



Explanatory Note to Decision 2016/012/R

Acceptable means of compliance and guidance material to implementing rules related to flight recorders, underwater locating devices and aircraft tracking systems (Second set)

RELATED NPA/CRD 2013-26 — OPINION No 01/2014 — RMT.0400 (OPS.090(a)) & RMT.0401 (OPS.090(b)) — 12.9.2016

EXECUTIVE SUMMARY

This document contains newly developed AMC and GM, as well as explanations for their development or amendment, which are intended to complement the new implementing rules (IRs) introduced after the publication of Opinion No 01/2014 in Commission Regulation (EU) 2015/2338 on flight recorders, underwater locating devices and aircraft tracking systems. This document also contains the AMC and GM intended to update the operational requirements applicable to flight data recorders (FDRs).

The AMC and GM are related to the following topics:

- Protection and use of recordings of the CVR in normal operation;
- Operational requirements for FDRs when installed on future aircraft; and
- Recording inspection.

Due to the importance and urgency of the issues and the short time frame, the subject of ED Decision 2016/012/R was consulted only with the relevant EASA advisory bodies; however, two phases of consultation were performed.

Applicability		Process map	
Affected regulations and decisions:	Decision 2014/018/R (AMC/GM to Part-SPO); Decision 2014/015/R (AMC/GM to Part-CAT); Decision 2013/021/R (AMC/GM to Part-NCC)	Concept paper:	No
Affected stakeholders:	Aircraft operators; aircraft manufacturers; flight crew members; safety investigation authorities; national aviation authorities	Rulemaking group:	No
Driver/origin:	Safety	Terms of reference (Issue 2):	25.9.2015
Reference:	Please see Section 4.2.	RIA type:	Full and Light
		Technical consultation during NPA drafting:	No
		Publication date of the NPA:	20.12.2013
		Duration of NPA consultation:	3 months
		Review group:	No
		Focused consultation:	No
		Publication date of the Opinion:	5.5.2014
		Publication date of the decision:	2016/Q2



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1. Procedural information

1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') issued on 5 May 2014 Opinion No 01/2014¹ titled 'Amendment of requirements for flight recorders and underwater locating devices'.

Said Opinion and the associated CRD 2013-26² contained draft IRs, draft AMC and draft GM to address the following safety issues:

- (a) unreliability of obsolete recording technologies such as magnetic tape, magnetic wire and frequency modulation;
- (b) frequent cases of CVR overwriting the recordings after an accident or a serious incident;
- (c) insufficient transmission time of the underwater locating devices (ULDs) fitted to flight recorders; and
- (d) insufficient detection range of the ULDs fitted to flight recorders after an accident over an oceanic area.

The committee established by Article 65 of Regulation (EC) No 216/2008³ (hereinafter referred to as the 'EASA Committee'), composed of experts of the European Commission and EU Member States, drafted a regulation based on the Agency proposals, but also including IRs to address issues not covered by Opinion No 01/2014, in particular aircraft tracking, location of an aircraft in distress, as well as use and protection of CVR recordings. On 9 July 2015, the EASA Committee unanimously voted in favour of this draft Regulation and it was published on 16 December 2015.

Therefore, new AMC and GM, in addition to or significantly different from those presented in CRD 2013-26, have to be developed. The Agency organised a consultation on those AMC and GM from 25 September 2015 until 16 October 2015.

This consultation was limited to the advisory bodies of the Agency, namely the Rulemaking Advisory Group (RAG), the Thematic Advisory Groups (TAGs), and the Safety Standards Consultative Committee (SSCC). As a general principle, for any new IR that is applicable immediately or in the near future, the associated AMC and GM should be issued without delay following the publication of the IR. Therefore, the Agency elected to not organise a public consultation.

In view of the feedback provided during the first consultation, it was decided to organise a second round of consultation of RAG, TAG and SSCC. The scope of this second consultation was, as for the first consultation, restricted to AMC and GM additional to or significantly different from those presented in CRD 2013-26; however, excluding AMC and GM to CAT.GEN.MPA.210 (location of an aircraft in distress – aeroplanes). Indeed, it was also decided after the first consultation to put on hold the preparation of AMC and GM to CAT.GEN.MPA.210.

¹ <http://easa.europa.eu/document-library/opinions/opinion-012014>

² <http://easa.europa.eu/system/files/dfu/CRD%202013-26.pdf>

³ Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1).



With regard to CAT.GEN.MPA.205 (aircraft tracking system), Standards and Recommended Practices were approved by the ICAO Council on 11 November 2015 and they are expected to be published with Amendment 39 of Annex 6 Part I. However, ICAO is preparing an additional standard as well as a circular. It was therefore decided after the second consultation of the Agency advisory bodies to put on hold the preparation of AMC and GM to CAT.GEN.MPA.205 until the remaining deliverables of ICAO would be available.

1.2. AMC and GM which are within the scope of this document

The IRs which were introduced or amended after the publication of Opinion No 01/2014 in Commission Regulation (EU) 2015/2338⁴ need to be complemented by AMC and GM. These are in particular CAT.GEN.MPA.195(f).

In addition, the Agency identified the need to update the performance specified for the FDR and for the FDR parameters as well as GM related to flight recorder serviceability.

1.3. AMC and GM which are outside the scope of this document

Some AMC and GM complementing Commission Regulation (EU) 2015/2338 are not within the scope of this document. The AMC and GM presented in Chapter 4 of CRD 2013-26 are not included in this document because they were already adopted by Decision 2015/030/R.

In addition, the AMC and GM to CAT.GEN.MPA.205 and CAT.GEN.MPA.210 are not in the scope of this document (see 1.1).

Finally, some changes that were introduced after the publication of Opinion No 01/2014 in the Regulation do not require the development of new AMC/GM or the amendment of those already presented in CRD 2013-26. Therefore, they are not addressed in this document. These changes are the following:

- (a) Opinion No 01/2014 proposed to require a 20-hour recording duration CVR for aeroplanes with a maximum certified take-off mass (MCTOM) of over 27 000 kg and first issued with an individual certificate of airworthiness (CofA) on or after 1 January 2020. Commission Regulation (EU) 2015/2338 requires a 25-hour recording duration CVR for aeroplanes with an MCTOM of over 27 000 kg and first issued with an individual CofA on or after 1 January 2021.
- (b) The requirement that all ULDs attached to flight recorders which are installed on aeroplanes operated for commercial air transport (CAT) have a minimum transmission time of 90 days was proposed by Opinion No 01/2014 to become applicable on 1 January 2018. The applicability date for this requirement in Commission Regulation (EU) 2015/2338 has been changed to 16 June 2018.
- (c) The eligible aircraft for the requirement to carry a long-range ULD was changed from [aeroplanes with an MCTOM of over 27 000 kg and operated for CAT] to [aeroplanes operated for CAT, which either have an MCTOM of over 27 000 kg and a maximum operational passenger seating configuration (MOPSC) of more than 19, or have an MCTOM of over 45 500 kg].
- (d) In all paragraphs containing the flight recorder carriage requirements in Part-CAT, Part-NCC and Part-SPO, a provision was added to require, in the case where the flight recorder is deployable,

⁴ Commission Regulation (EU) 2015/2338 of 11 December 2015 amending Regulation (EU) No 965/2012 as regards requirements for flight recorders, underwater locating devices and aircraft tracking systems (OJ L 330, 16.12.2015, p. 1).



that it has an automatic emergency locator transmitter (ELT).

1.4. The structure of this document

Chapter 1 of this document contains the procedural information related to this consultation. Chapter 2 (Explanatory Note) explains the core technical content.

Chapter 3 shows the changes to the text of those AMC and GM which are within the scope of this document (see 1.2), compared to the version presented in CRD 2013-26.



