual crew member that they shall not operate an aeroplane if they know or suspect that they are suffering from fatigue, to the extent that the flight may be endangered. They also have the requirement that they will make optimum use of the opportunities and facilities for rest provided and plan and use their rest periods properly.

4.6 The proposed regulations are improvements on EU-OPS Subpart Q and would be applicable to all EU Member States. UK passengers travelling on European airlines will benefit from this raised level of safety.

#### *The use of scientific and medical evidence in developing the regulations*

5.1 Regulation (EEC) No. 3922/91 required EASA to conclude a scientific and medical evaluation of the provisions of Subpart Q and to assist the European Commission in the preparation of proposals for the modification of the applicable technical provision of Subpart Q. The European Commission therefore gave EASA a clear mandate to review Subpart Q in the light of the most recent scientific and medical evidence. EASA was also required to develop regulations for the five areas of Subpart Q that remained under the regulations of the Member States.

5.2 To complete the evaluation task, EASA established an FTL Advisory Group representing the affected stakeholders, to provide recommendations on how the evaluation should be completed. The evaluation was conducted by Moebus Aviation. The report that was presented triggered discussions from different interest groups with contradicting views about its conclusions. Considering the follow-up of the Moebus report, the Commission tasked EASA to complete the rulemaking activity taking into account all relevant recent publicly available studies/evaluations and operational experience. EASA and its FTL advisory group were required to submit proposals for the modifications of the provisions after completing a regulatory impact assessment.

5.3 In accordance with ICAO's risk-based approach to aviation safety, EASA developed its rulemaking task from a fatigue risk assessment basis aiming to develop the most appropriate mitigations and limitations to manage the risks. Following the initial meeting of the stakeholder advisory group we provided EASA with a fatigue risk register, upon which EASA chose to base the risk assessment element of the task. We also provided EASA with a number of scientific papers and research studies on fatigue, some of which had been specifically commissioned by the CAA. The Moebus report was included as one of the studies/evaluations that EASA used during the rulemaking task. The detailed fatigue risk register and the list of over 50 scientific documentations that EASA used can be found in NPA 2010–14.

5.4 The EASA FTL advisory group agreed on a number of major factors affecting fatigue as noted in the scientific literature. These are summarised in Attachment Three.

5.5 As part the comments review stage of the draft regulations in NPA 2010–14, EASA commissioned three independent scientists to review the draft regulations and the comments that EASA had received. The scientists were asked a number of specific questions focusing on the most contentious elements of the proposals. We view the targeted use of scientific opinion at this stage in the development of the proposals as both constructive and appropriate use of their expertise which has helped to strength the proposals. The scientific assessments are attached to the EASA CRD. In consequence of these reports, a number of changes were made to the EASA proposals, such as reducing the limit on FDPs with unfavourable starting times (after 1900 and before 0415) from 12 hours to 11 hours, reducing the FDP from the third sector onwards by 30 minutes for each sector down to 9 hours, and removing reduced rest provisions below 12 hours at base or 10 hours out of base.

5.6 Although the scientists contracted by EASA advised a maximum FDP of 10 hours overnight, the EASA proposals in the CRD limit overnight Flight Duty Periods to 11 hours. EASA has stated in the CRD that it decided to limit Flight Duty Periods to 11 hours for overnight operations and to remove the possibility of a one hour extension. This was on the basis of the recognition of the impact of the circadian phase on fatigue, as well as operational experience of many EU Member States operating Flight Duty Periods overnight of 11 hours safely for many years.

#### *How the new regulatory regime compares to that in other countries*

6.1 EASA developed their proposals in accordance with ICAO provisions. In recent years ICAO has changed its approach to aviation safety to focus on Safety Management Systems and risk-based, outcome-focused approaches. This is reflected in their standards which have now been renamed Fatigue Management rather than the former prescriptive Flight Time, Flight Duty Period and Rest Requirements.

6.2 EASA assessed the new rules proposed in the USA by the Federal Aviation Administration (FAA), published on 21 December 2011. EASA and the CAA have been in regular contact with the FAA during the development of their proposals. Both the EASA and the FAA proposals are based on scientific data but the approaches differ in certain areas. The US proposals permit less allowable FDP at certain times of day but the EASA proposals provide significantly more rest. For instance, with respect to maximum allowed FDP and rest requirements:

- EASA's proposals only permit a maximum FDP of 14 hours twice a week and this would require post-flight and pre-flight rest periods to be increased by two hours (14 hours rest pre-duty/16 hours post duty) or an additional four hours post duty (12 hours rest pre-duty/18 hours post duty), whereas the FAA rules allow for a sequence of four days of 14-hour FDPs each only followed by a 10-hour rest period.
- The FAA rule is more protective when the Window of Circadian Low (WOCL) is encroached by limiting FDPs to nine hours after 2200. EASA's proposals limit the allowable FDP starting at 1900 to 11 hours overnight.
- The FAA regulations add an additional requirement of a limit on "stick time" within an FDP. This limits the amount of time the pilot can be at the controls within the FDP.
- EASA's regulations require a rest period to be the length of the preceding duty period or 12 hours at home base and 10 hours away from base, whichever is the greater, but the FAA proposals remain at 10 hours regardless of the length of the preceding duty period or whether it is at home or away from base.
- EASA's regulations require a weekly rest of at least 36 hours including two local nights<sup>22</sup> whereas the FAA propose a weekly rest of 30 hours with no set local night requirements.

6.3 Notwithstanding this brief comparison, it is not possible to compare sets of FTL regulations by isolating the parameters of complex systems. The overall level of protection of each set of regulations might be comparable as they both have a similar approach but each may lay different emphasis on FDP limits and rest requirements.

6.4 In broad terms, North American countries and those with strong links to the FAA have tended to follow the FAA's proposals. Those countries with which the UK has had strong commonwealth or trade links have tended to follow the UK's approach. Developing nations within the aviation sector such as China have focused on the use of computer modelling and a fatigue risk management approach. Australia and New Zealand have focused their recent developments on a fatigue risk based approach. There are still a large number of countries that have little or no regulations, even though it is an ICAO standard for the State to develop a scheme.

6.5 A number of example comparison graphs of the maximum allowable FDP permitted under CAP 371, the EASA CRD and the FAA are contained in Attachment Four. The examples show the length of flight duty period that a crew member could work for at any set time of the day under the three different regulations. They demonstrate the level of complexity of the FTL regulations and the difference in regulatory approach. They also indicate that no one approach is significantly more permissive than the other and that crew fatigue is a developing science.

*February 2012*

## **Attachment One**

### **PRÉCIS OF THE HISTORY OF DEVELOPMENT OF EUROPEAN FTL REGULATIONS**

European-wide development of FTL started in the early 1990's when the Joint Aviation Authorities (JAA) was developing requirements for air operations in Europe. The JAA had no legal authority and members chose whether or not to implement them. A proposal for FTL was presented in 1995 but this failed to reach complete agreement and, under the JAA the process to develop a European wide set of FTL regulations stalled. A few member states did implement the 1995 proposed provisions as regulations. In the late 1990's the issue of legally binding regulations for all EU operators was taken up by the European Parliament. Also at this time the European Parliament and the Council adopted the European Working Time Directive for Mobile Workers in Civil Aviation. This directive is social law and includes annual duty and flying hours, minimum rest day requirements, minimum leave entitlements as well as health entitlements. The directive has been implemented in UK law under the Civil Aviation (Working Time) Regulations which came into force in 2004. The interaction of social law with other safety regulations is a different approach to the one that the UK is used to, but countries such as France, Germany and Portugal do choose to place additional restrictions on working time as social considerations.

In 2006 the European Parliament and the Council agreed a legally binding set of regulations for aeroplane air operations, known as EU-OPS. The FTL regulations (Subpart Q of EU-OPS) were still not fully comprehensive as they were only applicable to multi-pilot operations and omitted specific detailed requirements in five areas, leaving these to be managed by National Authorities. Further development of the regulations was then passed to the European Aviation Safety Agency (EASA). The regulations that brought EU-OPS into force required EASA to assist the Commission in reviewing Subpart Q to develop regulations in the five required (but national authority managed) areas, and to review the existing regulations.

---

<sup>22</sup> Local night is defined as 8 hours between 2200 and 0800.

Attachment Two

COMPARISON TABLE CAP 371 VERSUS EASA CRD PROPOSALS

<i>Requirement</i>	<i>CAP 371</i>	<i>EASA Proposals (CRD to NPA 2010–14)</i>
Standard Minimum Rest at home	12 hours or the length of the preceding duty for Flight Crew. 11 hours or length of preceding duty period less one hour for Cabin Crew.	Flight and Cabin Crew 12 hours' rest or the length of the preceding duty.
Standard Minimum Rest away from base	11 hours or the length of the preceding duty if duty exceeded 12 hours (one hour less for cabin crew).	Flight and Cabin Crew—10 hours or the length of the preceding duty (the rest period must allow an 8-hour sleep opportunity).
Flying hour limits <sup>23</sup>	100 in 28 consecutive days. 900 in any 12 consecutive months. (Flight Crew only)	100 in 28 consecutive days. 900 in a calendar year. 1000 in any 12 consecutive months.(Flight and Cabin Crew)
Duty limits (Maximum achievable)	60 hours in 7 consecutive days (65 for cabin crew). 95 in 14 consecutive days (105 for cabin crew). 190 in 28 consecutive days (210 for cabin crew).	Flight and Cabin Crew: 60 hours in 7 consecutive days. 110 hours in 14 consecutive days. 190 hours in 28 consecutive days
Days Off <sup>24</sup>	Days off definition: A single day off shall include 2 local nights <sup>25</sup> . Consecutive days off shall include a further local night. 1 single day off in 8 days (34 hours long with two local nights). 2 consecutive days off in any 14 consecutive days (3 local nights, minimum time 54 hours). 7 days off in any 4 weeks. 8 days off in 4 weeks averaged over 12 weeks.	Single day off definition: A single day off shall include 2 local nights. (Minimum time would be 30 hours.) Weekly rest. No more than 168 hours (7 days) between weekly rests which must include 2 local nights and be 36 hours long. Recovery rest extended to two days off twice in 28 days (two local nights, minimum time 48 hours). Where the crew member had done 4 or more early/late or night duties then the weekly recovery rest is increased to 60 hours.
Early (0500–0659) Late (0100–0159) Night (0200–0459)	No more than 3 of these duties consecutively, or 4 in 7 consecutive days. Five consecutive duties permitted where limit is 9 hours (early) or 8 hours (night). No limit on night sectors. No duty transition requirements.	Early definition changed to 0500–0659. Late duty increased to 0000–0159 (new addition). No consecutive duties limit. Night duties limit to max of 4 sectors. A transition from a late/night to an early start shall include one local night of rest at home base.
Operators' requirements	None	Specific Operator Responsibilities to show performance of the work patterns. Compulsory Fatigue management training for all involved.
FDP limits	Maximum FDP for 1 sector for 2 pilots 12:30, for 2 sectors 13:15 between 0800–1259. Maximum FDP overnight 10:15. 45-minute sector reduction from the second sector up to 8 sectors.	Maximum FDP for 1 or 2 sectors 13 hours between 0600–1329. Sector reduction 30 minutes from the third sector until 9 hours. Overnight FDP limited to 11 hours.
Operator extension	CAP 371 allows a 1-hour extension only on FDPs with 2 sectors, 3 times a month (day off before and after).	EASA proposal will allow up to a 1-hour extension twice a week (additional rest of 2 hours before and after). No extension between 1900 and 0400.
Commander's Discretion	3 hours single sector or at the start of the last sector of a multi sector Flight. 2 hours at the start of a multi sector flight.	2 hours. 3 hours where the Flight Crew is augmented.

<sup>23</sup> UK Civil Aviation (Working Time) Regulations (CAWTR) will remain at 900 flying hours in any 12 consecutive calendar months.

<sup>24</sup> CAWTR requires seven days off a month and 96 per year.

<sup>25</sup> A local night is eight hours between 2200–0800.

<i>Requirement</i>	<i>CAP 371</i>	<i>EASA Proposals (CRD to NPA 2010–14)</i>
Management of Time zone crossing	No requirement.	Extended time off after time zone crossing on return to base and between east/west trips.
Split duty	Split must be minimum 3 hours, rest in a hotel if more than 6 hours.	Followed UK split duty but added that rest in the WOCL must be in a hotel even if less than 6 hours.
Standby	Airport counts as FDP. Home standby limit 12 hours and FDP starts after 6 hours (based on the more limiting time of report or standby start time). Contactable—10 hours' notice.	Airport counts as FDP (can be increased by up to 4 hours if accommodation provided). Short call limit 12 hours and FDP starts after 6 hours. Long call—10 hours' notice.
Extension due to In-Flight Rest	Detailed requirements based on seat/bunk and time of report. Maximum limits: 15 hours' seat rest Flight Crew (class 3) (16 hours' Cabin Crew). 18 hours' in a bunk Flight Crew (class one) (19 hours' Cabin Crew).	Detailed requirements based on facility for Flight Crew. Up to two sectors (where one sector is over 9 hours): Maximum limits: 15 hours' seat (class 3) for 3 pilots. 18 hours' in a bunk (class 1) for 4 pilots. Up to three sectors (no minimum sector length): Maximum limits: 14 hours' seat (class 3) 3 pilots. 17 hours' bunk (class 1) 4 pilots. Cabin crew limits based on time of day, type of facility and time spent in facility.

**Attachment Three**

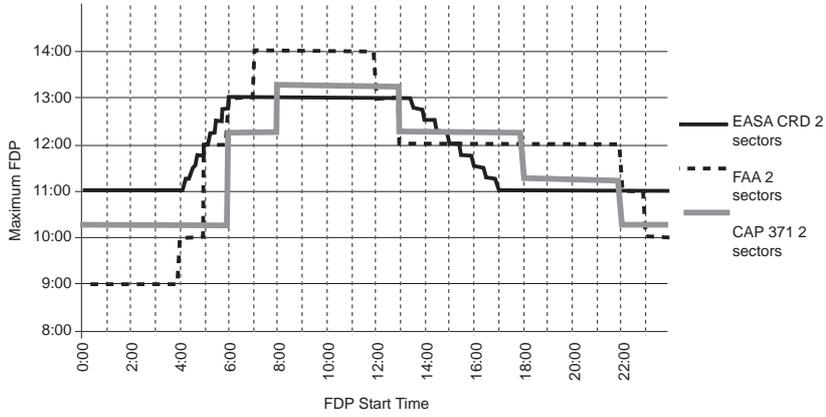
EASA'S LIST OF MAJOR FACTORS AFFECTING FATIGUE AND PROPOSED MITIGATIONS

<i>Fatiguing Effect</i>	<i>Examples of Fatigue Management in the Proposed Regulations</i>
<p><b>Time of day</b> Human waking and sleep cycles follow a 24-hour cyclical wave pattern known as the internal body clock (circadian rhythm). Fatigue is most likely (and when present, most severe) during the Window of Circadian Low (WOCL) when the body temperature is at its lowest, during a four hour period between the hours of 0000 and 0600. Studies show that subjects remaining awake through the WOCL and into daylight hours experience improvements in performance once past the WOCL, relative to their performance during the WOCL.</p>	<p>All the scientists agreed that Flight Duty Periods (FDP) of up to 14 hours were acceptable for the most favourable starting times of day if the crew is well rested. Proposed FDPs for the most unfavourable starting times limited to 11 hours. Proposals place a buffer on the maximum FDP by creating a standard maximum FDP of 13 hours and allowing Operator Extensions to the maximum limit agreed by the scientists only twice a week outside unfavourable start times.</p>
<p><b>Amount of recent sleep</b> If a person has had significantly less than 8 hours' sleep in the past 24 hours, they are more likely to be fatigued.</p>	<p>Any reduced rest provisions are strictly limited. Standby rules amended. Minimum rest at home 12 hours. Minimum rest away from base 10 hours (must have an 8-hour sleep opportunity).</p>
<p><b>Time Awake</b> A sleep debt builds up the longer a person is awake. Continuous hours awake beyond 17 increase the likelihood of fatigue affecting performance.</p>	<p>FDP limits take account of starting time. Split duty rules take account of the impact of the WOCL. Standby duties take account of time awake.</p>
<p><b>Cumulative Sleep Debt</b></p>	

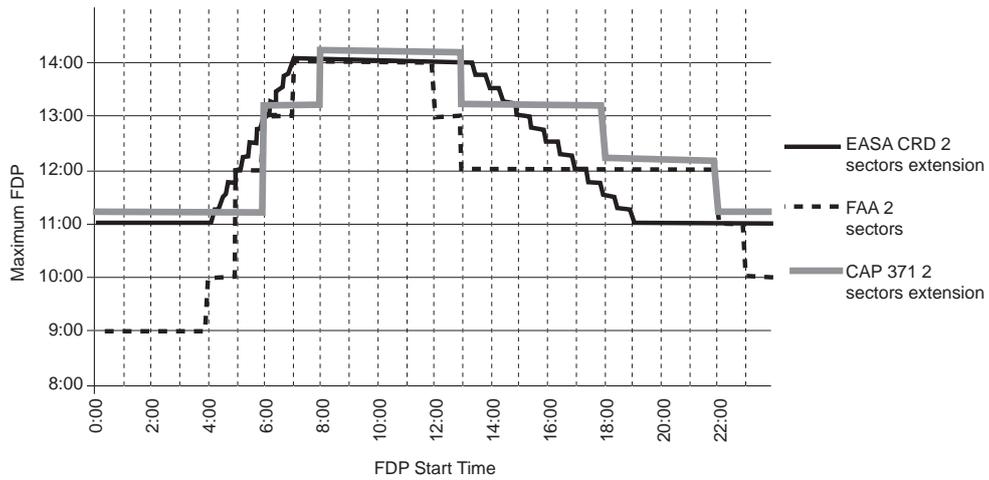
<i>Fatiguing Effect</i>	<i>Examples of Fatigue Management in the Proposed Regulations</i>
<p>Sleep debt refers to the impact of receiving less than a full night's sleep for multiple days.</p>	<p>Disruptive schedules can create a sleep debt and the regulations propose increased rest periods following disruptive schedules (mixing duties starting or finishing in the WOCL).            Definitions of late and early duties have been amended to follow scientific advice (0000—0659).            Extending recovery periods to be two days long at least twice in 28 days.            Extra time off required surrounding FDPs that cross significant numbers of time zones.</p>
<p>Time on task            The type of task plus the time spent continuously doing the task has a fatiguing effect.</p>	<p>The FDP is reduced depending on the number of flights to be conducted within the duty, as science shows that the number of flights in a duty has a fatiguing effect. Rest requirements are dependent on the length of the previous duty to ensure the crew member is well rested for the subsequent FDP.</p>

FLIGHT DUTY PERIOD COMPARISON TABLES BETWEEN CAP 371, THE EASA CRD AND THE LATEST FAA PROPOSALS<sup>26</sup>

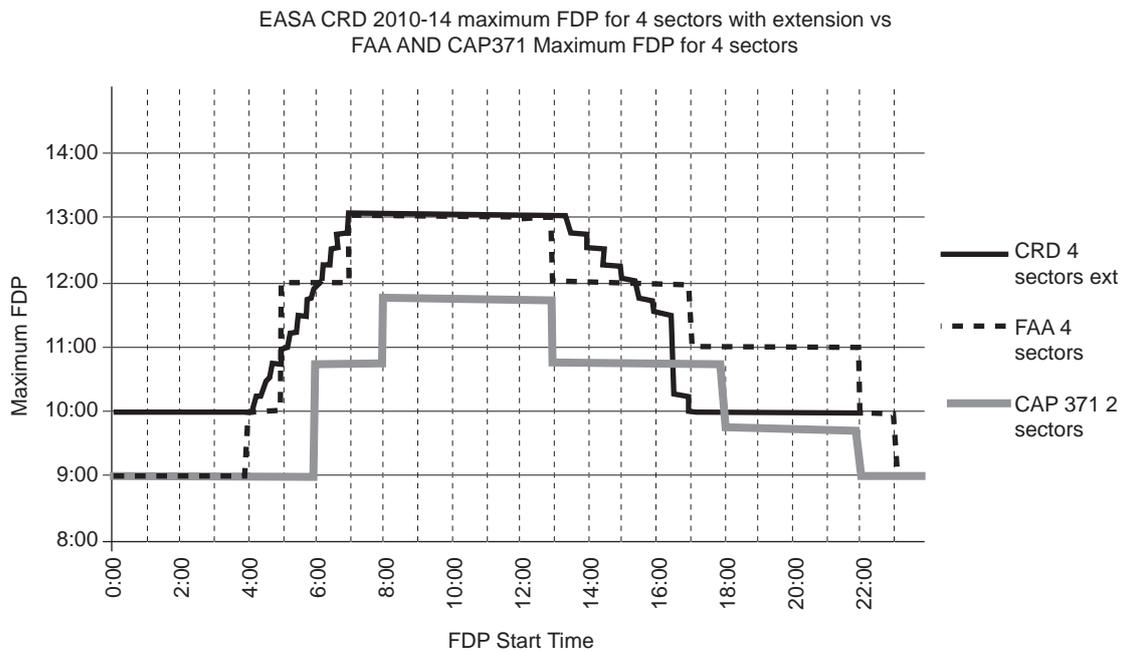
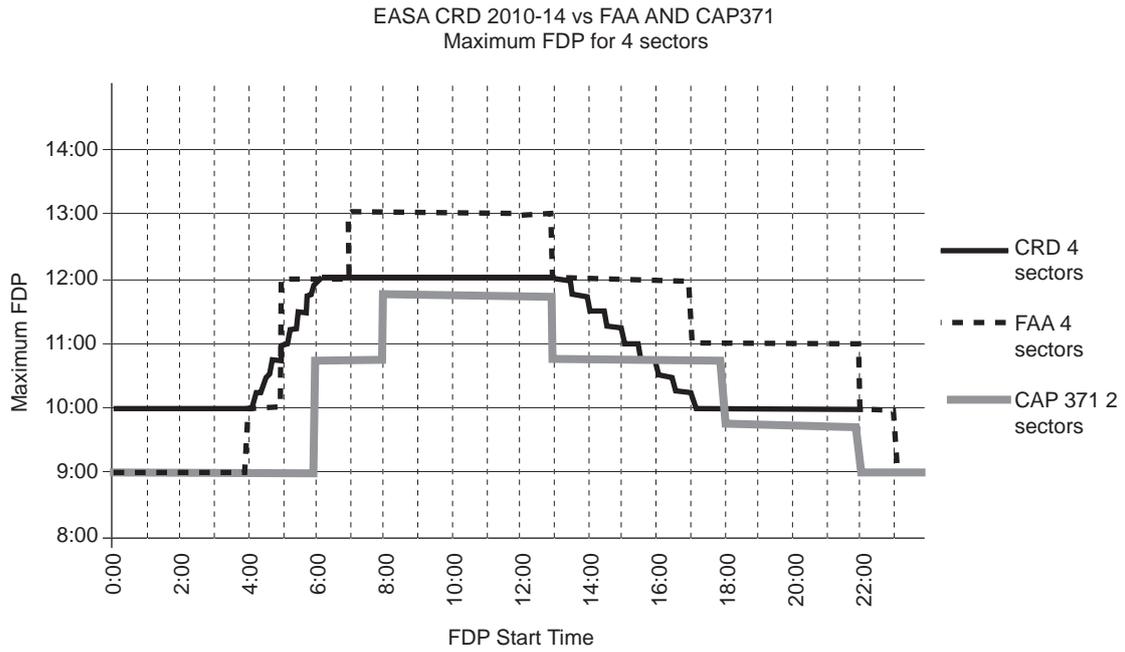
EASA CRD-14 vs faa AND CAP371  
Maximum FDP for 2 sectors



EASA CRD 2010-14 maximum FDP for 2 sectors with extensions vs CAP371 Maximum FDP with extension and FAA maximum FDP for 2 sectors



<sup>26</sup> Maximum Planned Flight Duty Period is shown in hours and minutes.



