



# Explanatory Note to Decision 2021/005/R

## Update of the Acceptable Means of Compliance and Guidance Material to Regulation (EU) No 965/2012

### 'Aeroplane performance, PBS, oxygen equipment, medical equipment, recorders, technical records, non-ETOPS operations, ground de-icing/anti-icing procedures'

- RELATED NPA/CRD 2018-03 — OPINION NO 02/2019 — RMT.0249
- RELATED NPA/CRD 2017-03 — OPINION NO 02/2019 — RMT.0271
- RELATED NPA/CRD 2016-11 — OPINION NO 02/2019 — RMT.0296
- RELATED NPA/CRD 2014-04 — OPINION NO 13/2016 — RMT.0276

#### EXECUTIVE SUMMARY

Following the adoption of Regulation (EU) 2019/1387, amending Regulation (EU) No 965/2012 (Air OPS Regulation), the objective of this Decision is to support the implementation of the requirements on:

- power supply to cockpit voice recorders (CVRs) in order to improve the availability of recordings;
- in-flight recording for light aircraft;
- commercial operation of certain categories of aeroplanes without an ETOPS approval;
- runway surface condition reporting and in-flight assessment of landing performance ;
- reduced required landing distance for certain categories of commercially operated aeroplanes;
- operations in airspaces where performance-based communication and surveillance (PBCS) is implemented;
- new technical standards on first-aid oxygen dispensing units, medical equipment, de-icing/anti-icing ground procedures; and
- technical records.

This Decision amends as necessary the acceptable means of compliance and guidance material in relation to the above-listed topics.

<b>Domain:</b>	Aircraft tracking, rescue operations and accident investigation; CAT, NCC, SPO & NCO operations; Maintenance and continuing airworthiness management		
<b>Related rules:</b>	AMC & GM to Commission Regulation (EU) No 965/2012 (Air OPS Regulation)		
<b>Affected stakeholders:</b>	Operators (of aircraft required to be equipped with flight recorders); operators (of aircraft not yet required to have flight recorders); aeroplane operators; air operators (CAT); production organisation approval (POA) holders and design organisation approval (DOA) holders; competent authorities; CAMOs and AMOs (Part-145 and Part-M Subpart-F)		
<b>Driver:</b>	Safety; level playing field	<b>Rulemaking group:</b>	RMT.0296: Yes; RMT.0249: No; RMT.0271/0272: Yes; RMT.0276 Yes
<b>Impact assessment::</b>	Yes	<b>Rulemaking Procedure:</b>	Standard

EASA rulemaking process milestones



RMT. 0249	27.1.2016	27.3.2018	21.2.2019	1.8.2019	21.4.2021
RMT. 0271/ 0272	25.7.2014	3.4.2017	21.2.2019	1.8.2019	21.4.2021
RMT. 0296	9.6.2015	30.9.2016	21.2.2019	1.8.2019	21.4.2021
RMT. 0276	28.11.2011	7.2.2014	17.11.2016	17.11.2016	21.4.2021



---

## Table of contents

<b>1. About this Decision .....</b>	<b>3</b>
<b>2. In summary — why and what .....</b>	<b>6</b>
2.1. Why we need to amend the AMC & GM .....	6
2.2. What we want to achieve — objectives .....	9
2.3. How we want to achieve it — overview of the amendments .....	11
<b>3. References .....</b>	<b>29</b>
3.1. Related regulations.....	29
3.2. Related decisions.....	29
3.3. Other reference documents .....	29
<b>4. Related documents .....</b>	<b>32</b>



## 1. About this Decision

The European Union Aviation Safety Agency (EASA) developed ED Decision 2021/005/R in line with Regulation (EU) 2018/1139<sup>1</sup> ('Basic Regulation') and the Rulemaking Procedure<sup>2</sup>.

This rulemaking activity is included in the European Plan for Aviation Safety (EPAS) [2021-2025](#) under rulemaking tasks RMT.0249 (MDM.051), RMT.0271 (MDM.073(a)) & RMT.0272 (MDM.073(b)), RMT.0276 (MDM.076), and RMT.0296 (OPS.008(a)). The scope and timescales of each task were defined in the related Terms of Reference<sup>3</sup>.

The draft text of this Decision has been developed:

— for RMT.0249 (MDM.051):

by EASA. All interested parties were consulted through NPA 2018-03<sup>4,5</sup>. 5 comments were received from interested parties, including industry and national aviation authorities (NAAs).

EASA has addressed and responded to the comments received on the NPA regarding the proposed amendments to the Air OPS Regulation<sup>6</sup>. The comments received and EASA's responses to them are presented in Comment-Response Document (CRD) 2018-03<sup>7</sup>;

— for RMT.0271 (MDM.073(a)) & RMT.0272 (MDM.073(b)):

by EASA based on the input of the RMT.0271 (MDM.073) Rulemaking Group (RMG). All interested parties were consulted through NPA 2017-03<sup>8,9</sup>. 108 comments were received from interested parties, including industry, NAAs, air accident investigation authorities, aircraft and equipment manufacturers, and airline and pilot associations.

---

<sup>1</sup> Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139>).

<sup>2</sup> EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (<http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure>).

<sup>3</sup> <https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0249-mdm051>  
<https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0271-0272-mdm073-b>  
<https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0296-ops008a>  
<https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-mdm076-rmt0276>

<sup>4</sup> <https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2018-03>

<sup>5</sup> In accordance with Article 115 of Regulation (EU) 2018/1139, and Articles 6(3) and 7 of the Rulemaking Procedure.

<sup>6</sup> Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1593529495409&uri=CELEX:32012R0965>).

<sup>7</sup> <http://easa.europa.eu/document-library/comment-response-documents>

<sup>8</sup> <https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-03>

<sup>9</sup> In accordance with Article 115 of Regulation (EU) 2018/1139, and Articles 6(3) and 7 of the Rulemaking Procedure.



EASA has addressed and responded to the comments received on the NPA with the support of the RMT.0271 Review Group (RG). The comments received and EASA's responses to them are presented in CRD 2017-03<sup>10</sup>;

— for RMT.0276 (MDM.076):

by EASA based on input of the RMT.0276 (MDM.076) RMG. All interested parties were consulted through NPA 2014-04<sup>11,12</sup>. 350 comments were received from interested parties, including aircraft owners, operators, flying-sports clubs/associations, maintenance organisations, CAMOs, manufacturers, CAs and individuals. The comments received and EASA's responses to them are presented in CRD 2014-04<sup>13</sup> on the result of the RMT conducted in the field of airworthiness. The result is a mere harmonisation of the AMC & GM to the Air OPS Regulation with the related airworthiness standards for technical records;

— for RMT.0296 (OPS.008(a)):

by EASA based on the input of the RMT.0296 (OPS.008(a)) RMG. All interested parties were consulted through NPA 2016-11<sup>14,15</sup>. 357 comments were received from interested parties, NAAs, aircraft operators, aircraft manufacturers and organisations.

EASA has addressed and responded to the comments received on the NPA with the support of the RMT.0296 RG. The comments received and EASA's responses to them are presented in CRD 2016-11<sup>16</sup>;

— for RMT.0695:

the proposal of this RMT has been developed with the support of a stakeholder-led rulemaking task (SLRT) group. EASA uses SLRTs to address industry-driven issues that cannot be prioritised as part of EASA's rulemaking programmes due to resource constraints.

All interested parties were consulted through NPA 2017-15<sup>17,18</sup>. 23 comments were received from interested parties, including industry and NAAs.

Based on the proposals of the SLRT group, EASA has addressed and responded to the comments received on the NPA. The comments received and the EASA responses to them are presented in CRD 2017-15<sup>19</sup>; and

— for PBCS, de-icing/anti-icing, medical equipment, oxygen dispensing units:

by EASA based on the latest available technical standards and on the feedback received in the context of focused consultation with expert groups and the EASA Advisory Bodies.

The final text of this Decision, with the acceptable means of compliance (AMC) and guidance material (GM), has been developed by EASA based on the input of the RG of the RMTs mentioned above, and

<sup>10</sup> <http://easa.europa.eu/document-library/comment-response-documents>

<sup>11</sup> <https://www.easa.europa.eu/sites/default/files/dfu/NPA%202014-04.pdf>

<sup>12</sup> In accordance with Article 115 of Regulation (EU) 2018/1139, and Articles 6(3) and 7 of the Rulemaking Procedure.

<sup>13</sup> <https://www.easa.europa.eu/sites/default/files/dfu/CRD%202014-04.pdf>

<sup>14</sup> <https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2016-11>

<sup>15</sup> In accordance with Article 115 of Regulation (EU) 2018/1139, and Articles 6(3) and 7 of the Rulemaking Procedure.

<sup>16</sup> <http://easa.europa.eu/document-library/comment-response-documents>

<sup>17</sup> <https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-15>

<sup>18</sup> In accordance with Article 115 of Regulation (EU) 2018/1139, and Articles 6(3) and 7 of the Rulemaking Procedure.

<sup>19</sup> <http://easa.europa.eu/document-library/comment-response-documents>



the feedback received in the context of focused consultation with regard to PBCS and medical equipment.

The major milestones of this rulemaking activity are presented on the title page.

.