2. Explanatory note

2.1. Overview of the issues to be addressed

There are three issues for which new AMC and GM need to be developed in addition to those presented in CRD 2013-26:

- (a) Protection and use of CVR recordings during normal operation (hence outside the scope of an official safety investigation). The requirement in Commission Regulation (EU) 2015/2338 on the protection of CVR recordings is different from the text proposed in Opinion No 01/2014. In particular, a distinction was introduced between the use of the CVR for ensuring its serviceability (e.g. replay the CVR recording to ensure that the audio quality is acceptable in actual flight conditions) and the use for other purposes (for instance, analysis of an incident). In addition, further improvements to the draft AMC and GM proposed in CRD 2013-26 were identified after its publication.
- (b) Performance specifications for the FDR and the FDR parameters. The operational performance requirements for FDRs installed on an aircraft manufactured after 1 January 2016 and operated for CAT are provided in AMC1 CAT.IDE.A.190 and AMC1 CAT.IDE.H.190. They are based on EUROCAE Document 112 (ED-112), version of 2003. Meanwhile, the Agency received five safety recommendations (SRs) which would be addressed by implementing the operational performance specifications defined by EUROCAE Document 112A (ED-112A) published in September 2013 and superseding ED-112. ED-112A is referenced in ICAO Annex 6, Parts I, II and III. In addition, two ICAO Standards prescribe a higher sampling rate for some FDR parameters, similar to the specifications of ED-112A. Hence, new operational performance requirements based on ED-112A need to be defined to address the SRs and ensure harmonisation with the ICAO Standards. The AMC to Part-NCC and to Part-SPO should also be considered.
- (c) Flight recorder serviceability. The recommended time interval between inspections of flight recorder recordings depends on if the flight recorder system is fitted with 'continuous monitoring for proper operation', among other criteria. However, some stakeholders have wrongly interpreted the concept of continuous monitoring for proper operation, therefore the explanation of the term in GM2 CAT.GEN.MPA.195(b) needs to be clarified.

2.2. Objectives

The specific objectives of this proposal are to address the issues of protection of CVR recordings, performance specifications for the FDR and the FDR parameters and flight recorder serviceability tasks.

2.3. Overview of the amendments

2.3.1. AMC on the use and protection of recordings of flight recorders

2.3.1.1. Provisions proposed in EASA Opinion No 01/2014

- (a) The following changes to paragraph CAT.GEN.MPA.195 were proposed in EASA Opinion No 01/2014:

‘Subparagraph (f)(1) of paragraph CAT.GEN.MPA.195 is replaced by the following:

- (1) *CVR recordings shall not be used for purposes other than the investigation by a safety*



investigating authority, by the competent authority or by the administration of justice, or for ensuring the CVR serviceability, unless:

- (i) a procedure related to the handling of CVR recordings and of their transcript is in place; and*
- (ii) all crew members and maintenance personnel concerned have given their prior consent.'*

- (b) As explained in the Explanatory Note to EASA Opinion No 01/2014:

'Subparagraph (f)(1) of paragraph CAT.GEN.MPA.195 has been reworded to require that if CVR recording is used for purposes other than investigation (by a safety investigation authority, the competent authority, or the administration of justice) and other than for ensuring the CVR serviceability, then a procedure relating to the handling of the CVR recordings and transcripts shall be in place in addition to getting the prior consent by crew members and maintenance personnel concerned.'

In addition, an AMC paragraph was presented in CRD 2013-26, which identifies important elements of the procedure for handling CVR recordings.

- (c) A similar change was proposed for paragraph NCC.GEN.145 in Part-NCC and for paragraph SPO.GEN.145 in Part-SPO.

2.3.1.2. New implementing rules

- (a) Further changes to the text of CAT.GEN.MPA.195(f) were made after the publication of Opinion No 01/2014. Commission Regulation (EU) 2015/2338 introduces the following changes:

'CAT.GEN.MPA.195 is amended as follows:

- (i) the title is replaced by the following:

CAT.GEN.MPA.195 Handling of flight recorder recordings: preservation, production, protection and use'

- (ii) (...)

- (iii) *point (f) is replaced by the following:*

Without prejudice to Regulation (EU) No 996/2010 of the European Parliament and of the Council⁵:

- (1) *Except for ensuring the CVR serviceability, CVR recordings shall not be disclosed or used unless:*

- (i) a procedure related to the handling of CVR recordings and of their transcript is in place;*
- (ii) all crew members and maintenance personnel concerned have given their prior consent; and*

⁵ Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC (OJ L 295, 12.11.2010, p. 35).



- (iii) *they are used only for maintaining or improving safety.*
- (1a) *When a CVR recording is inspected for ensuring the CVR serviceability, the operator shall ensure the privacy of the CVR recording and the CVR recording shall not be disclosed or used for other purposes than ensuring the CVR serviceability.*
- (2) *FDR recordings or data link recordings shall only be used for purposes other than for the investigation of an accident or an incident which is subject to mandatory reporting, if such records are:*
- (i) *used by the operator for airworthiness or maintenance purposes only; or*
- (ii) *de-identified; or*
- (iii) *disclosed under secure procedures.'*
- (b) CAT.GEN.MPA.195 has been retitled 'Handling of flight recorder recordings: preservation, production, protection and use' in order to emphasise the importance of the protection of flight recorder recordings.
- (c) In CAT.GEN.MPA.195(f)(1), instead of mentioning 'investigation by a safety investigation authority' as an exception to this provision, it was decided to refer to Regulation (EU) No 996/2010 on the investigation and prevention of accidents and incidents in civil aviation. Indeed, in case of an accident or a serious incident, Regulation (EU) No 996/2010 prevails over the air operation rules with regard to flight recorder handling. The safety investigation authority has in this case authority on the handling of the CVR recording. In addition, Article 14 of this Regulation explicitly mentions CVR recordings and their transcript among the records that 'shall not be made available or used for purpose other than safety investigation'.
- (d) In CAT.GEN.MPA.195(f)(1), in addition to the baseline principle that the CVR recordings shall not be used, it was added that they shall not be disclosed. This addition was made in order to remove legal uncertainty.
- (e) In CAT.GEN.MPA.195(f)(1), a third condition was used for using or disclosing CVR recordings, namely that the CVR recordings are used 'only for maintaining or improving safety'. Hence, any use of a CVR recording other than justified by safety considerations is not permitted.
- (f) A new provision CAT.GEN.MPA.195(f)(1a) is added to address solely the case where a CVR recording is inspected for ensuring the CVR serviceability (such as the audio quality and intelligibility on all CVR channels). This task is recommended to be performed at regular time intervals in AMC1 CAT.GEN.MPA.195(b). This is an essential task to make sure that the CVR recording is of acceptable quality when it is needed after an accident or a serious incident. Many cases of poor audio quality on the CVR were reported by safety investigation authorities, and the most common cause was that the CVR recording had remained unchecked until the time of an accident. It was assessed that in that case, it was not practical to request each time the prior consent of the flight crew. However, if a CVR recording is inspected for serviceability, it shall not be disclosed or used for other purposes, and its privacy shall also be ensured.
- (g) Similar changes are made to paragraph NCC.GEN.145 in Part-NCC and to paragraph SPO.GEN.145 in Part-SPO.
- (h) In summary, with these changes, a CVR recording may be used by an aircraft operator only for



two purposes:

- (1) For maintaining or improving safety, but only in the frame of an approved procedure and with the prior consent of flight crew members; or
- (2) For an inspection of the recording (to ensure sufficient audio quality and intelligibility), in which case the recording privacy must be ensured and the recording must not be used for other purposes.

