

**DEPARTMENT OF CIVIL AVIATION
MALAYSIA
AIRWORTHINESS NOTICE**

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Date: 1 July 1991

FLOOR PROXIMITY EMERGENCY ESCAPE PATH MARKING

1. Applicability

All Malaysian registered aeroplanes above 5700 kg MTWA for which a Type Certificate was first issued by an ICAO Contracting State on or after 1 January 1958 and which are:-

- (a) certificated in the Transport (Passenger) Category and
- (b) required to be equipped with an emergency lighting system to provide illumination in the passenger compartment sufficient to facilitate the evacuation of the aircraft.

2. Introduction

- 2.1 Internal emergency lighting systems, to facilitate the rapid evacuation of passengers in an emergency situation during conditions of darkness, are generally located in the overhead area. This not only optimises the protection of the lighting units and associated wiring but also makes the most economic use of available illumination in meeting the required minimum lighting levels. In a post-crash fire (where the fire enters the occupied compartments) overhead emergency lighting may soon become obscured by buoyant smoke and the lighting system may then be effectively lost.
- 2.2 A series of tests has been completed in the United States to evaluate practical ways of assisting passengers in finding exits under conditions of deteriorating visibility. The conclusion drawn from the test was that while there was no particular optimum solution, floor proximity lighting combined with conspicuous markers could provide the necessary clues to escaping passengers in search of the emergency exits in these conditions.
- 2.3 The FAA has now amended FAR Part 25 (amendment 25.58) to require on future aircraft types the provision of emergency evacuation guidance for passengers when all sources of illumination more than 4 feet above the cabin aisle floor are obscured by smoke. A companion amendment (121.183) to FAR Part 121.310 requires the provision of floor proximity emergency escape path marking for aircraft type certificated after the 1 January 1958 no later than 25 November, 1986. Similar requirements have been introduced by the CAA. The DCA has decided that the same requirements should be made mandatory for Malaysian registered aeroplanes, but with a later compliance date.

3. Compliance

With effect from the 1 December 1987 all aeroplanes included in paragraph 1 of this Notice must be in compliance with the requirements of paragraph 4.

4. Requirements

- 4.1 In addition to meeting the existing emergency lighting requirements of FAR 25.812, BCAR Chapter D4-3, JAR 25.812 or Airworthiness Notice No. 21 as applicable, each affected aeroplane must be provided with visible illuminated floor proximity emergency escape path markings which meet the standards of FAR 25.812(e) at Amendment 25.28 or JAR 25:812(e) at Change 12.

5. Interpretation of Requirements.

- 5.1 A floor proximity escape path marking system is an objective requirement and, therefore, the DCA does not wish to specify detailed means of compliance. Nevertheless, the following guidance information is provided with the objective of ensuring a consistent and uniform interpretation of the requirement.
- 5.2 The markings and illumination provided should enable the passenger to visually identify the escape path along the cabin aisle floor.

NOTE: It is not necessary to provide visual guidance to enable passengers to move from their seat to the cabin aisle.
- 5.3 The illumination should be of sufficient intensity to enable the passenger to identify features bounding the cabin aisle.

5.4 Where exits are to be found in one direction only, the system should not tend to lead the passenger towards the end of the cabin where there are no exits.

5.5 The escape path marking, coupled with exit markings, should be so arranged that a passenger will not tend to proceed along the cabin aisle past any available exits. It is recommended that conspicuous markers be placed at the point of access from the cabin aisle to the exit

5.6 Exit Identification

5.6.1 Only those exits which are either 'designated' emergency exits or 'excess' emergency exits should be identified by the floor proximity emergency escape path marking system.

NOTE: 'Designated' emergency exits are the minimum required for the certificated passenger capacity. 'Excess' emergency exits are additional exits to the minimum required which satisfy the same arrangement, marking and lighting requirements as for 'designated' exits and which are also readily accessible.

5.6.2 The exit should be positively identifiable to enable a passenger to proceed to it without hesitation in conditions where the exit is either open or closed. All exits likely to be available for use in an emergency should, therefore, have exit identifiers.