**Written evidence from the British Airline Pilots’ Association (BALPA)**

**1.0 EXECUTIVE SUMMARY**

1.1 Industries with significant potential to harm the public are regulated. Pilot fatigue is a considerable factor in aviation safety and is regulated. The European Aviation Safety Agency (EASA) was tasked with producing a Flight Time Limitation (FTL) proposal “taking into account recent scientific and technical evidence”.<sup>27</sup> EASA’s overarching objective is to promote the highest common standard of safety in Europe. There are stark differences between the EU proposals and the UK’s current FTL scheme which we believe will result in a diminution of flight safety.

1.2 Fatigue has many effects on mental and physical performance that would be exacerbated under the EU proposals. The potential effects of these proposals on aviation safety can be proven and indeed can be evidenced from recent fatal air incidents. The EASA proposal creates the possibility of pilots landing aircraft having been awake for some 22 hours.

<sup>27</sup> <http://easa.europa.eu/rulemaking/docs/crd/2011/CRD%202010-14/CRD%202010-14.pdf>

1.3 Scientific evidence was not used from the outset and this is contrary to the terms of reference for the rule-making group.

1.4 The CAA has submitted three areas of concern to EASA which have not been fully addressed, yet we understand they are intending to support the proposals. We have concerns that the CAA is struggling to reconcile their dual function as safety and economic regulator and are relying on airlines to construct non-fatiguing rosters.

1.5 The central issue is an ethical one around the value of life and our duty of care. This is best considered in the context of a fatal public transport accident having occurred where pilot error due to fatigue is proven to be a causal factor and where, for example, the crew have been awake for more than 16 hours. The following question would arise—“Given the available scientific evidence has sufficient care been taken in production of the regulation that allows this?” We consider that the answer is “No.”

## 2.0 EASA’s proposals and how these compare to the UK current regulations

2.1 The differences between CAP 371, the domestic UK pilot fatigue rule, and EASA’s proposals are stark. We have chosen four examples of where the proposals offer less protection than CAP 371 but this is not an exhaustive list.

2.2 It is important to bear in mind that “maximum” in FTL schemes does not have the plain English (*pE*) definition due to allowable additions—“*extensions*”, “*discretion*” and “*standby*”—which can add many hours to an FTL “maximum”. In this document we will use maximum (*pE*) to describe a limit which can never be exceeded. Notwithstanding this much of the text of the proposal is open to interpretation and lacks legal certainty.

## 2.3 Landing an aircraft after 22 hours awake

For a two pilot, two sector (flight) day the maximum (*pE*) FDP is 20 hours under the EASA proposals and 16.25 hours under CAP371. The reality of the EASA proposals is that a pilot could wake at 5.00 am, report for “airport standby” at 7.00 am, fly at 11.00 am and land and park the aircraft at the end of the FDP at 3.00 am the following day. He or she would then go to the crew room to complete their duty period by 3.30 am and either go to a hotel or find their way home. *This means that pilots could be landing their aircraft after having been awake for 22 hours.* While this should not be a regular occurrence, operational issues such as snow at a congested airport like Heathrow, could see many crews experiencing this maximum (*pE*) FDP.

## 2.4 Lack of restrictions on two flight, crew long range operations

The EASA rules will allow a two pilot crew to fly very long-haul single sector flights that would currently, under CAP371, require three crew-members. Put this together with a locked flight deck door and an FDP of up to 14 hours (16 with discretion) and you can see the potential for extremely fatigued pilots. Would you want to be a passenger on an aeroplane where a two pilot crew had been on continuous duty for up to 16 hours?

## 2.5 Maximum duty periods

Whilst EASA have proposed the introduction of a 14 day maximum duty limit which we support, their proposed limit of 110 hours is far too high. The UK CAP 371 has a 14 day limit of 95 hours which works well in ensuring that work blocks are not “bunched” together and allows sufficient time for rest and recuperation.

## 2.6 Consecutive Early Starts

Consecutive early starts have been researched by the UK CAA and this research has shown that sleep deprivation, leading to the onset of fatigue, can arise if crew members are required to report for an early start duty on a number of consecutive days.

2.7 The restrictions on the number of early starts permissible under CAP 371 are wholly sensible and backed by existing science. The science has included the need for a Fatigue Risk Management System (FRMS) to be researched and implemented should an operator wish to roster more than 3 consecutive early starts.

2.8 Under the EASA proposals control on the number of early starts is far too lax. The EASA CRD only states that, “For a crew member performing 4 or more night duties, early starts or late finishes between two recovery rest periods the second extended recovery rest period is extended to 60 hours.” This effectively means that *a crew member could work up to 7 early starts* and only be protected by 60 hours free from duty after the block of work. There is no rule protecting an individual from cumulative fatigue within the allowable 168 hour working block. This flies in the face of the established scientific research carried out by the UK CAA into the effects of continuous early starts.

## 3.0 The potential effects of the proposals on pilot fatigue and aviation safety

3.1 Fatigue has many effects on mental and physical performance including reaction time, co-ordination, decision-making, memory, speed and other important aspects of the flying task. Of particular importance,

however, is that fatigue increases the risk of involuntary sleep which comes with little warning. Dr Cabon and his colleagues conducted a study to investigate “pre-planned rest” on the flight deck. For this study<sup>28</sup> both pilots had the electrical activity of their brain monitored throughout the flight. The study revealed that whilst the pilot that was assigned to sleep was doing so, for about half of this time the other pilot was also involuntarily sleeping.

### 3.2 Fatigue and depressurisation

In the event of a sudden cabin depressurisation, alert pilots have in the region of 15 seconds to don their oxygen masks before they lose consciousness. At the best of times at cruising altitudes a pilot’s ability to perform this task within the 15 seconds or so is distinctly marginal. However, if both pilots are asleep then their blood oxygen is likely to be reduced so that 15 seconds is likely to be an over estimate of the time that they have, hence, in the event of a sudden depressurisation, it is quite possible that neither of them would ever regain consciousness.

### 3.3 A real risk of dual incapacitation

A recent poll<sup>29</sup> of 500 airline pilots found that in flights where there are two pilots on the flight deck 43% of pilots reported involuntarily falling asleep. Of these, 31% had woken to find the other pilot also asleep. Due to lack of awareness of one’s own micro sleeps these figures are likely to represent a substantial *under estimate* of the problem. Under CAP 371, where Flight Duty Periods of up to 16.25 hours are possible, pilots could be landing their aircraft at a time when their individual probability of “being likely to fall asleep” is around 21%.<sup>30</sup> Also at this time the pilots may have a hand-eye performance loss that would be similar to having a blood alcohol level of 4 times the legal limit for flying.<sup>31</sup> Under the EASA CRD, where FDP of up to 20 hours is possible, these figures are likely to be very much worse.

### 3.4 Other physical performance decrements

It is important that pilots have fast reaction times. In the cockpit safety critical information is widely spread across instrument panels in front, on either side and above the pilot. This information includes aircraft orientation (wings level or banked, climbing, descending, inverted etc.), fuel levels, ground terrain and what autopilot mode the aircraft is in. Pilots are trained to assimilate this information by scanning their instruments; this is a very mentally demanding task that is particularly likely to “break down” when pilots are tired.

### 3.5 Fatigue a cause of human error

Whilst involuntary sleep is an obvious manifestation of fatigue, more commonly fatigue acts to increase the risk of most forms of human error. Human error is a cause or associated with some 70–80% of aviation accidents.<sup>32</sup> The list of recent fatal accidents where fatigue has been a contributory factor is well known: latterly it includes the Comair Flight 191 at Lexington (KY) in August 2006; Colgan Air Flight 3407 at Buffalo (NY) in February 2009; and Air India Express Flight 812 at Mangalore, India, in May 2010. The 2009 Colgan accident has particularly influenced sentiment in the United States where revised FTL rules announced in December 2011 go much further to protect against fatigue risks than the current EASA proposals. (See 5.1 below)

While the risk of fatigue is universally present in aviation, the effect of the EASA proposals is that pilots will be *more tired more often* and therefore at increased risk of pilot-error.

## 4.0 *The use of scientific and medical evidence in developing the regulations*

4.1 In this area the central issue is one of proper process. Contrary to the EU law setting up EASA and Terms of Reference of the OPS 0.55 rulemaking group<sup>33</sup> we believe EASA took inadequate account of scientific evidence in the formulation of its FTL rules, both in respect of the annual flight hour limits it set and also the daily FDP Limits. Failure to have adequate regard to scientific evidence is a breach of Article 8 of the EASA Basic Regulation and a breach of the general requirements of proportionality (insofar as it is unsuitable to achieve the ends of high, uniform safety and does not go far enough to achieve its objectives). EASA’s failure to adequately reason its conclusions also constituted an infringement of an essential procedural requirement.

4.2 We consider that the EASA working group that produced the proposals was neither sufficiently free from bias nor did it have sufficient capacity in the scientific and medical qualifications of its membership. In the event the group produced a set of proposals that were deeply flawed and then sought scientific, but not medical, advice and incorporated this advice as it saw fit but not in its entirety. To re-emphasise, though, *these proposals have never been subject to medical evaluation.*

<sup>28</sup> Cabon, P *et al* Crew sleep patterns of cockpit napping during transatlantic flights XVth International Symposium on Night and Shiftwork, 17- 21 November 2003, Santos, Brazil.

<sup>29</sup> Telephone Polling conducted by Comres between 20 and 30 September 2011. Representative sample of 500 pilots.

<sup>30</sup> Calculated using the CAA-sponsored “SAFE” Program resulting in a Karolinska score equal to or greater than 8.

<sup>31</sup> Calculated using the CAA-sponsored “SAFE” Program and an output of blood-alcohol equivalence.

<sup>32</sup> Reason, J. (1990). *Human Error*. New York: Cambridge.

<sup>33</sup> [http://www.easa.eu.int/rulemaking/docs/tor/ops/EASA-ToR-OPS.055%28a%29\\_OPS.055%28b%29-00-20112009.pdf](http://www.easa.eu.int/rulemaking/docs/tor/ops/EASA-ToR-OPS.055%28a%29_OPS.055%28b%29-00-20112009.pdf)

#### 4.3 EASA's original scientific evaluation

In 2008 EASA commissioned a scientific evaluation of the EU's current FTL rules, EU OPS Subpart Q. The report, called *The Moebus Report*, stated that:

- The allowed maximum daily flight duty period of 13–14 hours “exceeds reasonable limits” and is “not in keeping with the body of scientific evidence”; it should therefore be reduced.
- The allowed maximum of 11.45 hours night duty should be reduced to 10 hours, because of the particularly fatiguing nature of work at night.
- The allowed practice of 3 consecutive 60-hour weeks (ie 180 duty hours in 21 days) needs to be changed by setting an additional limit of 100 duty hours within 14 consecutive days (ie an average of 50 hours/week, instead of 60).
- Stand-by at the airport is as fatiguing as flight duty, and should not be considered as “rest” but “count 100% as flight duty when calculating the maximum flight duty period.”

4.4 More recently EASA has commissioned further scientific reports which have reached similar conclusions.

4.5 Yet EASA has produced proposals that allow a maximum (*pE*) FDP of 20 hours, maximum (*pE*) night duty hours of 11 hours and does consider airport standby as rest. In Article 22 of the Basic EU Regulation EASA has the explicit obligation in law to base its proposals on scientific evidence.

#### 4.6 Scientific evidence cited in the FAA rules

The US Federal Aviation Administration (FAA) published new FTL rules in January 2012. Quoting directly from those new regulations: “A study published in 2003 analysed the accident rate of pilots as a function of the amount of time that the pilots had spent on duty. The study<sup>34</sup> found that: ‘[T]he proportion of accidents associated with pilots having longer duty periods is higher than the proportion of longer duty periods for all pilots. For 10–12 hours of duty time the proportion of accident pilots with this length of duty period is 1.7 times as large as for all pilots. For pilots with 13 or more hours of duty, the proportion of accident pilot duty periods is over five and a half times as high’”. This is a very important point which underlines why strong FTL regulations are needed and that the FAA understands this point while EASA seem not to.

#### 4.7 An alternative approach to managing fatigue

Reliability standards are a cornerstone of aviation safety. This is where a precisely stated numerical standard for each of the safety critical sub-systems of the aircraft—the engines, the electrical and hydraulic systems and so on—is given. This approach is also taken with the medical fitness of the pilots where their medical certification standard is based on a numerical prospective risk of incapacitation. Over a decade up to 2003 the UK CAA spent some one million pounds on the “SAFE” computer program which has the capacity to predict, to a useful degree, the risk of involuntary sleep in pilots. This risk could be used to set a fatigue related incapacitation standard for pilots. We are disappointed that EASA has not considered this reliability approach and we have made complaint to the CAA that SAFE has still not been released to industry.

4.8 The CAA is likely to raise the matter of Fatigue Risk Management Systems (FRMS) which they seem to believe to be the answer to concerns about the permissiveness of the proposals. FRMS is a scheme whereby specific derogations are allowed by the CAA.

4.9 We do not believe that FRMS should be used as a substitute for a robust basic and legal scheme of flight time limitations.

#### 5.0 How the new regulatory regime compares to that of other countries

##### 5.1 Comparing with the United States

As there have been a number of recent fatigue related fatal airline accidents and incidents in the United States, the National Transportation Safety Board's (NTSB) list of “Most Wanted Transportation Safety Improvements”<sup>35</sup> includes dealing with pilot fatigue. And subsequently there has been a revision of the FAA's FTL scheme published in January 2012. There are striking differences from the EASA FTL scheme. There can be no inclusion of standby time in the FDP so the two crew, two sector maximum (*pE*) FDP is 16 hours whereas in the EASA scheme it is 20 hours. However, the FAA also sets important overarching hard limits on flight time, the time that the pilot actually spends flying the aircraft. *This means, assuming an allowance of two hours for pre-flight duties and turnaround, that the maximum (*pE*) flight time under the FAA regulations is nine hours whilst under the EASA it is approximately 14 hours.*

##### 5.2 Other EU Countries

Objections to the proposals have come from a variety of groups from across the EU including safety organisations and Governments. In particular, the Danish Transport Minister has written to the EU Transport Commissioner, Siim Kallas, raising concerns about the proposals. He wrote, “fatigue among pilots seems to be

---

<sup>34</sup> Goode JH (2003). “Are pilots at risk of accidents due to fatigue?” *Journal of Safety Research*, 34: 309–313.

<sup>35</sup> <http://www.nts.gov/safety/mwl-1.html>

a more widespread problem than we have been aware of before.” He also formally raised objections at the EU Transport Council in Luxembourg on 16 June 2011. In contrast, UK Ministers have raised no objections at all.

## 6.0 CAA/DfT POSITION

6.1 We have been deeply disappointed by the failure of the CAA and Ministers in the Department to stand up for UK-level safety as a minimum requirement. Ministers have made it clear that they will abdicate responsibility for judging the safety of the scheme to the CAA. We do not believe the CAA has correctly judged the safety impact of what is being proposed.

6.2 The CAA submitted three areas of concern to EASA. These related to FDP for overnight operations, “recovery periods” and a requirement for a 14-day duty hour limit. In none of these areas has the CAA’s concern been fully answered. We believe this should mean the CAA ought to recommend to the Minister to reject the proposals as they currently stand.

6.3 The position of the previous Government, as outlined to us in a letter from the then-Parliamentary Under Secretary of State was “... to maintain existing UK requirements unless they need amendment in the light of new scientific evidence, such as might emerge from a review by the European Aviation Safety Agency.” Any reading of the science would show that CAP 371 might need amending only insofar as it is insufficiently robust, and not because more lax rules, such as EASA’s proposals, would be safer.

6.4 We believe that the CAA is struggling to reconcile its dual function as safety regulator and economic regulator which is impairing its ability to judge these rules correctly.

6.5 The Committee should note that the CAA is likely to refer to an overarching duty on operators to not construct fatiguing rosters. However, there is no definition of what constitutes a fatiguing roster out with CAP371 as currently exists or EASA’s proposals into the future. Any airline would assume, surely correctly, that if a roster is possible in the FTL rules then, by definition, it is not fatiguing.

## 7.0 CONCLUSION

7.1 EASA’s process was flawed from the start. EASA should have mandated scientific and medical experts in the field to construct a new scheme of FTLs based on scientific and medical evidence.

7.2 In this submission we have cited provisions within the EASA scheme which are grossly unsafe and increase the risk of a fatal air accident.

7.3 We would like to see high uniform safety standards, with CAP 371 as a minimum requirement, across Europe. We note with regret that this seems a distant possibility so we would like assurances that the UK Government will not support the adoption of these rules unless there are very considerable changes.

7.4 At the very least we require the UK government to commit to seeking a derogation for the UK if these rules are adopted in current, or close to current, form so that UK aviation safety standards are preserved.

7.5 Given the EU proposals have been developed contrary to EU law and EASA basic regulation, we would ask whether the UK government would be happy to defend these regulations should a fatal air accident occur where pilot fatigue is cited as a cause.

February 2012

---

### Supplementary written evidence from BALPA

Thank you for giving me the opportunity to give oral evidence on behalf of BALPA at the session on flight time limitations on 22 February.

I would like to clarify some of the points raised and address some of the other matters that arose.

#### THE GOODE STUDY

The scientific research that has important bearing on the issue is the US Federal Aviation Administration paper by Goode JH (2003): *Are pilots at risk of accidents due to fatigue*, *Journal of Safety Research*, 34: 309–313 (copy of article attached). The *Journal of Safety Research* is a peer reviewed publication, that is to say its articles are vetted by a scientific editorial board. The intent of the vetting is to eliminate bias, flawed method, unsubstantiated conclusion and other known vulnerabilities in research. The study uses a particular statistical technique to compare the duty time of pilots involved in accidents compared with all pilots (both those that have and have not had accidents).

The results show that from one to six hours of duty the proportion of accident pilots is smaller than for all pilots, from seven to nine hours of duty the proportion is a little higher at 1.1 times that of all pilots, from 10 to 12 hours the proportion is 1.7 times that of all pilots and for duty periods of over 13 hours the proportion is 5.62 times higher. The statement within the paper “highly significant exceeding the 1% significance threshold” refers to a statistical test that essentially asks—“Although the proportion of accidents associated

with pilots having over 13 hours of duty was 5.62 times higher than that for all pilots what is the probability that this result is due to chance alone?" The answer in this case is that the probability of this being a chance finding is less than 1% which in the language of scientific report writing translates to the term "highly significant".

#### BLOOD ALCOHOL EQUIVALENCE

In relation to the discussion around blood alcohol equivalence, the SAFE program and tests for fatigue, the issue was that the CRD does not define how tired is too tired. Over a decade or so the CAA has spent one million pounds on the SAFE program, a computer program that predicts pilot fatigue given the input parameters of the pilots' duty times.