## 2. In summary — why and what

### 2.1. Why we need to amend the AMC & GM

#### **RMT.0249 (MDM.051) ‘Alternate power supply for cockpit voice recorders (CVRs)’**

Safety investigation bodies have found during several investigations of accidents that the CVRs had been depowered prematurely while they could have kept recording useful information if an alternate power source had been installed. SRs have been addressed to EASA and the Federal Aviation Administration (FAA) on this issue.

This is why Commission Regulation (EU) 2019/1387<sup>20</sup> introduced the following requirement in Part-CAT, CAT.IDE.A.185:

‘(i) Aeroplanes with an MCTOM of over 27 000 kg and first issued with an individual CofA on or after 5 September 2022 shall be equipped with an alternate power source to which the CVR and the cockpit-mounted area microphone are switched automatically in the event that all other power to the CVR is interrupted.’

AMC and GM are needed to facilitate the implementation of this new requirement.

#### **RMT.0271 (MDM.073(a)) & RMT.0272 (MDM.073(b)) ‘In-flight recording for light aircraft’**

##### In flight-recording for light aircraft

In the context of RMT.0271, the following terms are used:

- ‘light aeroplane’ means an aeroplane of a maximum certified take-off mass (MCTOM) of 5 700 kg or less;
- ‘light helicopter’ means a helicopter of an MCTOM of 3 175 kg or less.

Since 2010, accidents and serious incidents that occur over the territory of an EASA Member State (MS) must be subject to safety investigation. However, until the publication of Commission Regulation (EU) 2019/1387, light aeroplanes and light helicopters were not required to carry flight recorders. In the absence of data on the aircraft condition and operation, it can be very difficult to reconstruct the sequence of events that led to an accident or a serious incident — knowing though that the sequence of events is essential for defining actions to prevent future occurrences.

This is why the Standards in ICAO Annex 6 prescribe, for some categories of light aeroplanes and light helicopters, the carriage of in-flight recording equipment. In addition, 12 SRs related to in-flight recording for light aeroplanes and helicopters were addressed to EASA by safety investigation authorities.

The impact assessment of NPA 2017-03 concluded, among others, that the ICAO Annex 6 Standards regarding carriage of in-flight recording equipment on board light aeroplanes and light helicopters should be transposed as requirements into the EU regulatory framework, with some differences. Such requirements and the associated AMC and GM were developed and presented in NPA 2017-03.

---

<sup>20</sup> Commission Implementing Regulation (EU) 2019/1387 of 1 August 2019 amending Regulation (EU) No 965/2012 as regards requirements for aeroplane landing performance calculations and the standards for assessing the runway surface conditions, update on certain aircraft safety equipment and requirements and operations without holding an extended range operational approval (OJ L 229, 5.9.2019, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R1387&qid=1616166664513>).

After the NPA 2017-03 public consultation, the draft requirements and the associated draft AMC and GM were slightly amended and appended to Opinion No 02-2019. The impact assessment carried out in the NPA was reviewed and deemed still adequate.

#### Minor changes regarding flight data monitoring programmes and flight data recorders

Some categories of large aeroplanes and large helicopters must carry a flight data recorder (FDR) (refer to Part-CAT, CAT.IDE.A.190 and CAT.IDE.H.190) and/or be included into a flight data monitoring programme (refer to Part-ORO, ORO.AOC.130 and to Part-SPA, SPA.HOFO.145). In the AMC and GM related to these requirements, the need for minor updates and editorial corrections was identified.

#### **RMT.0276 (MDM.076) ‘Technical Records’**

In relation to the airworthiness requirements on technical records, there is a need to provide acceptable means to comply with the requirement regarding the functionality of the components required for the intended operation that are not controlled in the context of the continuing-airworthiness management. Additionally, operators should define responsibilities and procedures to retain and control the status of the above-mentioned components.

#### **RMT.0296 (OPS.008(a)) ‘Review of the aeroplane performance requirements for air operations’**

Investigations of accidents indicate that the standards for runway surface condition assessment and reporting are not harmonised and have recognised this fact as a significant contributing factor to runways excursions, in particular when the runway is wet or contaminated.

The standards for aeroplane performance calculations do not cover adequately all conditions on wet and contaminated runways in relation to the method used for assessing and reporting the runway surface condition.

ICAO has consequently amended a number of Standards and Recommended Practices (SARPs) in several of its annexes, namely Annex 6, 8, 14 and 15, and has produced extensive guidance material in order to establish a globally harmonised reporting format for runway surface condition, airworthiness standards on performance data necessary for the assessment of the landing distance for aeroplanes at the time of landing, and operational provisions for the flight crew on landing performance calculations and runway condition reporting.

The Air OPS Regulation has therefore been amended to implement the applicable ICAO SARPs on runway surface condition assessment and reporting and aeroplane performance requirements.

Furthermore, a need for operational flexibility has been identified in certain CAT operations with regard to the required landing distance. Certain performance class A and class B aeroplanes are allowed in other regulatory systems to land within 80 % of the landing distance available on the intended runway, provided that they are granted a prior approval from the competent authority and that they fulfil a number of risk-mitigating conditions. The Air OPS Regulation has also been amended in this regard as well to define the conditions under which these operations may be conducted, while attaining a level of safety that is equivalent to that attained by the existing requirements for landing performance.

Other miscellaneous amendments have been necessary to clarify the applicability and use of crosswind limitations, and improve technical accuracy, clarity and consistency.



This Decision introduces the related AMC and GM to support the implementation of the said rules.

### **RMT.0695 ‘Non-ETOPS operations’**

The main issue addressed by RMT.0695 is level playing field. This issue is linked to the following current conditions:

- The existing threshold of 45 360 kg for non-ETOPS operations (commercial operation of performance class A aeroplanes with a maximum operational passenger seating configuration (MOPSC) of 19 or less without an ETOPS approval over routes that contain a point further from an adequate aerodrome than the distance flown in 60 minutes at the one-engine-inoperative cruising speed) distorts the level playing field since it introduces an additional burden on CAT operators of twin-engined aeroplanes with an MCTOM at or above 45 360 kg and an MOPSC of 19 or less, relative to CAT operators of similar aeroplanes but with an MCTOM below 45 360 kg.
- There is also a harmonisation issue as no such mass threshold is defined in the regulatory frameworks of the FAA or Transport Canada Civil Aviation (TCCA). Furthermore, the FAA and TCCA regulatory provisions do not require a specific type design approval for non-ETOPS operations — while CAT.OP.MPA does require a specific type design approval for 120–180-minute non-ETOPS operations using performance class A aeroplanes with an MOPSC of 19 or less and an MCTOM less than 45 360 kg.

The present Decision introduces the AMC and GM that are needed to implement the requirement amended by RMT.0695. The relevant amendments to AMC 20-6 are introduced by ED Decision 2021/006/R.

### **PBCS**

ICAO Annex 6 ‘Operation of Aircraft’ contains requirements on PBCS.

As of 29 March 2018, PBCS has been implemented in certain airspaces, reducing the existing separation minima for a more efficient use of those airspaces.

As a consequence, those operators wishing to continue to use tracks where reduced separation minima are applied, need to demonstrate compliance with the applicable required communication performance (RCP) and required surveillance performance (RSP) specifications and the other provisions of ICAO Annex 6.

The present amendment to the AMC and GM to the Air OPS Regulation is intended to provide detailed means of compliance and guidance to Member States and operators for the implementation of PBCS, based on the content of:

- Doc 9869 ‘Performance-Based Communication and Surveillance (PBCS) Manual’; and
- ICAO PBCS Operational Authorization Guide.

### **OXYGEN DISPENSING UNITS**

Recent technological developments have made available first-aid oxygen dispensing units that attain a level of safety equivalent to those currently in use. The Air OPS Regulation has been amended to allow the use of such equipment. The present Decision introduces the related AMC.

### **DE-ICING/ANTI-ICING PROCEDURES**





The present Decisions also amends the GM on de-icing/anti-icing procedures. The main reason for this change is that the previous GM had become outdated after the Association of European Airlines (AEA) embraced in 2017 the 'Global Aircraft De-icing Standards' and consequently discontinued their annual publication of their 'Recommendations for de-icing/anti-icing of aircraft on the ground', which was referred in the old GM. Back then, EASA published SIB 2017-11, as an immediate measure, to recommend to the European industry the use of the 'Global Aircraft De-icing Standards' and with this Decision such guidance is revised. Also, some obsolete references have been removed and the wording has been aligned with the 'Global Aircraft De-icing Standards'.

## MEDICAL EQUIPMENT

Through the application of flexibility provisions and due to a considerable number of AltMoC related to the emergency medical kits (EMKs) and proposing different contents, EASA has identified the need to:

- adjust the AMC & GM to the Air OPS Regulation related to the first-aid kit (FAK) and the EMK, as some of them were found too prescriptive, thus creating unnecessary burden for the industry, and
- take into account recent developments in medicine and align these provisions with the latest guidelines in emergency medicine.

Therefore, this Decision amends the FAK/EMK content with the support of a task force including MSs' medical experts.

## 2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This Decision will contribute to the achievement of the overall objectives by addressing the issues outlined in Section 2.1.