5.6.3 Exit identifiers of floor level exits need to be located so that they can be seen directly when adjacent to the last aisle marker, or in the case of a flood-lit system, within the flood-lit zone, and viewed on the vertical centre line of the aisle at a height no more than 4 feet above the cabin floor level. Additional cues to a passenger may, however, be provided as an alternative such as horizontally mounted exit identifiers located on an aft or forward bulkhead in the vestibule leading to an exit and within direct line of sight of a passenger when approaching the vestibules from the aisle.

5.6.4 Exit identifiers should, wherever practicable, be located at such a distance from the floor that they will not be obscured by any strewn hand baggage likely to be present in an emergency evacuation. It is, therefore, recommended that exit identifiers be located between 18 inches and 4 feet above the cabin floor level.

5.6.5 Where exit identifiers are mounted on cabin sidewalls and located close to passenger seats, they should be visible from the aisle with the seat next to the identifier occupied. This takes account of a passenger seated next to an exit being incapacitated. (A passenger slumped forward or sideways should also be considered).

5.7 Escape Path Markings along Cabin Aisle Floor

5.7.1 Where single point incandescent type or electro-luminescent strip type floor track markers are employed, the DCA recommends a distance between markers no greater than 20 inches (thus permitting a maximum distance between markers of 40 inches under typical Minimum Equipment List (MEL) conditions).

NOTE: Where incandescent lights are installed on the side of seats the distance between lights should not exceed 40 inches.

5.7.2 Floor track cabin aisle markers should be clearly visible when viewed from the aisle centre line at a height of 4 feet above the cabin floor.

5.7.3 At each end of a passenger cabin it is recommended that there are red/orange floor track cabin aisle markers (either, at least two closely spaced incandescent markers or, a short length of, electroluminescent strip) to highlight clearly the ends of the aisle.

5.8 Escape Path 'Flood Lighting' of Cabin Aisle

5.8.1 Where a 'flood lighting' system is employed the maximum distance between light sources is to be agreed with the DCA and this will be dependant upon the Intensity and distribution of light available.

5.9 Aisle Cues for Overwing Exits

- 5.9.1 Floor track marking system aisle cues for overwing exits are recommended to comprise three, with a minimum of two, closely spaced red/orange markers or a suitable length of red/orange strip-lighting, adjacent to the access route to overwing exits.
- 5.9.2 Where access to an overwing exit is achieved by a dual access route, the aisle cues should be located at the entrance to both access routes or be located so as not to bias one route when compared with the other.
- 5.9.3 Escape Path 'flood lighting' systems do not normally provide adequate aisle cues for overwing exits and should be complemented by the provision of some discrete cues so located that they can be seen by a passenger at a maximum height of 4 feet above the cabin floor when moving down the aisle (strobe lights are not considered to be effective cues, especially when smoke is present).

5.10 Cross Aisle Escape Path Markings

A similar level of floor proximity escape path marking/illumination to that provided for the cabin main aisles should be provided in cross aisles on multi-aisle aircraft. .

5.11 The 25 Percent Rule

- 5.11.1 Each escape path marking system is required to meet existing FAR/JAR 25.812 requirements. In particular FAR/JAR 25.812(k)(i) requires that not more than 25% of the escape path marking system lights are rendered inoperative after any single transverse vertical separation.
- 5.11.2 For systems in which the lights are controlled by remote transmitters there must be sufficient transmitters installed to ensure that the FAR/JAR 25.812(k)(i) requirement can be met even though, in a crash, there may be a considerable distance between the two vertically separated parts of the fuselage.

6. Additional Information

The DCA wishes to benefit from the expertise of regulatory authorities experienced in this field and will normally expect Malaysian operators to embody modifications which have previously been approved by the FAA or the CAA, in meeting the requirement of this Notice. Only in the most exceptional circumstances will the DCA consider applications for approval of modifications designed by operators.

7. Cancellation

This Notice cancels Airworthiness Notice No. 56, Issue 1, dated 1 April, 1987, which should be destroyed.

DIRECTOR GENERAL
DEPARTMENT OF CIVIL AVIATION
MALAYSIA.