2.3.1.3. New AMC proposed for CAT.GEN.MPA.195, NCC.GEN.145 and SPO.GEN.145

- (a) A few changes are proposed to the AMC to CAT.GEN.MPA.195(f) compared to the version presented in CRD 2013-26:
 - (1) Use of CVR recordings for improving safety:
 - (i) The AMC related to the use of CVR recordings for safety purposes remains AMC1 CAT.GEN.MPA.195(f)(1), but it is retitled 'Handling of flight recorder recordings: preservation, production, protection and use', in accordance with the title change of CAT.GEN.MPA.195.
 - (ii) It is proposed in sub-paragraph (a)(2) of AMC1 CAT.GEN.MPA.195(f)(1) to insert 'identified' before 'CVR transcript', as de-identified CVR transcripts could be used to share lessons learnt among flight crew members and therefore contribute to improving safety.
 - (iii) It is proposed to add in sub-paragraph (a)(3) a provision about the period of time after which CVR recordings and identified CVR transcripts are destroyed. Indeed, these are records with an intrinsic privacy content, and they should not be kept longer than needed.
 - (iv) In order to facilitate oversight of the appropriate use of CVR recordings, it is proposed to add sub-paragraph (a)(4). According to this new sub-paragraph, the aircraft operator should explain in the procedure what use is intended to be made of the CVR recordings and the CVR transcripts.
 - (v) In order to promote fair assessment of a CVR recording in case of a safety concern, three sub-paragraphs are proposed. They are consistent with existing provisions applicable to flight data monitoring (FDM) programmes in AMC1 ORO.AOC.130(k):
 - (A) Sub-paragraph (a)(5) recommends that the procedure specifies how flight crew member representatives will be involved in the assessment of a CVR recording. Indeed, it is a good practice to request the participation of a flight crew member for transcribing the communications. Safety investigation authorities usually invite flight crew members operating the same aircraft model to take part in the CVR transcription work;
 - (B) Sub-paragraphs (a)(6) and (a)(7) recommend that the procedure details, in the case where a safety issue is conformed, the conditions for determining a corrective action. Such a framework provides for more transparency and



trust inside the aircraft operator, and it can be checked by the oversight authority.

- (vi) Paragraph (b) of AMC1 CAT.GEN.MPA.195(f)(1) is reworded to be consistent with the new wording of CAT.GEN.MPA.195(f)(1).
 - (vii) Sub-paragraph (b)(2) of AMC1 CAT.GEN.MPA.195(f)(1) is slightly modified to take into account the fact that it may be challenging to delete all information with a privacy content from a CVR recording file. In addition, a nuance is made on the transcription of this information: while it is acceptable to mention in the transcript that the flight crew exchanged information with a privacy content (because this may have an influence on the attention of the flight crew members in critical flight phases), the detail of this information should not be transcribed.
 - (viii) Sub-paragraph (b)(2) of AMC1 CAT.GEN.MPA.195(f)(1) is proposed to be deleted because the new text of CAT.GEN.MPA.195 already requires that if a CVR recording or a CVR transcript is used, it is only for maintaining or improving safety.
 - (ix) It is proposed to add a paragraph (c) to AMC1 CAT.GEN.MPA.195(f)(1), in order to recommend that the safety manager or the person identified by the operator to fulfil this role is responsible for the protection and use of the CVR recordings and the CVR transcripts, as well as the assessment and transmission of issues. This is consistent with the fact that only the use for safety purposes is allowed by CAT.GEN.MPA.195(f)(1). This is also consistent with other existing provisions, such as AMC1 ORO.AOC.130 rendering the safety manager responsible for the FDM programme, including the protection of data.
 - (x) It is also proposed to add that when a third party is involved in the use of CVR recordings, contractual agreements with this third party should, when applicable, cover the aspects enumerated in paragraphs (a) and (b). This is to ensure that even if part of the handling of the CVR recordings is sub-contracted, the necessary precautions for the protection of data privacy will be taken by the third party.
 - (xi) In GM1 CAT.GEN.MPA.195(f)(1), the corrections in paragraphs (b) and (c) are meant to make the wording of GM1 CAT.GEN.MPA.195(f)(1) fully consistent with sub-paragraph (f)(1) of CAT.GEN.MPA.195. The sentence starting with 'It is not meant to be used by an operator for monitoring purposes' is deleted because it could be interpreted as contradictory with the fact that the CVR recordings may, under certain conditions, be used for maintaining operational safety.
- (2) Inspection of a CVR recording for ensuring serviceability:
- (i) AMC1 CAT.GEN.MPA.195(f)(1a) is developed to provide the means of compliance for CVR recording inspections.
 - (ii) Paragraph (a) contains the conditions to be complied with each time a CVR recording inspection is performed.
 - (iii) Sub-paragraph (a)(1) of AMC1 CAT.GEN.MPA.195(f)(1a) is recommending that CVR replays are conducted under conditions that ensure the privacy of CVR recordings required by CAT.GEN.MPA.195(f)(1a).



- (iv) In sub-paragraph (a)(2) of AMC1 CAT.GEN.MPA.195(f)(1a) it is recommended to restrict access to the CVR replay equipment in order to ensure that the use of this equipment is controlled.
 - (v) Sub-paragraphs (a)(3) and (a)(4) of AMC1 CAT.GEN.MPA.195(f)(1a) are related to the protection of the CVR recording medium and the CVR 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 timeframe, except for audio samples retained for the purpose of enhancing the CVR recording inspection. The CVR recording files should not be destroyed immediately in order to permit an independent check of the CVR recording quality, if necessary. However, a maximum retention time of the CVR recording files is also recommended, as they contain sensitive information.
 - (vi) Sub-paragraph (a)(5) of AMC1 CAT.GEN.MPA.195(f)(1a) designates the accountable manager and the safety manager of the operator as the only persons entitled to request a copy of a CVR recording file. This is meant to ensure control of the CVR recordings and it is consistent with AMC1 CAT.GEN.MPA.195(f)(1). Except for ensuring CVR serviceability, the only use of the CVR permitted during day-to-day operations is for maintaining and improving safety, and in that case, according to AMC1 CAT.GEN.MPA.195(f)(1), the safety manager should be responsible for the use and protection of the CVR recordings.
 - (vii) Paragraph (b) of AMC1 CAT.GEN.MPA.195(f)(1a) covers the cases where the CVR recording inspection is subcontracted to a third party.
- (b) The same changes to the AMC and GM to NCC.GEN.145 as to the AMC and GM to CAT.GEN.MPA.145 are proposed, except for the following aspects:
- (1) Use of CVR recordings for improving safety:
 - (i) In paragraph (a) of AMC1 NCC.GEN.145(f)(1), the mention of airline management and flight crew member representatives is replaced by 'aircraft operator, crew members, maintenance personnel if applicable' because this provision applies to non-commercial operations.
 - (ii) Sub-paragraphs (a)(5), (a)(6) and (a)(7) proposed for AMC1 CAT.GEN.MPA.145(f) are not proposed for AMC1 NCC.GEN.145(f)(1) because they are not considered relevant for non-commercial operations.
 - (iii) Paragraph (c) added to AMC1 CAT.GEN.MPA.195(f)(1) and recommending that the safety manager is responsible for the protection and use of the CVR recordings and the CVR transcripts, is not added to AMC1 NCC.GEN.145(f)(1). This is because a safety manager is only recommended in the case of a complex operator, which may not apply to an NCC operator. Instead, the term 'person responsible for managing the safety' is used. In addition, it is not considered necessary to recommend that this person is responsible for the assessment of issues and their transmission to a relevant manager.
 - (iv) In GM1 NCC.GEN.145(f)(1), paragraph (b) that refers to FDM programmes is



deleted because FDM programmes are not mandatory for NCC operations.

- (2) Inspection of a CVR recording for ensuring the CVR serviceability:

Paragraph (e) of AMC1 CAT.GEN.MPA.195(f)(1a) designates the safety manager as the only person entitled to request a copy of a CVR recording file. However, when considering NCC operations, there may not be a safety manager but just a person responsible for coordinating the safety management system⁶, since most NCC operations are performed by non-complex operators.

- (c) The same changes to the AMC and GM to SPO.GEN.145 as to the AMC and GM to NCC.GEN.145 are proposed.
- (d) GM1 CAT.GEN.MPA.195(f)(2) is developed to clarify that using FDR data in the framework of a FDM programme is acceptable if the conditions set by CAT.GEN.MPA.195 are complied with. Using FDR data for an FDM programme that complies with AMC1 ORO.AOC.130 would also comply with sub-paragraph (f)(2) of CAT.GEN.MPA.195. While this seems obvious to the Agency, clarification was requested by some stakeholders. Similar GM paragraphs are not proposed for Part-NCC or Part-SPO because an FDM programme is only mandated for large aeroplanes operated for CAT (refer to Part-ORO and ORO.AOC.130).

