

Advisory Circular

LEVEL OF RESCUE AND FIRE FIGHTING SERVICE PROTECTION AVAILABLE

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GENERAL

Advisory Circulars (ACs) are issued by the Director-General of Civil Aviation (DGCA) from time to time to provide practical guidance or certainty in respect of the statutory requirements for aviation safety. ACs contain information about standards, practices and procedures acceptable to CAAS. An AC may be used, in accordance with section 3C of the Air Navigation Act (Cap. 6) (ANA), to demonstrate compliance with a statutory requirement. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.

PURPOSE

This AC provides to demonstrate compliance with, and information on assessing the level of rescue and fire-fighting service (RFFS) protection available at the aerodromes to be used.

APPLICABILITY

This AC is applicable for the AOC holder operating in accordance with Air Navigation (121 – Commercial Air Transport by Large Aeroplanes) Regulations, ANR-121.

RELATED REGULATIONS

This AC relates specifically to Regulation 35 of ANR-121.

RELATED ADVISORY CIRCULARS

- AC 121-2-1 Guidance on Operational Procedures for ANR-121 Operations

CANCELLATION

This AC supersedes AC AOC-31.

EFFECTIVE DATE

This AC is effective from 1 October 2018.

OTHER REFERENCES

- ICAO Annex 6 Part I
- ICAO Annex 14 Volume 1
- ICAO Doc 9137-AN/898 Part I

1 INTRODUCTION

- 1.1 This AC provides guidance to the AOC holder for assessing aerodrome RFFS protection level in the event that the aerodrome RFFS category is unable to meet the aeroplane RFFS category. This AC also reminds the AOC holder to conduct relevant risk assessment relating to RFFS.
- 1.2 Whilst the principal objective of a RFFS is to save lives in the event of an aircraft accident or incident occurring at, or in the immediate vicinity of an aerodrome, the AOC holder has an equal part to play in meeting the objective by ensuring that the crew are competent to evacuate the passengers safely and expeditiously. In many instances, an adept crew have prevented or at least minimized the loss of life prior to the arrival of the RFFS.

2 ACCEPTABLE AERODROME RFFS PROTECTION LEVEL

- 2.1 For flight planning purposes, the AOC holder should plan to use an aerodrome that has a published RFFS category that is equal to or better than the aeroplane's RFFS category. However, if the aeroplane's RFFS category is not available at the aerodrome required to be specified in the operational flight plan, the AOC holder should ensure that the aerodrome has the minimum level of RFFS which is deemed acceptable based on a risk assessment conducted as part of the AOC holder's safety management system (SMS). When establishing acceptable levels of RFFS for these situations, the operator may use the criteria in Table 1 and Table 2. Notwithstanding these criteria, the operator may determine other acceptable levels of RFFS protection in accordance with paragraph 3 of this AC.
- 2.2 Some considerations that may be taken into account in an AOC holder's risk assessment can be found in **Appendix A**.
- 2.3 In order to determine the acceptability of an aerodrome RFFS protection level, the AOC holder should consider:
 - (a) For a departure or destination aerodrome, the difference between the aerodrome RFFS category and the aeroplane RFFS category, and the frequency of flights to that aerodrome; and
 - (b) For an alternate aerodrome, the difference between the aerodrome RFFS category and the aeroplane RFFS category, and the probability that this alternate aerodrome will be used.
- 2.4 When establishing acceptable aerodrome RFFS protection levels at flight planning, the AOC holder may refer to Table 1, for departure and destination aerodromes, and Table 2 for alternate aerodromes.

Table 1: Acceptable Aerodrome RFFS Protection Level for Departure and Destination Aerodromes

Aerodromes (Required to be specified in the operational flight plan)	Acceptable aerodrome RFFS Protection Level (Based on aerodrome RFFS category)
Departure and destination aerodrome	RFFS category for each aerodrome should be equal to or better than the aeroplane RFFS category. Where a suitable risk assessment has been conducted by the AOC holder: <ul style="list-style-type: none"> • One category below the aeroplane RFFS category; or • Two categories below the aeroplane RFFS category, in the case of a temporary downgrade of 72 hours or less; <i>but</i> not lower than aerodrome RFFS Category 4 for aeroplanes with maximum certificated take-off mass of over 27 000 kg and not lower than Category 1 for other aeroplanes.

