

Serviceability Checks Of Flight Recorders

1 Introduction

International Civil Aviation Organization (ICAO) has published Standards in Part I, II and III of **Annex 6** that require serviceability checks of flight recorders installed in aircraft.

Note: Crash protected flight recorders comprise one or more of the following systems: a flight data recorder (FDR), a cockpit voice recorder (CVR), an airborne image recorder (AIR) and/or a data link recorder (DLR). Lightweight flight recorders comprise one or more of the following systems: an aircraft data recording system (ADRS), a cockpit audio recording system (CARS), an airborne image recording system (AIRS) and/or a datalink recording system (DLRS).

2 Applicability

This Airworthiness Notice is applicable to Seychelles registered aircraft issued with a Certificate of Airworthiness.

The requirements prescribed in [Airworthiness Notice 5](#) and this Airworthiness Notice are operational requirements in addition to EASA AIR OPs, in particular ORO.AOC.130, CAT.GEN.MPA.195, CAT.IDE.A.190, CAT.IDE.H.190, NCC.GEN.145, NCC.IDE.A.165, NCC.IDE.H.165, SPO.GEN.145, SPO.IDE.A.145 and SPO.IDE.H.145.

- 2.1 Flight recorders which are installed or to be installed on Seychelles registered aircraft shall have been certified as approved aeronautical product or part by the SCAA, the State of Design, for use on aircraft operation and shall meet the applicable requirements set out in EASA PART 21 and associated Certification Standards.

3 Operational requirements on continued serviceability of flight recorders

- 3.1 Operational checks and evaluations of recordings from the Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) systems shall be conducted to ensure the continued serviceability of the recorders. Procedures for the inspections of the FDR and CVR systems shall be as follows:

- 3.1.1 Prior to the first flight of the day, the built-in test features on the flight deck for the CVR, FDR and Flight Data Acquisition Unit (FDAU), when installed, shall be monitored.

- 3.1.2 Inspections of flight recorder systems shall be carried out as follows:

- (a) FDR systems or Aircraft Data Recording System (ADRS), CVR systems or Cockpit Audio Recording System (CARS) and Airborne Image Recorder (AIR) systems or Airborne

Image Recording System (AIRS) shall have recording system inspection intervals of one year. Subject to the approval from this SCAA, this period may be extended to two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring. Data Link Recorder (DLR) systems or Data Link Recording System (DLRS) shall have recording system inspection intervals of two years. Subject to the approval from this SCAA, this period may be extended to four years provided these systems have demonstrated high integrity of serviceability and self-monitoring;

- (b) the read-out of the recorded data from the FDR and CVR shall ensure that the recorder operates correctly for the nominal duration of the recording;
- (c) the analysis of the FDR or ADRS shall evaluate the quality of the recorded data to determine if the bit error rate is within acceptable limits and to determine the nature and distribution of the errors;
- (d) a complete flight from the FDR or ADRS 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 or ADRS. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;
- (e) the read-out facility shall have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;
- (f) an examination of the recorded signal on the CVR or CARS shall be carried out by replay of the CVR or CARS recording. While installed in the aircraft, the CVR or CARS shall record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards;
- (g) where practicable, during the examination, a sample of in-flight recordings of the CVR or CARS shall be examined for evidence that the intelligibility of the signal is acceptable; and
- (h) an examination of the recorded images on the AIR or AIRS shall be carried out by replay of the AIR or AIRS recording. While installed in the aircraft, the AIR or AIRS shall record test images from each aircraft source and from relevant external sources to ensure that all required images meet recording quality standards.
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.

3.1.3 For flight data recording system, documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator. The documentation needs to be sufficient to ensure that the SCAA has the necessary information to read out the data in engineering units.

3.1.4 A report of the recording system inspection shall be made available on request to the SCAA for monitoring purposes. The recording system inspection report is available in Appendix 1 of this Airworthiness Notice.

3.1.5 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, whichever is earlier.