2.3.1.4. Regulatory impact

- (a) The safety impact of the AMC is expected to be medium positive. Indeed, AMC1 CAT.GEN.MPA.195(f)(1) offers to aircraft operators a framework for using CVR recordings to complement FDR or FDM data and the flight crew report. This framework is expected to facilitate the cooperation of flight crew members and therefore will allow the operator to better understand the circumstances of incidents without jeopardising the safety culture. In addition, CAT.GEN.MPA.195(f)(1a) will facilitate the CVR recording inspection for ensuring audio quality and intelligibility because in this case the flight crew consent is not needed. Facilitating CVR recording inspections should in the long term decrease the probability that CVR audio quality problems remain undiscovered for long periods of time.
- (b) The impact on rule harmonisation is expected to be overall medium positive since ICAO issued on 24 March 2015 State Letter AN 6/1.2-15/13 with proposals to introduce provisions in ICAO Annex 6 on the protection of flight recorder recordings, including CVR recordings. It is expected that the new AMC will be consistent with the future ICAO provisions.
- (c) The new sub-paragraphs (f)(1) and (f)(1a) of CAT.GEN.MPA.195 and the proposed AMC reinforce the protection of the CVR recordings to the benefit of flight crews and, therefore, their social impact is considered medium positive. Indeed, these provisions require procedures for using the CVR recordings, the application of which can be controlled by the oversight authority. In addition, only two use cases may justify access to a CVR recording: safety management and CVR serviceability.
- (d) The new AMC are not expected to have environmental impact.

⁶ AMC1 ORO.GEN.200(a)(1);(2);(3);(5) is applicable to a non-complex operator and it recommends that the operator identifies 'a person who fulfils the role of safety manager and who is responsible for coordinating the safety management system. This person may be the accountable manager or a person with an operational role within the operator.' AMC1 ORO.GEN.200(a)(1) is applicable to a complex operator and it recommends that the management system of the operator includes a safety manager.



- (e) The new AMC are not expected to have any impact on proportionality issues.
- (f) AMC1 CAT.GEN.MPA.195(f)(1) is expected to have no cost impact or slight cost impact (maintain a procedure and retain documentation). AMC1 CAT.GEN.MPA.195(f)(1a) is expected to have no or slight cost impact (measures to ensure privacy of a CVR recording which is checked in the frame of the CVR recording inspection).

Table 3: Impact of CAT.GEN.MPA.195(f)(1), CAT.GEN.MPA.195(f)(1a) and their AMC (from ‘- - -’ = very negative to ‘+++’ = very positive)

	Safety impact	Environmental impact	Social impact	Economic impact	Proportionality issues	Regulatory coordination and harmonisation
Impact	++	0	++	0/-	0	++

2.3.2. Update of the operational performance requirements applicable to FDRs

2.3.2.1. Current operational performance requirements

The current operational performance requirements for FDRs are summarised in Table 4 (aeroplanes) and Table 5 (helicopters). It is noteworthy that for all aircraft first issued with an individual CofA on or after 1 January 2016, the operational performance requirements for the FDR and the FDR parameters are those laid down in EUROCAE Document 112 (ED-112), dated 2003. Meanwhile, ED-112 was superseded by ED-112A published in 2013.

Table 4: Operational performance requirements applicable to the FDR installed on an aeroplane

	Aeroplane with individual CofA first issued on or after 1 January 2016	Aeroplane with individual CofA first issued on or after 1 April 1998 and before 1 January 2016	Aeroplane with individual CofA first issued on or after 1 June 1990 and before 1 April 1998	Aeroplane with individual CofA first issued before 1 June 1990
Part-CAT	Operational performance requirements laid down in ED-112 (dated 2003) or a later equivalent standard. FDR parameter list and FDR parameter performance specifications: same as ED-112 (version of 2003)	Operational performance requirements laid down in ED-55 (dated 1990) or ED-112 (dated 2003) or a later equivalent standard. FDR parameter list: same as in EU OPS, Appendix 1 to OPS 1.715. FDR parameter performance specifications: same	No reference to an industry standard. FDR parameter list: same as in EU OPS, Appendix 1 to OPS 1.720. FDR parameter performance specifications: same as in TGL44, Appendix 1 to ACJ OPS 1.720/1.725.	No reference to an industry standard. FDR parameter list: same as in EU OPS, Appendix 1 to OPS 1.725. FDR parameter performance specifications: same as in TGL44, Appendix 1 to ACJ OPS 1.720/1.725.



	Aeroplane with individual CofA first issued on or after 1 January 2016	Aeroplane with individual CofA first issued on or after 1 April 1998 and before 1 January 2016	Aeroplane with individual CofA first issued on or after 1 June 1990 and before 1 April 1998	Aeroplane with individual CofA first issued before 1 June 1990
	Refer to AMC1 CAT.IDE.A.190	as ED-55 (version of 2003). Refer to AMC2 CAT.IDE.A.190 and AMC3 CAT.IDE.A.190	Refer to AMC4 CAT.IDE.A.190 and AMC5 CAT.IDE.A.190	Refer to AMC5 CAT.IDE.A.190 and AMC6 CAT.IDE.A.190
Part-NCC	Operational performance requirements laid down in ED-112 (dated 2003) or a later equivalent standard. FDR parameter list and FDR parameter performance specifications: same as ED-112 (version of 2003) Refer to AMC1 NCC.IDE.A.165	Not applicable (FDR carriage not required)	Not applicable (FDR carriage not required)	Not applicable (FDR carriage not required)
Part-SPO	Operational performance requirements laid down in ED-112 (dated 2003) or a later equivalent standard. FDR parameter list and FDR parameter performance specifications: same as ED-112 (version of 2003) Refer to AMC1 SPO.IDE.A.145	Not applicable (FDR carriage not required)	Not applicable (FDR carriage not required)	Not applicable (FDR carriage not required)



Table 5: Operational performance requirements applicable to the FDR installed on a helicopter

	Helicopter with individual CofA first issued on or after 1 January 2016	Helicopter with individual CofA first issued on or after 1 January 1989 and before 1 January 2016	Helicopter with individual CofA first issued before 1 January 1989
Part-CAT	Operational performance requirements laid down in ED-112 (dated 2003) or a later equivalent standard. FDR parameter list and FDR parameter performance specifications: same as ED-112 (version of 2003) Refer to AMC1 CAT.IDE.H.190	FDR parameter list: same as in JAR OPS 3, Appendix 1 to JAR-OPS 3.715/3.720. FDR parameter performance specifications: same as in ED-55 Refer to AMC2 CAT.IDE.H.190 and AMC3 CAT.IDE.H.190	Not applicable (FDR carriage not required)
Part-NCC	Operational performance requirements laid down in ED-112 (dated 2003) or a later equivalent standard. FDR parameter list and FDR parameter performance specifications: same as ED-112 (version of 2003) Refer to AMC1 NCC.IDE.H.165	Not applicable (FDR carriage not required)	Not applicable (FDR carriage not required)
Part-SPO	Operational performance requirements laid down in ED-112 (dated 2003) or a later equivalent standard. FDR parameter list and FDR parameter performance specifications: same as ED-112 (version of 2003) Refer to AMC1 SPO.IDE.H.145	Not applicable (FDR carriage not required)	Not applicable (FDR carriage not required)

2.3.2.2. Drivers for updating the operational performance requirements

(a) The Agency received five SRs related to the FDR parameters. These are:

- (1) GREC-2006-047 (accident of B737 registered 5B-DBY on 14 August 2005): 'EASA/JAA and ICAO require the aircraft manufacturers to also record cabin altitude on the FDR';
- (2) UNKG-2009-091 (accident of B777 registered G-YMMM on 17 January 008): 'It is recommended that the European Aviation Safety Agency introduce a requirement to record, on a DFDR, the operational position of each engine fuel metering device where practicable';



- (3) NETH-2010-001 (accident of AS332 registered G-JSAR on 21 November 2006): 'The Board recommends that EASA consider expanding the parameters for the flight data recorders of helicopters to include the forces of the steering ("control forces"), as is the case in some categories of fixed wing aircrafts';
- (4) FRAN-2011-015 (accident of A330 registered F-GZCP on 1 June 2009): 'The BEA recommends that EASA and the FAA make mandatory the recording:
- of the position of the flight director crossbars,
 - of the parameters relating to the conduct of the flight displayed on the right side, in addition to those displayed on the left side';
- (5) FRAN-2011-016 (accident of A330 registered F-GZCP on 1 June 2009): 'The BEA recommends that EASA and the FAA evaluate the relevance of making mandatory the recording of the air data and inertial parameters of all of the sources used by the systems.'

