

# European Aviation Safety Agency

---

## Assessment N° IFTSS 2018/002/FR of a deviation from CS FTL.1.235 (c) ('HOP! reduced rest deviation') under ARO.OPS.235 (d) of Regulation (EU) No 965/2012

### A) BACKGROUND

1. On 22 February 2018, the Directorate of Civil Aviation Safety (DSAC), Directorate of the General Directorate of Civil Aviation (DGAC), ('the French competent authority') requested EASA to carry out an assessment under ARO.OPS.235 (d) of Regulation (EU) No 965/2012<sup>1</sup> of the report of the company HOP! ('the operator') on the implementation of their reduced rest deviation scheme.
2. The operator's reduced rest deviation scheme is an individual deviation from the minimum rest periods set out in CS FTL.1.235 (c) of Regulation (EU) No 965/2012, which was approved by the French competent authority in 2016 on the basis of ORO.FTL.235(c) *idem* and following a positive evaluation of EASA (Report No IFTSS/2015/004/FR).
3. In accordance with ORO.FTL.125 (d), the operator submitted to the French competent authority a Report<sup>2</sup> on the scientific study carried out for the purpose of analysing the effects of the approved deviation on aircrew fatigue.
4. In addition to the scientific study, the documents submitted to EASA contain the operator's risk assessment, updated mitigation measures, analysis of operator's Flight Data Monitoring (FDM) events, fatigue safety performance indicators, a summary note, as well as an Individual Flight Time Specification Scheme ('IFTSS') Evaluation report carried by DSAC.
5. Based on data and experience gained from nearly two years of implementation, the operator amends some of the existing fatigue risk mitigation measures and proposes new ones. The French competent authority considers those measures acceptable and intends to validate the operator's IFTSS.
6. Furthermore, the French competent authority states that the operator's FRM has continued to improve thanks to the experience gained and the data collected and that the operator has the necessary procedures, tools and skills to guarantee an acceptable control of the conditions associated with this deviation and an appropriate implementation of the mitigation actions.

### B) LEGAL FRAMEWORK

7. ARO.OPS.235 of Regulation (EU) No 965/2012 reads as follows:

*'(a) The competent authority shall approve flight time specification schemes proposed by CAT operators if the operator demonstrates compliance with Regulation (EC) No 216/2008 and Subpart FTL of Annex III to this Regulation.*

*(b) Whenever a flight time specification scheme proposed by an operator deviates from the applicable certification specifications issued by the Agency, the competent authority shall apply the procedure described in Article 22(2) of Regulation (EC) No 216/2008.*

---

<sup>1</sup> Regulation [EU] No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation [EC] No 216/2008 of the European Parliament and of the Council

<sup>2</sup> WELBEES Final Report HOP!, January 2018



- (c) *Whenever a flight time specification scheme proposed by an operator derogates from applicable implementing rules, the competent authority shall apply the procedure described in Article 14(6) of Regulation (EC) No 216/2008.*
- (d) *Approved deviations or derogations shall be subject, after being applied, to an assessment to determine whether such deviations or derogations should be confirmed or amended. The competent authority and the Agency shall conduct an independent assessment based on information provided by the operator. The assessment shall be proportionate, transparent and based on scientific principles and knowledge.'*

8. ORO.FTL.125 of Regulation (EU) No 965/2012 reads as follows:

- (a) *Operators shall establish, implement and maintain flight time specification schemes that are appropriate for the type(s) of operation performed and that comply with Regulation (EC) No 216/2008, this Subpart and other applicable legislation, including Directive 2000/79/EC.*
- (b) *Before being implemented, flight time specification schemes, including any related FRM where required, shall be approved by the competent authority.*
- (c) *To demonstrate compliance with Regulation (EC) No 216/2008 and this Subpart, the operator shall apply the applicable certification specifications adopted by the Agency. Alternatively, if the operator wants to deviate from those certification specifications in accordance with Article 22(2) of Regulation (EC) No 216/2008, it shall provide the competent authority with a full description of the intended deviation prior to implementing it. The description shall include any revisions to manuals or procedures that may be relevant, as well as an assessment demonstrating that the requirements of Regulation (EC) No 216/2008 and of this Subpart are met.*
- (d) *For the purpose of point ARO.OPS.235 (d), within 2 years of the implementation of a deviation or derogation, the operator shall collect data concerning the granted deviation or derogation and analyse that data using scientific principles with a view to assessing the effects of the deviation or derogation on aircrew fatigue. Such analysis shall be provided in the form of a report to the competent authority.'*

