



GOVERNMENT OF INDIA

OFFICE OF DIRECTOR GENERAL OF CIVIL AVIATION
TECHNICAL CENTRE, OPP SAFDARJANG AIRPORT, NEW DELHI

CIVIL AVIATION REQUIREMENTS
SECTION 2 - AIRWORTHINESS
SERIES 'I' PART VI
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EFFECTIVE: FORTHWITH

Subject : **Cockpit Voice Recorders**

1. PURPOSE:

Rule 57 of the Aircraft Rules, 1937 requires that every aircraft shall be fitted and equipped with instruments and equipment, including radio apparatus and special equipment as may be specified according to the use and circumstances under which the flight is to be conducted.

This part of Civil Aviation Requirement lays down the requirements for fitment of Cockpit Voice Recorder (CVR) on aircraft registered in India and aircraft leased and imported into the country.

This CAR has been issued under the provision of Rule 29C of the Aircraft Rules, 1937.

2. DEFINITION:

Cockpit Voice Recorder (CVR): An equipment installed in the aircraft for the purpose of recording the aural environment on the flight deck during flight time for the purpose of accident/ incident prevention and investigation.

3. APPLICABILITY REQUIREMENTS:

3.1 AEROPLANES – COMMERCIAL AIR TRANSPORT

3.1.1 Cockpit voice recorders - aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1987

3.1.1.1 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg shall be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time.

3.1.1.2 It is recommended that all multi-engined turbine-powered aeroplanes of a maximum certificated take-off mass of 5 700 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 1990 should be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time.

3.1.2 Cockpit voice recorders - aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 1987

Note.— CVR performance requirements are as contained in the Minimum Operational Performance Specifications (MOPS) document for Flight Recorder Systems of the European Organization for Civil Aviation Equipment (EUROCAE) or equivalent documents.

3.1.2.1 All turbine-engined aeroplanes of a maximum certificated take-off mass of over 27 000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 shall be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time.

3.1.2.2 It is recommended that all turbine-engined aeroplanes of a maximum certificated take-off mass of over 5 700 kg up to and including 27000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 should be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time.

3.2 AEROPLANES – GENERAL AVIATION

3.2.1 Cockpit voice recorders — aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1987

3.2.1.1 All aeroplanes of a maximum certificated takeoff mass of over 27 000 kg shall be equipped with a cockpit voice recorder, the objective of which is the recording of the aural environment on the flight deck during flight time.

3.2.1.2 It is recommended that all aeroplanes of a maximum certificated take-off mass of over 5 700 kg up to and including 27 000 kg should be equipped with a cockpit voice recorder, the objective of which is the recording of the aural environment on the flight deck during flight time.

3.3 COCKPIT VOICE RECORDERS – DURATION (AEROPLANES)

3.3.1 A CVR shall be capable of retaining the information recorded during at least the last 30 minutes of its operation.

3.3.2 It is recommended that a CVR, installed in aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1990, should be capable

of retaining the information recorded during at least the last two hours of its operation.

- 3.3.3 A CVR, installed in aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued after 1 January 2003, shall be capable of retaining the information recorded during at least the last two hours of its operation.

3.4 HELICOPTERS – INSTALLATION

3.4.1 Cockpit voice recorders - helicopters for which the individual certificate of airworthiness is first issued on or after 1 January 1987

- 3.4.1.1 All helicopters of a maximum certificated take-off mass of over 3180 kg shall be equipped with a CVR the objective of which is the recording of the aural environment on the flight deck during flight time. For helicopters not equipped with an FDR, at least main rotor speed shall be recorded on one track of the CVR.

3.4.2 Cockpit voice recorders - helicopters for which the individual certificate of airworthiness was first issued before 1 January 1987

All helicopters of a maximum certificated take-off mass of over 7 000 kg shall be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time. For helicopters not equipped with an FDR, at least main rotor speed shall be recorded on one track of the CVR.

3.5 COCKPIT VOICE RECORDERS – DURATION (HELICOPTERS)

- 3.5.1 A CVR shall be capable of retaining the information recorded during at least the last 30 minutes of its operation.

