

## GEN 1.5 AIRCRAFT INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

### 1 General

Commercial air transport aircraft operating within the Republic of Zambia must adhere to the provision of ICAO Annex 6 – Operation of Aircraft, Part 1 – International Commercial Air Transport – Aeroplane, Chapter 6 (Aeroplane Instruments, Equipment and Flight documents) and ZCARS part 7 – Instruments and Equipment

### 2 Special equipment to be carried

Not Applicable.

### 3 Requirements for SSR transponder

3.1. All aircraft operating in the airspace of Zambia shall be equipped with serviceable Secondary Surveillance Radar (SSR) transponder in accordance with the requirements of ICAO Annex 10 and ZCARS part 7.

3.2. Operators of aircraft not equipped with SSR transponder and carrying out special aviation work (agricultural, construction, rescue and training) or performing one-shot flight may operate only on special authorization of the Director General of Civil Aviation Authority.

### 4 Requirements for ACAS II

4.1. All commercial aircraft operating in the airspace in Zambia with maximum certificated take-off mass exceeding 5700 kilograms or authorized to carry more than 19 passengers and non-commercial aircraft with maximum certificated take-off mass exceeding 15000 kilograms or authorized to carry more than 30 passengers shall be equipped with Airborne Collision Avoidance System (ACAS II) in compliance with the requirements of ICAO Annex 10.

4.2. Any airborne collision avoidance system installed on an aircraft in Zambia shall be approved by the Civil Aviation Authority.

4.3. Each person operating an aircraft equipped with an airborne collision avoidance system shall have that system on and operating.

### 5 Requirements for RVSM

a. In respect of groups of aeroplanes that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance, the height-keeping performance capability shall be such that the Total Vertical Error (TVE) for the group of aeroplanes shall have a mean no greater than 25 m (80 ft) in magnitude and shall have a standard deviation no greater than  $28 - 0.013z$  for  $0 \leq z \leq 25$  when  $z$  is the magnitude of the mean TVE in metres, or  $92 - 0.004z$  for  $0 \leq z \leq 80$  where  $z$  is in feet. In addition, the components of TVE shall have the following characteristics:

1. the mean Altimetry System Error (ASE) of the group shall not exceed 25 m (80 ft) in magnitude;
2. the sum of the absolute value of the mean ASE and of three standard deviations of ASE shall not exceed 75 m (245 ft); and
3. the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

b. In respect of aeroplanes for which the characteristics of the airframe and altimetry system fit are unique and so cannot be classified as belonging to a group of aeroplanes encompassed by paragraph 1, the height-keeping performance capability shall be such that the components of the TVE of the aeroplane have the following characteristics

1. the ASE of the aeroplane shall not exceed 60 m (200 ft) in magnitude under all flight conditions; and the differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential
2. The differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

### 6 Requirements for PBN/RNAV/RNP

6.1. Except for the State aircraft, all aircraft carrying out IFR flights in the controlled airspace in Zambia, except TMAs, shall have and use RNAV equipment based on all sensors meeting RNAV5 navigation specification requirements in accordance with ZCARS part 7.

6.2. Flight operations and air traffic control procedures are carried out according to the requirements of ICAO Docs 8168, 4444 and 7030 and Part 7 of the ZCARS.

#### 6.3 Navigation Specification

A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined Required Navigation Performance (RNP) specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

## **7 Equipment and flight documents to be carried by all types of flights**

7.1. Instrumental, radio and navigation equipment installed on civil aircraft corresponds to requirement of Chapter 6 and 7 of ICAO Annex 6 and Part 7 of ZCARS.

7.2. The following documents or copies thereof shall be carried on board the aircraft during the flight:

- a. Certificate of Registration of the aircraft;
- b. Certificate of Airworthiness of the aircraft;
- c. Certified copy of the Noise Certificate (if applicable), including an English translation;
- d. Certified copy of the Air Operator Certificate;
- e. the Aircraft Radio Licence
- f. the original or a copy of the Third Party Liability Insurance Certificate(s);
- g. Each flight crew member shall, on each flight, carry a valid flight crew licence with appropriate rating(s) for the purpose of the flight;
- h. the current parts of the Operations Manual(OM) relevant to the duties of the crew are carried on each flight;
- i. those parts of the OM which are required for the conduct of a flight are easily accessible to the crew on board the aeroplane;
- j. the current Aeroplane Flight Manual (AFM);
- k. Operational Flight Plan;
- l. ATS flight plan (FPL);
- m. NOTAM/AIS briefing documentation;
- n. Meteorological information;
- o. Mass and Balance documentation;
- p. Notification of special loads including dangerous goods including written information to the commander;
- q. Cargo manifest, passenger manifest;
- r. Forms to comply with the reporting requirements of the Authority and the Operator;

7.3. Current and suitable maps and charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted.

7.4. Procedures, as prescribed in ICAO Annex 2, for pilots-in-command of intercepted aircraft.

7.5. A list of visual signals for use by intercepting and intercepted aircraft, as contained in ICAO Annex 2.

## **8 Equipment to be carried on all internal and on certain flights**

8.1. On all flights with single-engine and that multi-engine aircraft not capable to maintain the prescribed minimum safe altitude in the event of engine failure, the following emergency equipment shall be carried.

8.2. Signalling equipment:

- a. An Emergency Locator Transmitter (ELT); with frequency of 121.500 MHz.
- b. Two signal flares of the day and night type;
- c. A signal sheet (1x1 m) in a reflecting color;
- d. A knife;
- e. An electric hand torch.

8.3. Survival equipment:

In accordance with ICAO Annex 6, Part 1 and ZCARS Part 7