9. The legal basis for a deviation from the minimum rest requirements is laid down in ORO.FTL.235 (c) of Regulation 964/2012:

- (c) *Reduced rest*  
*By derogation from points (a) and (b), flight time specification schemes may reduce the minimum rest periods in accordance with the certification specifications applicable to the type of operation and taking into account the following elements:*
  - (1) *the minimum reduced rest period;*
  - (2) *the increase of the subsequent rest period; and*
  - (3) *the reduction of the FDP following the reduced rest.'*

10. The deviation refers to CS FTL.1.235 (c), which reads:

- (c) *Reduced rest*
  - (1) *The minimum reduced rest periods under reduced rest arrangements are 12 hours at home base and 10 hours out of base.*
  - (2) *Reduced rest is used under fatigue risk management.*
  - (3) *The rest period following the reduced rest is extended by the difference between the minimum rest periods specified in ORO.FTL.235 (a) or (b) and the reduced rest.*
  - (4) *The FDP following the reduced rest is reduced by the difference between the minimum rest period specified in ORO.FTL.235(a) or (b) as applicable and the reduced rest.*



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

### C) EVALUATION

11. As required by ARO.OPS.235 (d) EASA, assisted by a panel of FTL/FRM experts<sup>3</sup>, conducted an independent assessment of the Report and supporting documents provided by the operator. The panel met on 12 April 2018. The French competent authority was also given the possibility to attend the panel meeting in order to answer questions and provide clarifications.

12. The examination of the documents showed that:

**a) The initial assumption has been confirmed**

- The initial assumption that duty cycles with reduced rest (RR) produce an equivalent level of safety to that of rotations with early starts (ES) has proven correct. The Welbees study proves that RR rotations produce similar level of fatigue as ES rotations. It also proves that sequences of ES and RR may be carefully managed in order not to increase fatigue levels.
- To that end, sleep data and fatigue levels on RR periods have been compared to sequences of up to 3 consecutive early starts, the latter being anyway allowable under Subpart FTL of Regulation 965/2012. The sleep debt and fatigue levels in three ES sequences was deemed acceptable during the initial evaluation of the case and used as a baseline.
- Early start duties and reduced rest periods in various combinations are part of the normal Hop! operations. A RR pattern (cycle) corresponds to 2 duty days and is typically a '5 or 3 sectors FDP/RR/3 sectors FDP' pattern. An ES corresponds to a flight duty period that commences before 07:00 (local time).

**b) Data collection methods, data quality and representativeness of the sample are acceptable**  
The technical quality and conduct of the Welbees scientific study appears to be conclusive, solid and thorough. The method of collection of the data is acceptable. Along with sleep diary and "Top of Descent" survey, focus groups interviews and actigraphy have been used to collect data on aircrew's sleep and fatigue. Representativeness of the sample is also acceptable. It is well balanced in terms of chronotype, individual sleep need and duty start time between the two groups ES and RR.

**c) Compliance with EASA initial recommendations:**

The IFTSS approved under case No 2015/003/FR complies with all safety recommendations initially made by EASA.

**d) Mitigation measures are relevant and effective:**

The operator has been collecting operational data and measuring through safety performance indicators (SPI) the effectiveness of mitigation measures. The results show that:

- Nearly 100% *stability of the reduced rest duration* was achieved for Q4 2016 and entire 2017 (SPI 1);
- *A stability of the rosters* was achieved as in Q3 2017 the robustness was 83.9% FC/85.5% CC for the EMB fleet, and 91.8%CF/88.7%CC for ATR fleet (SPI 4);
- *A stability of the reduced rest cycle* was achieved as on average, the crews go to bed 1.08 hours after duty end (*Welbees*, p. 44). This includes time to reach the hotel as well as time to take a shower and time to relax before going to bed. This has been used to monitor the

<sup>3</sup> Panel composition IFTSS 2018/002/FR published on Circabc



actual transfer time (planned to be less than 15 minutes) and the availability of hotel rooms;