4 Notice revision

All enquiries about the technical content of this Airworthiness Notice should be addressed in writing to the Airworthiness Inspectorate of the Safety & Security Regulation Division, Seychelles Civil Aviation Authority, P.O. Box 181, Mahe, Seychelles.

This Notice becomes effective from the date of issue

Appendix 1. Recording system inspection report



**Airworthiness Checklist Form SF49
FDR Serviceability Checks.**

Name of Operator _____
Type of operation _____
Aircraft type/model _____

| NN | Description | AIRW evaluation | AIRW Comments | Applicant's follow-up (if applicable) | AIRW use only |
|----|--|-----------------|---------------|---------------------------------------|---------------|
| 1 | Verify if prior to the first flight of the day, the built-in test features on the flight deck for the CVR, FDR and Flight Data Acquisition Unit (FDAU), when installed, is monitored. | | | | |
| 2 | <p>Verify inspections of flight recorder systems are carried out as follows:</p> <ol style="list-style-type: none"> 1. FDR systems or Aircraft Data Recording System (ADRS), CVR systems or Cockpit Audio Recording System (CARS) and Airborne Image Recorder (AIR) systems or Airborne Image Recording System (AIRS) have recording system inspection intervals of <ul style="list-style-type: none"> <input type="checkbox"/> one year; <input type="checkbox"/> extended for two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring. Data Link Recorder (DLR) systems or Data Link Recording System (DLRS) have recording system inspection intervals of two years; <input type="checkbox"/> extended to four years provided these systems have demonstrated high integrity of serviceability and self-monitoring; 2. the read-out of the recorded data from the FDR and CVR ensures that the recorder operates correctly for the nominal duration of the recording; 3. the analysis of the FDR or ADRS evaluates the quality of the recorded data to determine if the bit error rate is within acceptable limits and to determine the nature and distribution of the errors; 4. a complete flight from the FDR or ADRS are examined in engineering units to evaluate the validity of all recorded parameters. Particular attention is given to parameters from sensors dedicated to the FDR or ADRS. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems 5. the read-out facility have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals; 6. an examination of the recorded signal on the CVR or CARS is carried out by re-play of the CVR or CARS recording. While installed in the aircraft, the CVR or CARS record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards; 7. where practicable, during the examination, a sample of in-flight recordings of the CVR or CARS have been examined for evidence that the intelligibility of the signal is acceptable; and | | | | |

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|---|---|--|--|--|--|
| | 8. an examination of the recorded images on the AIR or AIRS are carried out by replay of the AIR or AIRS recording. While installed in the aircraft, the AIR or AIRS records test images from each aircraft source and from relevant external sources to ensure that all required images meet recording quality standards. | | | | |
| 3 | Validate that a flight recorder system is 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. | | | | |
| 4 | Check that for flight data recording system, documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information have been maintained by the operator. The documentation needs to be sufficient to ensure that the Authority has the necessary information to read out the data in engineering units. | | | | |
| 5 | Check if a report of the recording system inspection has been made or would be available on request to the Authority for monitoring purposes | | | | |
| 6 | <p>Calibration of the FDR system:</p> <p>1. For those parameters which have sensors dedicated only to the FDR and, are not checked by other means, recalibration have been 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</p> <p>2. When the parameters of altitude and airspeed are provided by sensors that are dedicated to the FDR system, there has been a recalibration performed as recommended by the sensor manufacturer, or at least every two years, whichever is earlier.</p> | | | | |

Satisfactory , Unsatisfactory , or Not applicable

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| Name of Applicant: | | | |
| Evaluation carried-out by: | | | |
| Signature: | | Position: | |
| Print Name: | | Date of signing: | |
| List follow-actions required: _____ | | | |
| Applicant follow-up action completed by: | | | |
| Signature: | | Date of signing: | |
| Print Name: | | | |
| Applicant remark: | _____ | | |
| For SCAA use only Final Remark | _____ | | |