The specific objective of this Decision is to support the application of the amended Regulation for air operations by providing AMC and GM to achieve the objectives of the Regulation that are:

- for RMT.0249 (MDM.051):  
to increase the robustness of CVRs following the loss of their power supply;
- for RMT.0271 (MDM.073(a)) & RMT.0272 (MDM.073(b)):
  - to enhance the identification and prevention of safety issues that affect light aircraft by means of data recorded in flight;
  - to transpose the relevant amendments of the ICAO Standards in Annex 6, Parts I, II and III;
- for RMT.0276 (MDM.076)  
to define responsibilities and procedures for operators to retain and control the status of those aircraft components that are not controlled in the context of the continuing-airworthiness management.

- 
- for RMT.0296 (OPS.008(a)):
    - to reduce the number of accidents and serious incidents where aeroplane performance is a causal factor;
    - to transpose the relevant amendments of ICAO Standards in Annex 6, Parts I and II;
    - to provide improved clarity, technical accuracy, flexibility or a combination of these benefits for the EU operational requirements on aeroplane performance; and
    - to contribute to the global harmonisation of regional, notably the FAA, and EU operational requirements on aeroplane performance in support of CAT operations;
  
  - for RMT.0695:
    - to increase harmonisation with the regulatory framework of other major aviation authorities for the operation of these aeroplanes and, therefore, contribute to ensuring a level playing field between EU and third-country operators; and
    - to ensure a level playing field among CAT operators of aeroplanes with an MOPSC below 19, and avoid an undue burden on European CAT operators of business jet aeroplanes, and support the implementation of the changes to the Regulation for air operations allowing CAT operations of passenger-carrying aeroplanes that have an MOPSC of 19 seats or less and an MCTOM above 45 500 kg, but less than 54 500 kg, without a reinforced cockpit door;
  
  - For PBCS

to allow European operators to take benefit of the reduced separation in those airspaces where PBCS is implemented;
  
  - OXYGEN DISPENSING UNITS

to provide flexibility to operators in fulfilling the requirement on supplemental oxygen equipment by allowing the use of new type of units;
  
  - DE-ICING/ANTI-ICING PROCEDURES

to provide updated guidance and increase safety on de-icing/anti-icing procedures;
  
  - MEDICAL EQUIPMENT

to update the AMC and GM on the content of first-aid kits (FAK) and emergency medical kits (EMK) in order to reflect the current guidelines and the latest developments in emergency medicine, and to provide economic benefits by optimising the items available and their quantity so as to best address the most common medical emergencies on board.



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

#### RMT.0249 (MDM.051) ‘Alternate power supply for cockpit voice recorders (CVRs)’

AMC1 CAT.IDE.A.185 is amended to specify that the alternate power source required by point (i) of CAT.IDE.A.185 should provide electrical power to operate both the CVR and the cockpit-mounted area microphone for at least 10 minutes. This is to ensure that the alternate power source brings the expected benefit for the safety investigation. This engagement duration is consistent with point (d)(6) of CS 25.1457 in the certification specifications and acceptable means of compliance for large aeroplanes (CS-25) and with the engagement duration prescribed for the alternate power source in ICAO Annex 6 Part I, Chapter 6, 6.3.2.4.

In addition, a tolerance of 1 minute is permitted, which is consistent with AMC 25.1457, Section 5 (power source) in CS-25 and with ICAO Annex 6 Part I, Chapter 6, 6.3.2.4.

GM1 CAT.IDE.A.185 is added to explain the terms ‘alternate power source’ and ‘cockpit-mounted area microphone’ that appear in the requirement adopted by Commission Regulation (EU) 2019/1387. The explanations of these terms are the same as in AMC 25.1457, Section 5, in CS-25.

AMC1 CAT.IDE.A.200 is amended to specify that when two flight data and cockpit voice combination recorders are installed instead of one FDR and one CVR, there is no need to provide an alternate power source to both recorders: it is sufficient in that case to provide the alternate power source to one recorder. This is consistent with AMC 25.1457, Section 5, in CS-25.

#### RMT.0271 (MDM.073(a)) & RMT.0272 (MDM.073(b)) ‘In-flight recording for light aircraft’

##### **Changes to GM to Annex I Definitions**

##### Explanation of the ‘flight recorder’ definition

The definition of the term ‘flight recorder’ was introduced in Annex I (Definitions) to the Air OPS Regulation. As the concept of the lightweight flight recorder was not previously used in the Air OPS rules, GM has been developed to explain that the recently introduced definition of a flight recorder covers both a crash-protected flight recorder, which is required to be carried on board large aircraft (such as the FDR or the CVR), and a lightweight recorder, which is designed to meet less demanding crash-protection requirements.

##### **Changes to AMC & GM to Part-ORO**

##### Update to the AMC and GM addressing flight data monitoring programmes (applicable to aeroplanes with an MCTOM of over 27 000 kg)

AMC1 ORO.AOC.130 has been updated as follows:

Point (c)(1) has been amended to recommend that when selecting the set of core events, the most significant risks identified by the operator as part of its safety risk management should also be covered, to the extent possible (because some kinds of risks are difficult to monitor when just relying on flight data). In addition, reference to Appendix 1 to AMC1 ORO.AOC.130 has been deleted because this appendix has been transformed into GM (more details below).

A few editorial corrections have been made to point (l) in order to reflect the technological evolution. In particular, most currently operated aeroplanes with an MCTOM of over 27 000 kg are equipped with digital systems, and the term ‘modern’ has been therefore deleted. In addition, the term ‘basic’



was used to designate FDRs relying on older recording technologies (such as magnetic wire or magnetic tape) and/or without a flight data acquisition unit, while most currently operated aeroplanes with an MCTOM of over 27 000 kg are equipped with a flight data acquisition unit and a solid-state FDR. Therefore, the term ‘basic’ has been deleted.

Appendix 1 to AMC1 ORO.AOC.130 has been transformed into GM, because it only contains guidance (examples of FDM events) and not acceptable means of compliance.

GM1 ORO.AOC.130 has been amended in order to reflect the change made to point (c)(1) of AMC1 ORO.AOC.130: the corrected point (a)(1)(i) of GM1 ORO.AOC.130 advises to base the set of core events on a prior assessment of the most significant safety risks. It also points at some common risks that have been repeatedly pointed out by EPAS and that are already monitored by many operators through their FDM programme; those are the risk of runway excursion or abnormal runway contact at take-off or landing, the risk of loss of control in flight, the risk of airborne collision, and the risk of collision with terrain.

GM2 ORO.AOC.130 (now GM3 ORO.AOC.130, following the transformation of Appendix 1 to AMC1 ORO.AOC.130 into GM) has been amended in order to update the reference to official guidance material issued by ICAO and the UK CAA. In addition, reference to the industry good practice documents developed by the European Operators Flight Data Monitoring (EOFDM) forum is included to make operators aware of these documents. EOFDM is a voluntary partnership between European operators and EASA, which aims at facilitating the implementation of FDM programmes by operators. EOFDM documents have been developed under the leadership and with the active participation of FDM specialists from operators.

#### Editorial correction

An editorial correction is made to AMC3 ORO.MLR.100 (content of the operations manual).

#### **Changes to AMC & GM to Part-SPA**

In AMC1 SPA.HOFO.145, the note referring to Appendix 1 to AMC1 ORO.AOC.130 has been deleted because this appendix has been transformed into GM.

#### **New AMC & GM to Part-CAT and Part-SPO**

##### New AMC and GM associated with the new recording requirements for commercial operations (CAT and SPO) with light aeroplanes and light helicopters

AMC and GM have been developed for the new lightweight flight recorder carriage requirements (CAT.IDE.A.191, CAT.IDE.H.191, SPO.IDE.A.146 and SPO.IDE.H.146). The AMC specify the flight parameters to be recorded and the operational performance target for these flight parameters. The AMC also specify the information to be captured if recording images is preferred to recording flight parameters. Furthermore, the AMC also recommend that the operational performance of the flight recorder meet the specifications laid down in industry standards (EUROCAE Document ED-155 or EUROCAE Document ED-112 or equivalent standards recognised by EASA). In particular:

**AMC1 CAT.IDE.A.191** has been developed to provide the operational performance requirements for the flight recorder required in the new CAT.IDE.A.191.

- If the flight recorder records flight data, point (a) of AMC1 CAT.IDE.A.191 specifies what flight parameters should be recorded in order to ensure that sufficient information is recorded to



determine the aircraft flight path and speed. The listed flight parameters can be obtained by means of dedicated sensors (accelerometric sensors and GNSS receiver), if there is no flight data acquisition unit or if a stand-alone recorder is preferred.

- If the flight recorder records images, point (b) of AMC1 CAT.IDE.A.191 specifies that views of the main instrument displays at the pilot station(s) should be captured, and that the recorded images should allow reading the instruments' indications during most of the flight. In addition, a list of indications to be captured is provided. These indications correspond to instruments required on board all aeroplanes in accordance with CAT.IDE.A.125 (operations under VFR by day) and CAT.IDE.A.130 (operations under IFR or at night), hence they can be captured by cameras. When the indication may not be required under some types of operation, then the indication should be recorded 'if displayed'.

