



Barbados Civil Aviation
Department

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AIRWORTHINESS

ADVISORY

CIRCULAR

AIRCRAFT FIRE PRECAUTIONS

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AIRCRAFT FIRE PRECAUTIONS

INTRODUCTION. The purpose of this Airworthiness Advisory Circular is to state the BCAD mandatory requirements in order to minimise the risk of fire in aircraft.

1. Aircraft Seats And Berths — Resistance To Fire

1.1. Applicability

1.1.1. This is applicable to all seats and berths (except seats located within the flight deck) installed in Barbados registered aircraft (aeroplanes and rotorcraft) over 5700 kg MTWA.

1.1.2. For the purpose of this Notice, the term berths is taken to include such items as:

- (a) berth and stretcher mattresses,
- (b) couch cushion assemblies,
- (c) other similar upholstery assemblies.

1.2 Introduction.

1.2.1. Research into post-crash fire survivability has demonstrated that the overall flammability of seat upholstery materials is an important, and in many cases a dominant, factor in the rate at which a fire spreads through a cabin. Present-day seat cushions are typically constructed of flame-resistant polyurethane foam over which there is an upholstery covering. Both in the FAA fire programme and in a related UK programme at the Fire Research Station at Boreham Wood, fire tests have clearly demonstrated how, by encapsulating the seat cushion with a fire-blocking layer, the onset of ignition of the foam core can be delayed and thereby survival time within the fuselage can be extended.

1.3 Compliance.

1.3.1 All affected seats and berths fitted to aircraft defined in paragraph 1.1 above, shall comply with the requirements of this Circular.

1.4 Requirements

1.4.1. Each seat cushion (squab and back support), except those fitted to seats located within the flight deck, and berths, shall meet the requirements of JAR-25, Appendix F, Part II or FAR Part 25, Appendix F, Part II.

2. Cabin And Toilet Fire Protection.

2.1. Applicability.

Section 2 of this Airworthiness Advisory Circular is applicable to all Barbados registered aircraft (aero planes and rotorcraft) over 5700 kg MTWA operating for commercial air transport.

2.2. Introduction

2.2.1. There have been reported accidents in which a fire in a waste receptacle was uncontained and developed into a major in-flight, and subsequently a post-crash, fire with high number of fatalities.

2.2.2. The purpose of this Section of the Circular is to publish requirements for the provision of:

- (a) smoke detection in each toilet compartment;
- (b) a minimum number of passenger-cabin-mounted Halon 1211 (BCF) fire extinguishers;
- (c) an increase in the minimum number of handheld fire extinguishers in the passenger cabin.

2.2.3. Section 2 of this Circular takes into account FAR Part 121.308 and 121.309. It also equates to JAR 25.854, JAR 29.853(f).

2.3 Compliance

2.3.1 All aircraft defined in paragraph 2.1 above shall comply with the requirement of paragraph 3.1 of this Circular.

3.1 Requirements

3.1.1 Each toilet compartment shall be equipped with a smoke detection system approved, in accordance with the requirements of JAR-21 Subparts E or K, which provide a warning light and/or aural warning in the passenger cabin, so located as to be readily seen or heard by a flight attendant performing his / her normal duties throughout the flight, and/or a warning light on the flight deck.

3.1.2 In addition to the extinguishers provided for use in the flight deck, accessible cargo compartments and upper and lower deck galleys, there shall be at least the following number of approved handheld fire extinguishers, strategically located throughout the passenger compartment:

Passenger Seating Capacity	No. of Extinguishers
Up to 60	2
61-200	3
201-300	4
301-400	5
401-500	6

3.1.3. At least half, but not less than two, of the required handheld extinguishers installed in the passenger cabin shall contain HALON 1211 or its equivalent as the extinguishing agent

4.1 Additional requirements.

4.1.1. Compliance with FAR Part 121.308 and 121.309 will satisfy the requirements of section 2 of this Circular.

4.1.2. The built-in fire extinguisher called for in FAR Part 121.308 for each toilet compartment waste receptacle for the disposal of towels, paper and waste although not required by this section, are nevertheless, recommended.

