

## Annex II to ED Decision 2015/021/R

### 'AMC and GM to Part-NCC — Amendment 3'

The Annex to Decision 2013/021/R AMC/GM to Annex VI (Part-NCC) to Commission Regulation (EU) No 965/2012) is amended as follows:

The text of the amendment is arranged to show deleted, new or amended text as shown below:

1. deleted text is marked with ~~strike through~~;
2. new or amended text is highlighted in **grey**; and
3. an ellipsis (...) indicates that the remaining text is unchanged in front of or following the reflected amendment.

1. AMC1 NCC.GEN.145(b) has been amended as follows:

#### **AMC1 NCC.GEN.145(b) Preservation, production and use of flight recorder recordings**

##### ~~OPERATIONAL INSPECTIONS AND CHECKS OF RECORDINGS~~

Whenever a flight recorder is required to be carried, ~~the operator should:~~

- (a) the operator should perform an annual inspection of flight data recorder (FDR) recording and cockpit voice recorder (CVR) recording the FDR recording and the CVR recording every year, unless one or more of the following applies:
  - (1) If the flight recorder records on magnetic wire or uses frequency modulation technology, the time interval between two inspections of the recording should not exceed three months.
  - ~~(1) Where two solid-state FDRs both fitted with internal built-in test equipment sufficient to monitor reception and recording of data share the same acquisition unit, a comprehensive recording inspection need only be performed for one FDR. For the second FDR, checking its internal built-in test equipment is sufficient. The inspection should be performed alternately such that each FDR is inspected once every other year.~~
  - (2) If the flight recorder is solid-state and the flight recorder system is fitted with continuous monitoring for proper operation, the time interval between two inspections of the recording may be up to two years.
  - (3) In the case of an aircraft equipped with two solid-state flight data and cockpit voice combination recorders, where
    - (i) the flight recorder systems are fitted with continuous monitoring for proper operation, and
    - (ii) the flight recorders share the same flight data acquisition,

a comprehensive inspection of the recording needs only to be performed for one flight recorder position. The inspection of the recordings should be performed alternately so that each flight recorder position is inspected at time intervals not exceeding four years.

~~(2)~~(4) Where all of the following conditions are met, the FDR recording inspection of FDR recording is not needed:

- (i) the aircraft flight data are collected in the frame of a flight data monitoring (FDM) programme;
- (ii) the data acquisition of mandatory flight parameters is the same for the FDR and for the recorder used for the FDM programme;
- (iii) an inspection similar to the inspection of the FDR recording and covering all mandatory flight parameters is conducted on the FDM data at time intervals not exceeding two years the integrity of all mandatory flight parameters is verified by the FDM programme; and
- (iv) the FDR is solid-state and the FDR system is fitted with continuous monitoring for proper operation an internal built-in test equipment sufficient to monitor reception and recording of data.

~~(3)~~ Where two solid state CVRs are both fitted with internal built in test equipment sufficient to monitor reception and recording of data, a comprehensive recording inspection need only to be performed for one CVR. For the second CVR, checking its internal built in test equipment is sufficient. The inspection should be performed alternately such that each CVR is inspected once every other year.

- (b) the operator should perform every 5 five years an inspection of the data link recording.
- (c) when installed, the aural or visual means for preflight checking the flight recorders for proper operation should be used every day. When no such means is available for a flight recorder, the operator should perform an operational check of this flight recorder at time intervals not exceeding seven calendar days of operation.
- ~~(e)~~(d) the operator should check every 5 five years, or in accordance with the recommendations of the sensor manufacturer, that the parameters dedicated to the FDR and not monitored by other means are being recorded within the calibration tolerances and that there is no discrepancy in the engineering conversion routines for these parameters.

2. GM1 NCC.GEN.145(b) has been amended as follows:

### **GM1 NCC.GEN.145(b) Preservation, production and use of flight recorder recordings**

#### INSPECTION OF THE FLIGHT RECORDERS RECORDINGS

- (a) The inspection of the FDR recording usually consists of the following:
  - (1) Making a copy of the complete recording file.

(2) Converting the recording to parameters expressed in engineering units in accordance with the documentation required to be held.

(2)(3) Examining a whole flight in engineering units to evaluate the validity of all mandatory parameters - this could reveal defects or noise in the measuring and processing chains and indicate necessary maintenance actions. The following should be considered:

- (i) when applicable, each parameter should be expressed in engineering units and checked for different values of its operational range - for this purpose, some parameters may need to be inspected at different flight phases; and
- (ii) if the parameter is delivered by a digital data bus and the same data are utilised for the operation of the aircraft, then a reasonableness check may be sufficient; otherwise a correlation check may need to be performed;
  - (A) a reasonableness check is understood in this context as a subjective, qualitative evaluation, requiring technical judgement, of the recordings from a complete flight; and
  - (B) a correlation check is understood in this context as the process of comparing data recorded by the flight data recorder against the corresponding data derived from flight instruments, indicators or the expected values obtained during specified portion(s) of a flight profile or during ground checks that are conducted for that purpose.