CAT.IDE.A.191 does not forbid the combination of the recording of images and flight data, at the operator's convenience. However, the flight parameters recommended in point (a) of AMC1 CAT.IDE.A.191 do not contain the same information as the indications recommended to be recorded by means of images in point (b). To resolve this discrepancy and ensure that a minimum data subset is recorded regardless of the elected solution, point (c) of AMC1 CAT.IDE.A.191 recommends that when both flight data and images are recorded, each flight parameter listed in point (a) AMC1 CAT.IDE.A.191 is recorded as flight data or by means of images.

- Point (d) of AMC1 CAT.IDE.A.191 clarifies the applicable flight parameter performance when flight data is recorded, taking into account that the operator may choose to record the data on a crash-protected FDR or on a lightweight aircraft data recording system (ADRS). The performance of flight parameters should then meet the applicable performance specifications (i.e. range, sampling intervals, accuracy limits and resolution in read-out) either given by relevant tables of EUROCAE Document 112 (ED-112) dated March 2003, or by relevant tables of EUROCAE Document 155 (ED-155) dated July 2009. This is consistent with the flight parameter performance prescribed in ICAO Annex 6 Part I. It should be noted that although ED-112 was superseded by ED-112A in 2013, compliance with ED-112 is still considered acceptable: this is because the performance specifications provided by ED-112 are considered sufficient for investigation purposes in the case of a light aeroplane.
- Point (e) of AMC1 CAT.IDE.A.191 recommends that the operational performance of the flight recorder should, in any case, meet the specifications of either ED-155 or ED-112. This is consistent with the operational performance requirements prescribed for flight recorders in ICAO Annex 6 Part I, which refers to ED-112 and ED-155. In addition, EUROCAE standards are the reference industry standards in the Air OPS rules applicable to crash-protected flight recorders (see, for instance, AMC1 CAT.IDE.A.190), as well as in the CS-ETSO addressing FDRs (ETSO-C2124c), airborne image recorders (ETSO-C2176a) and lightweight flight recorders (ETSO-2C197 A1).

Similarly to the new AMC for aeroplanes, **AMC1 CAT.IDE.H.191** has been developed to provide the operational performance requirements for the flight recorder required in the new CAT.IDE.H.191.

- Similar to AMC1 CAT.IDE.A.191, AMC1 CAT.IDE.H.191 specifies what flight parameters should be recorded when flight data is recorded and what instrument indications should be captured



if images are recorded (based on the indications required to be displayed in accordance with CAT.IDE.H.125 and CAT.IDE.H.130).

- Similar to AMC1 CAT.IDE.A.191, AMC1 CAT.IDE.H.191 allows the combination of the recording of images and flight data; however, in that case, each flight parameter listed in point (a) of AMC1 CAT.IDE.H.191 is recorded as flight data or by means of images.
- Similar to AMC1 CAT.IDE.A.191, AMC1 CAT.IDE.H.191 refers to ED-112 and ED-155 with regard to the performance of the flight parameters and the operational performance of the flight recorder.

**AMC1 SPO.IDE.A.146** has been developed to provide the operational performance requirements for the flight recorder required in SPO.IDE.A.146. AMC1 SPO.IDE.A.146 has the same content as AMC1 CAT.IDE.A.191.

**AMC1 SPO.IDE.H.146** has been developed to provide the operational performance requirements for the flight recorder required in SPO.IDE.H.146. AMC1 SPO.IDE.H.146 has the same content as AMC1 CAT.IDE.H.191.

**GM1 CAT.IDE.A.191** has been developed to encourage operators to record more data than what is strictly related to flight path and aircraft speed. In particular, the operator may also want to consider recording the position of the flight controls and an external view. This would make the recordings more complete and, therefore, more useful for an operator that would like to use them to analyse its incidents.

**GM2 CAT.IDE.A.191** has been developed to recommend that when a camera is used, it is installed in such a way as to avoid capturing images of the head and shoulders of the flight crew members, in order to limit any breach to their privacy, should the image recordings be disclosed (unlawfully or by a decision of the administration of justice).

**GM3 CAT.IDE.A.191** has been developed in response to the feedback received by EASA on the lack of clarity concerning the accuracy limit of the attitude rate parameters (pitch rate parameter, yaw rate parameter, roll rate parameter) specified in ED-155.

**GM1 CAT.IDE.A.191(e)** has been developed to explain that the function to modify the recordings of audio and images by the commander has the purpose of protecting the flight crew's privacy and does not actually erase the recordings. Safety investigation authorities or equipment manufacturers may still retrieve such recordings when needed, by using special techniques.

**GM to CAT.IDE.H.191, SPO.IDE.A.146 and SPO.IDE.H.146** have been developed for the same purposes as detailed above for CAT.IDE.A.191.



## Changes to AMC & GM to Part-CAT, Part-NCC and Part-SPO

### Checks and evaluations to ensure the continued serviceability of the flight recorders

The wording of **AMC1 CAT.GEN.MPA.195(b)** and **GM1 CAT.GEN.MPA.195(b)** has been amended to address the flight recorder's serviceability when a flight recorder is installed in order to comply with CAT.IDE.A.191 or CAT.IDE.H.191.

Safety investigation authorities have repeatedly pointed at recordings of bad quality and other issues (refer to NPA 2013-26 'Amendment of requirements for flight recorders and underwater locating devices'<sup>21</sup> and to EASA Safety Information Bulletin 2009-28R1 'Flight Data Recorder and Cockpit Voice Recorder Systems Serviceability'<sup>22</sup>).

Standards in ICAO Annex 6 Part I, Appendix 8, Section 7 prescribe two kinds of checks to be performed by the operator for all types of flight recorders:

- inspection of the recording at time intervals of 1 or 2 years for the FDR and the CVR (5 years for data-link recording);
- daily use of the means for preflight checking of the flight recorders for proper operation.

These checks have been transposed in AMC1 CAT.GEN.MPA.195(b) by EASA Decision 2015/021/R for crash-protected flight recorders and they were also considered regarding the serviceability of lightweight flight recorders.

However, since the cost impact of maintenance tasks should remain proportionate for light aeroplanes and light helicopters, a less constraining framework has been proposed for a flight recorder installed for compliance with CAT.IDE.A.191 or CAT.IDE.H.191, when it is not an FDR:

- Recording inspection at time intervals of 2 years (new point (c) of AMC1 CAT.GEN.MPA.195(b)). Given that just a dozen of flight parameters are required to be recorded, this inspection is expected to be completed much faster than for an FDR where up to 80 flight parameters are required to be recorded, depending on the aircraft model and the date of manufacture.
- Daily use of the means for preflight checking of the flight recorder for proper operation (point (d) of AMC1 CAT.GEN.MPA.195(b)). This operational check may be performed by the flight crew within a few seconds at the first flight of the day.

If, however, no means for preflight checking of the flight recorder is available, an operational check should be performed at intervals 'not exceeding 150 flight hours or 7 calendar days of operation, whichever is considered more suitable by the operator'. 150 flight hours correspond to about 7 days of operation, assuming that the aircraft is operated 21 hours per day (case of large aeroplanes which are flying most of the time). For a light aeroplane or a light helicopter, which is usually used less, 150 flight hours corresponds to a longer time interval.

When the operator installs an FDR in order to comply with CAT.IDE.A.191 or CAT.IDE.H.191, the operational checks and evaluations to be performed are the same as for an FDR installed on a large

<sup>21</sup> <https://www.easa.europa.eu/document-library/notices-of-proposed-amendments/npa-2013-26>

<sup>22</sup> <http://ad.easa.europa.eu/ad/2009-28R1>

aeroplane or a large helicopter, because without such checks the FDR serviceability might not be ensured.

Point (b) of GM1 CAT.GEN.MPA.195(b) has been amended in order to remove ‘where practicable’, because this term was not explained and subject to different interpretations, leading to non-harmonised practice. In addition, it is not necessary anymore to get the consent of the flight crew before inspecting an audio recording for ensuring the serviceability of the flight recorder (refer to point (f)(1a) of CAT.GEN.MPA.195). Also, it has been added in point (b) that evidence of that the audio signal is acceptable should be checked ‘in all phases of flight’, because it was often found out by safety investigation authorities that the audio quality of the CVR was not good during some particular phases of flight.

Point (d) of GM1 CAT.GEN.MPA.195(b) has been developed to address the inspection of recorded images. In the case of images, the primary purpose is to verify that the images are of a quality sufficient for reading the instruments’ indications, and this applies for various flight phases. Point (d) contains similar specifications to those of point (b) that is applicable to audio recordings from a flight recorder.

The wording of **AMC1 NCC.GEN.145(b)**, **GM1 NCC.GEN.145(b)**, **GM3 NCC.GEN.145(b)** **AMC1 SPO.GEN.145(b)**, **GM1 SPO.GEN.145(b)** and **GM3 SPO.GEN.145(b)** has been amended similarly to AMC1 CAT.GEN.MPA.195(b), GM1 CAT.GEN.MPA.195(b) and respectively GM3 CAT.GEN.MPA.195(b).

#### Protection of image and audio recordings from a flight recorder

**AMC1 CAT.GEN.MPA.195(f)(1)**, on the use of audio recordings for maintaining or improving safety, has been amended to include a reference to Regulation (EU) 2016/679, which should be considered in the procedure related to the handling of audio recordings when the audio recording is used for maintaining or improving safety. Furthermore, the ‘CVR recordings’ has been replaced with ‘audio recordings from audio recorders and of their transcripts’ to cover also the audio recorded by a lightweight flight recorder.