4.1.3. It is recommended that, wherever possible, the use of access points and / or built-in distribution spray systems should be provided so as to ensure an effective distribution of extinguishant from a handheld fire extinguisher into toilet compartment waste receptacles and adjacent regions.

5. Fire Precautions Aircraft Toilets

5.1 Applicability

Section 3 of this Circular is applicable to all aircraft over 5700 kg operating for commercial air transport.

5.2. Introduction

5.2.1 The results of surveys conducted by Regulatory Authorities have shown that in some instances the design of receptacles (eg. towel dispensers, waste containers), provided within toilet areas for the carriage of flammable materials and in particular flammable waste, does not comply with the current interpretation of published airworthiness requirements. In other instances the receptacles are not sufficiently robust to withstand the effects of wear and deterioration in service. Surveys have also showed that, regardless of notices prohibiting smoking in toilets, smoking does occur, and that, even when ashtrays are provided, they are often not used, and cigarette ends are deposited in other receptacles.

5.2.2 The purpose of this Circular is to publish requirements aimed at reducing the probability of persons smoking in toilet compartments and at minimising the potential fire hazard caused by persistent smokers.

5.3. Requirements

5.3.1. Inspection

At intervals not exceeding 72 hours elapsed time, or at such other intervals as may be agreed with the BCAD on the basis of available data, the following inspection shall be performed:

(a) All receptacles shall be inspected to ascertain that all entry flaps or doors still operate, fit, seal and latch correctly, ashtrays are fitted, notices installed and receptacle stowage compartment is clean with all debris removed.

(b) Any defects revealed by the inspection of (a) are corrected.

This inspection shall be included in the Maintenance Programme using the normal procedure.

5.4. Prohibition of Smoking in Toilet Compartments

5.4.1 Smoking shall not be permitted in toilet compartments.

5.4.2. No Smoking placards and ashtrays are required both inside and outside these compartments.

5.4.3 The No Smoking placards shall be displayed so as to be prominent to, and the ashtrays shall be obviously and conveniently placed for, those about to enter and those within these compartments.

5.5. Interpretation of Requirements

5.5.1. All receptacles used for towels, papers and waste, shall be constructed of materials resistant to fire. The receptacles shall incorporate covers or other provisions for containing fires if started in the receptacles.

5.5.2 For compliance to be shown, such receptacles (see 5.5.4 for towel dispensers) shall be constructed of materials which are flame resistant*, and which in addition, will retain sufficient mechanical properties as to contain such a fire as may develop by burning of materials such as paper towels within the receptacle. (It should be noted that although a thermoplastic material may be flame resistant it would not necessarily retain adequate mechanical properties in the case of a fire.) The receptacle shall be completely enclosed with the exception of a self-closing entry flap or door, which itself shall be rigid, and when closed, form as airtight a seal as is practicable. Entry flaps or doors shall be designed so that they remain self-closing even after exposure to a fire within the receptacle.

NOTE: *Suitable methods for flame resistance testing are contained in JAR-25 Appendix F

5.5.3 It is, however, permissible for receptacles to be open topped provided that they are mounted in a cabinet which itself complies with 5.5.2. In this instance, the door of the cabinet shall be of a robust construction and such as to ensure an adequate seal and to withstand misuse in service. Such cabinets shall not contain other flammable materials, potential fire sources (e.g. electrical apparatus) or apertures which would either allow air to feed a fire or permit a fire to spread beyond the cabinet (e.g. through apertures provided for services).

5.5.4 It is accepted that some receptacles, e.g. paper towel dispensers, cannot readily be designed to meet the above requirements. In such instances they shall be so designed and positioned within the compartment to ensure that:

- (a) the likelihood of the depositing of cigarette ends, etc., into them is minimised, and
- (b) a fire, which could be expected to start in another container, cannot readily spread to them; for example, a paper towel dispenser must not be positioned adjacent to, or immediately above, either the entry flap or door of a waste container or an ashtray provided in the compartment.