(3)(4) Retaining the most recent copy of the complete recording file and the corresponding recording inspection report that includes references to the documentation required to be held.

(b) The inspection of the CVR recording usually consists of:

- (1) checking that the CVR operates correctly for the nominal duration of the recording;
- (2) examining, where practicable and subject to prior approval by the flight crew, a sample of in-flight recording of the CVR for evidence that the signal is acceptable on each channel; and
- (3) preparing and retaining an inspection report.

(...)

3. A new GM2 NCC.GEN.145(b) has been introduced:

#### **GM2 NCC.GEN.145(b) PRESERVATION, PRODUCTION AND USE OF FLIGHT RECORDERS RECORDINGS**

##### **MONITORING AND CHECKING THE PROPER OPERATION OF FLIGHT RECORDERS — EXPLANATION OF TERMS**

For the understanding of the terms used in AMC1 CAT.GEN.MPA.195(b):

(a) 'operational check of the flight recorder' means a check of the flight recorder for proper operation. It is not a check of the quality of the recording and, therefore, it is not equivalent to an inspection of the recording. This check can be carried out by the flight crew or through a maintenance task.

(b) 'aural or visual means for preflight checking the flight recorders for proper operation' means an aural or visual means for the flight crew to check before the flight the results of an automatically or

manually initiated test of the flight recorders for proper operation. Such a means provides for an operational check that can be performed by the flight crew.

- (c) 'flight recorder system' means the flight recorder, its dedicated sensors and transducers, as well as its dedicated acquisition and processing equipment.
- (d) 'continuous monitoring for proper operation' means for a flight recorder system, a combination of system monitors and built-in test functions which operates continuously in order to detect the following:
  - (1) loss of electrical power to the flight recorder system;
  - (2) failure of the equipment performing acquisition and processing;
  - (3) failure of the recording medium and/or drive mechanism; and
  - (4) failure of the recorder to store the data in the recording medium as shown by checks of the recorded data including, as reasonably practicable for the storage medium concerned, correct correspondence with the input data.

4. AMC1 NCC.IDE.A.160 has been amended as follows:

#### **AMC1 NCC.IDE.A.160 Cockpit voice recorder**

##### GENERAL

- (a) The operational performance requirements for cockpit voice recorders (CVRs) should be those laid down in the European Organisation for Civil Aviation Equipment (EUROCAE) Document ED-112 (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems), dated March 2003, including amendments n°1 and 2, or any later equivalent standard produced by EUROCAE.
  - (b) The operational performance requirements for equipment dedicated to the CVR should be those laid down in the European Organisation for Civil Aviation Equipment (EUROCAE) Document ED-56A (Minimum Operational Performance Requirements For Cockpit Voice Recorder Systems) dated December 1993, or EUROCAE Document ED-112 (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems) dated March 2003, including Amendments No°1 and No°2, or any later equivalent standard produced by EUROCAE.
5. In AMC1 NCC.IDE.A.165, the content of the last row of Table 1 (Parameter No 75) has been deleted from this table and inserted into Table 2, between Parameters Nos 74 and 76.

6. In Table 1 of AMC1 NCC.IDE.A.165, the description of Parameter No 18 has been amended as follows:

18	Primary flight control surface and/or primary flight control pilot input (for aeroplanes with control systems in which movement of a control surface will back drive the pilot's control, 'or' applies. For aeroplanes with control systems in which movement of a control surface will not back drive the pilot's control, 'and' applies. For multiple or split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. For aeroplanes that have a flight control break-away capability that allows either pilot to operate the controls independently, record both inputs):
18a	Pitch axis
18b	Roll axis
18c	Yaw axis

7. AMC1 NCC.IDE.H.160 has been amended as follows:

**AMC1 -NCC.IDE.H.160- Cockpit voice recorder**

GENERAL

- (a) The operational performance requirements for cockpit voice recorders (CVRs) should be those laid down in EUROCAE Document ED-112 (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems), dated March-2003, including amendments No°1 and No 2, or any later equivalent standard produced by EUROCAE.
- (b) The operational performance requirements for equipment dedicated to the CVR should be those laid down in the European Organisation for Civil Aviation Equipment (EUROCAE) Document ED-56A (Minimum Operational Performance Requirements For Cockpit Voice Recorder Systems) dated December 1993, or EUROCAE Document ED-112 (Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems) dated March 2003, including Amendments No°1 and No°2, or any later equivalent standard produced by EUROCAE.