The program expresses pilot fatigue on a number of scales including blood alcohol equivalence and the Karolinska Sleepiness Score (KSS), a scoring system that can evaluate the risk of a pilot experiencing involuntary sleep. In the autumn of 2011 BALPA commissioned a study of the original EASA proposals using the alcohol and KSS outputs from SAFE. The study demonstrated that pilots could be landing aircraft with specific alcohol equivalent performance decrements of four times the legal limit for flying and with very high risks of involuntary sleep.

A Karolinska score of 8 or more is associated with a high frequency of microsleeps. SAFE can be used to predict the probability of this score being achieved according to the duty the pilot would be flying. We suggest a roster which would allow a 10% or more probability of achieving the KSS 8 score is the limit. In plain terms this is how we answer the questions: "*How tired is too tired?*" and "*When is a roster too fatiguing?*"

In relation to the CAA's removal of alcohol equivalence from the SAFE program, in the session the CAA cited a private communication with their scientific advisor as the evidence for the removal. We can note that the evidence for the original inclusion of the alcohol equivalence in SAFE was taken from peer reviewed publications and from the CAA's own publications. There has been no peer reviewed publication cited by the CAA in relation to the removal of the alcohol functionality from SAFE; it was something the CAA declared after BALPA had given a public exposition of the risks of the CRD using the alcohol equivalence output from SAFE in the autumn of last year.

We also discussed tests for sleepiness. There are several available, many of which work on known associations with eyelid and eye pupil movements. These technologies are available to car and truck drivers and BALPA are currently evaluating their use in the aviation environment.

#### IGNORING THE SCIENCE

Mr Horne of the ECA pointed out that in some areas of the CRD, EASA had noted that all three scientists involved in reviewing the rules were in agreement and that their opinion was ignored. An example of this is overnight operations; all three scientists agreed that the limit should be 10 hours but EASA have retained an 11 hour limit. The CAA, having previously opposed the 11 hour limit, stated that they now had privately held unpublished work to support their acceptance of the 11 hour limit. We find it unsatisfactory that privately held unpublished work is cited in support of this element of the CRD.

In a similar way the CRD's position on early starts is not supported by the science. In fact none of the three scientists support there being no restrictions on early starts. Spencer states that "it would be sensible to include a restriction, say of three consecutive early starts or night duties, but to allow extensions to this based on FRM". Cabon's recommendation was: "For duties starting before 0600, only two consecutive early starts should be allowed. For duties starting after 0600, only three consecutive early starts should be allowed." And the third scientist, Gundel, stated that, "...it is suggested to allow consecutive early starts and late finishes under FRM only." To be clear, there will be no requirement for fatigue risk management for up to *seven* consecutive early starts under the proposal.

#### RYANAIR AND ROSEKIND

Mr O'Brian of Ryanair/ELFAA made several points to which we would like to respond.

Firstly, in response to Mr Stringer's request that he rank the three schemes discussed (Subpart Q, CRD and CAP 371) in order of safety, he stated that they are all equally safe. In contrast, we consider that the CRD represents an increase in safety standards compared to the low fatigue assurance standard of Subpart Q. We also consider that CAP 371, while far from perfect, is a better standard amongst European FTL schemes and that adopting the CRD would be a downward step.

We do not support the citation of the Rosekind Study as being supportive of Subpart Q. This study, which was commissioned by Ryanair, was not subject to peer reviewed publication and has not been published at all in its entirety. We believe this is the very minimum that must happen before its findings could be taken into account. Should the report be properly peer reviewed then its conclusions could form part of the main body of scientific evidence in this area which certainly do not support the current proposal.

BALPA commissioned a review into the study as published by Ryanair in 2008. The conclusion by Dr Leigh Signal was, "...there are potentially a number of flaws in the way in which data were handled and analyses

conducted, but this is difficult to ascertain due to the limited details provided. In summary, due to these flaws and lack of methodological detail, the conclusions cannot be considered robust and therefore accepted by an external audience.” I would be happy to share the report with you if that would be helpful.

#### CAA’S MOTIVES

In answer to Q18–19 from Mr Maynard I was asked to speculate on the motives for the CAA’s support for the CRD. To add to what I said in response, a feature of the proposals is that they transfer responsibility for fatigue risks away from regulators and towards operators. With responsibility there is associated liability and we consider that the permissive nature of these proposals is likely to lead to a fatigue attributable aircraft accident. Should such an accident occur we consider that under the CRD the operator and any surviving pilots may be held responsible. In this regard, the combination of regulators setting regulation but without their having clear linkage to the risks created by that regulation, make for regulators that have authority without accountability. We feel that this loss of accountability may drive poor regulation.

#### CAA’S DUTIES

I would like to clarify my comment in regard to the CAA’s relationship with the economy of the airlines, which Mr Haines refuted. I was basing my comments on the Civil Aviation Act 1982. Please note my underlining:

*“Regulation of performance by CAA of its functions*

4 General objectives.

- (1) It shall be the duty of the CAA to perform the functions conferred on it otherwise than by this section in the manner which it considers is best calculated—
  - (a) to secure that British airlines provide air transport services which satisfy all substantial categories of public demand (so far as British airlines may reasonably be expected to provide such services) at the lowest charges consistent with a high standard of safety in operating the services and *an economic return to efficient operators* on the sums invested in providing the services and with securing the sound development of the civil air transport industry of the United Kingdom; and..”

#### AIRPORT STANDBY NOT SPLIT DUTY

As you will know, one of our key examples demonstrating the danger of the proposals was around airport standby and the possibility that, through this, pilots could be landing after being awake for 22 hours. Mr Haines said that this would be possible under current regulations within the provisions for split duty. Airport standby occurs at such a time of day and without provision for a bed so that it is as fatiguing as duty and should be counted as 100% in duty time calculations as is the case under the new US fatigue regulations (FAA NPRM). In contrast, split duty refers to the provision of a rest period between flights where a bed is provided and there is a reasonable expectation of sleep. We think Mr Haines was wrong to conflate the two types of duty which are fundamentally different.

#### CAA’S OBJECTIONS NOT ADDRESSED

Finally, I would like to explain the extent to which the CAA’s original three areas of objection had been addressed.

Firstly, EASA had previously proposed a basic limit of 11 hours which could be extended to 12 hours for overnight operations. The CAA noted that “most scientific evidence indicates that overnight flight duty periods should not exceed 10 hours.”

The CRD no longer allows for the one hour extension but CAA’s requirement that 10 hours not be exceeded for overnight operations has been ignored.

Secondly, on extended recovery periods the CAA made the following recommendation: “Add the requirement in FTL.1.235 (c) of at least twice in 28 days that the recurrent extended recovery period is increased to at least 54 hours including three local nights.”

This has been partially addressed in the CRD with a two day break being given twice in 28 days, however the CRD fails to define the number of hours or local nights associated. As the definition of a “Local day” is a 24-hour period commencing at 00:00 local time, the text in the CRD will be satisfied if a period of only 48 hours off is achieved starting at midnight. In relation to the same point, the CAA’s submission goes on: “plus a minimum of 7 ‘recovery days’ in 28 consecutive days, with an average of 8 ‘recovery days’ over 84 days.” This section has not been addressed in the CRD and the current text could allow for only five recovery days per 28 days which is below the CAA ambition.

Lastly, the CAA called for a 100-hour limit over 14 consecutive days, which is in itself an increase over the current CAP 371 limit of 95 hours. The CRD has set the limit at 110 hours which we believe could lead to unacceptable “bunching” of rosters, and is in excess of the CAA’s requirements.

So, as you can see, the CAA's position at the hearing is untenable. We do not believe answering these three issues even in their entirety would make the scheme as safe as CAP 371, but EASA have failed even to do that. It is shocking to us that the CAA are now refusing to stand up even for the measures they themselves called for after the publication of the first iteration of these rules. To say that their concerns have been "wholly met" is, in my estimation, misleading the Committee.

#### KEEP FLYING SAFE

Since the Committee hearing a website has been established on which pilots have been giving their opinions on the proposals as well as some examples of fatigue they have experienced. You can access that at [www.keepflyingsafe.co.uk](http://www.keepflyingsafe.co.uk)

I hope this additional information is of use to the Committee. I am at your service to provide any further information I can.

February 2012

### Written evidence from the European Cockpit Association (ECA)

#### 1. Who are we?

1.1 The European Cockpit Association (ECA) is the association of European flight crew unions, representing more than 38,650 pilots from 38 countries. We are the European regional body of the International Federation of Airline Pilots (IFALPA) representing over 100,000 pilots in 100 member Associations.

#### 2. What is pilot fatigue?

2.1 It is a state of serious tiredness and exhaustion. Defined by ICAO (Annex 6, Part I, as amended in 2009): "A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness and/or physical activity that can impair a crew member's alertness and ability to safely operate an aircraft or perform safety related duties."

2.2 Explained by Dr Samuel Strauss, Aviation Medic NASA: "There are two major physiological phenomena that have been demonstrated to create fatigue: sleep loss and circadian rhythm disruption. Fatigue is a normal response to many conditions common to flight operations because of sleep loss, shift work, and long duty cycles. It has significant physiological and performance consequences because it is essential that all flight crewmembers remain alert and contribute to flight safety by their actions, observations and communications".

#### 3. The reality of pilot fatigue

3.1 15–20% of fatal accidents related to human errors have pilot fatigue as a contributing factor<sup>36</sup> and some notable accidents include:

2010	Air India—Mangalore—152 killed
2009	Colgan Air—Buffalo NY—52 killed
2006	Comair—Lexington KY—49 killed
2004	Med Air—San Bernadino CA—5 killed
2004	MK Airlines Halifax Canada—8 killed
2002	AgcoCorp Birmingham UK—5 killed
2001	Crossair, BAe146 at Zurich, Switzerland
1999	American Airlines Texas USA—11 killed
1997	Korean Air Guam—228 killed
1994	Air Algerie, Coventry, UK—5 killed
1993	Kalitta International, Guantanamo Bay—11 killed

3.2 Furthermore, there is extensive scientific evidence that shows accident rates increase markedly after 13 hours on duty. (Study by Goode JH, 2003)

#### 4. What are Flight Time Limitations? (FTLs)

4.1 Since the 1944 Chicago Convention, it has been recognised that pilot fatigue can pose a risk to the safety of air operations. This risk needs to be controlled by the means of Flight Time Limitations (FTL).<sup>37</sup>

<sup>36</sup> "The role of EU FTL legislation in reducing cumulative fatigue in civil aviation" 2003. T Akerstedt, R Mollard, A Samel, M Simons, M Spencer

<sup>37</sup> 1944 Chicago Convention (Annex 6, 9.6.) "The State of the Operator shall establish regulations specifying the limitations applicable to the flight time and flight duty periods for flight crew members. These regulations shall also make provision for adequate rest periods and shall be such as to ensure that fatigue occurring either in a flight or successive flights or accumulated over a period of time due to these and other tasks, does not endanger the safety of a flight."

## 5. How do Flight Time Limitation's (FTLs) work across Europe currently?

5.1 Despite their importance for aviation safety, common European flight time rules did not exist until very recently. It is only since July 2008, that "EU-OPS" Regulation's Subpart Q (in Annex III) has been regulating minimum FTLs for air crew.

5.2 While individual EU countries can apply stricter FTL rules at national level, they are not allowed to go below the minimum set by EU-OPS, unless they apply for a specific derogation. Some countries (such as UK or Spain) choose to overlay their own national schemes. In the UK this scheme of FTL's is called CAP 371 and has evolved since the 1950's when the issue of pilot fatigue was first recognised CAP 371 is much admired around the globe and is the basis for national FTL schemes in some other several countries (eg Cyprus etc).

5.3 In addition to national schemes, most airlines will have a scheduling/collective labour agreement (CLA) which has been negotiated between the airline and pilot representatives. This agreement provides an interpretation of the national scheme specifically tailored to the conditions of that airline. These scheduling agreements cannot set lower safety levels than EU-OPS, and in most cases they actually provide for significantly more advanced FTL provisions than the national laws or EU-OPS. They therefore provide for higher safety levels than required by law.

5.4 However, we have seen a trend which is the gradual *downgrading of* safety levels within the framework of Scheduling/Collective Labour Agreements (CLAs) at Airline level. Increasing competitive pressure, combined with the existence of an EU-wide FTL standard which is below most CLAs, encourages many companies to dismantle the more protective CLA provisions and to *move towards the lower EU minimum*. The recent cancellation by Air France of all Collective Labour Agreements (incl. their provisions of flight and duty times and rest periods) is just the latest example of this trend. If this trend continues in future, aviation safety levels risk to suffer. We therefore are concerned about countries placing responsibility for safe scheduling in the hands of commercially motivated employers.

## 6. Why are the current EU rules being changed?

6.1 While setting a minimum safety level, Subpart Q is by no means ideal. Its main weakness is that it has never been subject to a scientific and medical evaluation. This weakness is what the new FTL scheme being developed by EASA was supposed to address.

6.2 Subpart Q also needs updating as it presently contains a number of significant "black holes"—areas of fatigue vulnerability where EU Member States took different approaches in protecting against fatigue. Where these approaches were politically difficult to reconcile, rather than applying a common rule, Subpart Q simply set them aside and remained silent, trusting to national laws or CLAs to provide protection.

6.3 The EU-OPS regulation mandates the EU to revise the current rules in view of scientific evidence. EASA's Basic Regulation (Art. 22(2)) also mandates the new EASA rules to be based on scientific evidence—in line with the requirements of ICAO Annex 6.

6.4 There is a unique legislative opportunity here to provide safe, scientifically based rules for the whole of Europe and we are dismayed that scientists have not been involved from the outset and their input at this late stage is being largely ignored on an important number of key provisions of EASA's latest proposal (CRD-2010-14).

## 7. Fatigue is a growing problem in Europe

7.1 Increasingly, due to commercial pressures, we are seeing FTL rules being set as a "target" rather than the limits for safe operation.

7.2 Recent surveys among airline pilots show the extent of the problem: for example surveys in Sweden, Norway and Denmark show that 71%-90% of pilots said they made errors due to fatigue, with 50-54% saying they fell asleep in the cockpit without agreeing this with their colleague. Other surveys in Spain, France, UK, Germany and Iceland confirm that we do have a safety issue in Europe's cockpits.

7.3 In the UK a recent survey showed that, 43% of pilots say they have fallen asleep while working in two crew operations. Of them 31% have woken up to find the other pilot asleep.<sup>38</sup>

7.4 A recent UK survey among the Doctors who function as Aero-Medical Examiners (AMEs) shows that 75% of AME's consider that up to 25% of pilots are too tired to fly safely, and 68% of AMEs think pilots often fall asleep without realising it themselves.<sup>39</sup>

7.5 This reality is not captured by official statistics. This is because the statistical tools often are not precise enough to properly identify pilot fatigue. And because the EU Occurrence Reporting Directive does not make fatigue a mandatory reporting event.

7.6 More importantly: fatigue is significantly under-reported by the pilots themselves. This is because pilots do not file reports on an aspect that has become a "normal" part of their daily work. Many are afraid their

<sup>38</sup> Telephone Polling conducted by Comres between 20 and 30 September 2011. Representative sample of 500 pilots.

<sup>39</sup> Telephone polling conducted by Populus . Sample of 50 Aviation Medical Examiners in the UK between 11 and 13 April 2011.

---

fatigue reports could have negative consequences for their professional future (ie reprisals by management)—a phenomenon that is growing—particularly when pilots refuse to fly because they are too fatigued. Indeed UK polling results show that 33% of pilots would not feel comfortable refusing to fly if fatigued, and of those who would, three quarters would have reservations. Once a pilot has decided they have no option but to fly, a fatigue report would be tantamount to writing the evidence for their own prosecution.

7.7 The surveys among airline pilots confirm what the scientific research has already shown: today's EU fatigue rules are insufficient to protect against the safety risks of fatigue and must be changed.

#### 8. *What does the science say?*

8.1 Research into fatigue has been going on for many decades and has underpinned many national regulations in Europe. The International Civil Aviation Organisation (ICAO) concluded recently that sufficient scientific and medical evidence is available, and it therefore mandates that national fatigue rules must be based on such evidence.

8.2 However, the EU's current rules ("Subpart Q") are not based on science, and were mandated to be replaced by scientifically derived rules based on a "scientific and medical evaluation" to be carried out by EASA.

8.3 The results of this scientific evaluation<sup>40</sup>—carried out by 10 renowned scientists—were officially published in Jan. 2009. It identifies a number of provisions in Subpart Q that need improvement to ensure adequate levels of flight safety, concluding among others that:

- The allowed maximum daily flight duty period of 13–14 hours "exceeds reasonable limits" and is "not in keeping with the body of scientific evidence"; it should therefore be reduced.
- The allowed maximum of 11:45 hours night duty should be reduced to 10 hours, because of the particularly fatiguing nature of work at night.
- The allowed practice of three consecutive 60-hour weeks (ie 180 duty hours in 21 days) needs to be changed by setting an additional limit of 100 duty hours within 14 consecutive days (ie an average of 50 hours/week, instead of 60).
- Stand-by at the airport is as fatiguing as flight duty, and should not be considered as "rest" but "count 100% as flight duty when calculating the maximum flight duty period".

8.4 Since being published the study was subsequently *de facto* put aside by EASA and the EASA process to develop new FTLs began without any scientific basis, nor any involvement of scientists (and this despite the fact that the Terms of Reference of the rulemaking task specifically mentioned the involvement of scientists).

8.5 In 2011, and following intense pressure from the ECA and national pilot Associations, EASA commissioned three independent and separate scientific assessments of its Dec. 2010 proposal for EU fatigue rules. All three scientists come to very similar conclusions as EASA's initial study, showing a clear need to revise EASA's new proposed rules.

8.6 Since June 2011, EASA kept these three reports behind closed doors despite requests to release them, and published them only in January 2012, having already written its revised proposal.

8.7 We are currently assessing the three scientific reports in detail. However, a first assessment shows that scientific findings have been ignored on a number of issues (see chapter 11 below).

#### 9. *A flawed rule-making process*

9.1 The International Civil Aviation Organisation (ICAO) concluded recently that sufficient scientific and medical evidence is available, and it therefore mandates that national fatigue rules must be based on such evidence.<sup>41</sup>

9.2 The EU-OPS Regulation of the EU parliament and council also requires that scientific evidence be the basis for new rule development and, as science was not a part of the process from the outset, this constitutes an infringement of an essential procedural requirement.<sup>42</sup> Further, EASA's Basic Regulation (Art. 22(2)) mandates the new EASA rules to be based on scientific evidence.

9.3 The rule-making group (Ops 055) was comprised of representatives from EASA, selected National Authorities (incl. from the UK), ECA, ETF and the airline associations AEA, IACA, ERA, and ELFAA, plus an observer from the European Commission, but did not include as a member anyone with scientific credentials or expertise.

9.4 We therefore believe that the proposals EASA have delivered are contrary to EU law.

---

<sup>40</sup> Moebus 2008 <http://www.easa.eu.int/rulemaking/docs/research/FTL%20Study%20Final%20Report.pdf>

<sup>41</sup> amended ICAO Annex 6—adopted in March 2009

<sup>42</sup> Articles 2(1) and 8(6) of Regulation 216/2008/EEC of the European Parliament and the Council

## 10. *United States rules moving in the opposite direction towards a safer FTL regime*

10.1 On 21 Dec. 2011, the USA's Federal Aviation Authority (FAA) released its long-awaited new pilot fatigue regulation. This publication comes almost three years after 50 people died in a plane crash (Colgan Air) in which pilot fatigue played a major role.

10.2 The new US legislation replaces the current antiquated fatigue rules and will take effect in two years time. However, as a result of the operators' intensive lobbying campaign, cargo operations are excluded from the new legislation—despite the fact that fatigue affects pilots irrespectively of whether they transport passengers or cargo. Crucially, the airline industry was not successful in aborting these new rules altogether. Instead, the FAA was able to defend key aspects of its proposal, which is largely based on scientific evidence.

## 11. *ECA's concerns with the latest EASA proposal (CRD-2010-14, 18 January 2012)*

11.1 Below are some examples of where the latest EASA proposals are insufficient to ensure safe operations for Europe's travelling public. It is based on an initial assessment of the EASA proposal and only focuses on *some* of the major concerns European pilots have. A more detailed list will be compiled in the coming weeks after a thorough assessment.

### *Night Duties: Scientists Agree 10 hrs are safe—but EASA allows 11 hrs*

11.2 Three independent scientific reports—commissioned by EASA in 2011—conclude that flying at night should be limited to a flight duty of 10 hours. Anything above would create critical levels of fatigue and hence a potential safety risk. And yet, the latest EU proposal allows 11 hours at night.

### *Airport Standby: How can you land your plane safely after 22 hours awake?*

11.3 The EASA rules would consider the following work day as perfectly legal: A crewmember wakes up at 05:00 in the morning and begins his/her standby at 07:00 in the crew room. If s/he is called to take a flight at 11:00, the EU proposal would allow to fly until 01:00 next morning. This is 18 hours from the start of the standby and 20 hrs after having woken up.

11.4 And if an unforeseen delay occurs, eg on the last flight, this could be extended by up to two more hours. The pilot would then be required to land the plane safely at 03:00, having been awake for 22 hrs.

11.5 For comparison: the new US pilot fatigue rules would require the pilot to end his/her duty at 21:00, or latest at 23:00 in case of an unforeseen delay.

### *“Short-call” standby: another example of excessively long duty days*

11.6 To give companies flexibility, EASA proposes “short-call” standby where the pilots either stay at home or at the airport (in a hotel room), waiting there for a flight. Again the following is considered perfectly legal.