Said SRs were all considered during the revision of ED-112, which resulted into ED-112A published in 2013. The tables of FDR parameters to be recorded (Tables II-A.1 and II-A.2 of ED-112A) were updated when necessary.

- (b) ICAO Annex 6 Part I Standard 6.3.1.2.12 prescribes that 'aeroplanes which are required to record normal acceleration, lateral acceleration and longitudinal acceleration for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and which are required to be fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.0625 seconds.' In ED-112A Table II-A.1, the indicated maximum recording interval in seconds is '0.125 (0.0625 recommended)' for these flight parameters (instead of '0.125' for the normal acceleration and '0.25' for the lateral acceleration and longitudinal acceleration in Table II-A.1 of ED-112).
- (c) ICAO Annex 6 Part I Standard 6.3.1.2.13 prescribes that 'aeroplanes which are required to record pilot input and/or control surface position of primary controls (pitch, roll, yaw) for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and which are required to be fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.125 seconds.' In ED-112A Table II-A.1, the indicated maximum recording interval in seconds is '0.125 (0.0625 recommended)' for these flight parameters (instead of '0.25 (0.0625 recommended)' in Table II-A.1 of ED-112).
- (d) ICAO Annex 6 Part II Standard 2.4.16.1.2.2 also prescribes a maximum sampling and recording interval of 0.125 seconds for the pilot input and/or control surface position of primary controls.
- (e) Hence, a reference to the minimum operational performance specification specified for the FDR by ED-112A would address the five SRs mentioned in (a) and would provide for better alignment with the Standards of ICAO Annex 6.
- (f) ED-112A is, like ED-112, an internationally recognised industry standard for flight recorders.



FAA TSOs for flight recorders⁷ refer to ED-112A. Notes in ICAO Annex 6 Parts I, II and III refer to ED-112A for the specifications applicable to flight recorders installed on aircraft for which the application for type certification is submitted on or after 1 January 2016.

2.3.2.3. New proposed AMC proposed for the operational performance requirements

- (a) The scope of applicability of AMC1 CAT.IDE.A.190 is changed in order to be limited to aeroplanes manufactured on or after 1 January 2016 and before 1 January 2023. The title of this AMC is corrected accordingly. In addition, editorial corrections are made in Table 1, parameters Nos 9 and 27 and in Table 2, parameters Nos 15, 21c, 32a, 56, 72, 73 and 74.
- (b) A new AMC to CAT.IDE.A.190 is developed to specify the operational performance requirements applicable to the FDR when installed on an aeroplane manufactured on or after 1 January 2023.
- (c) Because the published AMC paragraphs related to CAT.IDE.A.190 have been numbered in increasing order from the most recent aircraft to the oldest ones, it would not be logical to place the new AMC after already published AMC. On the other hand, it is preferable to avoid renumbering AMC. Therefore:
 - (1) AMC1 CAT.IDE.A.190 is renumbered 'AMC1.1 CAT.IDE.A.190' while AMC2 CAT.IDE.A.190 to AMC6 CAT.IDE.A.190 keep their original numbering; and
 - (2) The new AMC to CAT.IDE.A.190 is interposed between AMC1.1 CAT.IDE.A.190 and AMC2 CAT.IDE.A.190 with number 'AMC1.2 CAT.IDE.A.190'. Future additional AMC to CAT.IDE.A.190 can be inserted with numbers AMC1.3, AMC1.4, etc. without limitation.
- (d) The new AMC1.2 CAT.IDE.A.190 contains the following:
 - (1) A reference to ED-112A for the operational performance requirements applicable to FDRs.
 - (2) Two tables of FDR parameters. Table 1 lists the FDR parameters to be recorded regardless of the aircraft complexity: these are the FDR parameters of Table II-A.1 of ED-112A not marked with an asterisk. Table 2 indicates the FDR parameters to be recorded if an information source for the parameter is used by aircraft systems and/or flight crew to operate the aircraft. These FDR parameters are marked with an asterisk in Table II-A.1 of ED-112A.
 - (i) Table 2 of AMC1.2 CAT.IDE.A.190 contains new FDR parameters:
 1. Parameter No 35i, named 'Engine fuel metering valve position';
 2. Parameter No 79, named 'Cabin pressure altitude';
 3. Parameter No 80, named 'Aeroplane computed weight';
 4. Parameter No 81, named 'Flight director command'; and
 5. Parameter No 82, named 'Vertical speed'.

⁷ These are TSOs C123c (CVR equipment), C124c (FDR equipment), C176a (cockpit image recorder equipment) and C177a (data link recorder equipment).



- (ii) These additional FDR parameters address SRs GREC-2006-047, UNKG-2009-091 and FRAN-2011-015.
 - (iii) When considering aeroplanes type-certified before 1 January 2023, these additional FDR parameters are only to be recorded if this does not require extensive modification on the aircraft. This condition reflects the assessment made by the Flight Recorder Specific Working Group (FLIRECSWG) of ICAO. When considering aeroplanes type-certified on or after 1 January 2023, because these additional FDR parameters are in Table 2, they should be recorded when data source for the FDR parameter 'is either used by the aeroplane systems or is available on the instrument panel for use by the flight crew to operate the aeroplane'.
- (3) A reference to the 'relevant tables' of ED-112A for the performance specifications of the FDR parameters.
- (i) The performance specifications of the FDR parameters means their range, sampling period, accuracy limits and resolution in the read-out. The relevant table of ED-112A is Table II-A.1.
 - (ii) Table II-A.1 of ED-112A specifies a sampling period of 0.125 seconds (0.0625 seconds recommended) for FDR parameters No 5 (Normal acceleration), No 16 (Lateral acceleration) and No 17 (Longitudinal acceleration). ICAO Annex 6 Part I Standard 6.3.1.2.12 is considered to be transposed with this reference to ED-112A.
 - (iii) Table II-A.1 specifies that the sampling period of FDR parameter No 18 (Primary flight control surface and primary flight control pilot input) should be 0.125 seconds (0.0625 seconds recommended), so ICAO Annex 6 Part I Standard 6.3.1.2.12 is considered to be transposed as well.
 - (iv) Table II-A.1 contains reference to paragraph II-A.6.1 in the rows corresponding to FDR parameters Nos 2 (Pressure altitude), 3 (Indicated airspeed or calibrated airspeed), 6 (Pitch attitude) and 7 (Roll attitude). Paragraph II-A.6.1 of ED-112A specifies: 'Altitude, airspeed, pitch angle and roll angle displayed on each flight crew member primary flight displays shall be recorded.' This is reflected in the definitions of FDR parameters Nos 2, 3, 6 and 7 in Table 1 of AMC1.2 CAT.IDE.A.190. This change is considered to address SR FRAN-2011-016.
 - (v) The performance specifications of Table II-A.1 of ED-112A are more stringent for some FDR parameters than the corresponding specifications in ED-112. For example:
 - 1. the sampling period of heading, roll angle and air-ground status is 0.25 seconds;
 - 2. the sampling period of primary flight control position and primary flight surface is 0.125 seconds; and
 - 3. the sampling period of latitude and longitude is 1 second and the resolution in the read-out of these parameters is increased.