**GM1 CAT.GEN.MPA.195(f)(1)** has been deleted because the content of this GM was rather justification of CAT.GEN.MPA.195(f)(1) than practical guidance.

**AMC1 CAT.GEN.MPA.195(f)(1a)**, on the inspection of audio recordings for ensuring serviceability of the flight recorder, has been amended to replace the term ‘CVR recording’ with ‘audio recording from a flight recorder’.

The **new AMC1 CAT.GEN.MPA.195(f)(3)** addresses the use of images of the flight crew compartment recorded by a flight recorder for maintaining or improving safety. This is because compliance with CAT.IDE.A.191 or CAT.IFE.H.191 may be achieved by recording images. The AMC follows the same principles as AMC1 CAT.GEN.MPA.195(f)(1).

Point (a) of AMC1 CAT.GEN.MPA.195(f)(3) recommends that the procedure related to the handling of recordings of flight crew compartment images be documented and signed by all parties, so that it can be checked that all internal stakeholders are aware of this procedure. It also recommends that Regulation (EU) 2016/679 be considered when drafting this procedure.

In addition:

- Point (a)(1) recommends that the procedure defines the method to obtain the consent of all the staff members concerned.





- Point (a)(2) limits the access to recorded images to specifically authorised persons.
- Point (a)(3) recommends a retention policy and accountability that includes the measures to ensure the protection of recordings.
- In order to facilitate oversight of the appropriate use of recorded images, point (a)(4) recommends that the aircraft operator explain in the procedure what use is made of the images.
- In order to promote fair assessment of recorded images in case of safety concern, points (a)(5), (a)(6) and (a)(7) have been developed, which are consistent with the existing provisions applicable to FDM programmes in AMC1 ORO.AOC.130(k).

The objective of point (b) of AMC1 CAT.GEN.MPA.195(f)(3) is to ensure that, if a recording file containing images of body parts is read out, the competent authority may check the use of this recording file.

Point (c) of AMC1 CAT.GEN.MPA.195(f)(3) recommends that the safety manager or the person identified by the operator to fulfil this role be responsible for the protection and use of flight crew compartment images, as well as the assessment and transmission of issues. This is consistent with the fact that the use of recorded images is allowed only for safety purposes or to ensure the flight recorder serviceability except when Regulation (EU) No 996/2010 applies (refer to CAT.GEN.MPA.195(f)(3)).

Point (d) of AMC1 CAT.GEN.MPA.195(f)(3) recommends that when a third party is involved in the use of recorded images, contractual agreements with this third party should, when applicable, cover the aspects enumerated in points (a) and (b). This is to ensure that even if part of the handling of recorded images is subcontracted, the necessary precautions for the protection of data privacy will be taken by the third party.

**AMC1 CAT.GEN.MPA.195(f)(3a)** has been developed to address the use of flight crew compartment images recorded by a flight recorder for ensuring serviceability. It follows principles similar to those of AMC1 CAT.GEN.MPA.195(f)(1a), which addresses the recording inspection of audio recordings from a flight recorder for ensuring serviceability. However, the conditions enumerated in point (a) of AMC1 CAT.GEN.MPA.195(f)(3a) are only applicable when a body part of a crew member is likely to be visible on the images, meaning that they have a privacy content.

Point (a)(1) of AMC1 CAT.GEN.MPA.195(f)(3a) recommends that replays are conducted under conditions that ensure the privacy of recordings required by CAT.GEN.MPA.195(f)(3a).

Point (a)(2) recommends restricting access to the replay equipment in order to ensure that the use of this equipment is controlled.

Points (a)(3) and (a)(4) are related to the protection of the recording medium and the recording files read out from this recording medium. They recommend secure storage of the recording medium and the recording files, as well as destruction of the recording files in a given time frame, except for some images retained for the purpose of enhancing the recording inspection. The recording files should not be destroyed immediately, in order to permit an independent check of the quality of the recorded images if necessary. However, a maximum retention time of the recording files is also recommended, as they contain sensitive information.

Point (a)(5) designates the accountable manager and the safety manager of the operator as the only persons entitled to request a copy of the recording files. This is meant to ensure control of the recorded images and it is consistent with AMC1 CAT.GEN.MPA.195(f)(3). Except for ensuring



serviceability, the only permitted use during day-to-day operations is for maintaining and improving safety, and in that case, in accordance with AMC1 CAT.GEN.MPA.195(f)(3), the safety manager should be responsible for the use and protection of the image recordings.

Point (b) covers the cases where the image recording inspection is subcontracted to a third party.

The new **GM1 CAT.GEN.MPA.195(f)** has been added to provide a common understanding of images of the ‘flight crew compartment’, when there are no compartments segregating the flight crew from the passengers.

The explanations above are valid also for the changes to **AMC & GM to NCC.GEN.145(f)** and **AMC & GM to SPO.GEN.145(f)**.

#### Editorial corrections — AMC associated with the requirement to carry a flight data recorder on board large aeroplanes and large helicopters

In AMC2 CAT.IDE.A.190, AMC4 CAT.IDE.A.190 and AMC6 CAT.IDE.A.190, the terms ‘when determined by the Agency’ were replaced by ‘when determined by the competent authority’. Indeed, the corrected terms are the result of an unintended wording change during the preparation of the first issue of the AMC to Part-CAT. In the Annex to Commission Regulation (EC) No 859/2008 (‘EU-OPS’) which was applicable in EU Member States until the Air OPS Regulation entered into force, the corresponding wording is ‘if acceptable to the Authority’ (refer to OPS 1.715, 1.720 and 1.725). In that context, ‘the Authority’ was to be understood as the authority competent for the oversight of the operator, which usually is the national aviation authority of the State where the operator has its main place of business.

Similarly, the terms ‘when determined by the Agency’ were replaced by ‘when determined by the competent authority’ in AMC2 CAT.IDE.H.190.

In AMC1.2 CAT.IDE.A.190, AMC2 NCC.IDE.A.165 and AMC2 SPO.IDE.A.145 alleviations for the recording of certain parameters are introduced for consistency with other similar cases.

#### **RMT.0276 (MDM.076) ‘Technical Records’**

An AMC and GM is added in Part-CAT, Part-NCC, Part-NCO and Part-SPO, to define operators’ responsibilities on the retaining and control of the status of those aircraft components that are not controlled in the context of the continuing-airworthiness management.

#### **RMT.0296 (OPS.008(a)) ‘Review of the aeroplane performance requirements for air operations’**

##### Annex I — Definitions

Guidance is added to further explain the definitions introduced in Annex I for the Global Reporting Format (GRF) of runway surface conditions.

##### Part-ORO

GM3 ORO.GEN.130(b) has been amended to include reduced required landing distance operations in the list of prior approval.

AMC5 ORO.MLR.100 is added to provide recommendation on publishing operational crosswind limitations in the operations manual.



## Part-CAT

AMC1 CAT.OP.MPA.300(a) has been amended to explain how to perform the landing distance assessment in flight.

GM1 CAT.OP.MPA.300(a) has been added to provide guidance on the availability of wind data.

AMC1 CAT.OP.MPA.301 has been added as result of the split of the aeroplane rule from the helicopter rule, with no technical change.

AMC1 CAT.OP.MPA.303 has been added to explain when it is possible to assess the LDTA based on dispatch criteria.

GM1 and GM2 to CAT.OP.MPA.303 have been added to provide further guidance on the assessment of the landing distance at time of arrival (LDTA).

AMC1 CAT.OP.MPA.303(e) has been added to define which performance data may be used for the assessment of the LDTA.

AMC1 and GM1 CAT.OP.MPA.311, on the reporting on runway braking action, have been added.

AMC1 CAT.OP.MPA.303 & CAT.OP.MPA.311 and GM1 CAT.OP.MPA.303 & CAT.OP.MPA.311 have been added to provide means of compliance and guidance for a syllabus on flight crew training on the GRF.

AMC1 CAT.POL.A.200 has been amended to include the concept of GRF.

AMC1 CAT.POL.A.215 has been amended to improve the quality of the graphics.

AMC1 CAT.POL.A.230 & CAT.POL.A.235 and GM1 CAT.POL.A.230 have been amended to include a reference to the newly introduced concept of 'reduced required landing distance operations'.

GM1 CAT.POL.A.230(a) has been added to clarify what are the alternate aerodromes to be considered at dispatch.

GM1 CAT.POL.A.230(d)(2) has been added to clarify what AFM corrections are provided for landing distance calculations.

GM1 CAT.POL.A.235(a) and (b) has been added to provide guidance on the assessment of marginal cases for dispatch on wet and contaminated runways.

GM1 CAT.POL.A.235(a)(1) has been added to explain what AFM data may be available for landing distances on wet runways.

AMC1 CAT.POL.A.235(a)(3) has been added to support operations on runways with friction improving characteristics.

GM1 CAT.POL.A.230 & CAT.POL.A.235 has been added to clarify the rule applicability and consequent workflow to determine the landing distance at dispatch.