11.7 A crewmember wakes up at 06:00 and starts his/her standby duty at home at 07:00. If s/he is called to begin a flight at 13:00, the EU proposal would allow the crewmember to fly until 03:00. This is 20 hours from the start of the standby and 21 hrs after having woken up.

11.8 Again: let's add an unforeseen delay, and the pilot will have to land the plane safely at 05:00, ie 23 hours after having got up in the morning.

11.9 Now add some difficult weather conditions—or a technical problem just before landing—and the pilot's ability to land safely would be seriously compromised. Nevertheless, EASA's new proposal considers this perfectly safe.

11.10 For comparison: the new US pilot fatigue rules would require the pilot to end his/her duty at 23:00, or latest at 01:00 the next morning in case of an unforeseen delay.

### *Long work days with multiple take-offs: Insufficient protection against fatigue*

11.11 Scientific evidence demonstrates that fatigue increases with the lengths of the working day as well as with the workload. And it shows that fatigue levels build up faster towards the end of a long duty day and after multiple take-offs and landings.

11.12 Despite this, the EU proposal does not protect sufficiently against the fatiguing effect of multiple take-offs and landings. Scientists are unanimous that the total daily flight duty time must be reduced as of the second take-off. But EASA requires this only as of the third one.

11.13 The scientists also recommend that the total daily flight duty time should be reduced (as of the second take-off) by 30–45 minutes for each such additional take-offs. However, EASA sticks to the lower limit of 30 minutes, even for work days with four or more take-offs.

11.14 While this suits the commercial interests of the airlines, it does not protect passenger safety on flights where the pilots have already carried out numerous flights before during the same day.

## 12. Conclusions and recommendations

12.1 We believe this is a unique opportunity to use this legislative process to produce safe rules to the benefit of Europe's travelling public.

12.2 EASA's proposals in their current form do not take account of the available science and therefore they are unsafe. We need EASA to be forced to use the available science and make Europe a leader in aviation safety. This is what Europe's passengers deserve: legislation that protects THEM—rather than the airlines' commercial interest.

12.3 We would recommend that:

12.4 Current CRD is significantly improved with necessary amendments that are fully in line with scientific evidence.

12.5 CAP 371's safety levels are taken as a benchmark for the EASA proposal.

12.6 The EU-OPS "non-regression" clause is maintained, whereby Member States with higher safety standards than the future EASA rules can maintain their national rules.

12.7 The CRD and final EASA Opinion (expected for June 2012) to be subject to a scientific assessment by the same three scientists that assessed the previous EASA NPA. The findings of this assessments must be taken into account in the final EU FTL rules. Ideally, the final regulation should comply with EASA's own commissioned Moebus report.

February 2012

---

### Supplementary written evidence from the European Cockpit Association (ECA)

I would like to express my thanks for giving me the opportunity to demonstrate the concerns of European pilots with EASA's proposed rules on Flight Time Limitations to the Transport Select Committee.

It is reassuring to see that the Committee is willing to advocate for public safety and independently investigate measures such as these when the safety regulation process appears to become diverted from its original intent.

I am also writing as I would be grateful if you would allow me to clarify some points which were raised by the hearing and that could not be fully addressed due to time constraints, or which were the subject of comments from some witnesses that could be deemed misleading if not addressed.

#### 1. THE ORAL EVIDENCE FROM OPERATORS

There are three points I would particularly like to address that in isolation could be deemed misleading:

##### 1.1 "Responsibility" of Operators and Commanders

It was suggested (Q49) that responsibility for safety lay exclusively with Operators and the Commander of an aircraft "on the day". This wording seems to tie in with the CAA's reliance on "Operator responsibilities" in its acceptance of EASA's proposals.

However, the witness seems to confuse the concept of "liability" and "responsibility". Clearly, once an accident has happened the Operator and/or Commander may be held liable for causing it.

Given that ECA fully supports the Committee's focus on public safety and therefore believes that the priority should be on preventing accidents in the first place—the responsibility for this clearly lies in the first instance with the regulator and a safe system of rules for airlines and pilots to operate within.

##### 1.2 Ryanair input on CAP 371

Mr. O'Brien, apparently representing ELFAA, though speaking principally about the interests of Ryanair specifically, had a number of things to say about the merits of CAP 371 vs Subpart Q. (Qs 51, 57, 59, 60, 61, 62)

It should be noted Ryanair chooses to be regulated by the Irish Aviation Authority, using the basic Subpart Q, and is not regulated by the CAA, nor has it ever operated under CAP 371.

It is curious that it therefore feels it can contribute meaningfully on the safety or other benefits of CAP 371. Ryanair (who also staffed the "ELFAA" position on the FTL rulemaking review group within EASA) have consistently argued and lobbied for the laxest possible standards of fatigue rules, other than in a few areas where they believe they will achieve competitive advantage as they go unaffected whilst their competitor's operations are affected. ECA believes they seek to lower their costs, at any cost.

I would ask the Committee to bear this in mind when considering how to weight their evidence.

### 1.3 Composition and behaviour of the EASA “OPS055” FTL review group

Contrary to the allegations of Mr. O’Brien, the position of European pilots with respect to EASA’s proposals has always been based on scientifically evidenced safety promotion, and never social or industrial arguments. (Qs 57, 62, 63, 65)

At the outset of this process ECA took the view that whilst there were many compelling arguments related to the negative social effects of EASA’s proposals on Europe’s pilot and cabin crew workforce, we would never use them.

We know well that the safety risk associated with inadequate FTL rules outweighs any other considerations, and that fatigue massively increase the likelihood of all categories of accident (even those that don’t cite “fatigue” as a contributor), affecting aviation across the board.

We have therefore been *absolutely rigorous* to solely and simply advocate that the established body of scientific and medical evidence on fatigue related performance degradation be used to determine what regulations are needed.

Indeed, where scientific advice has been that provisions in EASA’s original proposal are unnecessarily strict, we have been happy to support more permissive rules.

Pilots are (literally) at the forefront of public safety on this issue—as the saying in flight school goes, the first person to arrive at the scene of every aircraft accident is always a pilot. It is very much in our interest to seek science based safety rules long before we worry about social or industrial issues.

## 2. THE UK CAA’S STANCE ON FATIGUING DUTIES

There are some detailed comments made in the evidence of the UK CAA that do not stand up to scrutiny:

### 2.1 Pilot responsibility

There is an explicit suggestion (Qs 73, 75) that pilots suffering involuntary sleep or fatigue related performance degradation are doing so because of activity in their rest periods, that if they were more responsible fatigue would not be a problem, and that therefore fatigue is not related to the nature of duties constructed under flight time limitations.

The idea that the source of fatigue problems does not lay with flight duties and associated safety regulation, but with pilots’ personal lives is a gross abdication of responsibility from the regulator. It is also a suggestion without foundation.

If this is the attitude held by the regulator it indicates a serious failure to understand the widespread professionalism of UK pilots, the nature of their day to day work which does not leave room for skipping available rest opportunities, the available scientific evidence demonstrating a clear link between accidents of all “causes” and fatiguing duties, and seems to suggest an alarming distance between the CAA and the reality of Commercial Air Operations.

### 2.2 Inability to “achieve” similar figures for time awake at landing under CAP 371 and EASA CRD

Mr. Haines made a comment that it was possible to achieve the 22 hours awake on landing figure under CAP 371 (Q87). This is not correct.

That the CAA thinks this would be a thing that is desirable to “achieve” is interesting in itself however.

The example he cited was one of “Split Duty”, whereby a crewmember commences a Flight Duty Period (FDP), operates a flight, and then gets an opportunity to sleep for a number of hours, usually in a hotel, before commencing another flight that must finish within the original Flight Duty Period limit. A proportion of the time spent asleep can be used to extend the limit of the FDP however. It is under this construction that the CAA alleges it would be possible to get to 22 hours. However, it means the crewmember getting 7 hours of rest in a hotel in the middle of their duty, and not therefore in any way equivalent.

It is not possible under CAP 371 to get anywhere near the amount of continuous time awake prior to landing that is possible under the EASA proposal, and it is disingenuous to suggest otherwise to claim they are in any way equivalent.

### 2.3 Likelihood of reaching duty limits under an FTL scheme

The CAA also claimed (Q86) that it would be “exceptionally rare” to reach the outer limits of possible duties under EASA’s proposal.

As ECA explained in its written evidence, FTL regulations are increasingly used as a target, rather than a limit.

Even in the more scrupulous operators this occurs because of the way crew and aircraft rosters are created. A computer will be programmed with the set of FTL rules, and then quite reasonably asked to cover the

required flying as efficiently as possible. This means in practice with as few pilots as possible, pilots being a cost to the business. Consequently, rather than the roster just being curtailed where it runs up to the occasional FTL limit, the computer system ends up expanding the work on the roster to completely fill the possible envelope of the FTL scheme—it ends up targetting all of the “limits” at once, in pursuit of efficiency.

Nor is the use of “Commander’s discretion” to extend beyond an already “maximum” duty period exceptionally rare—indeed when this form of extension is used, it is often on many flights at the same time all going through the same airport, concentrating the risk. An obvious topical example is during disruption caused by snow or fog at London Heathrow. Arrival and departure delays will affect all flights using the airport in the same period of time, and on limiting duties will require the use of these duty extensions. Many of the flight cancellations in the most recent snow affected period were due to pilots reaching their duty limits even with the full use of Commander’s discretion—airlines expect their pilots to use it to “keep the show on the road”. For every flight cancelled due to breaching the limit there will be many more that operate *just* under these extended limits.

For the CAA to dismiss the the risk of these incredibly long and fatiguing duties that are possible under EASA’s proposals as not a concern is both alarming, and irrational—if they believe they so rare as to be no problem, why not just act to prevent them being possible in the first place?

### 3. THE UK CAA’S STANCE ON EASA’S PROPOSED RULES

The UK CAA’s stated position on EASA’s proposed FTL rules at the inquiry appears at this stage to be that they are, when considered as part of a package, “broadly equivalent” to CAP 371. (*Qs 72, 76, 78, 71*)

This position was based on three points:

- (i) That whilst the prescriptive rules in the CRD are generally more permissive, there are some areas, such as afternoon duty starts, that are more restrictive.
- (ii) That the more permissive “hard” rules are in part made up for by increased “Operator Responsibilities”.
- (iii) That there is a wider use of Fatigue Risk Management (Systems) [FRM(S)] in the EASA proposal which make up for more permissive “hard” rules.

To found a belief that CAP 371 is broadly equivalent to the EASA proposals on these points is deeply flawed—all three points provide only illusory protection when subjected to any scrutiny. Their flaws are outlined below.

I believe they show clearly that there is no “broad equivalence” at all.

#### 3.1 (i) EASA proposed FDP limits on afternoon duty starts more limiting than CAP 371?

The majority of late afternoon starts are for long range single sector flights (“Longhaul” operations in colloquial terms). Flight Duty Periods (FDPs) under CAP 371 are limited well below the “headline” numbers the CAA use to make their comparison for flights over 7 hours in duration, and even more so for flights over 9 hours duration.

Under CAP 371 flights will in practice therefore have to operate with relief pilots and in-flight rest facilities well before reaching the theoretical FDPs mentioned by the CAA. Under the EASA rules there will be no such protection (incidentally there is similar protection in the US from limits on “time at the controls”).

Indeed this protection for Longhaul flights applies for FDPs starting at any time in the UK at present, but will disappear in the UK under EASA’s rules.

This alleged area of greater protection under the EASA proposal therefore does not, in practice, exist.

#### 3.2 (ii) Operator Responsibilities

The section on Operator Responsibilities in EASA’s proposals is, to be blunt, vague, subjective, and ambiguous.

There is nothing in it that could be used to meaningfully determine or limit an Operator’s rostering practices—all they need say is “our rosters are not fatiguing”.

The section is short, and so the Committee can judge for itself, I copy it below:

*“ORO.FTL.110 Operator responsibilities*

*An operator shall, where applicable to the type of operation:*

- (a) publish duty rosters sufficiently in advance to provide the opportunity for crew members to plan adequate rest;*
- (b) ensure that flight duty periods are planned in a way that enables crew members to remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety under all circumstances;*

- 
- (c) *specify reporting times to allow sufficient time for ground duties;*
  - (d) *take into account the relationship between the frequencies and pattern of flight duty periods and rest periods and give consideration to the cumulative effects of undertaking long duty hours combined with minimum rest periods;*
  - (e) *allocate duty patterns which avoid practices that cause a serious disruption of established sleep/work pattern, such as alternating day/night duties;*
  - (f) *provide rest periods of sufficient time to enable crew members to overcome the effects of the previous duties and to be rested by the start of the following flight duty period; and*
  - (g) *plan recurrent extended recovery rest periods and notify crew members sufficiently in advance;”*

This will not provide any protection, and to rely on it seems extraordinary.

### 3.3 (iii) *Wider use of FRMS*

Any operator remaining within the prescriptive rules of EASA’s proposal, need not use FRMS. It is used for deviating from the already lax basic proposal.

To be clear, there is no requirement for FRMS to be used anywhere in Europe under the proposals.

It does not therefore seem a useful point to rely on as a safety measure.

## 4. FINAL POINTS

### 4.1 *Harmonisation down*

The Committee rightly sought to discover whether the introduction of EASA’s proposal would be a harmonisation up, or down across Europe, and in the UK.

Clearly ECA wishes for the harmonisation process to bring up the standard in the weaker states of its members, but it must be pointed out that *all* of our members do not think the current EASA proposal is adequate, even those that stand to benefit from it.

However, given the concentration of aviation activity in those states with existing higher standards than subpart Q, we are confident that for the majority of European Aviation this does indeed represent a harmonisation *down*. In the UK, this is without question.

### 4.2 *Benefits of non-regression*

It is worth pointing out that it is not just the UK that has high existing FTL safety standards. For example, Spain, Sweden, Denmark, Norway, and Cyprus all have similarly high standards and would benefit from maintaining them under a “non-regression” clause, as provided by today’s EU FTL rules.

It is for this reason that despite the obvious benefits of harmonisation, ECA would still hope to see the UK maintain its previous stance in requesting non-regression. At worst it would have no disadvantage for the UK and its travelling public, and it would be potentially of great benefit to many other states that look to the UK for their lead.

We also understand from our political contacts that this is an “open door”.

### 4.3 *UK influence on the process*

ECA also understands that the UK has significant opportunity to improve EASA’s rules, and the process, for the better.

The UK punches well above its weight within EASA and has very significant influence. Were the Minister or Secretary of State to direct their officials to press for improvements they are likely to make a positive difference for the whole of Europe, and have a public safety success story on their hands.

## 5. OUR RECOMMENDATION

I would like to reiterate our hope that the Transport Select Committee might recommend to both the Secretary of State and the Minister that, for all the reasons stated in our evidence, they direct their officials to seek that EASA’s proposed FTL rules fully reflect *all* their scientific and medical advice, and are significantly improved upon, and further that the current principle of non-regression is maintained in any event to provide a “backstop”.

Thank you again Chair, and Committee, for examining this evidence and taking the time to investigate this important public safety concern. If there are any further points you would like me to provide information on, or assistance with, please do not hesitate to contact me.

*Jon Horne*

*Professional Affairs Director  
European Cockpit Association*

*March 2012*

---

### **Written evidence from British Airways**

#### SUMMARY

Please note that, in this submission, British Airways makes reference to the EASA draft rules on FTL as modified and published in Comment Response Document 2010–14 in January 2012.

- British Airways contends that the rules need to be viewed in their entirety to effect a meaningful comparison with other schemes (eg CAP 371, US FAA proposals). British Airways believes that the EASA rules, in their entirety, will give an equivalent level of safety to those in CAP 371.
- British Airways believes that FTL rules sit within the broader framework of a company's safety-management system. In order to be effective, they require operator accountability, just culture and crew responsibility. With those elements in place, the net effect on safety in Europe should be positive.
- When implemented, the new rules should have the desired effect of providing a high and uniform level of safety within Europe. Some comments are provided about the United States FAA's recent FTL proposals.
- British Airways has a few remaining concerns about how the new rules will be implemented and overseen, but that their substance should be endorsed by the Select Committee.

#### 1. INTRODUCTION

1.1 British Airways welcomes the opportunity to contribute to the Transport Select Committee's inquiry into Flight Time Limitations (FTL).

1.2 British Airways is one of the world's largest international airlines and the UK's largest international scheduled airline, carrying approximately 32 million passengers worldwide annually on around 750 daily flights. The airline employs 40,000 people, the vast majority of these at its sites throughout the UK, and has an annual turnover of £8.5 billion.

1.3 The airline's two main operating bases are London's Heathrow and Gatwick airports, with a smaller base at London City airport serving New York and European business destinations. From these three, British Airways flies 237 aircraft to 152 destinations in 75 countries. In addition to passengers, the airline also transports cargo—more than 750,000 tonnes of cargo are carried around the globe each year.

1.4 In 2010, the airline completed its merger with Iberia of Spain to create the International Airlines Group (IAG). Our combined business offers flights to 205 destinations throughout the world on a fleet of 415 aircraft. It also commenced a joint business agreement with American Airlines, which further extends benefits for its customers. The combined network of British Airways, Iberia and American Airlines serves 433 destinations in 105 countries with more than 5,180 daily departures.

#### 2. *EASA's proposals and how these compare to the UK's current regulations*

2.1 In assessing the difference between the EASA proposals and the current UK regulation—CAP 371—it is most important to take what may be referred to as a 'zoom lens' approach. In other words, it is important when focusing on individual elements of either rule set to then 'zoom out' to view those elements in the context of the entirety of the proposals.

2.2 It is not possible to generalise about how the EASA proposals compare with CAP 371: in some areas they are more permissive, in some areas more restrictive—including on the all-important topic of maximum flying duty period (FDP), where, depending upon the time of start and number of sectors, either set of rules will permit longer duty. In setting FDP limits, which are the same for both pilots and cabin crew, the EASA proposals are more restrictive than CAP 371. The proposed duty-hour limits for one week and two weeks are more permissive; the four week limit is the same.

2.3 Generally, British Airways welcomes the work done by the EASA FTL Rulemaking Group, which constitutes evolution, not revolution of FTL rules. Its task has been one of the most difficult undertaken by the Agency. Its work has resulted in rulemaking proposals, which build on the existing EU-OPS Subpart Q (as required by the European Commission), national rules from more than one state, scientific evidence and solid safety criteria. The end result is that the EU will have among the strictest set of FTL rules in the world. British Airways believes that the EASA rules, in their entirety, will give an equivalent level of safety to CAP 371.

### 3. *The potential effects of the proposals on pilot fatigue and aviation safety*

3.1 It is important to state at the outset that FTL rules are simply one part of the complex set of variables, which makes up an operator's safety-management system. As a constituent part of that system, they will not guarantee safety by themselves. Moreover, publication of European FTL rules will not change the safety accountabilities and responsibilities of an operator. In the case of British Airways, responsibility for safety lies with the Chief Executive, and in turn the Director of Flight Operations is accountable to him. Ultimately, whatever is published by EASA, operators must interpret the rules to ensure their operation is safe—that responsibility lies nowhere else.

3.2 Equally important, in ensuring that FTL rules work properly, is a just-reporting culture which allows crew members to report if they are insufficiently rested prior to a duty, or fatigued (the two are different things). Crew members, pilots or cabin crew, have an equal responsibility to ensure they use their rest periods efficiently so that they report for duty sufficiently rested.

3.3 If those elements of the safety-management system—operator accountability, just culture and crew responsibility work properly, the proposals should have no adverse effect on aviation safety. It will be the way in which the rules are managed which will be the key to success.

### 4. *The use of scientific and medical evidence in developing the regulations*

4.1 As the Select Committee will be aware, EASA made reference to more than 200 individual studies in developing the original Notice of Proposed Amendments, and subsequently took the views of three scientists in producing the revised text of the CRD. The most contentious of the scientific studies was the “Moebus Report”. The Moebus Report does not in British Airways' view meet the scientific standards required to inform decision-making in this important area, and inferred conclusions, which were beyond the data which the report's authors had at their disposal. We note that, although EASA sponsored the production of the Moebus report, it too disregarded it from its deliberations in producing the FTL rules. British Airways is aware that some stakeholders have made claims regarding some components of the EASA proposals, based on a limited range of scientific studies, without linking those claims to the entirety of the EASA proposals. In some cases these stakeholders neglect to observe that the CAA/Qinetiq SAFE model, which has been widely endorsed, has also been used in developing many of the EASA proposals.

4.2 Ultimately, British Airways is confident that the proposals made by EASA have been validated either by robust scientific study, or by widespread custom and practice.

### 5. *How the new regulatory regime compares to that in other countries*

5.1 Our knowledge of other countries' FTL schemes is, necessarily, limited. We are supportive of the EASA work, not least because it should bring the FTL regulation in Europe up to a high and uniform level. We understand that is definitely not the case in Europe at the moment. Whilst under the existing scheme CAP 371 is the most comprehensive FTL scheme in Europe, other states' schemes are, we understand, less detailed or much less restrictive. Therefore, the scope of change required to comply with the EASA FTL rules in countries other than the UK will be considerably greater.

5.2 We are aware that the United States Federal Aviation Administration has recently published its new draft rules on FTL. Several aspects of the FAA rules are actually aimed at aligning the FAA with the existing EU Ops Subpart Q, such as defining a maximum Flight Duty Period based on the time of the day pilots begin their first flight, number of scheduled sectors and circadian limits. The fact that the FAA is aligning itself with aspects of Subpart Q may be seen as an endorsement that the existing Subpart Q rules are effective in mitigating fatigue-related safety risks.

