Democratic Socialist Republic of Sri Lanka

Civil Aviation Authority of Sri Lanka

Implementing Standards

(Issued under Sec. 120, Civil Aviation Act No. 14 of 2010)

Title: Requirements for Calibration of Flight Data Recorders and Cockpit Voice Recorders

Reference No. : IS 6-(i)-6 **SLCAIS :** 063 **Date:** 16.03.2018

Pursuant to Sec.120 of the Civil Aviation Act No.14 of 2010 which is hereinafter referred to as the CA Act, Director General of Civil Aviation shall have the power to issue, whenever he considers it necessary or appropriate to do so, such Implementing Standards for the purpose of giving effect to any provision in the CA Act, Requirements or Rules made thereunder including the Articles of the Convention on International Civil Aviation specified in the Schedule to the CA Act.

Accordingly, I, being the Director General of Civil Aviation do hereby issue the Implementing Standards on **Requirements for Calibration of Flight Data Recorders and Cockpit Voice Recorders** as mentioned in the Attachment hereto (Ref: Attachment No. IS-6-(i)-6-Att.), elaborating the requirements to be satisfied for the effective implementation of the International Standards and Recommended Practices contained in Annex 6, Part I, Chapter 6 to the Convention and the Air Navigation Regulations of 1955 and SLCAIS-015.

This Implementing Standard shall be applicable to any operator who is engaged in commercial air transport operation under as Air Operator Certificate issued by DGCA – Sri Lanka or any prospective importers of aircraft to Sri Lanka including any foreign aircraft / helicopter operator engaged in such operation within Sri Lanka airspace.

This Implementing Standard shall come in to force with immediate effect and remain in force unless revoked and it will supersede the requirement in Aviation Safety Notice (ASN) 102.

Attention is also drawn to Sec. 49 and Sec. 103 of the Act, which states inter alia that failure to comply with Implementing Standard is an offence.

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Enclosure: Attachment No IS-6-(i)-6-Att.

Implementing Standards

SLCAIS – 063 : REQUIREMENTS FOR CALIBRATION OF FLIGHT DATA RECORDERS AND COCKPIT VOICE RECORDERS

Introduction

The Air Navigation Regulations of 1955 and SLCAIS-015 issued incompliance with its subsidiary special Gazette notification of 2002 requires that the aircraft are issued with a certificate of airworthiness by DGCA- Sri Lanka or the aircraft operating into, out of or within Sri Lanka should be equipped with required aircraft instrument. While SLCAIS-015 explains the requirement for fitment of Flight Data Recorders and Cockpit Voice Recorders on aircraft registered in Sri Lanka, this Implementing Standard supplements latest issue of SLCAIS-015 in respect of requirements for analyses, calibration and periodic maintenance of FDR and CVR for issue/renewal of airworthiness of the aircraft. All aircraft imported/purchased or leased for operations in Sri Lanka shall meet the applicable requirements described in this Implementing Standard.

Unless otherwise specified herein, all words, phrases and abbreviations in this Implementing Standard carry the same meaning as defined in the ICAO Doc. 8400.

1. Scope

This Implementing Standard establishes the requirements to be met by an aircraft operator who seeks opportunity to import/purchase or lease an aircraft for operation in Sri Lanka and applying for issue or renewal of Certificate of Airworthiness.

2. Guidance on Flight Data Recorder (FDR)/Cockpit Voice Recorder(CVR)

2.1 The FDR/CVR is to record continuously during flight time.

2.2 The FDR/CVR container is to:

a) Be painted a distinctive orange or yellow colour;

b) Carry reflective material to facilitate its location; and

c) Have securely attached an automatically activated underwater locating device.

2.3 The FDR/CVR is to be installed so that:

a) The probability of damage to the recording is minimized. To meet this requirement it should be located as far aft as practicable. In the case of pressurized aeroplanes it should be located in the vicinity of the rear pressure bulkhead;

b) It receives its electrical power from a bus that provides the maximum reliability for operation of the FDR/CVR without jeopardizing service to essential or emergency loads; and

c) There is an aural or visual means for pre-flight checking that the FDR/CVR is operating properly.

3. Inspection of Flight Recorder system

3.1 Prior to the first flight of the day, the built-in test features for the flight recorders and flight data acquisition unit (FDAU), when installed, shall be monitored by manual and/or automatic checks.

3.2 FDR systems or CVR systems shall have recording system inspection intervals of one year; subject to the approval from the DGCA, this period may be extended to two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring.