- The crew members are positive with regard to *the quality of reduced rest arrangements* (Welbees, p. 18). As confirmed by DSAC, the quality of the rest arrangements is defined in the OPS Manual and is monitored by the operator every six months. The accommodation of aircrew in hotels near airports is being selected in consultation with the staff representatives;
- *The sleep quality* is slightly better during a RR period than before an ES duty (Welbees study, p. 27);
- *Nutrition arrangements* allow the crews to sleep as much as possible without having to eat when they arrive at the hotel on a reduced rest. In 80% of cases, the crews had their meal on-board, and in 15% of cases, they needed to eat at the hotel. There are no data of further reducing the RR due to lack of food and drink in the hotel. The meal opportunities are defined in the Operations Manual;
- The use of *commander's discretion* ('CD') is high compared to the target. In Q3 2017 for a target of less than 40, the number of cases in the CRJ fleet is 73 and in the EMB fleet – 60. It remains relatively low in the ATR fleet. Combination of RR and commander's discretion is allowed as the actual rest period must be greater than or equal to the approved reduced rest duration per stopover. This may expand the application of RR beyond the approved destinations. Therefore the use of CD must be carefully monitored by the operator and by DSAC;
- *The workload* preceding the RR period is relatively low as 85% of the FDPs are more than 2 hours below the maximum FDP limit. Since Q3 2017, the average FDP has been 7 hours 45 minutes;
- Cabin crew tend to report higher *fatigue* levels than flight crew at the end of the duty period following the RR period. Workload has mainly been considered in relation to the number of sectors, as initially requested by EASA. The Welbees study has used a linear-regression method so that fatigue can be tracked and assessed for root causes such as number of sectors, individual aircrew characteristics, sleep duration and quality, type of duty, number of disruptive schedules etc. Missing are details on how passenger profile, length of sector, number of passengers (load factor), delivery of service, number of cabin crew (minimum or augmented) and the length of turn-round between sectors contribute to the increase of workload for cabin crew. Nonetheless, DSAC confirms that these factors have been closely monitored by the operator, based on focus groups with FC & CC and fatigue reports;
- The effectiveness of the operator's *Fatigue Risk Management* ('FRM') system is acceptable (SPI 11, SPI 13 and SPI 14). The French competent authority confirms it carries out regular inspections of the operator's FRM.

**e) New mitigation measures are adequate**

The operator refines some of the existing and proposes new mitigation measures which are deemed adequate. One of them (No 27) relates to potentially very fatiguing duty sequences.

This measure however, need to be clarified so that:

- such sequences are published in advance at roster's publication to allow the crew member to plan adequate rest prior to such duties;
- changes in the assigned sequences following their publication are allowed, only if they produce less fatiguing duties;



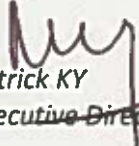
- a crew member is assigned such sequence of duties out of reserve or standby, only if he/she has received initial and recurrent fatigue management training on the potential impact of those duties on crew performance and on building personal mitigation strategies.

#### D) CONCLUSION

13. EASA concluded that the continuation of the deviation would ensure a level of protection equivalent to CS FTL-1 on the following conditions:

- The use of commander's discretion must be carefully monitored by the operator and by the French competent authority, in particular on destinations that have not been approved for the application of reduced rest, in order to avoid excessive application of reduced rest beyond the approved destinations;
- The operator should clarify mitigation measure No 27, as specified in paragraph (e) above;
- The operator should develop different levels of assessment of workload and mitigation for flight crew and cabin crew, due to the different physical and cognitive fatigue effects associated within their duties in the aircraft. Future data collections should explore additional dimensions of workload and specifically target operational issues experienced by cabin crew such as number of passengers and their profile, length of sector, delivery of service, number of cabin crew (minimum or augmented) and the length of turn-round times between sectors.
- The operator should clearly state in the Operations Manual that the commander has the possibility to extend the turn-around time to allow for a meal opportunity in flight, when necessary.
- The operator should inform the crews about the new mitigations and ensure that they are complied with.
- The operator and the competent authority need to review the current SPI in order to make them more adequate and useful for the purpose of assessing the effectiveness of mitigation measures. For example, an assessment of the number of delayed arrivals prior to reduced rest may be indicative for the effectiveness of the measures designed to optimise the RR period.

Signed on ..... **23. JULI 2018**

  
Patrick KY  
Executive Director