5.3 We also understand that certain organisations appear supportive of the FAA draft rules over and above the EASA proposals. Whilst that approach may be superficially attractive—presumably because of the lower flight-time limits in the FAA proposals—British Airways would question the value of a set of FTL rules which, *inter alia*:

- did not contain any cumulative (weekly, two-weekly or monthly) duty limits; and
- only required 10 hours rest between duty periods (as opposed to the much more sophisticated EASA proposals for rest).

### 6. OTHER ISSUES RELATING TO FLIGHT TIME LIMITATIONS AND THE WORK OF EASA

6.1 British Airways believes that the EASA rulemaking group deserves recognition for sticking to its task of producing FTL rules, which are safe, often in the face of considerable opposition to its work. Whilst we have some ongoing concerns about the value of publishing rules in certification specifications, as opposed to hard law, and about the mechanism by which the new FTL rules will be implemented and overseen—as the relative roles of EASA and the UK CAA in that process are not yet entirely clear—we believe that the substance of the proposals from EASA are robust and should be endorsed by the Committee.

## CONCLUSIONS

British Airways believes that EASA has performed a valuable role in developing the new FTL rules. With proper implementation and oversight, and within a just reporting culture, the rules will have the net effect of raising safety standards in Europe.

February 2012

---

### Written evidence from the European Low Fares Airline Association (ELFAA)

#### INTRODUCTION AND OVERVIEW

1. The European Aviation Safety Agency (EASA) has failed to conduct the scientific and medical evaluation of EU-OPS Subpart Q (Subpart Q), which was mandated by the European Parliament (EP), in contravention of the Regulations under which it acts.

2. The sole scientific evaluation of existing Subpart Q operations concluded that it is effective.<sup>43</sup>

3. European airlines,<sup>44</sup> and pilots<sup>45</sup> actually operating under Subpart Q, are unanimous in their support for the system.

4. EASA replaced its rulemaking process with an unsafe industrial-style negotiation.

5. EASA has misrepresented subjective opinion as scientific and medical evidence.<sup>46</sup>

6. EASA has excluded stakeholders from the Regulatory Impact Assessment (RIA), which it has no competence to conduct.

7. EASA arbitrarily changed the Notice of Proposed Amendment (NPA) at the last minute following unidentified National Aviation Authorities' (NAAs) comments at an un-minuted meeting, without supporting scientific or medical evidence.

8. EASA misrepresented a union "*mail shot*" of multiple identical emails as having equal status to considered and scientifically supported airline submissions, which were buried in unnecessarily repeated and identical union emails.

9. As a result of these failures, EASA has ignored scientific and medical evidence (including that of the scientists it appointed), by recommending:

- a rolling 12-month 1,000 hour flight time limit, despite the scientific and medical evidence, which shows that this is destabilising and unsafe;
- a rolling 14-day 110 hour duty limit, on the basis of erroneous assumptions—and which is wholly unsupported by scientific and medical evidence;
- illogical and contradictory constraints on changing home base, which is a contractual issue—and which is wholly unsupported by scientific and medical evidence; and
- constraints on blocks of duties with four or more early starts, despite the scientific and medical evidence shows that these are particularly safe.

#### EUROPEAN AIRLINES' JOINT POSITION PAPER, IN SUPPORT OF SUBPART Q: LETTER FROM 28 SEPTEMBER 2009

1. EU-OPS Sub Part Q in its current form, complete with all existing definitions, limits and National variants is, and must remain, available to all European airlines as an acceptable FTL system.

2. Fatigue risk management should be seen as integral part of an operator's safety management system to review to effectiveness of FTL systems, propose changes and support variations to EU-OPS Sub Part Q guided by operational experience or scientific study. Further guidance on FRMS will be provided by ICAO, FRMS does not need additional prescriptive regulation by EASA.

3. All EU airlines are agreed on the above points and cannot accept any changes to EU-OPS Sub Part Q which is already in operation, state-of-the-art, demonstrably safe, and more comprehensive than foreign FTL schemes.

EASA is a safety regulator and not a social mediator. FTL as an established safety system and not a social tool.

European airlines unanimously call on EASA to confirm that above agreed principles will be implemented in the interest of European air safety, and not driven by social agendas.

---

<sup>43</sup> The Role of Fatigue Factors in Aviation Operational Events: Analysis of Ryanair Flight Data and Crew Schedules, Dr Mark Rosekind (ex-NASA, now NTSB), January 2008. (See page 6.)

<sup>44</sup> Joint Position Paper on Flight Time Limitations for Commercial Air Transport, Association of European Airlines (AEA), European Low Fares Airlines Association (ELFAA), European Regional Airlines Association (ERAA) & the International Air Carrier Association (IACA), 28th September 2009. (See page 4.)

<sup>45</sup> Pilot letter to EASA. (See page 5.)

<sup>46</sup> Dr Mark Rosekind (ex-NASA, now NTSB) critique of the "*Moebius report*", January 2008, January 2009. (See page 7.)

---

LETTER TO EASA FROM PILOTS OPERATING UNDER SUBPART Q, IN SUPPORT OF SUBPART Q

It is our experience that conforming to Sub Part Q, the current roster system that the company uses allow pilots to maximize alertness and efficiency during the duty day by enabling them to manage short-term rest and prevent cumulative fatigue.

These effects appear to have been predicted by the evaluation conducted in 2002 by Dr. Rosekind and others, and confirmed by a comprehensive review in 2008.

A secondary factor is that pilots are able to effectively organize social activities and allow the enjoyment of a life away from work.

We have been made aware of proposals that will significantly alter Sub Part Q FTL regulations.

Having previous experience of operating under alternative FTL regulations we are of the opinion that the current form of Sub Part Q FTL cleavers significant fatigue reducing factors and is a melon benefit to operational night safety.

DR MARK ROSEKIND (EX-NASA, NOW NTSB) SCIENTIFIC REPORT, DEMONSTRATING SUBPART Q IS SAFE

KEY POINTS

*Overview*

- First-ever study examining relationship between aviation operational events and physiological fatigue factors during actual flight schedules.
- 82,000 flights were considered for the study.
- Onboard technical flight data collection utilized with continuous monitoring of 90 unique flight parameters.
- NASA derived fatigue “scorecard” used to evaluate 11 fatigue factors.
- Ryanair fatigue score compared to other safety sensitive 24/7 work settings.

*Conclusions*

- No relationship was found between fatigue factors and operational events; fatigue factors did not contribute to the occurrence of operational events.
- Results showed a low fatigue factor score for event and non-event flights with no statistically significant difference between the two.
- Ryanair schedules had a better (lower) fatigue factor score compared to other safety sensitive 224/7 work settings (health care, law enforcement, air traffic control, other aviation).
- There were some counter intuitive findings found; for example, the fewest operational events occurred on later days and flight sectors.
- These results demonstrated that Ryanair policies, practices, and roster system are effective in minimizing fatigue factors in its flight operations.

DR MARK ROSEKIND (EX-NASA, NOW NTSB) SCIENTIFIC REPORT, DEMONSTRATING THAT THE “MOEBUS REPORT” IS UNSCIENTIFIC

*Conclusion*

The MAR acknowledges that no data are available or uses unrelated data or relies on subjective findings to provide a scientific and medical evaluation of flight time limitations. Then goes beyond this tasking to suggest “practical” recommendations without using safety, operational or policymaking expertise or data. Examples are provided that demonstrate how the resulting MAR is invalid, insufficient, and risky.

A path that provides an opportunity to pursue policy development related to flight time limitations is outlined.

EASA’S TERMS OF REFERENCE (ToRs)

1. EASA’s ToRs state, *inter alia*, that:

- (a) “... the European Parliament and the Council when adopting regulation (EC) No. 1899/2000 [... amending Council Regulation (EEC) No. 3922/91 on the harmonisation of technical requirements and administrative procedures in the field of civil aviation] *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 on the preparation of regulatory proposals, *if required...*”; (*emphasis added, throughout*) and
- (b) “... by 16 January 2009, the *European Aviation Safety Agency shall conclude a scientific and medical evaluation of the provisions of Subpart Q...*”<sup>47</sup>

---

<sup>47</sup> ... to Commission regulation (EC) No. 859/2008 of 20th August 2008 amending Council Regulation (EEC) No. 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane.

2. It is consequently clear that on the basis of a scientific and medical evaluation, the EC required EASA to make recommendations for:

- (a) changes to existing Subpart Q provisions, *where these were shown to be necessary*; and
- (b) new provisions, where under Subpart Q, these were delegated to National Aviation Authorities (NAAs).

3. EASA is consequently constrained by its ToRs to recommend changes to Subpart Q only where these are justified by scientific and medical evaluation. This requirement applies equally to both changes to existing provisions and to new provisions.<sup>48</sup>

#### *Scientific and Medical Evaluation*

4. By omitting the requirement for a scientific and medical evaluation from its stated objectives, EASA seriously breaches the EC's requirements:

- (a) "... to fulfil the task as required by the legislator taking into consideration all relevant recent publicly available studies/evaluations and operational experience: by *reviewing the flight and duty time limitations and rest requirements specified in Subpart Q...*" and
- (b) "... by *addressing those areas/points in EU-OPS Subpart Q currently subject to national provisions* in accordance with Article 8.4 of Regulation 3922/91 (eg extended FDPs with augmented flight crew, split duty, time zone crossing, reduced rest and standby)..."<sup>49</sup>

5. EASA has manifestly failed to undertake any form of scientific or medical evaluation of Subpart Q. The only scientific and medical evaluation of Subpart Q, which has been ignored by EASA throughout its rulemaking process, concluded that:

- (a) "... these results demonstrated that Ryanair policies, practices, and roster system [conducted under Subpart Q] are effective in minimizing fatigue factors in its flight operations."<sup>50</sup>

6. Instead of conducting a scientific and medical evaluation of Subpart Q, EASA relies on the Moebus report, which neither addresses itself to Subpart Q nor is a scientific and medical evaluation. Tellingly, the executive summary states, *inter alia*:

- (a) "... no decisive conclusion could be drawn..."<sup>51</sup>

7. The Moebus report is now widely discredited and has been assessed by an acclaimed expert, who concluded:

- (a) "... [the Moebus report] acknowledges that *no data* are available or uses *unrelated data* or relies on *subjective findings* [and then suggests] "practical" recommendations *without using safety, operational or policymaking expertise* or data [and] the resulting [Moebus report] is *invalid, insufficient and risky...*"<sup>52</sup>

8. When questioned on the status of the Moebus report, one of the co-authors admitted that:

- (a) "... the team was *not given the time and resources* to answer all of the questions posed by EASA [and that] *no research existed to provide scientific answers* to some of them."<sup>53</sup>

9. Because EASA has not conducted the scientific and medical evaluation required by the EC, any recommendations it makes are in clear breach of its ToRs. This is the case for both existing Subpart Q provisions and those currently delegated to NAAs.

#### *EASA's Recommendations*

10. Nevertheless, on 18 January 2012, EASA published its recommendations to the EC, through a Comments Response Document (CRD).<sup>54</sup> At the same time, EASA also published a bulletin in which Mr Jean-Marc Cluzeau, Head of Flight Standards (and Secretary to the FTL Rulemaking Group (OPS.055)) discussed the rulemaking process and publication of the CRD. He states:

- (a) "... if EASA had any safety concerns about the existing rules, it would have taken immediate action. *This is not the case...*;" and
- (b) "... as a regulator, we always need to look ahead and seek for continuous improvement of our rules."<sup>55</sup>

<sup>48</sup> In accordance with Regulation (EC) 3922/91, Article 8.4: extended FDPs with augmented flight crew, split-duty, time-zone crossing, reduced rest and standby.

<sup>49</sup> EASA Terms of Reference OPS.055 (a) & (b), paragraph 3.

<sup>50</sup> The Role of Fatigue Factors in Aviation Operational Events: Analysis of Ryanair Flight Data and Crew Schedules, Dr Mark Rosekind (ex-NASA, now NTSB), January 2008.

<sup>51</sup> Final Report, "Scientific and Medical Evaluation of Flight Time Limitations", Moebus Aviation, 30th September 2008.

<sup>52</sup> The Moebus Report on "Scientific and Medical Evaluation of Flight Time Limitations": Invalid, Insufficient and Risky, Dr Mark Rosekind (ex-NASA, now NTSB), January 2009.

<sup>53</sup> Dr Karen Robertson, QinetiQ, European Transport Safety Council meeting, at the European Parliament, Brussels, 31st March 2009.

<sup>54</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010-14.

<sup>55</sup> EASA News Special, Interview with Jean Marc Cluzeau, Head of Flight Standards, 18th January 2012.

11. EASA acknowledges that Subpart Q is safe—and as such, cannot make recommendations for changes to existing provisions, as it may only do so “*if required*”. It is self-evident—and was clearly the intention of the EC—that changes to an acknowledged safe FTL system are not required.

12. EASA’s claim of “*continuous improvement*” is bogus and an attempt to disguise misguided tinkering with an acknowledged safe FTL system, which was 18 years in the making. The scientific and medical evidence demonstrates that EASA’s tinkering, far from being “*continuous improvement*”, is unsafe.

#### *Subpart Q is Safe*

13. EASA therefore, again, breaches the EC’s requirement—and has stated that:

- (a) Subpart Q is safe; yet
- (b) EASA has decided to change it.

14. European airlines are unanimous in their support for Subpart Q:

- (a) “... all EU airlines are agreed [that Subpart Q is] state-of-the-art, demonstrably safe and more comprehensive than foreign FTL schemes.”<sup>56</sup>

15. The only pilots operating under Subpart Q state that it minimises fatigue and ensures high levels of flight safety:

- (a) “... having previous experience of operating under alternative FTL regulations, we are of the opinion that the current form of Sub Part Q FTL delivers significant fatigue reducing factors and is a major benefit to operational flight safety;”<sup>57</sup> and
- (b) “... we strongly believe in the importance of the retention of Sub Part Q in order to continue the high level of passengers safety...”;<sup>58</sup>

16. If EASA had conducted a scientific and medical review, which it clearly has not, it would be compelled to make recommendations for new provisions in areas, which under Subpart Q are delegated to NAAs. EASA is, however, required by its ToRs to make recommendations for changes to existing provisions only “*if required*”.

#### EASA HAS IGNORED THE SCIENTIFIC AND MEDICAL EVIDENCE

17. The following paragraphs demonstrate both EASA’s lack of supporting scientific and medical evidence and its failure to accept scientific and medical evidence which does not support its recommendations. They focus on four unsafe and/or unnecessary EASA recommendations, which are of particular concern to ELFAA.

#### *Rolling 12-Month 1,000 hour Flight Time Limit*<sup>59</sup>

18. Subpart Q imposes a 900 hour calendar year flight time limit.<sup>60</sup> Despite a complete lack of supporting scientific and medical evidence, a *rolling* 12-month 1,000 hour flight time limit was included in EASA’s Notice of Proposed Amendment of 20 December 2010 (NPA).<sup>61</sup>

19. The continuation of the current 900 hour calendar year flight time limit, as opposed to a rolling 12-month flight time limit, is endorsed by a number of leading authorities:

- (a) “... *the annual limit approach with no rollover [...] provides greater predictability and stability than a rollover system* [and] [t]he rollover system [creates] an unpredicted and less stable operation;”<sup>62</sup>
- (b) “... the Ryanair scheme, which limits the maximum number of flying hours from April to March of each year to 900 [...] amply protects crew from any possibility of long term flight fatigue;”<sup>63</sup>
- (c) “... for the reason of stability and easy control by the operator and the Authority Germany has always regulated maximum flying hours and maximum duty time on the basis of a fixed calendar year. It is strongly recommended that Ryanair, for the same reason, also plans on a fixed 12 months period as this is also in the EU-requirement.”<sup>64</sup>

<sup>56</sup> Joint Position Paper on Flight Time Limitations for Commercial Air Transport, Association of European Airlines (AEA), European Low Fares Airlines Association (ELFAA), European Regional Airlines Association (ERAA) & the International Air Carrier Association (IACA), 28th September 2009.

<sup>57</sup> Letter of 19 March 2010, from Ryanair Pilots to EASA.

<sup>58</sup> Letter of 2 March 2010, from Ryanair Pilots to EASA.

<sup>59</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010–14, B. Proposed Rule, II, Annex III, PART-ORO (Organisational Requirements), Subpart—Flight and duty time limitations and rest requirements, Section 1, ORO.FTL.215 Flight times and duty periods (b) (3).

<sup>60</sup> EU-OPS, Subpart Q, OPS 1.1100 Flight and duty limitations 1.2 (a).

<sup>61</sup> EASA, Notice of Proposed Amendment (NPA) No 2010–14C, Draft Opinion and decision Part-OR (Subpart OPS), OR.OPS.FTL.215 Flight times and duty periods (b) (3) & FTL.1.215 (b) (3).

<sup>62</sup> Dr Mark Rosekind, Alertness Solutions letter to Ryanair, 30th August 2002.

<sup>63</sup> Mr Michael Willett, Member UK CAA, Head of Safety Regulation 1992–97, letter to Ryanair, 1 September 2002.

<sup>64</sup> Mr Dieter Horst, Director General of the German Civil Aviation Administration, 1995–2000, letter to Ryanair, 6 September 2002.

20. Throughout the rulemaking process, EASA had repeatedly stated that it did not understand airlines' concerns, regarding a rolling 12-month 1,000 hour flight time limit. Notwithstanding that EASA has no mandate to impose rules on the basis of not understanding objections; airlines' concerns that a rolling 12-month 1,000 hour flight time limit was destabilising had been illustrated at an EASA Rulemaking Group Meeting of 30 November 2010 (before publication of the NPA), following which EASA had stated that it *did* understand airlines' concerns.<sup>65</sup>

21. In September 2011, EASA was provided with further scientific and medical evidence of the destabilising and unsafe effects of a rolling 12-month flight time limit, which concluded:

- (a) "... calendar year block hour limits cause scheduling instability at year's end. *Rolling 12-month block hour limits cause scheduling instability throughout the year;*"
- (b) "... perversely, at year's end, calendar year block hour limits spill hours onto pilots who are themselves approaching short term limits. *Rolling 12-month block hour limits spill hours throughout the year;*"
- (c) "... except for absences, *rolling 12-month block hours for a pilot do not predict weekly duty hours for that pilot;*"
- (d) "... *rolling 12-month block hours have no correlation to weekly duty hour maxima, which are a key mechanism for managing pilot fatigue;*" and
- (e) "... *if an annual limit is used, a calendar year limit imposes less unnecessary instability and disruption to operations than a rolling 12-month limit.*"<sup>66</sup>

22. Shortly after receiving this report, EASA removed the requirement for a rolling 12-month 1,000 hour flight time limit from its recommendations, which were under discussion at the Rulemaking Group.

23. There is no scientific or medical evidence to support EASA's recommendation for a rolling 12-month 1,000 hour flight time limit, as EASA itself admits:

- (a) "... the majority of the comments requested [...] the deletion of the gliding limit of 1,000 flight hours in any 12 consecutive months...";<sup>67</sup>
- (b) "... the 900 flight hour limit in a calendar year, [airlines] argued, is *already the most restrictive but stable limit* [and] provided *scientific advice stating that an additional gliding limit is not necessary and that it would destabilise rosters* [and] argued that the gliding system would actually create a "year end" situation of *unpredictability and potential instability...*";<sup>68</sup> and
- (c) "... all three scientists stated that from a scientific point of view *the limit is unknown...*"<sup>69</sup>

24. During meetings with the Rulemaking Group, the three scientists appointed by EASA to review the NPA (all co-authors of the Moebus report) admitted that there was no scientific basis for annual flight time limits, whatsoever.<sup>70</sup> In regard to a rolling 12-month 1,000 hour flight time limit, their final reports state:

- (a) "... there is *very little scientific evidence* to support specific limits for cumulative duty hours..."<sup>71</sup> and "... again, it is difficult to comment on this from a scientific viewpoint [and limiting the accumulation of fatigue] *could be better achieved in other ways...*";<sup>72</sup>
- (b) "... to my knowledge there are *no scientific data* to specify this number [of hours]";<sup>73</sup>
- (c) "... there is a *limited number of data on cumulative fatigue* [and] other possible approach to cumulative fatigue [other than a rolling 12-month flight time limit] would also be to require days off at regular periods [as provided for under Subpart Q]".<sup>74</sup>

25. Despite the overwhelming scientific and medical evidence demonstrating the destabilising and unsafe effects of a rolling 12-month 1,000 hour flight time limit and the complete lack of scientific and medical evidence to support its inclusion, at the end of the final Rulemaking Group meeting of 29 November 2011, EASA re-introduced its recommendation for a rolling 12-month 1,000 hour flight time limit.

<sup>65</sup> Ryanair letter to EASA of 24 January 2012.

<sup>66</sup> Alertness Solutions, Fatigue Management and Flight/Duty Limits: A Scientific Evaluation Based on Operational Data, Alertness Solutions, September 2011.

<sup>67</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010–14, A. Explanatory Note, Flight times and duty periods, 303.

<sup>68</sup> *Ibid.*, A. Explanatory Note, Flight times and duty periods, 320.

<sup>69</sup> *Ibid.*, A. Explanatory Note, Flight times and duty periods, 324.

<sup>70</sup> Dr Alexander Gundel, Dr Mick Spencer and Dr Philipp Cabon.