GM1 CAT.POL.A.230 & CAT.POL.A.235 has been added to better explain how to apply corrective factors to the landing distance.

GM1 CAT.POL.A.245(a) has been added to provide a definition of screen height for the purposes of steep approach operations.

GM1 CAT.POL.A.255(a)(2) has been added to explain the concept of aircraft eligibility for reduced required landing distance operations.

GM1 CAT.POL.A.255(a)(3) has been added to define non-scheduled on-demand commercial air transport (CAT) operations for the purposes of reduced required landing distance operations.

AMC1 CAT.POL.A.255(b)(1) has been added to provide means to demonstrate an equivalent level of safety for the approval of reduced required landing distance operations.

AMC1 CAT.POL.A.255(b)(2)(iv) and GM1 CAT.POL.A.255(b)(2)(iv) have been added to provide means of compliance for flight crew qualification and training for the purposes of reduced required landing distance operations.

AMC2 CAT.POL.A.255(b)(2)(iv) and GM2 CAT.POL.A.255(b)(2)(iv) has been added to provide means of compliance for monitoring of reduced required landing distance operations.

AMC1 CAT.POL.A.255(b)(2)(v) and GM1 CAT.POL.A.255(b)(2)(v) has been added to provide means of compliance and guidance on the aerodrome landing analysis programme (ALAP) required for reduced required landing distance operations.

AMC1 CAT.POL.A.255(b)(2)(vi) and GM1 CAT.POL.A.255(b)(2)(vi) have been added to provide means of compliance and guidance on equipment affecting landing performance for the purposes of reduced required landing distance operations.

AMC1 CAT.POL.A.255(b)(2)(vii), on recency of flight crew for reduced required landing distance operations, has been added.

AMC1 CAT.POL.A.255(b)(2)(ix), on additional aerodrome conditions that may be required for reduced required landing distance operations, has been added.

The AMC and GM on aeroplane performance applicable to Performance Class B and performance Class C aeroplanes have been updated in a similar fashion and for the same reasons as those applicable to Performance Class A aeroplanes as listed above.

#### Part-NCC/Part-NCO/Part-SPO

AMC and GM have been added to explain the concept of the GRF and provide guidance for non-commercial operations taking place at aerodromes where the GRF will be implemented.

#### **RMT.0695 ‘Non-ETOPS operations’**

The following changes have been made to the AMC and GM to Part-CAT:

- AMC1 CAT.OP.MPA.140(d) has been amended to:
  - remove all the criteria linked with the type design approval requirement associated with the 120-180 minutes non-ETOPS operational approval;
  - reword for clarity and consistency the operational criteria associated with the 120-180 minutes non-ETOPS operational approval;
- The new GM1 CAT.OP.MPA.140(d) has been introduced to provide a definition of and guidance related to the significant systems, whose status is to be verified during the pre-departure check.

## PBCS

AMC and GM have been added to the AMC & GM to Part-CAT, Part-NCC and Part-SPO to define detailed means of compliance and guidance for the implementation of PBCS operations.

## OXYGEN DISPENSING UNITS

AMC1 CAT.IDE.A.230(d) has been added and GM1 CAT.IDE.A.230 has been amended to allow the use of more efficient portable dispensing units of first-aid oxygen.

## DE-ICING/ANTI-ICING PROCEDURES

GM1, GM2 and GM3 to CAT.OP.MPA.250, GM1, GM2 and GM3 to NCC.OP.185 and GM1, GM2 and GM3 to SPO.OP.175, related to 'Ice and other contaminants – ground procedures' have been amended to reflect the latest available technical standards (Global Aircraft De-icing Standards) after the discontinuation of the AEA annual publication. Also, some obsolete references have been removed and the wording has been aligned with the 'Global Aircraft De-icing Standards'.

## MEDICAL EQUIPMENT

The main changes through this Decision, compared to the current AMC & GM related to FAK and EMK are described below:

### CAT.IDE.A.220 First-Aid Kit

#### Point (b)(1) of AMC1 CAT.IDE.A.220

- A triangular bandage has been included to ensure its availability as a most versatile first-aid supply.
- Surgical masks have been included to prevent spreading of infectious diseases as well as to ensure a better protection of persons administering first aid and treated persons with severe health issues.

#### Point (b)(2) of AMC1 CAT.IDE.A.220

- A higher flexibility has been provided regarding the form of simple analgesics used to treat children in flight by specifying their intended use since the only paediatric (i.e. liquid) form of analgesics available in some countries is not allowed on board for private persons.
- A non-injectable form of antiemetics has been specified to supplement the injectable form included in the EMK as well as due to the fact that the injectable form can only be administered by suitably qualified persons.
- A paediatric form of antihistamines and antiemetics has been included in the FAK to ensure that the dose appropriate for children is available to treat nausea and acute allergic reactions, which belong to the major reasons for medical emergencies on board involving children.

#### Point (b)(3) of AMC1 CAT.IDE.A.220

- The structure of the AMC has been updated to only list documentation and instructions under this point.
- Flexibility has been provided regarding the format of instructions related to equipment and medications and a suitable location of instructions is indicated.



- Basic Life Support instructions cards, previously available in the EMK, has been included in the FAK to facilitate treatment in cases of respiratory and cardiac distress on all flights irrespectively of the availability of the EMK.

#### Point (b)(4) of AMC1 CAT.IDE.A.220

A new category of content, ‘additional equipment’, has been introduced to include items that are linked to the FAK. Additional equipment consists of equipment needed for resuscitation and of several infrequently but repeatedly used items which may not fit in the existing FAKs or which should be on board but are not required to be included in all the FAKs. Such items are currently part of either the FAK (an eye irrigator and biohazard disposal bags) or the EMK (an automated external defibrillator (AED) which is now included for all aircraft required to carry at least one cabin crew in line with EASA SIB 2018-03 of 30 January 2018, bag-valve masks, a suitable airway management device and a basic delivery kit) and thus their availability and quantity are subject to the respective criteria stated in the AMC. Including such equipment in a separate category should generate savings for the airlines in terms of costs, space and weight. As the availability of the EMK on some flights is optional, this additional equipment set is linked to the FAK required on all flights; however, the number of each item of additional equipment carried on board should be decided by the operator based on the capacity and design of the aircraft (single-deck versus multi-deck). For instance, the bag-valve mask is currently part of the EMK and, therefore, its availability on board depends on the flight duration and on the MOPSC. However, including such a mask in the FAK would make its quantity dependent on the number of passenger seats installed, i.e. in an aeroplane carrying 200-300 passengers, three pieces should be available as three FAKs are required according to CAT.IDE.A.220. However, carrying one bag-valve mask would be sufficient considering its infrequent but repeated use. To enable a possible installation of an additional equipment set on each deck, it is specified that operators should assess if such a set is needed on each deck when operating multi-deck aircraft.

#### New GM to CAT.IDE.A.220

- The new GM1 CAT.IDE.A.220 has been introduced to indicate the location of the FAK in the cabin using internationally recognisable signs to mitigate cases of cabin crew incapacitation and to allow easy access to the FAK for survivors in case of an accident.
- The new GM2 CAT.IDE.A.220 has been introduced to encourage the use of a single point of storage of emergency equipment on board to improve the availability of and avoid delays in accessing life-saving equipment in an emergency.
- The new GM3 CAT.IDE.A.220 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.
- The new GM4 CAT.IDE.A.220 has been introduced to maintain consistency with the EASA SIB 2018-03 recommendations related to the C-PED category.

#### AMC1 CAT.IDE.A.225 has been updated as follows:

#### Point (b)(1) of AMC1 CAT.IDE.A.225

- A higher flexibility has been provided regarding the type of sphygmomanometer carried on board.

- The amended wording gives the operator the flexibility to decide on the amount of intravenous fluids carried on board.
- Oropharyngeal airways and intubation set have been removed from the EMK to aim for a non-prescriptive approach. However, an airway management device is included in the FAK as part of the additional equipment set due to better chances of survival based on the availability of this ventilation device to ensure airway management in cases of unconsciousness.
- The contents of a basic delivery kit have been specified to include at least the three elementary items that are negligible in terms of size, weight and cost. The basic delivery kit has been moved to the additional equipment set linked with the FAK due to a number of deliveries that took place on board of European flights in the past few years.
- Bag-valve masks has been removed from the EMK and are listed under the additional equipment used for resuscitation; the masks include three sizes to also allow treatment of children and infants.
- A pulse oximeter has been included for cases of crew incapacitation by a loss of cabin pressurisation, for treating anxiety attacks, etc. and thus could generate savings for airlines. Pulse oximeters are reported to be frequently used on board and are considered effective and easy to operate. The cost, size and weight of the devices are low.
- A pneumothorax set has been included to treat severe cases of suffocating pneumothorax based on a high number of reported cases when such a kit was needed and successfully used in flight. The size and weight of the pneumothorax set is minimal, it is inexpensive and has a long shelf life, as it does not contain any perishable substances, thus not requiring a frequent replacement.

Point (b)(2) of AMC1 CAT.IDE.A.225

- Guidance for conversion of units for the blood glucose test has been included as part of instructions to ensure correct monitoring of blood glucose for people with diabetes to reduce the short-term, potentially life-threatening complications of hypoglycemia.
- Flexibility has been provided regarding the format of instructions related to the use of equipment and medication and a suitable location of instructions is indicated.