4. Recording system inspections shall be carried out as follows:

a) An analysis of the recorded data from the flight recorders shall ensure that the recorder operates correctly for the nominal duration of the recording;

b) the analysis of the FDR shall evaluate the quality of the recorded data to determine if the bit error rate (including those errors introduced by recorder, the acquisition unit, the source of the data on the aeroplane and by the tools used to extract the data from the recorder) is within acceptable limits and to determine the nature and distribution of the errors;

c) A complete flight recording from the FDR shall be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention shall be given to parameters from sensors dedicated to the FDR. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;

d) The readout facility shall have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;

e) An examination of the recorded signal on the CVR shall be carried out by replay of the CVR recording. While installed in the aircraft, the CVR shall record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards;

f) Where practicable, during the examination, a sample of in-flight recordings of the CVR shall be examined for evidence that the intelligibility of the signal is acceptable; and

5. A flight recorder system shall be considered unserviceable if there is a significant period of poor quality data, unintelligible signals, or if one or more of the mandatory parameters is not recorded correctly.

6. A report of the recording system inspection shall be made available on request to DGCA for monitoring purposes.

7. Calibration of the FDR system:

a) for those parameters which have sensors dedicated only to the FDR and are not checked by other means, recalibration shall be carried out at least every five years or in accordance with the recommendations of the sensor manufacturer to determine any

discrepancies in the engineering conversion routines for the mandatory parameters and to ensure that parameters are being recorded within the calibration tolerances; and

b) When the parameters of altitude and airspeed are provided by sensors that are dedicated to the FDR system, there shall be a recalibration performed as recommended by the sensor manufacturer, or at least every two years.

8. General Requirements on Flight Data Recorder/Cockpit Voice Recorder

8.1 The Flight Data Recorders shall be of an approved type and shall meet the specification of TSO C-51 (a) or its latest derivation in compliance with certified equipment listed in the Illustrated Part Catalogue of the aircraft type data sheet.

8.2 The recorder shall be maintained by an appropriately qualified engineer in an Approved manner

8.3 Aeroplanes equipped with QAR (Quick Access Recorder)/PMR (Permanent Magnetic Recorder) systems should be capable of storing the recorded data for the at least last 50 hours of operation. The QAR/PMR tape should be removed on or before completion of the tape and preserved for a period of 30 days. The cassettes pertaining to incident s should be preserved unless cleared by DGCA.

8.4 All operators shall carry out FDR readout at their own or any approved facility every 12 months for each serial number of the unit installed on the aircraft in order to ensure the following:

a) All parameters are recorded and the parameter values are logical.

b) Monitoring the performance of aircraft and its systems.

8.5 The Component Overhaul Service Life (COSL) shall specify the reliability control of FDR, which is arrived at, on the basis of the recommendations of the manufacturer of the unit.

8.6 The procedure for compliance with the requirements shall be documented in the Operator's Maintenance Control Manual/Maintenance Management Exposition.

8.7 Operational checks and evaluation of recordings from the flight data and cockpit voice recorder systems shall be conducted to ensure the continued serviceability of the recorders. The manufacturer's instruction for recording integrity checks shall be followed in addition to the requirements contained in this Part. All air transport operators shall carry out CVR readout at their own or other approved facility for each serial number of the unit installed on aircraft operated by them every 12 months in order to ensure the following:

a) The integrity and clarity of recording of the CVR system, and

b) Monitoring and analyzing the performance of flight crew members with regard to adherence to Cockpit Checklist and operating procedures.

8.8 To aid in voice and sound discrimination, microphones in the cockpit are to be located in the best position for recording voice communications originating at the pilot and co-pilot stations and voice communications of other crew members on the flight deck when directed to those stations. This can best be achieved by wiring suitable boom microphones to record continuously on separate channels.

8.9 The CVR shall be of an approved type and shall meet the specification of TSO C- 84 or any other specification acceptable to DGCA.

8.10 The CVR shall not have bulk erase facility. To ensure positive deactivation, the bulk erase card shall be removed from the CVR unit. Wherever the same is not possible, alternate means of compliance shall be adopted.

8.11 The CVR system should have Hot Microphone to ensure clear recording of the aural environment in the cockpit.

8.12 The CVR, when tested by methods approved by the appropriate certificating authority, will be demonstrated to be suitable for the environmental extremes over which it is designed to operate.

8.13 Means will be provided for an accurate time correlation between the FDR and CVR.

8.14 Proper records shall be maintained for the readouts and evaluation carried out by the operator which shall be authenticated by the In-charge of Quality Assurance of the organisation.

8.15 The compliance status of the above status shall be inspected at the issue/renewal of airworthiness of each aircraft by the CAA inspector.