<sup>71</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group: Final Report, Mick Spencer, June 2011, Cumulative fatigue (AQ3) 6.1.1.

<sup>72</sup> *Ibid.*, Cumulative fatigue (AQ3) 6.3.2.

<sup>73</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Dr Alexander Gundel, August 2011, 3.5 Cumulative fatigue—12-month flight hours limit.

<sup>74</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Philippe Cabon, 3.5 Cumulative fatigue.

---

*Rolling 14-day 110 hour Duty Limit*<sup>75</sup>

26. Neither Subpart Q nor the NPA incorporate a rolling 14-day duty limit; however, both incorporate a rolling 7-day 60 hour duty limit and a rolling 28-day 190 hour duty limit, which fully protect crew from cumulative fatigue.

27. There is no scientific or medical evidence to support EASA’s recommendation for a rolling 14-day duty limit, as EASA itself admits:

- (a) “... [airlines] welcomed the confirmation of the fact that *there is no safety justification for a 14-day limit.*”<sup>76</sup>

28. EASA’s suggestion that airlines could otherwise roster 190 duty hours in a three week period is clearly wrong, as the existing Subpart Q rolling seven day 60 hour duty limit precludes this.<sup>77</sup> Neither has there been any suggestion that airlines habitually (or ever) roster to a maximum of 180 duty hours in a three week period—and even if they did, there is no scientific or medical evidence to suggest that it would be unsafe.

29. Crew are fully protected from cumulative fatigue by existing Subpart Q rolling seven and 28-day duty limits, which would mandate a maximum of 10 hours duty in the seven days following such a period of duty.

30. During meetings with the Rulemaking Group, the three scientists appointed by EASA to review the NPA (all co-authors of the Moebus report) admitted that there was no scientific basis for a rolling 14-day 110 hour duty limit. In regard to a rolling 14-day duty limit, their final reports state:

- (a) “... I have seen *no data from civil aviation* on work rates of [120 hours duty in 14 days] level of intensity...”<sup>78</sup>
- (b) “... an additional *limit for 14 days is not necessary since there is no firm scientific evidence* to support such a limit”;<sup>79</sup> and
- (c) “... there is a *limited number of data on cumulative fatigue* [and] other possible approach to cumulative fatigue [other than a rolling 14-day duty limit] would also be to require days off at regular periods [as provided for under Subpart Q]”.<sup>80</sup>

31. Despite a complete lack of scientific and medical evidence supporting the inclusion of a rolling 14-day duty limit, at the end of the penultimate Rulemaking Group meeting of 10<sup>th</sup> November 2011, EASA introduced a recommendation for a rolling 14-day 110 hour duty limit.

*Change of Home Base*<sup>81</sup>

32. Neither Subpart Q nor the NPA incorporate any constraints on change of home base:

- a. “... home base is the location nominated by the operator to the crew member from where the crew member normally starts and ends a duty period or a series of duty periods and where, under normal conditions, the operator is not responsible for the accommodation of the crew member concerned...”;<sup>82</sup>
- (b) “... ‘home base’ means the location nominated by the operator to the crew member from where the crew member normally starts and ends a duty period or a series of duty periods and where, under normal circumstances, the operator is not responsible for the accommodation of the crew member concerned...”;<sup>83</sup> and
- (c) “... an operator shall nominate a home base for each crew member.”<sup>84</sup>

33. Change of home base is entirely a contractual issue and there is no scientific or medial evidence to suggest that there is any safety benefit in the introduction of additional rest requirements when changing home base, or for commuting to be reclassified as duty. Operating from one airport cannot be more fatiguing than from another. As EASA itself concedes:

---

<sup>75</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010–14, B. Proposed Rule, II, Annex III, PART-ORO (Organisational Requirements), Subpart—Flight and duty time limitations and rest requirements, Section 1, ORO.FTL.215 Flight times and duty periods (a) (2).

<sup>76</sup> *Ibid.*, A. Explanatory Note, 14-day limit, 311.

<sup>77</sup> The seven day 60 hour duty limit means that the maximum duty that could be assigned in any three week period is 180 hours.

<sup>78</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group: Final Report, Mick Spencer, June 2011, Cumulative fatigue (AQ3) 6.2.1.

<sup>79</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Dr Alexander Gundel, August 2011, 3.5 Cumulative fatigue—seven-day duty limit.

<sup>80</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Philippe Cabon, 3.5 Cumulative fatigue.

<sup>81</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010–14, B. Proposed Rule, II, Annex IV, Draft Decision—Certification Specifications, flight time specification schemes, Certification Specifications FTL 1, Commercial Air Transport by Aeroplane—Schedule and Charter Operations, CS FTL.1.205 Home base.

<sup>82</sup> EU-OPS, Subpart Q, OPS 1.1095 Definitions 1.7.

<sup>83</sup> EASA, Notice of Proposed Amendment (NPA) No 2010–14C, Draft Opinion and decision Part-OR (Subpart OPS), OR.OPS.FTL.105 Definitions.

<sup>84</sup> *Ibid.*, OR.OPS.FTL.205 Home base.

- (a) "... [change of home base] would require crew members to travel in their own time and in their own minimum rest period...";<sup>85</sup> however
- (b) "... [EASA] notes that the decision where a crew member resides is a *personal decision and cannot be regulated*."<sup>86</sup>

34. EASA's first point is irrelevant, as is apparent from its second. The domestic arrangements of crew cannot be regulated. EASA's recommendation of additional rest requirements when travelling to work at the behest of an airline is illogical and unworkable—and places completely different rules on similar operational transactions, for example:

- (a) crew travelling back home after holiday are not subject to this recommendation; and
- (b) it is common practice for crew, particularly long-haul pilots, to live some distance from their home base—often in a different country.<sup>87</sup>

35. Additionally, crew travelling from home to their base may choose to do so by car, train or other means—and may wish to extend/interrupt their journey for personal reasons, for example, to visit relatives.

36. EASA's recommendation effectively says that this type of travel is more fatiguing when undertaken at the behest of airlines than when it is for personal reasons. This is self-evidently a false assumption. Neither EASA nor airlines can dictate personal, travel and/or domestic arrangements, to crew.

37. In any case, the CRD places a shared responsibility of airlines and crew, to ensure that crew are adequately rested, before commencing duty:

- (a) "... an operator shall [...] ensure that flight duty periods are planned in a way that enables crew members to remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety under all circumstances";<sup>88</sup> and
- (b) "... an operator shall [...] provide rest periods of sufficient time to enable crew members to overcome the effects of the previous duties and to be rested by the start of the following flight duty period";<sup>89</sup> whilst
- (c) "... crew members shall make optimum use of the opportunities and facilities for rest provided and plan and use their rest periods properly."<sup>90</sup>

38. Clearly, there are occasions when airlines use positioning/FDP, when crew operate from different bases, during a series of duties, in order to provide for adequate rest.

39. During meetings with the Rulemaking Group, the three scientists appointed by EASA to review the NPA (all co-authors of the Moebus report) admitted that there was no scientific basis the imposition of constraints on changing home base. Their final reports state:

- (a) "... the influence on safety is not a direct one...";<sup>91</sup> and
- (b) "... during the meeting, the discussion on [changing home base] was focussed on the risk of instability in the home base."<sup>92</sup>

40. The three scientists did not identify any safety benefit in placing restrictions on changing home base and made no suggestions in regard to additional rest requirements. They simply referred to discussions (instigated by unions) and on that basis alone, made vague recommendations.

41. It is consequently clear that there is no safety risk associated with changing home base, as existing rules ensure that crew are adequately rested. Despite this, EASA has incorporated additional rest requirements and constraints on travel into the CRD.

42. EASA is a safety, not a social, regulator; however, in imposing additional rest requirements and constraints on travel when changing home base, it is pursuing ill-conceived lifestyle objectives, proposed by unions, but not supported by scientific or medical evidence.

---

<sup>85</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010–14, A. Explanatory Note, Home base, 181.

<sup>86</sup> Ibid, A. Explanatory Note, Agency's conclusion on home base, 205.

<sup>87</sup> It is widely reported that around 50% of Air France pilots live more than four hours commute from their Paris home base.

<sup>88</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010–14, B. Proposed Rule, II, Annex III, PART-ORO (Organisational Requirements), Subpart—Flight and duty time limitations and rest requirements, Section 1, ORO.FTL.110 Operator responsibilities (b).

<sup>89</sup> Ibid, ORO.FTL.110 Operator responsibilities (f).

<sup>90</sup> Ibid, ORO.FTL.115 Crew member responsibilities (b).

<sup>91</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Dr Alexander Gundel, August 2011, 3.5 Cumulative fatigue—seven-day duty limit.

<sup>92</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Philippe Cabon, 3.5 Cumulative fatigue.

*Constraints on Early Starts*<sup>93</sup>

43. Neither Subpart Q nor the NPA incorporate any constraints on blocks of duties with four or more early starts.

44. Scientific and medical evidence clearly demonstrates that blocks of duties with consecutive early starts are particularly safe and stable:

- (a) "... Ryanair's [Subpart Q] roster system, with banks of early starts followed by banks of late starts, with fixed days off, successfully addresses known fatigue factors..."; and
- (b) "... there were some counterintuitive findings found; for example, *the fewest operational events occurred in later days and flight sectors.*"<sup>94</sup>

45. During the rulemaking process, the UK CAA presented "*the SAFE model*", developed by QinetiQ, which demonstrated that blocks of duties with consecutive early starts were safe. This outcome was unexpected by—and disappointing to—the UK CAA presenter, a former union official.

46. When faced with this outcome, which contradicted the UK CAA's position, the presenter admitted that "*the SAFE model*", which it had introduced, had not been validated for cumulative fatigue.

47. As was pointed out at the time, it is unacceptable both for the UK CAA to make presentations on the basis of un-validated science and for EASA to permit such presentations into the rulemaking process. Nevertheless, as a direct result of this presentation, a constraint on transitions from a duty with a late/night finish to one with an early start was incorporated into the NPA—and subsequently, into the CRD.<sup>95</sup>

48. Airlines accept that disruptive rosters, those incorporating transitions between early starts and late/night finishes, are more fatiguing than stable rosters.

49. During meetings with the Rulemaking Group, the three scientists appointed by EASA to review the NPA (all co-authors of the Moebus report) stated that blocks of duties with consecutive early starts were less fatiguing than other blocks of duties and/or admitted that there was no scientific basis the imposition of additional rest requirements for blocks of duties incorporating four or more early starts. Their final reports state:

- (a) "... [studies] do not show fatigue increasing [and] *fatigue decreased steadily after the first night* [...] easyJet found that pilots could work five consecutive early starts with less fatigue than [...] three consecutive early starts: *putting the early starts in a single block was better than combining in a mixed schedule...*"<sup>96</sup>
- (b) "... the scientific data are less clear [...] *the scientific basis is not firm enough to support the regulation of consecutive early starts...*"<sup>97</sup> and
- (c) "... the data clearly show that after three consecutive days the bedtime and getup time sleepiness values were no longer significant..."<sup>98</sup>

50. Despite the scientific and medical evidence demonstrating the particular safety of rosters incorporating more than four early starts and the complete lack of scientific and medical evidence to support the inclusion of associated constraints, at the penultimate Rulemaking Group meeting of 10<sup>th</sup> November 2011, EASA introduced a recommendation that these be constrained by a requirement for increased extended periodic rest.

## UNSCIENTIFIC AND SUBJECTIVE RULEMAKING PROCESS

51. EASA conducted its rulemaking in the style of an industrial negotiation, seeking to somehow find a middle ground between airlines and unions. This was an entirely asymmetrical process; EASA never considered loosening Subpart Q limits and so unions were at liberty to pursue their lifestyle aspirations, without fear of "*losing ground*"—and they took full advantage.

52. Because of EASA's breach of its ToRs, its failure to conduct a scientific and medical evaluation of Subpart Q and its failure to validate material submitted by interested parties, EASA has taken on the guise of

<sup>93</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010–14, B. Proposed Rule, II, Annex IV, Draft Decision—Certification Specifications, flight time specification schemes, Certification Specifications FTL 1, Commercial Air Transport by Aeroplane—Schedule and Charter Operations, CS FTL.1.235 Minimum rest period, 1—Disruptive schedules (b).

<sup>94</sup> The Role of Fatigue Factors in Aviation Operational Events: Analysis of Ryanair Flight Data and Crew Schedules, Dr Mark Rosekind (ex-NASA, now NTSB), January 2008.

<sup>95</sup> EASA, Notice of Proposed Amendment (NPA) No 2010–14C, Draft Opinion and decision Part-OR (Subpart OPS), FTL.1.235 Minimum rest period (d) Disruptive schedules, Annex IV, Draft Decision—Certification Specifications, FTL 1, Commercial Air Transport by Aeroplane—Schedule and Charter Operations, CS FTL.1.235 Minimum rest period, 1—Disruptive schedules (a) & European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010–14, B. Proposed Rule, II, Annex III, PART-ORO (Organisational Requirements), Subpart—Flight and duty time limitations and rest requirements, Section 1, ORO.FTL.235 Rest periods (e) (2).

<sup>96</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group: Final Report, Mick Spencer, June 2011, 3.4 Consecutive early starts and consecutive nights (AQ1c) 3.4.2.

<sup>97</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Dr Alexander Gundel, August 2011, 3.8 Disruptive schedules.

<sup>98</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Philippe Cabon, 3.2 Maximum FDP, c).

---

adjudicator in a process which it has likened to an industrial negotiation. EASA's has no mandate to conduct rulemaking in this arbitrary, unscientific and unsafe manner. Its own Work Instruction states that:

- (a) "... decisions in the group shall be taken by consensus..."<sup>99</sup>

53. There has been no consensus in the EASA FTL Rulemaking Group.

54. The situation is exacerbated by EASA's recruitment of an ex-union delegate, who is now effectively reviewing his own input.<sup>100</sup> This matter has been the subject of written questions to the EC, which confirmed EASA's liability:

- (a) "... the sole liability for its actions remains with EASA..."<sup>101</sup>

#### *Subjective Opinion*

55. EASA failed to ask the scientists it appointed to provide scientific and medical evidence; rather, it asked for "*comments*" on its NPA proposals and "*suggestions*" for rules, for example:

- (a) "... comment on the provisions for the maximum daily flight duty period..."  
(b) "... comment on the provisions regarding extended FDP operations, with in-flight rest..."  
(c) "... comment on the provisions regarding cumulative fatigue..."  
(d) "... comment on the provisions in the NPA for the calculation of maximum FDP when called out from airport standby..."  
(e) "... comment on the provisions in the NPA for the calculation of maximum FDP when called out from home standby..."<sup>102</sup>

56. It is unsurprising therefore, that the scientists provided EASA with subjective opinions, in regard to FTL rules. So EASA got what it asked for, but not what is required by EC Regulation—and it is quite clear from their final reports, that the scientists themselves acknowledge that their subjective opinions are not scientifically-based.

57. Scientists opinion of the NPA was, however, neatly summarised by one of EASA's appointed scientists:

- (a) "... the NPA sometimes goes into great detail presenting many numbers. This may lead to the impression of high accuracy. This accuracy is *certainly not based on scientific studies* [and] the exact numbers provided are usually the result of operational experience *and industrial negotiations*..."<sup>103</sup>

58. Scientists are not rulemakers—that is EASA's role. EASA was tasked by the EC to recommend FTL rules based on scientific and medical evidence, a requirement which EASA has, again, failed to observe.

#### *National Aviation Authorities*

59. EASA's recommendations in the CRD are markedly different to those in the NPA. It claims these last-minute changes result from "*major objections*", raised by NAAs.<sup>104</sup>

60. EASA was requested to confirm:

- (a) "... which NAAs raised 'major objections'...";  
(b) "... what these 'major objections' were..."; and  
(c) "... what scientific evidence was presented..."<sup>105</sup>

61. EASA's response was to blandly state that:

- (a) "a number of member states had expressed their concerns..." and  
(b) "... for a summary of the issues that had been criticised by Member States, please refer to the list of the items that were discussed during the special AGNA<sup>106</sup> meeting..."<sup>107</sup>

62. The list referred to was prepared in advance of the AGNA meeting and so provides no indication of which issues were supposedly of concern, or to whom, or on what basis, whilst EASA's response notably avoids the question of scientific and medical evidence.

63. This is a typically inadequate and evasive response to reasonable questions raised by a member of EASA's FTL Rulemaking Group, which illustrates EASA's breach of its ToRs and continuing failure to base its proposals on scientific or medical evidence.

---

<sup>99</sup> Rule of Procedure for Rulemaking Groups, WL.RPRO.00045–001, section VII.

<sup>100</sup> Mr Daniel Coutelier, former representative of the European Transport Forum, an umbrella organisation for cabin crew.

<sup>101</sup> E-010127/2011 & E-010977/2011. Answer given by Mr Siim Kallas on behalf of the Commission, 14 December 2011.

<sup>102</sup> EASA Questions to Scientists, 19 April 2011 and 19 May 2011.

<sup>103</sup> Provision of Scientific Expertise to submit an assessment of the NPA on Flight Time Limitations (FTL) and to provide guidance and advice to the FTL Review group, Dr Alexander Gundel, August 2011, Closing remarks.

<sup>104</sup> Jean-Marc Cluzeau, EASA, letter to Ryanair, 28 November 2011.

<sup>105</sup> Ian Clayton, Ryanair (ELFAA nominee to EASA FTL Rulemaking Group) letter to EASA, 7 December 2011.

<sup>106</sup> Advisory Group of National Authorities.

<sup>107</sup> Jean-Marc Cluzeau, EASA, letter to Ryanair, 21 December 2011.

64. It is nevertheless apparent that at the AGNA, NAAs advanced proposals in line with their own national FTL regulations, without reference to scientific and medical evidence. In particular, the UK CAA advocated a rolling 12-month flight time limit, a 14-day duty limit and constraints on blocks of duty with four or more early starts, all of which are currently required by UK regulation, despite scientific and medical evidence to the contrary.<sup>108</sup>

65. This regulation places airlines operating under UK Airline Operating Certificates (AOCs) at a considerable competitive disadvantage, in comparison to airlines operating under other EU states' AOCs.

#### *Regulatory Impact Assessment*

66. As a result of these last-minute changes to the NPA, EASA now proposes to undertake a second RIA; however, it proposes to exclude stakeholders from this process. This is in clear contradiction of its own work instruction, which states:

- (a) "... the group shall develop a draft of the Regulatory Impact Assessment (RIA), proposing alternatives, and present it to the Agency..."; and
- (b) "... the group will then proceed with the establishment of the detailed RIA..."<sup>109</sup>

67. EASA does not possess the competence to evaluate the impact of its proposals and it is therefore manifestly unreasonable that it should consider undertaking an RIA, in isolation from stakeholders.

#### *Comments on the NPA*

68. EASA received 49,819 comments on the NPA, 46,957 (98.6%) of which were from individual crew members, based in the UK.<sup>110</sup> It is absolutely clear that these responses are virtual facsimiles and that this represents a coordinated "mail shot" by unions to overwhelm EASA. Contrast this with the 748 researched, considered and reasoned comments made by airlines and the 199 comments made by airlines' organisations.<sup>111</sup>

69. Despite recognising this fact, EASA has published all 49,819 comments, at the same time acknowledging that it has made recommendations on this basis:

- (a) "... as a result of the analysis of more than 49,000 comments received on the NPA [...] changes to the initial proposals of the NPA are proposed..."<sup>112</sup>

70. In so doing, EASA has allowed the legitimate, reasonable and scientifically-based views of airlines to be buried in an indigestible 2,382 page document of four point type.<sup>113</sup>

71. This represents a serious failure by EASA to recognise and react appropriately to blatantly unreasonable lobbying tactics. That it has attached undue weight to these comments (due to their sheer volume) indicates that EASA has succumbed to the quantity, rather than the quality of responses to the NPA.

#### OTHER RECOMMENDATIONS

72. EASA makes a number of other recommendations for:

- (a) changes to existing Subpart Q provisions; and
- (b) new provisions, where under Subpart Q, these were delegated to National Aviation Authorities (NAAs).

73. These are addressed as appropriate, in turn and by reference to the CRD, in the Appendix.

*February 2012*

<sup>108</sup> CAP 371, The Avoidance of Fatigue In Aircrews, Guide to Requirements, Civil Aviation Authority, Safety Regulation Group.

<sup>109</sup> Rule of Procedure for Rulemaking Groups, WLRPRO.00045-001, section VII.

<sup>110</sup> European Aviation Safety Agency, Comment Response Document (CRD) to NPA 2010-14, A. Explanatory Note, 13.

<sup>111</sup> *Ibid*, Explanatory Note, 14.

<sup>112</sup> *Ibid*, Executive Summary.