Point (b)(3) of AMC1 CAT.IDE.A.225

- Epinephrine/adrenaline has been included unconditionally, as it is vital for treatment of serious allergic reactions to any substances in emergencies.
- Atropine, antiarrhythmic, antihypertensive medications, and beta-blockers have been removed from the EMK due to the lack of clinical indication for the emergency use of those drugs on board an aircraft, due to their interchangeability with other medications and equipment available in the FAK and EMK or due to a low frequency of relevant occurrences.
- A higher flexibility has been provided for forms of adrenocorticoids and sedative/anticonvulsant medications as well as for the quantity of acetylsalicylic acid for coronary use.
- A paediatric form of antihistamines has been included to ensure that the dose appropriate for children is available to treat acute allergic reactions, which is one of the major reasons for medical emergencies on board involving children.



- An injectable form of antiemetics has been specified to supplement the oral form included in the FAK to cover severe cases not responding to oral treatment during long-haul flights.
- As many operators carry antibiotics as their standard practice, the injectable form of antibiotic (Ceftriaxone or Cefotaxime) has been added to treat acute bacterial meningitis. An antibiotic treatment is required in case of purpura fulminans or if the patient cannot be hospitalised within 90 minutes.
- In view of space limitations, the AMC only includes the inhaled type of bronchial dilator with a disposable collapsible spacer to facilitate the use of the inhaler.
- The remark related to dilution of epinephrine has been deleted to avoid possible confusion, as medical personnel using this medication should already be aware of the principle of dilution.
- The AED has now been included in the additional equipment linked to the FAK for all aircraft required to carry at least one cabin crew in line with SIB 2018-03 issued by EASA. This change takes into account relevant medical recommendations (including from the European Society of Aerospace Medicine (ESAM)) accepted by experts, the relatively low cost of the device and the standard practice of many operators to carry an AED on board.

The AMC and GM to CAT.IDE.A.225 have been updated as follows:

- Based on the proposal of the task force, the new point (d) AMC3 CAT.IDE.A.225(d), related to the access to the emergency medical kit, has been introduced to allow suitably trained persons to administer medications when permitted under the operator's national legislation. In some Member States, the law allows appropriately trained non-health professionals, including cabin crew, to administer medication (under the supervision of a medical practitioner, but this requirement may be met by providing procedures and training). Therefore, some cabin crew may be able to administer oral medication, including prescription and controlled drugs, or an EpiPen, from the EMK in accordance with their training and without seeking assistance from an on-board health professional or ground-based medical advisory service. They may also administer other oral drugs under the direction of a ground-based medical advisory service.
- The new GM2 CAT.IDE.A.225 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.
- The new GM3 CAT.IDE.A.225 has been introduced to maintain consistency with the EASA SIB 2018-03 recommendations related to the C-PED category.

AMC1 CAT.IDE.H.220 has been updated as follows:

The changes to AMC1 CAT.IDE.A.220 have been transposed to AMC1 CAT.IDE.H.220 with the following slight modifications that take into account the specificities of helicopter operations:

- The paediatric form of antihistamines and simple analgesics in the FAK should be available only if the type of operation includes transport of children or infants, in order to ensure that the dose appropriate for children is available to treat acute allergic reactions and to relieve pain.
- The basic delivery kit has not been included in the 'additional equipment' set due to the possibility to land within a reasonable time span.





- The FAK is not required for helicopter emergency medical service (HEMS) operations where the content of the FAK is included in the medical equipment carried on board.

New GM to CAT.IDE.H.220 has been introduced:

- The new GM1 CAT.IDE.H.220, on location and use of the FAK, has been introduced to indicate the location of the FAK using internationally recognisable signs to allow easy access to the FAK for survivors in case of an accident and to allow more flexibility on locating the FAK considering the specificities of helicopter operations when conditions for its accessibility are met.
- The new GM2 CAT.IDE.H.220 has been introduced to encourage the use of a single point of storage of emergency equipment on board to improve the availability of and avoid delays in accessing life-saving equipment in an emergency.
- The new GM3 CAT.IDE.H.220 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.
- The new GM4 CAT.IDE.H.220 has been introduced to maintain consistency with the EASA SIB 2018-03 recommendations related to the C-PED category.

AMC1 NCC.IDE.A.190 has been updated as follows:

AMC1 NCC.IDE.A.190 has been aligned with AMC1 CAT.IDE.A.220 regarding the changes to the FAK proposed above.

GM to NCC.IDE.A.190 has been is introduced:

- The new GM1 NCC.IDE.A.190 has been introduced to indicate the location of the FAK in the cabin using internationally recognisable signs to mitigate cases of cabin crew incapacitation and to allow easy access to the FAK for survivors in case of an accident.
- The new GM2 NCC.IDE.A.190 has been introduced to encourage the use of a single point of storage of emergency equipment on board to improve the availability of and avoid delays in accessing life-saving equipment in an emergency.
- The new GM3 NCC.IDE.A.190 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.
- The new GM4 NCC.IDE.A.190 has been introduced to maintain consistency with the EASA SIB 2018-03 recommendations related to the C-PED category.

AMC1 NCC.IDE.H.190 has been updated as follows:

AMC1 NCC.IDE.H.190 to C-PED category aligned with AMC1 CAT.IDE.H.220 regarding the changes to the FAK proposed above.

GM to NCC.IDE.H.190 has been introduced:

- The new GM1 NCC.IDE.H.190 has been introduced to indicate the location of the FAK using internationally recognisable signs to allow easy access to the FAK for survivors in case of an accident and to allow more flexibility on locating the FAK considering the specificities of helicopter operations when conditions for its accessibility are met.

- The new GM2 NCC.IDE.H.190 has been introduced to encourage the use of a single point of storage of emergency equipment on board to improve the availability of and avoid delays in accessing life-saving equipment in an emergency.
- The new GM3 NCC.IDE.H.190 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.
- The new GM4 NCC.IDE.H.190 has been introduced to maintain consistency with the EASA SIB 2018-03 recommendations related to the C-PED category.

AMC1 NCO.IDE.A.145 has been updated as follows:

- AMC1 NCO.IDE.A.145 has been aligned with AMC1 CAT.IDE.A.220 regarding the changes to the FAK proposed above.
- A disposable resuscitation aid is recommended in line with point (b)(1)(x) of AMC1 CAT.IDE.A.220 to ensure its availability on all flights as the most elementary and vital resuscitation item.

GM to NCO.IDE.A.145 has been introduced:

- The new GM1 NCO.IDE.A.145 has been introduced to indicate the location of the FAK in the cabin using internationally recognisable signs to mitigate cases of cabin crew incapacitation and to allow easy access to the FAK for survivors in case of an accident.
- The new GM2 NCO.IDE.A.145 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.

AMC1 NCO.IDE.H.145 has been updated as follows:

- AMC1 NCO.IDE.H.145 is aligned with AMC1 CAT.IDE.H.220 regarding the changes to the FAK proposed above.
- A disposable resuscitation aid is recommended in line with point (b)(1)(x) of AMC1 CAT.IDE.H.220 to ensure its availability on all flights as the most elementary and vital resuscitation item.

GM to NCO.IDE.H.145 has been is introduced:

- The new GM1 NCO.IDE.H.145 has been introduced to indicate the location of the FAK using internationally recognisable signs to allow easy access to the FAK for survivors in case of an accident and to allow more flexibility on locating the FAK considering the specificities of helicopter operations when conditions for its accessibility are met.
- The new GM2 NCO.IDE.H.145 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.

AMC1 SPO.IDE.A.165 has been updated as follows:

- AMC1 SPO.IDE.A.165 is aligned with AMC1 CAT.IDE.A.220 regarding the changes to the FAK proposed above.



- A disposable resuscitation aid is recommended in line with point (b)(1)(x) of AMC1 CAT.IDE.A.220 to ensure its availability on all flights as the most elementary and vital resuscitation item.

AMC2 SPO.IDE.A.165 has been updated as follows:

The main changes to Part-SPO through this Decision, compared to the current AMC & GM related to the FAK, take into account the specificities of specialised operations and are described below:

Point (b)(1) of AMC2 SPO.IDE.A.165

- A triangular bandage has been included to ensure its availability as a most versatile first-aid supply.
- Surgical masks have been included to prevent spreading of infectious diseases as well as to ensure a better protection of persons administering first aid and treated persons with severe health issues.

Point (b)(2) of AMC2 SPO.IDE.A.165

- The liquid form of simple analgesic has been deleted as it is primarily used to treat children and thus is not required due to the nature of specialised operations.
- The non-injectable form of antiemetic has been included as the injectable form can only be administered by suitably qualified persons.

Point (b)(3) of AMC2 SPO.IDE.A.165

- Flexibility has been provided regarding the format of instructions related to equipment and medications and a suitable location of instructions is indicated.
- Basic Life Support instructions cards are included to facilitate treatment in cases of respiratory and cardiac distress.
- A bag-valve mask for adults is included as this is an item used in emergencies for resuscitation and necessary to ventilate a patient in case of respiratory failure or respiratory arrest.