- (e) The FDR parameter named 'All cockpit flight control input forces' (parameter No 75) appears in Table 2 of AMC1.2 CAT.IDE.A.190 (while this FDR parameter is specified to be recorded regardless of the aircraft complexity in ED-112A). Indeed, recording this flight parameter may result in important redesign cost when it is not already measured and used by other aircraft systems. On smaller aeroplanes (below 10 000 kg), it can be difficult to find enough space to install dedicated sensors. The corresponding FDR parameter in ED-112A Table II-A.2 (helicopters), parameter No 51, is specified to be recorded only if an information source for the parameter is used by aircraft systems and/or flight crew to operate the aircraft.
- (f) The scope of applicability of AMC1 CAT.IDE.H.190 is changed to be limited to helicopters manufactured on or after 1 January 2016 and before 1 January 2023. The title of this AMC is corrected accordingly. In addition, editorial corrections are made in paragraph (c) and in Table 1 parameters Nos 5, 9, 10.
- (g) A new AMC paragraph is developed to specify the operational performance requirements applicable to the FDR when installed on a helicopter manufactured on or after 1 January 2023.
- (h) Because the published AMC paragraphs related to CAT.IDE.H.190 have been numbered in increasing order from the most recent aircraft to the oldest ones, it does not seem logical to place the new AMC after already published AMC. On the other hand, it is preferable to avoid renumbering AMC. Therefore:
- (3) AMC1 CAT.IDE.H.190 is renumbered 'AMC1.1 CAT.IDE.H.190' while AMC2 CAT.IDE.H.190 and AMC3 CAT.IDE.H.190 keep their original numbering; and
- (4) The new AMC to CAT.IDE.H.190 is interposed between AMC1.1 CAT.IDE.H.190 and AMC2 CAT.IDE.H.190 with number 'AMC1.2 CAT.IDE.H.190'. Future additional AMC to CAT.IDE.H.190 can be inserted with numbers AMC1.3, AMC1.4, etc. without limitation.
- (i) The new AMC1.2 CAT.IDE.H.190 contains the following:
- (1) A reference to ED-112A or any later equivalent standard for the operational performance requirements applicable to FDRs.
- (2) Two tables of FDR parameters. Table 1 lists the FDR parameters to be recorded regardless of the aircraft complexity, while Table 2 indicates the FDR parameters to be recorded if an information source for the parameter is used by aircraft systems and/or flight crew to operate the aircraft. These tables are based on Table II-A.2 of ED-112A.
- (i) Compared to AMC1 CAT.IDE.H.190, several FDR parameters are new:
1. Parameter No 49, named 'Status of GPWS/TAWS/GCQS';
 2. Parameter No 50, named 'TCAS/ACAS';
 3. Parameter No 51, named 'Primary flight controls — Pilot input forces';
 4. Parameter No 52, named 'Computed centre of gravity'; and
 5. Parameter No 53, named 'Helicopter computed weight'.
- (iv) The addition of parameter No 51 addresses SR NETH-2010-001.
- (v) When considering helicopters type-certified before 1 January 2023, FDR parameters No 49 to 53 are only to be recorded if this does not require extensive



modification on the aircraft. This condition reflects the assessment made by the Flight Recorder Specific Working Group (FLIRECSWG) of ICAO. When considering helicopters type-certified on or after 1 January 2023, because these additional FDR parameters are in Table 2, they should be recorded when data source for the FDR parameter 'is either used by the helicopter systems or is available on the instrument panel for use by the flight crew to operate the aeroplane'.

- (3) A reference to the 'relevant tables' of ED-112A for the performance specifications of the FDR parameters. This is Table II-A.2 of ED-112A. The performance specifications of this table are more stringent for some parameters than the corresponding specifications in ED-112. For example:
- (i) the sampling period of heading and roll angle is 0.25 second;
 - (ii) the sampling period of primary flight control position and primary flight surface is 0.125 seconds; and
 - (iii) the sampling period of latitude and longitude is 1 second and the resolution in the read-out of these parameters is increased.
- (j) Parameter No 29f (Ground speed), which was already in Table 2 of AMC1 CAT.IDE.H.190, is kept in Table 2 of AMC1.2 CAT.IDE.H.190, although it does not appear in Table II-A.2 of ED-112. This is because this FDR parameter is prescribed to be recorded by Annex 6 Part III (See Table A4-1 of Appendix 4 to ICAO Annex 6 Part III).
- (k) Parameter No 51 deviates from the definition provided in ED-112A, which is 'Primary flight controls — Pilot input and/or control output forces'. In Table 2 of AMC1.2 CAT.IDE.H.190, parameter No 51 is 'Primary flight controls — Pilot input forces'. This is because no justification was found for recording the output forces on primary flight controls. The report of the investigation authority after the accident of the AS332 registered G-JSAR (which contains SR NETH-2010-001) does not support the need for recording output forces.
- (l) A new AMC paragraph is developed to specify the operational performance requirements applicable to the FDR when installed on an aeroplane manufactured on or after 1 January 2023 and operated under Part-NCC. Its number is AMC2 NCC.IDE.A.165 and its content is identical to AMC1.2 CAT.IDE.A.190.
- (m) A new AMC paragraph is developed to specify the operational performance requirements applicable to the FDR when installed on a helicopter manufactured on or after 1 January 2023 and operated under Part-NCC. Its number is AMC2 NCC.IDE.H.165 and its content is identical to AMC1.2 CAT.IDE.H.190.
- (n) A new AMC paragraph is developed to specify the operational performance requirements applicable to the FDR when installed on an aeroplane manufactured on or after 1 January 2023 and operated under Part-SPO. Its number is AMC2 SPO.IDE.A.145 and its content is identical to AMC1.2 CAT.IDE.A.190.
- (o) A new AMC paragraph is developed to specify the operational performance requirements applicable to the FDR when installed on a helicopter manufactured on or after 1 January 2023 and operated under Part-SPO. Its number is AMC2 SPO.IDE.H.145 and its content is identical to AMC1.2 CAT.IDE.H.190.



2.3.2.4. Regulatory impact

- (a) The safety impact of the new AMC is expected to be medium positive because:
- (1) the additional FDR parameters and the enhanced operational requirements for the FDR will facilitate investigation work; hence, accelerating the determination of causes and corrective actions; and
 - (2) the additional FDR parameters will be beneficial to FDM programmes. Indeed, since there are no minimum flight parameters performance required for FDM, aircraft operators usually have to cope with the data frame layout designed by aircraft manufacturers, which is not always adequate. However, when flight parameters are required to be recorded by the FDR, they are usually recorded by the FDM recorder. Some of the additional FDR parameters introduced by the new AMC (such as vertical speed, flight control forces, or aircraft computed weight) are helpful for FDM. The increase of sampling rate for some other FDR parameters (e.g. latitude, longitude, flight control position, air-ground status) will also facilitate the monitoring of some events.
- (b) The impact on rule harmonisation is expected to be medium positive since the new AMC will better align European air operation requirements with the Standards of ICAO Annex 6.
- (c) The new AMC are not expected to have any social or environmental impact.
- (d) The new AMC are not expected to have any impact on proportionality because the changes only affect aircraft first issued with an individual CofA on or after 1 January 2023; hence, they will be implemented by aircraft manufacturers. In addition, the FDR is not required to be carried on board non-complex aircraft.
- (e) The cost impact of the new AMC is expected to be neutral or slightly negative for the following reasons:
- (1) Only aircraft first issued with an individual CofA on or after 1 January 2023 are within the scope of the proposals. Hence, assuming that the AMC are published in the first quarter of 2016, aircraft manufacturers will have almost seven years to take the new AMC into account; and
 - (2) The new FDR parameters are to be recorded if the data source for the parameter is either used by aircraft systems or is available on the instrument panel for use by the flight crew to operate the aircraft. Hence, redesign work on certified aircraft models should be limited.