<sup>113</sup> [http://easa.europa.eu/rulemaking/docs/crd/2011/CRD%202010-14/CRD%202010-14%20\(Commentators%20and%20their%20comments\).pdf](http://easa.europa.eu/rulemaking/docs/crd/2011/CRD%202010-14/CRD%202010-14%20(Commentators%20and%20their%20comments).pdf)

**Appendix to ELFAA Submission to the UK House of Commons Transport Select Committee on EASA  
FTL Rulemaking Task OPS.055 (a) & (b): Updating of Flight & Duty Time Limitations & Rest  
Requirements for Commercial Air Transport (CAT) with Aeroplanes taking into Account Recent  
Scientific and Technical Evidence**

<i>Reference</i>	<i>Description</i>	<i>Comments</i>
ORO.FTL.100	Scope	—
ORO.FTL.105	Definitions	<p><b>The definition of “accommodation” requires adequate furniture, comparable to a “class 3 in-flight rest facility”.</b> There is no scientific or medical evidence to support EASA’s recommendation for the incorporation of a class 3 rest facility into the definition of accommodation, for the purposes of airport standby.</p> <p>The furniture requirement was not included in the NPA and was not introduced until the end of the rulemaking process. EASA has made a logical error, by equating facilities required for <b>in-flight rest</b>, with those needed for <b>airport standby</b>. Functions of in-flight rest and airport standby are quite different; the first is <b>recuperative</b>; whereas, the second is not.</p> <p>EASA confirms this difference: “... [EASA] is not convinced that in-flight rest arrangements in economy seat [ie less than class 3] allow for recuperative sleep...” (Explanatory Note 105) (See “class 3 rest facility”, below.)</p> <p><b>The definition of “early start” is extended to cover a duty period starting between 0500 and 0659.</b> There is no scientific or medical evidence to support EASA’s recommendations for the incorporation or re-definition of an early start.</p> <p>Subpart Q does not recognise the concept of an early start, while the NPA defines an early start as “... a flight duty period starting in the period between 0500 and 0559 hours in the time zone to which the crew is acclimatised.” (OR.OPS.FTL.105) (See paragraphs 43 to 50, above.)</p> <p><b>The definition of “late finish” is extended to cover a duty period finishing between 0000 and 0159.</b> There is no scientific or medical evidence to support EASA’s recommendations for the incorporation or re-definition of a late finish. <b>Any possible fatigue impact is covered by reductions to maximum daily FDP encroaching the Window of Circadian Low (WOCL).</b> (ORO.FTL.210 (b) (1))</p> <p>Subpart Q does not recognise the concept of a late finish, while the NPA defines a late finish as “... a flight duty finishing in the period between 0100 and 0159 hours in the in the time zone to which the crew is acclimatised.” (OR.OPS.FTL.105)</p> <p><b>The definition of “Class 3 rest facility” requires a seat that reclines at least 40° and provides leg and foot support.</b> There is no scientific or medical evidence to support EASA’s recommendations for the incorporation of a class 3 rest facility into the definition of accommodation, for the purposes of airport standby.</p> <p>(See “accommodation”, above.)</p>
ORO.FTL.110	Operator responsibilities	—
ORO.FTL.115	Crew responsibilities	—
ORO.FTL.120	Fatigue risk management (FRM)	—
ORO.FTL.200	Flight time specification schemes	—
ORO.FTL.205	Home base	There is no scientific or medical evidence to support EASA’s recommendations for constraints on changing home base. (See paragraphs 32 to 42, above.)

<i>Reference</i>	<i>Description</i>	<i>Comments</i>
ORO.FTL.210	Flight duty period (FDP)	<p><b>EASA specifies maximum daily FDP, without the use of extensions, by means of a table.</b></p> <p>There is no scientific or medical evidence to support EASA's approach to specifying maximum daily FDP, without the use of extensions.</p> <p><b>EASA should re-introduce the formula</b>, which it has deleted from the Guidance Material (GM). It is for NAAs to enforce the proper use of a formula, should there be any misinterpretations, as EASA considers may be the case. (Explanatory Note 215)</p> <p>Subpart Q sets out clear criteria for maximum daily FDP (OPS 1.1105, paragraphs 1.1 to 1.5); however, the NPA makes use of a table (FTL.1.210, 1(a), table 36).</p> <p>The CRD table is incremented in 15 minute steps, which is arbitrary and leads to losses and gains in maximum daily FDP, when compared to the formula, from which it was derived.</p>
ORO.FTL.215	Flight times and duty periods	<p>There is no scientific or medical evidence to support EASA's recommendations for a rolling 14-day 110 hour duty limit or a rolling 12-month 1,000 hour flight time limit. The scientific and medical evidence shows that <b>a rolling 12-month 1,000 hour flight time limit is destabilising and unsafe.</b></p> <p>(See paragraphs 18 to 31, above.)</p>
ORO.FTL.220	Positioning	—
ORO.FTL.225	Split duty	—
ORO.FTL.230	Standby	—
ORO.FTL.235	Rest periods	<p><b>The recurrent recovery rest period must be increased to two [local] days twice every 28 days.</b></p> <p>There is no scientific or medical evidence to support EASA's recommendations for increasing extended recovery rest. Neither Subpart Q nor the NPA recognise the concept of increased extended recurrent recovery rest, which was introduced at the end of the rulemaking process. EASA does not refer to increased extended recovery rest periods in the Explanatory Notes.</p> <p><b>Flight time specification schemes must specify additional rest requirements to compensate for a change of home base.</b></p> <p>There is no scientific or medical evidence to support EASA's recommendations for constraints on changing home base. (See paragraphs 32 to 42, above.)</p>
ORO.FTL.240	Nutrition	<p><b>Airlines specify how the crew member's nutrition during FDP is ensured.</b></p> <p>There is no scientific or medical evidence to support EASA's recommendation for airlines to specify <b>how</b> nutrition is ensured. Neither Subpart Q nor the NPA require airlines to specify how nutrition is ensured, just <b>that</b> it is ensured. (OPS 1.1 130 &amp; OR.OPS.FTL.240)</p> <p>Despite the lack of scientific and medical evidence, it is patently unreasonable to specify exactly <b>how</b> meal opportunities should be taken. This is an issue best addressed by crew, subject to the circumstances of normal day-to-day operations.</p> <p><b>EASA acknowledges this fact</b>, but erroneously states that "... <i>the requirement to specify in its operations manual how the crew member's nutrition is ensure during FDP is removed...</i>" (Explanatory Note 540)</p>
ORO.FTL.245	Records of flight and duty times and rest periods	—

<i>Reference</i>	<i>Description</i>	<i>Comments</i>
ORO.FTL.250	Fatigue management training	<b>Airlines must provide initial and recurrent fatigue management training to crew members, crew rostering personnel and concerned management personnel.</b> There is no scientific or medical evidence to support EASA's recommendation for airlines to mandate FRM training. Despite the lack of scientific and medical evidence, EASA has perversely and illogically mandated training in FRM systems, for a wide range of staff, irrespective of whether FRM systems are used.
CS FTL.1.200	Applicability	—
CS FTL.1.205	Home base	There is no scientific or medical evidence to support EASA's recommendations for constraints on changing home base. (See paragraphs 32 to 42, above.)
CS FTL.1.210	Flight duty period (FDP)	There is no scientific or medical evidence to support EASA's approach to specifying maximum daily FDP, without the use of extensions. (See ORO.FTL.210, above.)
CS FTL.1.225	Split duty	—
CS FTL.1.230	Standby	—
CS FTL.1.235	Minimum rest period	There is no scientific or medical evidence to support EASA's recommendations for constraints on changing home base. (See paragraphs 32 to 42, above.)
AMC1 ORO.FTL.110(a)	Operators responsibilities	—
AMC1 ORO.FTL.120(d)(1)	Fatigue risk management (FRM)	—
AMC2 ORO.FTL.120(d)(1)	Fatigue risk management (FRM)	—
AMC1 ORO.FTL.120(d)(2)(i)	Fatigue risk management (FRM)	—
AMC1 ORO.FTL.120(d)(2)(ii)	Fatigue risk management (FRM)	—
AMC1 ORO.FTL.120(d)(2)(iii)	Fatigue risk management (FRM)	—
AMC1 ORO.FTL.120(d)(3)	Fatigue risk management (FRM)	—
AMC1 ORO.FTL.120(d)(4)	Fatigue risk management (FRM)	—
GM1 ORO.FTL.210	Flight duty period	—
AMC1 ORO.FTL.235(b)	Minimum rest periods	—
AMC ORO.FTL.240	Nutrition	<b>Airlines must specify the minimum duration of meal opportunity, when a meal opportunity is provided.</b> There is no scientific or medical evidence to support EASA's recommendation for airlines to specify <b>how</b> nutrition is ensured. (See ORO.FTL.240, above.)
AMC1 ORO.FTL.250	Fatigue management training	—
GM1 ORO.FTL.210(a)(1)	Flight duty period (FDP)	—
GM1 CS.FTL.1.210(3)	Flight duty period (FDP)	—
GM1 CS.FTL.1.210(3)	Flight duty period (FDP)	—
GM1 CS.FTL.1.210(3)(d)	Flight duty period (FDP)	—

<i>Reference</i>	<i>Description</i>	<i>Comments</i>
GM1 CS.FTL.1.210(4)	Flight duty period (FDP)	—
GM1 ORO.FTL.215(c)	Flight duty period (FDP)	—
GM1 CS FTL.1.205	Home base	—
GM1 CS FTL.1.225(b)	Split duty	—
GM1 CS FTL.1.230	Standby	—
AMC1 CS	Minimum rest	—
FTL.1.235(2)(b)(i)	periods	—
AMC1 CS	Minimum rest	—
FTL.1.235(2)(c)	periods	—

### Written evidence from the Department for Transport

#### EXECUTIVE SUMMARY

1. The Government welcomes this inquiry and the opportunity to explain its role in the adoption of future EU implementing rules on flight and duty time limitations.
2. The European Aviation Safety Agency (EASA) is currently consulting on draft proposals for flight and duty time limitations. The consultation closes on 18 March 2012.
3. In the UK expertise on flight and duty time limitations rests with the Civil Aviation Authority (CAA). The CAA has reviewed the latest proposals contained in the Consultation Response Document published on 18 January and believes that the proposals will provide an appropriate level of protection against fatigue.
4. However, the UK will not vote in favour of the final proposals unless the CAA remains satisfied that they provide an appropriate level of protection against fatigue.

#### EASA RULEMAKING PROCESS

5. Under Regulation (EC) No 216/2008<sup>114</sup> EASA has responsibility for drafting harmonised EU safety standards for most aspects of civil aviation. To assist it in each rulemaking task EASA establishes an advisory group which includes representatives from the relevant sectors of the industry and from the national aviation authorities. EASA then issues a Notice of Proposed Amendment (NPA) consulting on the draft implementing rule. Normally interested parties have three months to comment. Once the consultation period has ended EASA will form a comment review group to assist it in its review of the responses to consultation and identifying any revisions to the proposals that are necessary. EASA then issues a Comment Response Document (CRD) containing revised proposals. Interested parties will then have a further 2 months to comment.
6. Once consultation has been completed and EASA has finalised its proposals it will issue an Opinion to the Commission recommending the adoption of the draft implementing rules. Before issuing a legislative proposal the Commission will normally consult Member States through the relevant comitology committee. Once the draft Commission Regulation adopting the implementing rules has been issued it will be adopted by qualified majority voting in the comitology committee. The Department for Transport represents the UK on the committee.

#### DEPARTMENT FOR TRANSPORT RESPONSIBILITIES IN RESPECT OF EASA PROPOSALS FOR FLIGHT TIME LIMITATIONS

7. The Department for Transport has no direct role in the development of EASA proposals for flight and duty time limitations. Nevertheless the Department is keen to ensure that the implementing rules proposed by EASA provide an appropriate level of safety and do not impose unreasonable regulatory burdens on industry. We have therefore sought to influence the development of implementing rules through the UK's response to the NPA and the identification of our key concerns in accordance with the rulemaking procedure. The Department has liaised closely with the CAA, which has the expertise on flight and duty time limitations in the UK, over the responses to EASA's consultation documents.
8. EASA's consultation will continue until 18 March 2012. Once the response to the consultation has been considered, EASA will issue an Opinion to the European Commission for the adoption of a Commission Regulation giving effect to the proposed implementing rules. The Department will represent the UK on the comitology committee which will consider the draft Commission Regulation and vote on its adoption. The UK will not vote in favour of the Regulation unless the CAA, which is the Department's technical adviser on aviation safety matters, is satisfied that the implementing rules provide an appropriate level of protection against fatigue.

<sup>114</sup> Regulation (EC) No 216/2008 of the European Parliament and of the Council on common rules in the field of civil aviation and establishing a European Aviation Safety agency, and repealing Council Directive 91/679/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC

---

## UK RESPONSE TO EASA CONSULTATION ON PROPOSED IMPLEMENTING RULE ON FLIGHT AND DUTY TIME LIMITATION

9. The NPA on Flight Time Limitations issued by EASA on 20 December 2010 was carefully reviewed by the specialists of the CAA. There are a number of causes of crew fatigue that interact with each other. Consequently the CAA advice is that any set of regulations needs to be considered as a whole package rather than as a set of individual isolated requirements. The influences on fatigue include the time of day the duty starts, length of duty, type of task (duty type or intensity), impact of time zone crossing and rest periods. The way that the work and rest periods are combined also has an influence on fatigue. In reviewing the proposals the CAA had to assess whether the overall package of measures would provide an appropriate level of protection against fatigue.

10. The CAA made 69 comments in response to the NPA. A number of these were positive comments supporting aspects of the EASA proposal. However, the CAA identified three issues of significant concern which they believed needed to be addressed before the proposed implementing rule could provide an adequate level of protection against fatigue. The Department flagged these issues as “major objections” in accordance with the EASA rulemaking procedure, leading to a discussion of the issues at EASA’s Advisory Group of National Authorities.

11. The CAA is satisfied that the proposals contained in the CRD published on 18 January have adequately addressed the major objections. In addition the CAA has advised us that the overall package of measures will provide an appropriate level of protection against fatigue.

## EASA PROPOSALS AND HOW THESE COMPARE TO UK’S CURRENT REGULATIONS

12. The current safety standards for EU operators conducting commercial air transport by aeroplane are contained in Annex III to Council Regulation 3922/91<sup>115</sup> (known as EU-OPS). Subpart Q of EU-OPS contains the requirements for flight and duty time limitations. However, the Regulation allowed Member States to continue to apply existing national requirements provided the limits they set were below the maximum limits and above the minimum limits set under Subpart Q. Once the proposed implementing rules have been adopted in accordance with Regulation 216/2008 Member States will no longer have the ability to apply national provisions on flight time limitations.

13. The current UK requirements are set out in the Air Navigation Order. This requires UK airlines to have a flight time limitation scheme which has been approved by the CAA. Additionally it limits the flight time of a pilot of a UK registered aircraft to 100 hours in any 28 consecutive days and 900 hours in any 12 consecutive months. These legal requirements are supported by the CAA’s publication “CAP 371: Avoidance of Fatigue in Air Crews” which gives guidance on what should be included in a flight time limitation scheme to gain CAA approval. This guidance has a similar legal status to the Acceptable Means of Compliance and Guidance Material contained in the EASA proposal.

14. Unlike the current UK requirements the EASA proposals place a number of additional legal obligations on operators in relation to the planning of schedules and flight duty periods. In particular they must take into account, and mitigate against, known causes of fatigue to ensure that crew members remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety under all circumstances.

15. As previously stated, crew fatigue has a number of causes that interact with each other and therefore any set of regulations needs to be considered as a whole package rather than a set of individual isolated requirements. While in the past in the UK guidance has been issued on areas to consider when creating a crew member’s roster, there have never been any mandated performance requirements in this area. EU OPS Subpart Q currently has mandatory operator responsibilities with regard to fatigue management considerations that must be demonstrated to the satisfaction of the National Authority. These requirements have been transferred into the EASA implementing rules, meaning they are a compulsory element of the regulations. This is a significant improvement to the current UK requirements and is in line with the introduction of Safety Management Systems required by ICAO.

16. Rather than rely solely on prescribed limits where a crew member is within a prescriptive limit or not, EASA’s proposals have incorporated a number of fatigue mitigation requirements that are based on the type of work that is being conducted. The proposals have also included new provisions to mitigate cumulative fatigue due to disruptive schedules (for example those operating between 0000 and 0659, with extensive time zone crossings or involving combinations of blocks of flight duty periods that cross time zones in differing directions). These additional requirements for extended rest periods immediately following schedules that are known to create possible fatigue in crew members is an improvement for aviation safety.

17. The EASA proposals also require all aircrew, rostering personnel and associated management to undertake recurrent Fatigue Management Training in accordance with a set syllabus. This should improve fatigue awareness and fatigue management strategies, which when combined with more robust operator responsibilities, should lead to a better educated approach to fatigue management rather than regulatory compliance with a prescriptive limit.

---

<sup>115</sup> Council Regulation (EEC) No 3922/91 on the harmonisation of technical requirements and administrative procedures in the field of civil aviation. Annex III was initially added by Regulation (EC) 1899/2006

18. The CAA has reviewed the proposals and has advised the Department that they provide an appropriate level of protection against fatigue. Nevertheless, the proposals do require a considerable amount of change management oversight, by both authorities and operators, to ensure that the new regulations are correctly applied. This will be particularly important where the prescribed limits are more permissive and operators will have to take account of their wider responsibilities.

#### THE POTENTIAL EFFECT OF EASA'S PROPOSALS ON PILOT FATIGUE AND AVIATION SAFETY

19. The CAA's review of the proposals has determined that they provide an appropriate level of protection against fatigue. Further information is given in the CAA's evidence. The proposals also apply to the airlines of all other EU Member States. The proposals significantly strengthen the existing EU requirements on flight and duty time limitations contained in Sub-Part Q of EU-OPS which apply to such airlines which will therefore have a more robust safety approval more aligned to UK standards. The proposed implementing rules should, if adopted as currently drafted, lead to a significant improvement in safety requirements for airlines from other Member States, some of which have a significant presence in the UK market.

#### THE USE OF SCIENTIFIC AND MEDICAL EVIDENCE IN DEVELOPING THE IMPLEMENTING RULES

20. Under Article 8a of Council Regulation 3922/91 EASA has a clear mandate to review Subpart Q of EU-OPS in the light of the most recent scientific and medical evidence. Also in accordance with the global approach that aviation safety requirements should be risk based, EASA developed its rulemaking task on a fatigue risk assessment basis aiming to develop the most appropriate mitigations and limitations to manage the risks. The CAA has assisted EASA in this process by providing a fatigue risk register and numerous scientific studies, some of which had been specifically commissioned by the CAA and the rest from global research. The detailed fatigue risk register and list of scientific documentation that EASA used and reviewed can be found in the EASA Notice of Proposed Amendment 2010–14.

21. EASA also commissioned three independent scientists to review the provisions of NPA 2010–14 in order to assist with the review of the comments received. The scientists were asked a number of questions to focussing on the most contentious elements of the proposals. The scientific assessments were included in the CRD published on 18 January 2012.

22. The EASA advisory group agreed on the major factors affecting fatigue identified in the relevant scientific literature and EASA's proposals will introduce measure to mitigate these factors. However, EASA was also required to consider operational experience, especially where there was little research or where operational experience could support specific areas. This has led to some variances between the recommendations of the scientific advisers and EASA proposal. The most notable of these is the limit on flight duty periods with unfavourable start times (ie between 1900 and 0415). EASA's original proposal permitted maximum flight duty periods of up to 12 hours. The scientists contracted by the Agency advised that a maximum flight duty period of 10 hours overnight would be appropriate. However, many Member States (including the UK) have operated safely under 11 hours of flight duty period at night. In the light of the contradictory scientific recommendations and operational experience EASA has decided that they need to reduce the limit on overnight flight duty periods but only to 11 hours.

23. The CAA is content that EASA has struck the right balance in taking account of both scientific recommendations and operational experience.

#### EASA PROPOSALS AND HOW THESE COMPARE TO FLIGHT AND DUTY TIME LIMITATIONS IN THIRD COUNTRIES

24. The British Air Line Pilot's Association has highlighted differences between certain aspects of the EASA proposal and equivalent provisions in new rules introduced by the US Federal Aviation Authority (FAA). While both proposals are based on scientific data, the approaches they take differ on certain aspects. For example the FAA rules set lower flight duty periods at certain times of day while the EASA proposals require significantly higher rest periods. As previously stated fatigue has a number of causes that interact with each other and therefore any set of regulations needs to be considered as a whole package rather than as a set of individual isolated requirements. We have not seen any evidence that EASA's proposed requirements are any less protective than those adopted by the FAA.

### Written evidence from easyJet

I should note that easyJet is part of the European Low Fares Airline Association (ELFAA), which has already provided written evidence to your Committee. ELFAA has also represented us in the EASA led process to develop its new proposals on FTLs.

Flight Time Limitations are an important area of the safety regulations that ensure commercial operations are safe and it is also an area that has caused significant debate in recent years. It is important that the Committee address both the evidence that surrounds this issue, and the implications that different FTL regimes may have for flight safety. Our objectives for the FTL regime are twofold:

- To ensure that there is a single common standard across Europe.
- To ensure that this standard reflects up-to-date understandings of fatigue and how best to regulate for this.

We need a common standard across Europe as otherwise we continue to run the risk that different aircraft operators, entitled to exactly the same commercial freedoms in the Single European Aviation Area operate to different safety standards. This cannot be the right way forward. easyJet operates from bases in six European countries, and along with other UK airlines has pilots of many different EU nationalities. It is vital that our operation is regulated in exactly the same way as all other European operations; to ensure that there are consistent safety regimes, not least in the cockpit.

Turning to the recent process carried out by EASA. We do not believe EASA has conducted a satisfactory process, and nor has it arrived at a reasonable outcome. easyJet considers that EU-OPs, Subpart Q, the existing regulation in much of Europe, provides a world class, proven, safe FTL system—and EASA has provided no scientific or medical evidence to justify the incoherent changes it now proposes. We believe the logical outcome of EASA's work would have been the retention of EU-OPs Subpart Q as the governing FTL framework for all European airlines, within which individual airlines could exercise their Safety Management System and Fatigue Risk Management System.