Point (b)(4) of AMC2 SPO.IDE.A.165

Operators should carry additional equipment based on a risk assessment that considers the specificities and the nature of their specialised operations. Additional equipment consists of an AED, a non-specified airway management device and an eye irrigator. Reasons for the inclusion of these items are detailed above under points (b)(1) and (b)(3) of AMC1 CAT.IDE.A.225.

GM to SPO.IDE.A.165 has been introduced:

- The new GM1 SPO.IDE.A.165 has been introduced to indicate the location of the FAK in the cabin using internationally recognisable signs to mitigate cases of cabin crew incapacitation and to allow easy access to the FAK for survivors in case of an accident.
- The new GM2 SPO.IDE.A.165 has been introduced to encourage the use of a single point of storage of emergency equipment on board to improve the availability of and avoid delays in accessing life-saving equipment in an emergency.

- The new GM3 SPO.IDE.A.165 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.
- The new GM4 SPO.IDE.A.165 has been introduced to maintain consistency with the EASA SIB 2018-03 recommendations related to the C-PED category.

AMC1 SPO.IDE.H.165 has been updated as follows:

- AMC1 SPO.IDE.H.165 has been aligned with AMC1 CAT.IDE.H.220 regarding the changes to the FAK proposed above.
- A disposable resuscitation aid is recommended in line with point (b)(1)(x) of AMC1 CAT.IDE.H.220 to ensure its availability on all flights as the most elementary and vital resuscitation item.

AMC2 SPO.IDE.H.165 has been updated as follows:

In order to align AMC2 SPO.IDE.H.165 with AMC1 CAT.IDE.H.220, considering the specificities of specialised helicopter operations, the changes described above under AMC2 SPO.IDE.A.165(b)(1), (2), (3) and (5) are incorporated in AMC2 SPO.IDE.H.165 respectively.

GM to SPO.IDE.H.165 has been introduced:

- The new GM1 SPO.IDE.H.165 has been introduced to indicate the location of the FAK using internationally recognisable signs to allow easy access to the FAK for survivors in case of an accident and to allow more flexibility on locating the FAK considering the specificities of helicopter operations when conditions for its accessibility are met.
- The new GM2 SPO.IDE.H.165 has been introduced to encourage the use of a single point of storage of emergency equipment on board to improve the availability of and avoid delays in accessing life-saving equipment in an emergency.
- The new GM3 SPO.IDE.H.165 has been introduced to clarify that the risk assessment performed by the operator to supplement the FAK according to the characteristics of the operation does not require an approval by the competent authority.
- The new GM4 SPO.IDE.H.165 has been introduced to maintain consistency with the EASA SIB 2018-03 recommendations related to the C-PED category.



### 3. References

#### 3.1. Related regulations

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

#### 3.2. Related decisions

- Decision N° 2012/015/Directorate R of the Executive Director of the Agency of 24th October 2012 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council — ‘Guidance Material to Annex I — Definitions’
- Decision 2014/017/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ORO of Regulation (EU) No 965/2012 and repealing Decision 2012/017/R of the Executive Director of the Agency of 24 October 2012 — ‘AMC and GM to Part-ORO — Issue 2’
- Decision 2014/015/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-CAT of Regulation (EU) No 965/2012 and repealing Decision 2012/018/R of the Executive Director of the Agency of 24 October 2012 — ‘AMC and GM to Part-CAT — Issue 2’
- Decision N° 2012/019/Directorate R of the Executive Director of the Agency of 24th October 2012 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council ‘Acceptable Means of Compliance and Guidance Material to Part-SPA’
- Decision N° 2013/021/Directorate R of the Executive Director of the Agency of 23 August 2013 on adopting Acceptable Means of Compliance and Guidance Material for Non-commercial operations with complex motor-powered aircraft — ‘AMC and GM to Part-NCC’
- Decision 2014/016/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-NCO of Regulation (EU) No 965/2012 and repealing Decision 2013/022/R of the Executive Director of the Agency of 23 August 2013 — ‘AMC and GM to Part-NCO — Issue 2’
- Decision 2014/018/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-SPO of Regulation (EU) No 965/2012 — ‘AMC and GM to Part-SPO’

#### 3.3. Other reference documents

- JAA NPA-OPS 47 — Aeroplane Performance



- SR UNKG-2008-076 — Aircraft Accident Report 1/2009, Air Accidents Investigation Branch (AAIB), UK Department for Transport, 9 January 2009
- SR NORW-2011-011 — Report SL 2011/10, Winter Operations, Friction Measurements and Conditions for Friction Predictions, Vol II — Main Report, Accident Investigation Board Norway (AIBN), May 2011
- European Action Plan for the Prevention of Runway Excursions (EAPPRE), Released Edition 1.0, January 2013
- IATA Safety Report 2014, 51st Edition, April 2015
- Research Project EASA.2011/08 NGW — Near-Ground Wind Gust Detection (Report no. NLR-CR-2012-143)
- Eurocontrol — ‘Briefing: Business Aviation in Europe in 2012’ — STATFOR Briefing 167
- Research Project EASA.2008/4 — Runway Friction Characteristics Measurement And Aircraft Braking (RuFAB), final report, March 2010
- EASA Safety Information Bulletin (SIB) No 2014-20 — Aeroplane Operations in Crosswind Conditions, 23 June 2014
- EASA Safety Information Bulletin (SIB) No 2018-0220 — Runway Surface Condition Reporting
- Federal Aviation Regulation (FAR) Part 121
- Federal Aviation Regulation (FAR) Part 135
- Federal Aviation Regulation (FAR) Part 91K
- FAA AC No. 25-32 — Landing Performance Data for Time of Arrival Landing Performance Assessments
- FAA AC No. 25-31— Takeoff Performance Data for Operations on Contaminated Runways
- ICAO Annex 6 to the Chicago Convention on International Civil Aviation, Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes, 10th Edition, July 2016
- ICAO Annex 6 to the Chicago Convention on International Civil Aviation, Operation of Aircraft, Part II — International General Aviation — Aeroplanes, 9th Edition, July 2016
- ICAO Annex 8 to the Chicago Convention on International Civil Aviation, Airworthiness of Aircraft, 11th Edition, July 2010.
- ICAO Annex 14 to the Chicago Convention on International Civil Aviation, Aerodromes, Volume I — Aerodrome Design and Operations, 7th Edition, July 2016
- ICAO State Letter AN 4/1.1.55-15/30 of 29 May 2015
- ICAO State Letter AN 3/5.10-16/29 of 6 April 2015
- ICAO State Letter AN 11/1.3.29-16/12 of 8 April 2016
- ICAO State Letter AN 4/1.2.26-16/19 of 5 April 2016
- ICAO Doc 9981 — PROCEDURES FOR AIR NAVIGATION SERVICES (PANS) — Aerodromes



- 
- ICAO Doc 4444 — PROCEDURES FOR AIR NAVIGATION SERVICES (PANS) — Air Traffic Management (ATM)
  - ICAO Circular 355 ‘Runway Surface Condition Assessment, Measurement and Reporting’
  - Australian Government, Civil Aviation Authority, Civil Aviation Order (CAO) 82.0, Air Operators’ Certificates – applications for certificates and general requirements, dated 21 November 2012 taking into account amendments up to Civil Aviation Order 82.0 Amendment Instrument 2012 (No. 2)
  - Canadian Aviation Regulations, Part VII — Commercial Air Services, current to July 22, 2014
    - Subpart 3 — Air Taxi Operations
    - Subpart 4 — Commuter Operations
    - Subpart 5 — Airline Operations
  - Civil Aviation Authority of New Zealand, Civil Aviation Rules
  - Part 121, Air Operations – Large Aeroplanes, CAA consolidation current as of 1 April 2014
  - Part 125, Air Operations – Medium Aeroplanes, CAA consolidation current as of 1 April 2014
  - Robert E. Breiling Associates Inc., Business Turbine Aircraft Accidents Involving Extended Range Operations 1964 – 6 Mos. 1996 for National Business Aircraft Association Inc., July 1996
  - Robert E. Breiling Associates Inc., Business Turbine Aircraft Accidents Involving Extended Range Operations 1996 through 2013 for Bombardier Aerospace, September, 2014
  - Safety Information Bulletin No 2018-03 of 30 January 2018 related to Carriage and use of Automatic External Defibrillators
  - Safety Information Bulletin No 2017-11 of 14 July 2017 related to Global Aircraft De-icing Standards
  - Doc 9869 - PBCS Manual
  - ICAO PBCS Operational Authorization Guide
  - EASA Research Project ‘Investigation of the technical feasibility and safety benefit of a light aeroplane operational Flight Data Monitoring (FDM) system’, dated 16 December 2008
  - European General Aviation Strategy, dated 30 August 2012
  - EASA Management Board meeting 04/2012 of 11 December 2012, working paper 9a: Roadmap for Regulation of GA.
  - EUROCAE Document ED-155, Minimum Operational Performance Specification for Lightweight Flight Recording Systems, dated July 2009
  - EUROCAE Document ED-112, Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems, dated March 2003
  - EUROCAE Document ED-112A, Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems, dated September 2013



#### 4. Related documents

- CRD 2018-03
- CRD 2017-03
- CRD 2016-11
- CRD 2014-04