Table 6: Impact of new operational requirements on FDRs (from ‘---’ = very negative to ‘+++’ = very positive)

	Safety impact	Environmental impact	Social impact	Economic impact	Proportionality issues	Regulatory coordination and harmonisation
Impact	++	0	0	0/-	0	++



2.3.3. Explanation of term related to flight recorder serviceability

2.3.3.1. Issue and solution

- (a) A sentence is added in the explanation of the term ‘continuous monitoring for proper operation’ in sub-paragraph (d) of GM2 CAT.GEN.MPA.195(b).
- (1) Indeed, according to several stakeholders’ interpretation, the ‘continuous monitoring for proper operation’ should include a capability to automatically report to the flight crew compartment a failure of the flight recorder system or a loss of power supply.
 - (2) This is not intended, therefore the explanation of this term does not contain any mention of failure reporting. If failures had to be reported automatically to the flight crew compartment, then it would not be necessary to recommend in sub-paragraph (c) of AMC1 CAT.GEN.MPA.195(b) that ‘when installed, the aural or visual means for preflight checking the flight recorders for proper operation should be used every day’.
 - (3) In order to further clarify this point, a sentence is added, stating that detections by this function do not need to be automatically reported to the flight crew compartment.
- (b) The same correction is made in sub-paragraph (d) of GM2 NCC.GEN.145(b) and in sub-paragraph (d) of GM2 SPO.GEN.145(b).

2.3.3.2. Regulatory impact

- (a) The safety impact of the amendment is expected to be neutral, since this is a clarification and not a change to a means of compliance.
- (b) The impact on rules harmonisation is expected to be neutral, since this is a clarification of a term and not a change to a means of compliance.
- (c) The amendment is not expected to have any social or environmental impact.
- (d) The amendment is not expected to have any impact on proportionality.
- (e) The cost impact of the amendment is expected to be slightly positive, since it will prevent too restrictive interpretations of the term ‘continuous monitoring for proper operation’ which drive to the conclusion that some models of solid-state flight recorders cannot benefit from the relaxation of periodicity between recording inspections offered by sub-paragraph (a)(2) of AMC1 CAT.GEN.MPA.195(b), i.e. every two years instead of every year. Solid-state flight recorder models which are fitted with built-in test functions are eligible to this relaxation of periodicity, even if failures are not automatically reported to the flight crew compartment.

Table 7: Impact of new operational requirements on FDRs (from ‘– – –’ = very negative to ‘+++’ = very positive)

	Safety impact	Environmental impact	Social impact	Economic impact	Proportionality issues	Regulatory coordination and harmonisation
Impact	0	0	0	+	0	0



3. Changes to the text of AMC and GM presented in CRD 2013-26

This chapter is only showing the changes made to the text of AMC and GM already presented in CRD 2013-26. The purpose is to facilitate the identification of changes proposed for these AMC and GM.

In this chapter, the changes to CRD 2013-26 text are made visible as shown below:

- (a) deleted text is marked with ~~strike through~~;
- (b) new or amended text is highlighted in grey;
- (c) an ellipsis (...) indicates that the remaining text is unchanged in front of or following the reflected amendment.

Note 1: Completely new AMC and GM, i.e. provisions which were not presented in CRD 2013-26 (such as on aircraft tracking), are not shown in this chapter.

Note 2: In this chapter, the reference text is not the published version of the AMC and GM, but the versions presented in CRD 2013-26.

3.1. Changes to the AMC and GM presented in CRD 2013-26 for Part-CAT

**AMC1 CAT.GEN.MPA.195(f)(1) ~~Preservation, production and use of flight recorder recordings~~
Handling of flight recorder recordings: preservation, production, protection and use
USE OF CVR RECORDINGS FOR MAINTAINING OR IMPROVING SAFETY**

- (a) The procedure related to the handling of CVR recordings should be written in a document which should be signed by all parties (airline management, crew member representatives nominated either by the union or the crew themselves, maintenance personnel representatives if applicable). This procedure should, as a minimum, define:
 - (1) the method to obtain the consent of all crew members and maintenance personnel concerned;
 - (2) an access and security policy that restricts access to CVR recordings and identified CVR transcripts to specifically authorised persons identified by their position; ~~and~~
 - (3) a retention policy and accountability, including the measures to be taken to ensure the security of CVR recordings and CVR transcripts and their protection from misuse. The retention policy should specify the period of time after which CVR recordings and identified CVR transcripts are destroyed;
 - (4) a description of the uses made of the CVR recordings and of their transcripts;
 - (5) the participation of flight crew member representatives in the assessment of the CVR recordings or their transcripts;
 - (6) the conditions under which advisory briefing or remedial training should take place; this should always be carried out in a constructive and non-punitive manner; and
 - (7) the conditions under which actions other than advisory briefing or remedial training may be taken for reasons of gross negligence or significant continuing safety concern.



- (b) Each time a CVR recording file is read out under the conditions defined in CAT.GEN.MPA.195(f)(1) for purposes other than investigation by a safety investigating authority, the competent authority or the administration of justice, and other than for ensuring the CVR serviceability:
- (1) ~~the operator should delete without delay all parts of the CVR recording file that contain information with a privacy content should be deleted to the extent possible, and it should not be permitted that such the detail of information with a privacy content is transcribed; and~~
 - (2) ~~the operator should not permit this CVR recording file or any transcript of it to be used for other than safety-related purposes.~~
 - (3)(2) the operator should retain, and when requested, provide to the competent authority:
 - (i) information on the use made (or the intended use) of the CVR recording; and
 - (ii) evidence that the persons concerned consented to the use made (or the intended use) of the CVR recording file.
- (c) The safety manager or the person identified by the operator to fulfil this role should be responsible for the protection and use of the CVR recordings and of their CVR transcripts, as well as the assessment of issues and their transmission to the manager(s) responsible for the process concerned.
- (d) In case a third party is involved in the use of CVR recordings, contractual agreements with this third party should, when applicable, cover the aspects enumerated in (a) and (b).

**GM1 CAT.GEN.MPA.195(f)(1) ~~Preservation, production and use of flight recorder recordings~~
Handling of flight recorder recordings: preservation, production, protection and use**

USE OF CVR RECORDINGS FOR MAINTAINING OR IMPROVING SAFETY

- (a) The CVR is primarily a tool for the investigation of accidents and serious incidents by investigating authorities. ~~It is not meant to be used by an operator for monitoring operations.~~ Misuse of CVR recordings is a breach of the right to privacy and it works against an effective safety culture inside the operator.
- (b) It is noteworthy that the flight data recorder (FDR) may be used for a flight data monitoring (FDM) programme; however, in that case the principles of confidentiality and access restriction of the FDM programme apply to the FDR recordings. Because the CVR is recording the voices of the crew and verbal communications with a privacy content, the CVR recordings must be protected and handled with even more care than FDM data.
- (c) Therefore, the use of a CVR recording, when for purposes other than CVR serviceability or those laid down by Regulation (EU) No 996/2010 ~~not dictated by an authority or needed for assessing the CVR serviceability~~, should be subject to the free prior consent of the persons concerned, and framed by a procedure that is recognised endorsed by all parties and that protects the privacy of crew members and (if applicable) maintenance staff. ~~The competent authority is entitled to control that the use of CVR recordings made by an operator complies with these principles.~~



3.2. Changes to the AMC and GM presented in CRD 2013-26 for Part-NCC

AMC1 NCC.GEN.145(f)(1) ~~Preservation, production and use of flight recorder recordings~~ Handling of flight recorder recordings: preservation, production, protection and use
USE OF CVR RECORDINGS FOR MAINTAINING OR IMPROVING SAFETY

For the understanding of the terms used in AMC1 NCC.GEN.145(b):

- (a) The procedure related to the handling of CVR recordings should be written in a document which should be signed by all parties (~~airline management, crew member representatives nominated either by the union or the crew themselves, maintenance personnel representatives if applicable~~ aircraft operator, crew members, maintenance personnel if applicable). This procedure should, as a minimum, define:
- (1) the method to obtain the consent of all crew members and maintenance personnel concerned;
 - (2) an access and security policy that restrict access to CVR recordings and identified CVR transcripts to specifically authorised persons identified by their position; ~~and~~
 - (3) a retention policy and accountability, including the measures to be taken to ensure the security of the CVR recordings and CVR transcripts and their protection from misuse. The retention policy should specify the period of time after which CVR recordings and identified CVR transcripts are destroyed; and
 - (4) a description of the uses made of the CVR recordings and of their transcripts.
- (b) Each time a CVR recording file is read out under the conditions defined in NCC.GEN.145(f)(1) ~~for purposes other than investigation by a safety investigating authority, the competent authority or the administration of justice, and other than for ensuring the CVR serviceability:~~
- (1) ~~the operator should delete without delay all parts of the CVR recording file that contain information with a privacy content should be deleted to the extent possible, and it should not be permitted that such the detail of information with a privacy content is transcribed;~~ and
 - (2) the operator should retain, and when requested, provide to the competent authority:
 - (i) information on the use made (or the intended use) of the CVR recording; and
 - (ii) evidence that the persons concerned consented to the use made (or the intended use) of the CVR recording file.
- (c) The person who fulfils the role of a safety manager should also be responsible for the protection and use of the CVR recordings and the CVR transcripts.
- (d) In case a third party is involved in the use of CVR recordings, contractual agreements with this third party should, when applicable, cover the aspects enumerated in (a) and (b).