- 3.5.2 It is recommended that a CVR, installed in helicopters for which the individual certificate of airworthiness is first issued on or after 1 January 1990, should be capable of retaining the information recorded during at least the last two hours of its operation.

- 3.5.3 A CVR, installed in helicopters for which the individual certificate of airworthiness is first issued after 1 January 2003, shall be capable of retaining the information recorded during at least the last two hours of its operation.

4. Notwithstanding the provisions of para 3 of this CAR, all multi-engined aircraft (aeroplanes and helicopters) shall be equipped with CVR where STC is available.

5. GENERAL REQUIREMENTS

- 5.1 The CVR shall be constructed, located and installed so as to provide maximum practical protection for the recordings in order that the recorded information is

- preserved, recovered and transcribed. The recorder shall meet the prescribed crashworthiness and fire protection specifications.
- 5.2 The Cockpit Voice Recorder shall not be switched off during flight time.
- 5.3 In order to preserve the recorded information, the Cockpit Voice Recorder shall be deactivated, by pulling the CB, upon completion of flight following an accident or incident. The CVR shall not be re-activated before their disposition in accordance with instructions issued by DGCA.
- 5.4 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 CAR. All air transport operators shall carry out CVR readout at their own facility for each serial number of the unit installed on aircraft operated by them at intervals specified by the DGCA in order to ensure the following:
- (a) the integrity and clarity of recording of the CVR system, and
 - (b) monitoring the performance of flight crew members with regard to adherence to Cockpit Checklist and operating procedures.
- 5.5 The CVR is to be designed so that it will record at least the following:
- a) voice communication transmitted from or received in the aircraft by radio;
 - b) aural environment on the flight deck;
 - c) voice communication of flight crew members on the flight deck using the aircraft's interphone system;
 - d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker;
 - e) voice communication of flight crew members using the passenger address system, if installed; and
 - f) digital communications with ATS, unless recorded by the FDR.
- 5.6 The 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.
- 5.7 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.

5.8 The 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 CVR without jeopardizing service to essential or emergency loads;
- c) there is an aural or visual means for pre-flight checking of the CVR for proper operation; and
- d) if the CVR has a bulk erasure device, the installation should be designed to prevent operation of the device during flight time or crash impact.

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

5.10 Appropriately qualified engineer shall maintain the CVR in an approved manner.

5.11 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.

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

5.13 Performance Requirements:

5.13.1 The Cockpit Voice Recorder shall be capable of recording communication on at least four tracks simultaneously. The preferred track allocation is as follows:

Track 1	–	co-pilot headphones and live boom microphone
Track 2	–	pilot headphones and live boom microphone
Track 3	–	area microphone
Track 4 (aeroplanes)	–	time reference plus the third and fourth crew member's headphones and live microphones, if applicable.
Track 4 (helicopters)	–	time reference, main rotor speed or the flight Deck vibration environment, the third and fourth crew member's headphones and live microphones, if applicable.

5.13.2 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.

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

6. Inspections of CVR systems

- 6.1 Prior to the first flight of the day, the built-in test features on the flight deck for the CVR and Flight Data Acquisition Unit (FDAU), when installed, should be monitored.
- 6.2 Annual inspections should be carried out as follows:
- a) the read-out of the recorded data from the CVR should ensure that the recorder operates correctly for the nominal duration of the recording;
 - b) the read-out facility should have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;
 - c) an annual examination of the recorded signal on the CVR should be carried out by re-play of the CVR recording. While installed in the aircraft, the CVR should record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards; and
 - d) a sample of in-flight recordings of the CVR should be examined for evidence that the intelligibility of the signal is acceptable.
- 6.3 Flight recorder systems should 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.
- 6.4 A report of the annual inspection should be made available on request to DGCA for monitoring purposes.
- 6.5 Proper records shall be maintained for the readouts and evaluation carried out by the operator which shall be authenticated by the Quality Control Manager of the organisation.
- 6.6 This procedure shall be documented in the Operator's Quality Control Manual and Operations Manual.



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