We also believe that it is now time to move on from an entirely separate FTL scheme for UK airlines. A separate system both ensures that there are inconsistencies across Europe, and that UK airlines are operating under a different regime within the European market. We believe this undermines the integrity of the European aviation system.

February 2012

---

### Written evidence from Captain Chris Seal

#### COMMERCIAL AIRCREW FATIGUE AND EU FLIGHT TIME LIMITATIONS

I feel the need to make you aware of a number of issues regarding commercial aircrew fatigue and the proposed EU Flight Time Limitations (FTLs) to which the UK Government and its Regulator, the CAA, seem not to be giving due consideration and weight.

I am an aviation safety and human-factors consultant and a recently-retired civil airline pilot. I am also a former Royal Air Force tactical-transport aircraft captain, instructor and commander. I have seen fatigue in many forms—from severe stress in Afghanistan on operations, to the long-term insidious fatigue caused by low-cost airlines' *modi operandi*. Not only have I seen the debilitating effects of chronic fatigue in others but also, I have experienced them myself. Therefore, I feel qualified to comment. I, like all of my former colleagues in the military and their civilian-airline counterparts, take the responsibility of command extremely seriously and we do not take kindly to be ignored on matters of safety—our own or that of our passengers. However, it is quite clear that some people in executive positions have forgotten that those who work at the “coal-face” are the ones with a better view of the real-life risks of fatigue—indeed they are ones who have live with and manage those risks every day.

I have seen a recording of the evidence given on Wednesday to you and the House of Commons Transport Select Committee by the Rt Hon Teresa Villiers (Minister of State for Transport), the UK Civil Aviation Authority, representatives of the airlines and the crews' unions. It seems that everyone had a different perspective—which was both expected and understandable; I can sympathise with all viewpoints. However, in this case, I side with the concerns of the unions and the crews whom they represent because, although the Civil Air Publication 371 (CAP371—dealing with the UK FTL scheme) is not a panacea, the European Aviation Safety Agency (EASA) Sub-part Q (the EU equivalent) and the recent proposed CRD changes are very far from being as comprehensive and as well “tried and tested”. I disagree with the Mr Haines, CAA Chief Executive and Mrs Villiers in that I believe that the proposed CRD 2010–14 is *nowhere near* “broadly equivalent” to CAP371. There are far too many gaps -which BALPA and the crews' representative bodies have highlighted quite rightly.

Some important ones that come to mind are:

1. *Pilots may be landing aircraft having been awake for 22 hours.* Mr Haines retort that this is possible with “split-duty” under CAP371 is simply not true. UK-defined “split duty” allows

planned uninterrupted rest *in a hotel bed-room* but “airport standby” only requires a reclining seat which could be in a *crew-room*—where it is very much harder to get any meaningful rest.

2. *There will be no provision for “factorisation”* so that long-haul sectors, currently operated by three-pilot crews, will be allowed with just two pilots—significantly increasing their fatigue levels. It must be borne in mind that the loss Air France 447 over the mid Atlantic in 2009 was a three-pilot crew and so fatigue should not have played a part in this accident and so it likely the crew should have been able to recover the situation. But still, the pilots got it very wrong. Should these EU FTLs ever be used in their present proposed form, then many more pilots are likely to perform poorly.
3. *The restrictions on the number of consecutive early starts will go.* The CAA’s own research has shown that this can cause unsafe levels of cumulative fatigue. I can verify these blocks of duty can be absolutely debilitating—this was one of the main reasons I left my previous company to join one that did not employ such madness—even if they didn’t pay as well!
4. *Fatigue can indeed be correlated with blood alcohol concentration (BAC).* It was disingenuous of others to say this is not so. There is much evidence that does this, including some used by the CAA itself I believe. Even if it were not 100% comparable, I still would NOT take such risks—just in case! It was also disingenuous to suggest that pilots would fight any such pre-flight testing. I am sure that if one were to introduce a pre-flight check of BAC, drugs and fatigue; I, for one, would not argue. Of course, one would have to move-forward the report time accordingly, as such tests would add to the already hectic pre-flight preparations (one hour is sometimes not enough even now).

Overall, I believe that to accept the CRD in its current form would be a retrograde step to the overall safety of UK crews, their passengers and the countries over which they fly. Why should *any* UK citizen—passenger or crew—be subject to changes that lead to a different and lower standard of safety (no matter how small a reduction that is) just to appease the EU rule-makers?

However, what I most wish for is more scientific research data. I say this because the theme running through Wednesday’s evidence was the obvious absence of hard, scientific and factual evidence captured from real-life crews on actual operations. Each set of stakeholders bemoaned this partial vacuum.

At present, the data to which scientists have access (and even this has caused some polarisation of opinion) is based on very few objective, on-the-job or real-time studies. Many of the studies are taken from the road, rail or other industries and “read-across” is common. Also, a number of studies are either taken from aircraft simulator exercises or subjective personal reporting (often flawed or at least, skewed). Therefore, I am unconvinced that such research can fully and faithfully replicate or represent the “latent fatigue” induced by daily airline operations and the real-life stresses to which aircrew (both Flight-Deck and Cabin-Crew) are subjected. For sure, fatigue will result from the pursuit of operational “on-duty” or “standby” tasking but it is also caused by commuting to and from work and as a result of an imbalance between the demands of the job and whatever life-style and family commitments crews can fit into their rest-periods. No study data has yet captured this “latent fatigue” but the threat to airline safety exists.

As a result, I believe it is vital to fill this data vacuum—and rapidly. Consequently, I would suggest that one option open to you is to urge the Government and Ministry of Transport to orchestrate and underwrite *urgent and immediate* scientific research using the most modern methods. New measurement tools exist (or are becoming available) that use unobtrusive and non-invasive optometric technology—our eye movements change substantially when we get drowsy and fatigued. These technologies can overcome the many understandable difficulties in objective measurement of fatigue in crews at work.

Any such research would quickly help to validate or verify the “gold-standard” of best practice used to mitigate fatigue and could be used as part of future Fatigue Risk Management Systems (FRMSs). Currently, the “gold standard” is the CAP371 FTL scheme, which has been seen as the world’s most safe scheme for over 40 years. Nonetheless, the FTLs contained in CAP371 are not, as we all know, the whole answer and these limits are now used alongside commercially-available fatigue management/prediction programs (eg ones like SAFE, FAST or FAID). Sadly, these programs are only computer-based algorithms which, by definition, are prone to the *rubbish-in-rubbish-out* theory and all of them can make a number of dubious assumptions—so, these are not a panacea either. Though not perfect, the CAP371 FTL system supplemented by the more modern FRMSs is the best mitigation we have got.....so far.

Furthermore, it is also imperative that *any* FTL/FRMS scheme must be sufficiently flexible to be quickly altered in light of any future scientific findings. I am not certain that either CAP371, Sub-part Q or the CRD is sufficiently pliable in this respect—this serious limitation of all FTL schemes will also need to be addressed in the round.

Ultimately, however, until we have *scientifically proven* that what we do presently in the UK is either safe or over-cautious, then to go away from the current sunlit plateau of the UK flight-safety record and towards the shadowy valley of *ad-hoc* risk-management could be considered ill-advised.

Therefore, I recommend that the UK Government should not “sign-up” to the CRD changes and we should argue the case against UK adoption of EASA proposals in their present form. Quite how that will be achieved,

I am not sure—I will leave the finer details to those more-qualified. Pilots are, by nature, reluctant to get involved in such matters, or to speak out un-necessarily, so it must ring some alarm bells when so many are taking up the cudgel against this EU-driven proposal.

*February 2012*

---

#### **Written evidence from Tim Farmer**

Thank you for taking the time on Saturday to discuss my concerns regarding the EASA proposals to change pilot FTL rules which, as a professional pilot, cause me grave concern. We are rapidly approaching the point where the Government will have to decide if these EU rules are safe or not and I am concerned that the CAA and Government appear to be happy to sacrifice our reasonably safe UK rules in the name of harmonisation.

Under the new rules pilots could be landing planes after having been awake for 22 hours. You don't need to be a sleep scientist to know that this is manifestly unsafe. And there would be fewer restrictions on the number of early starts in a row and carrying spare crew on very long-haul flights. All of these issues, and many more besides, show that the proposals are unsafe, and that is borne out of the fact that the scientific evidence has been ignored by EASA.

I want to be clear. The CAA/Government attitude that "operators' responsibility" will be a suitable safeguard is a red herring. Surely any operator would say that if it is allowed in the rules then, by definition, the roster is safe. During the summer I often work to the limits of the current FTL regulations and this is exhausting to the extent I have had to take days off due to fatigue, if the regulations were to be relaxed then in my view this would be unsafe.

This is not just about working hours, it is about the safety of the travelling public. There is no doubt in the minds of British pilots that if these proposals go through the risk of fatigue-related accidents will increase.

It is worth noting that, because of the Colgan Air accident in Buffalo, NY, in 2009, the Americans have actually tightened their FTL scheme to be probably the safest in the world. We're going in the opposite direction. Let's not wait for a crash before securing safe rules for the UK.

The Minister has made it clear that she intends simply to accept the CAA's recommendation on this. I would ask the Minister to take a much closer interest in this vital issue than that. If she did, then she would realise the dangers of what is being proposed here and demand that the UK is allowed to retain, and improve, its own domestic FTL scheme.

Thank you for offering to pass on my concerns to the Select Committee and if you felt it appropriate would you also forward my concerns to the Secretary of State.

On behalf of the thousands of passengers I fly every year, thank you.

*Tim Farmer*  
*Commercial Pilot*

*March 2012*

---

#### **Supplementary written evidence from the Civil Aviation Authority**

Following the CAA's oral evidence to the Committee on Flight Time Limitations, you enquired about numbers of reports citing fatigue. I hope the information below meets your needs.

#### **MANDATORY OCCURRENCE REPORTING (MOR) SCHEME**

A reportable occurrence in relation to an aircraft means: *Any incident which endangers or which, if not corrected, would endanger an aircraft, its occupants or any other person.* The CAA receives around 14,000 reports per year encompassing UK airlines (wherever the incident occurs) plus any aircraft in UK airspace. In 2010, 43 reports (0.3% of all MOR reports in 2010) and in 2011, 20 reports (0.13% of all MOR reports in 2011) cited fatigue as a possible causal factor for the incident.

The objective of occurrence reporting is the prevention of accidents and incidents and not to attribute blame or liability. The CAA gives an assurance that its primary concern is to secure free and uninhibited reporting and that it will not be its policy to institute proceedings in respect of unpremeditated or inadvertent breaches of the law which come to its attention only because they have been reported under the Scheme, except in cases of gross negligence.

In addition a separate confidential reporting avenue exists in CHIRP.

---

## CONFIDENTIAL HUMAN FACTORS INDEPENDENT REPORTING PROGRAMME (CHIRP)

CHIRP is a charitable trust that promotes aviation and maritime safety by encouraging confidential reports of incidents. It is well known, with a quarterly report sent out to all commercially licensed pilots, air traffic controllers and engineering personnel; a circulation of around 30,000.

The number of reports received by CHIRP on Flight Time Limitations/Rostering issues was 38 in 2009, 41 in 2010 and 22 in 2011. Prior to 2009 there was a year-on-year reduction from 98 reports in 2006. The focus of reports has changed from poor rostering issues to concerns with regard to the fatigue levels of cadet or “flexi-crew” pilots who work on a contract for a third party supplying pilots to the operator.

## EASA PROPOSAL—NEXT STEPS

In the past few weeks the CAA Chair has replied to letters from a number of individual flight crew about the EASA proposal on Flight Time Limitations. I thought the Committee might find it helpful to see the text of her reply, and it is attached to this letter. You will see from the penultimate paragraph that, although CAA supports the proposed regulations overall, we are continuing to work on refining them. This is an area we did not have time to explore with the Committee. To give you a little more detail, our comments to EASA include:

- *Flying Duty Periods overnight.* A suggested additional requirement for flights over 10 hours between 22.00–04.00 that the effects of such duties are actively managed in relation to the surrounding duties and rest periods.
- *Augmented crew on overnight operations.* This refers to a crew of three or more pilots so that the allowable Flight Duty Period can be extended by the pilots taking rest in a suitable facility outside of the flight deck. The limits for augmented crew do not currently vary by time of day. The CAA shares Mick Spencer’s concern about their application at night and has suggested a method for reducing the limits by up to 2 hours in line with the graduated formula used for normal Flight Duty Period limits.
- *Potential 22 hour Flight Duty Period.* As I said at Question 87, the CAA thinks there is a drafting error and EASA’s intention was a maximum of 21 hours. As well as requiring clarification on this, the CAA has proposed an additional requirement within the Certification Specification proposals for the National Aviation Authority to approve the accommodation; plus an additional “Acceptable Means of Compliance” (an AMC is an illustrative standard) stating that the total airport standby (using accommodation) and the planned Flight Duty Period cannot exceed 16 hours for pilots and for 50% of the cabin crew.

## TEXT OF CAA CHAIR’S REPLY TO CONCERNED PILOTS

Thank you for your letter/email highlighting your concerns with the European Aviation Safety Agency’s (EASA) proposals in relation to Flight Time Limitations (*FTL*).

Our key priority is flight safety and we take our responsibilities as an independent regulator very seriously. These have been the Civil Aviation Authority’s (CAA) only considerations when reviewing the proposals. You may be aware that the CAA has been actively contributing to the EASA process for over two years. EASA has involved representatives from both pilot and cabin crew associations, airlines and National Aviation Authorities across Europe in the development of their proposals. In addition, EASA has reviewed over 50 scientific research documents on fatigue with the majority of this research being conducted using aircrew. EASA has also commissioned three scientists to review their initial published proposals and, this research, and the three scientists’ reports, were used during the development of the proposals. The CAA has made numerous comments during the rulemaking process and we have been encouraged that the latest proposals reflect significant improvements on EASA’s original proposals. ,

It is important to recognise that fatigue is influenced by a combination of factors and this is why the proposals need to be assessed as a complete package of requirements for flight safety. The CAA’s view is therefore based on the regulations as a total package of duty, flight duty, and rest periods, combined with operator responsibilities and with the additional safety and social regulations that overlay them.

It is generally agreed that there are five major factors that contribute to fatigue and these are the time of day that the duty starts, the amount of recent sleep, the time a crew member will have been awake, cumulative sleep debt from disruptive schedules and time spent on fatiguing tasks (such as take-off and landing). These factors have been reviewed by EASA during their rulemaking task. While there is some specific research in these operational areas, in order to develop the regulations, the focus has to be on the overall principles shown by the research rather than just using one specific study. In some areas, such as standby duties and split duty, there is no research available and the operational best practice that the UK has developed has been chosen to fill these gaps.

The CAA is aware of a number of specific areas of concern with regard to the proposals, some of which you refer to in your letter/email and others that you may be interested in.

*The possibility of landing an aircraft after 22 hours awake.* The maximum *FDP*, including operator extension that can be planned is 14 hours. The proposals allow a crew member to be on airport standby resting in

accommodation (of the same standard as for split duty and will need to be approved by the CAA) for four hours before their FDP must commence, which brings the total duty period to 18 hours. If the Commander determines that the crew is fit to continue they can extend the FDP by one hour, which would have to be reported to the CAA. This would bring the total duty period to 19 hours. There has also been an assumption of two hours from the crew member waking to reporting.

This is based on a 90 minutes travelling time—this is the maximum travelling time to report for duty from CAP371 beyond which a crew member should rest closer to their place of report. This results in a total of 21 hours, which is similar to the length of duty that can be achieved under the CAA's current regulations for split duty using the same type of non-hotel accommodation.

The discrepancy between the 21 hours shown above and the 22 hours commonly quoted is that the current proposals can be interpreted to provide an extension of two hours to the operator's extended FDP. However, we strongly believe, based on information that has separately been provided to National Authorities that this is an error and the CAA will be seeking a correction to reflect this in the final proposals.

It is important to recognise that the case outlined above to achieve a 21 hour period between waking and landing is based on the outer limits of the regulations. The CAA would certainly not be supportive of these outer limits being used extensively but we are confident that the discretion reporting process, approval of accommodation, the CAA's experience of split duty using accommodation, and the additional oversight provided by the proposals will allow these duties to be safely managed. In recognition of the airport standby scenario in the proposals, the CAA will also be suggesting some further guidance in the proposals with regard to the management of these long duties.

*Lack of restriction on two flight crew long range operations.* The scientists who reviewed the proposals supported Flight Duty Periods (FDPs) of up to 14 hours for two pilots. The addition of an extra crew member is only supported by the research where there are appropriate rest facilities. All rest periods must be at least the length of the previous duty to a minimum of 12 hours at home and 10 hours away from base. These minimum rest period requirements are also extended by two hours pre and post duty for FDP's with an extension. The CAA is satisfied with the approach that EASA has taken with regard to two crew long range operations.

*Maximum duty hours in 14 days.* There is no specific scientific research to support a limit on 14 days but operational best practice shows that some limit on 14 days can help to manage cumulative fatigue. The limit of 110 hours combined with the additional extended recovery rest periods is considered to ensure that duty hours are evenly spread. The CAA has concluded that this approach, of increasing the weekly rest to mitigate the cumulative effect of fatigue that may occur due to the type of disruptive duties that have been undertaken, provides for effective fatigue management.

*Lack of restrictions on consecutive early starts.* It is important to manage all duties that occur between 0000 and 0659. The CM has always permitted five consecutive early duties with extended recovery rest periods and recent operational research shows that it is better to stay in a pattern of similar report times than to transition between late, early and night duties. The addition of an extended recovery rest period of 60 hours following any work block that contains four or more of these duties is consistent with our current approach. The CAA has concluded that by matching the rest with the disruptive duties, whether or not they are consecutive, provides for effective management of these duties.

*Flying Duty Periods overnight.* EASA's original proposals permitted an FDP to be planned up to 12 hours overnight. The CAA and the scientists all commented that this limit was too high. The EASA proposals reduce the two sector limits that the CAA currently permits from 1700 to 2200 by between 15 minutes and 1 hour 15 minutes, and limits overnight FDP's to 11 hours. CAP371 currently permits FDP's of 10 hours 15 minutes for two sectors from 2200 and this can be extended to 11 hours 15 minutes. Whilst, the scientists' advice has been that the planning limit should be 10 hours, the CAA has taken into account its experience of regulating duties operated overnight and research conducted by UK operators on duties up to 11 hours, and therefore concluded that these duties are acceptable within the total package of the proposals.

Whilst the CAA has reached a position where we accept the specific proposals, a key part of our assurance is the obligations placed on an operator to undertake active fatigue management and the additional tools provided to regulators than those we currently have under CAP 371. These include the requirement for a non-punitive reporting system, the ability for a Commander to reduce an FDP or increase a rest period, obligations to closely monitor and report to the CAA the use of Discretion. Operators will also have to demonstrate how they manage a number of key areas within their roster construction where fatigue might be generated and we will require evidence from them that their actions are effective. Demonstratable management of safety regulations is a requirement of the operators' management system regulations that come into force later this year. This will ensure that, before the new FTL regulations are implemented, operators will already be providing the CM with evidence of effective management of the other safety regulations.

Aviation safety is, of course, a collaborative effort and the CAA is committed to working with all of our stakeholders to achieve this. Ultimately, safety will be realised in the actions and decisions of people, whether that is on the front line, in management, or in regulation. Fatigue can most effectively be managed by combining

---

prescriptive regulations with Safety Management Systems. EASA's current proposals provide a reasonable method of managing crew fatigue and will deliver an equivalent level of safety.

Even though the CAA has been extensively involved with the development of the regulations, we will still be commenting on them, in areas of clarity and intent. Once EASA has reviewed all the comments they will publish their Opinion and the CAA will review the regulations again to ensure they still meet our requirements as suitable regulations for managing crew fatigue.

I appreciate you bringing your concerns to my attention and hope you are reassured by the CAA's involvement with the process and the development of our position. It might also be useful to highlight that the EASA proposals are still in the consultation phase and, therefore, should you continue to be concerned on this matter, you do have until 18 March to comment directly to EASA.

*March 2012*

---

#### **Further written evidence from Adrian J Williams**

##### **FLIGHT DUTY TIMES**

Sleep is a drive state like hunger or thirst and, as is the common experience, cannot be avoided.

To be fully refreshed and capable of optimum performance requires an adequate and undisturbed sleep opportunity (the time of which varies between individuals, the average need being 8.1 hours).

Over the past 25 years however it has become increasingly recognised that the time spent awake is an equally important determinant of performance.

The seminal work of Dawson recorded increasing performance decrements after 13 hours of time awake and that after 17 hours performance was as poor as that produced by excessive alcohol.

Recent additions to the field by Dinges have amplified this message with studies confirming the crucial deterioration in measures of performance (such as errors and omissions in vigilance tracking) after 16 hours of wake.

As would be predicted, prolonged work hours in medical practitioners is associated with an increase in accidents and errors with potentially devastating effects, and confirmation of this was produced by a study published in *The New England Journal of Medicine* which has led to the Institute of Medicine to recommend that trainees not be allowed to work beyond 16 hours without 5 hour totally protected rest period (away from all potentially work related contact).

The implications for pilots seems to me to be inescapable, given the concentration and aptitudes required to fly, and particularly to land, modern jets.

*March 2012*

ISBN 978-0-215-04549-2



9 780215 045492