GM1 NCC.GEN.145(f)(1) ~~Preservation, production and use of flight recorder recordings~~ Handling of flight recorder recordings: preservation, production, protection and use
USE OF CVR RECORDINGS FOR MAINTAINING OR IMPROVING SAFETY

- (a) The CVR is primarily a tool for the investigation of accidents and serious incidents by



investigating authorities. It is not meant to be used by an operator for monitoring operations. Misuse of CVR recordings is a breach of the right to privacy and it works against an effective safety culture inside the operator.

~~(b) It is noteworthy that the FDR may be used for a flight data monitoring (FDM) programme, however in that case the principles of confidentiality and access restriction of the FDM programme apply to the FDR recordings. Because the CVR is recording the voices of the crew and verbal communications with a privacy content, the CVR recordings must be handled with even more care than FDM data.~~

~~(c)(b) Therefore, the use of a CVR recording, when for purposes other than CVR serviceability or those laid down by Regulation No (EU) 996/2010 not dictated by an authority or needed for assessing the CVR serviceability, should be subject to the free prior consent of the persons concerned, and framed by a procedure that is recognised endorsed by all parties and that protects the privacy of crew members and (if applicable) maintenance staff. The competent authority is entitled to control that the use of CVR recordings made by an operator complies with these principles.~~

3.3. Changes to the AMC and GM presented in CRD 2013-26 for Part-SPO

AMC1 SPO.GEN.145(f)(1) Preservation, production and use of flight recorder recordings Handling of flight recorder recordings: preservation, production, protection and use
USE OF CVR RECORDINGS FOR MAINTAINING OR IMPROVING SAFETY

For the understanding of the terms used in AMC1 NCC.GEN.145(b):

- (a) The procedure related to the handling of CVR recordings should be written in a document which should be signed by all parties (airline management, crew member representatives nominated either by the union or the crew themselves, maintenance personnel representatives if applicable aircraft operator, crew members, maintenance personnel if applicable). This procedure should, as a minimum, define:
- (1) the method to obtain the consent of all crew members and maintenance personnel concerned;
 - (2) an access and security policy that restricts access to CVR recordings and identified CVR transcripts to specifically authorised persons identified by their position; and
 - (3) a retention policy and accountability, including the measures to be taken to ensure the security of the CVR recordings and CVR transcripts and their protection from misuse. The retention policy should specify the period of time after which CVR recordings and identified CVR transcripts are destroyed; and
 - (4) a description of the uses made of the CVR recordings and of their transcripts.
- (b) Each time a CVR recording file is read out under the conditions defined in SPO.GEN.145(f)(1) for purposes other than investigation by a safety investigating authority, the competent authority or the administration of justice, and other than for ensuring the CVR serviceability:
- (1) the operator should delete without delay all parts of the CVR recording file that contain information with a privacy content should be deleted to the extent possible, and it should not be permitted that such the detail of information with a privacy content is transcribed.



- (2) the operator should retain, and when requested, provide to the competent authority:
- (i) information on the use made (or the intended use) of the CVR recording; and
 - (ii) evidence that the persons concerned consented to the use made (or the intended use) of the CVR recording file.

(c) The person who fulfils the role of a safety manager should also be responsible for the protection and the use of the CVR recordings and the CVR transcripts.

(d) In case a third party is involved in the use of CVR recordings, contractual agreements with this third party should, when applicable, cover the aspects enumerated in (a) and (b).

GM1 SPO.GEN.145(f)(1) ~~Preservation, production and use of flight recorder recordings~~ Handling of flight recorder recordings: preservation, production, protection and use
USE OF CVR RECORDINGS FOR MAINTAINING OR IMPROVING SAFETY

- (a) The CVR is primarily a tool for the investigation of accidents and serious incidents by investigating authorities. ~~It is not meant to be used by an operator for monitoring operations.~~ Misuse of CVR recordings is a breach of the right to privacy and it works against an effective safety culture inside the operator.
- ~~(b) It is noteworthy that the FDR may be used for a flight data monitoring (FDM) programme, however in that case the principles of confidentiality and access restriction of the FDM programme apply to the FDR recordings. Because the CVR is recording the voices of the crew and verbal communications with a privacy content, the CVR recordings must be handled with even more care than FDM data.~~
- ~~(c)~~(b) Therefore, the use of a CVR recording, when for purposes other than CVR serviceability or those laid down by Regulation (EU) No 996/2010 ~~not dictated by an authority or needed for assessing the CVR serviceability~~, should be subject to the free prior consent of the persons concerned, and framed by a procedure that is ~~recognised~~ endorsed by all parties and that protects the privacy of crew members and (if applicable) maintenance staff. ~~The competent authority is entitled to control that the use of CVR recordings made by an operator complies with these principles.~~



4. References

4.1. Affected AMC and GM

- Decision 2014/015/R of the Executive Director of the European Aviation Safety 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 2013/021/R of the Executive Director of the European Aviation Safety Agency of 23 August 2013 adopting Acceptable Means of Compliance and Guidance Material for non-commercial operations with complex motor-powered aircraft (Part-NCC)
- Decision 2014/018/R of the Executive Director of the European Aviation Safety 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’

4.2. Reference documents

- Commission Implementing Regulation (EU) No 1035/2011 of 17 October 2011 laying down common requirements for the provision of air navigation service providers and amending Regulations (EC) No 482/2008 and No 691/2010 (OJ L 271, 18.10.2011, p. 23)
- ICAO State Letter AN 6/1.2-15/13, Proposal for the amendment of Annexes 13 and 6 relating to the protection of accident and incident records and flight recorder recordings, dated 24 March 2015
- ICAO State Letter SP 55/4-15/15, Proposals for the amendment to Annex 6, Parts I, II and III relating to carriage requirements of flight recorders, dated 15 May 2015
- Investigation report of the accident to the McDonnell Douglas MD11 registered HB-IWF on 2 September 1998
- Investigation report of the accident to the Boeing 737 registered 5B-DBY on 14 August 2005
- Investigation report of the accident to the Avions de Transport Regional (ATR) 42 registered OY-JRJ on 31 January 2005
- Investigation report of the serious incident to the Boeing 737 registered PH-BDP on 10 February 2010
- Investigation report of the accident to the Boeing 767 registered G-OOBK on 3 October 2010
- Investigation report of the serious incident to the Airbus 340 registered F-GLZU on 22 July 2011
- Investigation report of the serious incident to the Airbus A330 registered OH-LTO on 11 December 2010
- Investigation report of the serious incident to the ATR42 registered EI-SLD on 18 January 2007
- Investigation report of the accident to the Boeing 777 registered G-YMMM on 17 January 2008
- Investigation report of the accident to the Aerospatiale 332 registered G-JSAR on 21 November 2006



- EUROCAE Document 112A (September 2013): Minimum Operational Performance Specification For Crash Protected Airborne Recorder Systems