Table 2: Acceptable Aerodrome RFFS Protection Level for Alternate Aerodromes

Aerodromes (Required to be specified in the operational flight plan)	Acceptable aerodrome RFFS protection level. (Based on aerodrome RFFS category)
Take-off alternate and destination alternate aerodromes	<ul style="list-style-type: none"> • Two categories below the aeroplane RFFS category; or • Three categories below the aeroplane RFFS category in the case of a temporary downgrade of 72 hours or less; <i>but</i> not lower than aerodrome RFFS Category 4 for aeroplanes with maximum certificated take-off mass of over 27 000 kg and not lower than Category 1 for other aeroplanes
En-route alternate aerodromes	If at least 30-minute notice [#] is given to the aerodrome operator prior to the arrival of the aeroplane, a minimum of RFFS Category 4 for aeroplanes with maximum certificated take-off mass of over 27 000 kg, and RFFS Category 1 for other aeroplanes. If less than 30-minute notice [#] can be given to the aerodrome operator prior to the arrival of the aeroplane: - <ul style="list-style-type: none"> • Two categories below the aeroplane RFFS category; or • Three categories below the aeroplane RFFS category in the case of a temporary downgrade of 72 hours or less; <i>but</i> not lower than aerodrome RFFS Category 4 for aeroplanes with maximum certificated take-off mass of over 27 000 kg and not lower than Category 1 for other aeroplanes.

[#]Note: The AOC holder must clearly state the 30-minute notice requirement in its Operational Documentation mandating that the PIC complies with the requirement.

- 2.5 If an individual aerodrome serves more than one purpose, the highest required category corresponding to that purpose at the time of expected use applies.
- 2.6 For an all-cargo operation, further reductions might be acceptable provided that the RFFS capability is adequate to arrest fire around the flight deck area for the persons on board to safely evacuate the aeroplane.

3 VARIATIONS FROM THE ACCEPTABLE AERODROME RFFS PROTECTION LEVEL

- 3.1 The AOC holder may consider using an aerodrome with an aerodrome RFFS category below the acceptable aerodrome RFFS protection level in Tables 1 and 2. This should only be considered after the AOC holder has performed a specific risk assessment relating to such a situation.
- 3.2 The following are some situations where a variation to the acceptable aerodrome RFFS protection level in Table 1 and Table 2 may be considered:
 - (a) An occasional flight;
 - (b) Regular flights for which a similar aerodrome is selected for the same purpose, for a given aeroplane type; and
 - (c) Temporary downgrades exceeding 72 hours.

Where applicable, a variation may be used for a group of aerodromes selected for the same purpose, for a given aeroplane type.

- 3.3 The abovementioned variations may be based on additional or other criteria relevant to the type of operations. For instance, the 72-hour threshold for RFFS temporary downgrades may not be relevant for a single flight to or from the aerodrome concerned, such as a non-scheduled flight, whereas it is fully relevant for operations carried out on a continuous and daily basis. A variation should be time limited. A variation should also be modified to reflect the changes of the RFFS protection level available at the aerodrome concerned. Information related to the level of RFFS protection that is deemed acceptable by the AOC holder (e.g. variations and their validity period) should be contained in the operations manual.
- 3.4 For variations to acceptable aerodrome RFFS protection levels at planned departure and destination aerodromes, the risk assessment should include consideration of the following:
 - (a) The frequency of flights intended by the AOC holder in relation to a lowered RFFS protection level as permitted in Table 1; and
 - (b) Coordination between the AOC holder and the aerodrome operator (for instance, reducing intervention time by prepositioning the existing RFFS means along the runway before the intended take-off or landing). For a regular flight, the coordination between the AOC holder and aerodrome operator should take into account the possibility to modulate the RFFS protection level available on a daily cycle or seasonal cycle.

- 3.5 For variation to acceptable aerodrome RFFS protection levels at a planned alternate aerodrome, the risk assessment should include consideration of the following:
- (a) The probability of effective use of the aerodrome concerned; and
 - (b) The frequency of the selection of the aerodrome for the respective purpose of use.

4 INFLIGHT USE OF ACCEPTABLE AERODROME RFFS PROTECTION LEVEL

- 4.1 The information published in the operations manual about the acceptable aerodrome RFFS protection level is applicable at the in-flight re-planning point.
- 4.2 The pilot-in-command may decide to land at an aerodrome regardless of the RFFS category if, in the pilot's judgment after due consideration of all prevailing circumstances, to do so would be safer than to divert.

5 ACTION BY THE AOC HOLDER

- 5.1 The AOC holder should review his safety risk assessment in the various changing circumstances and to ensure that his operations manual is updated accordingly.

APPENDIX A CONSIDERATIONS IN AN AOC HOLDER'S RISK ASSESSMENT

- 1 The AOC holder should complete a detailed risk assessment for any deviations from the guidance material as mentioned in this Advisory Circular.

- 2 The risk assessment should at least contain elements such as prevention and mitigation of in-flight fire and cabin crew training to ensure expeditious evacuation of passengers. Some of these considerations are listed below but are not exhaustive.
 - (a) Operation philosophy and training which are geared towards preventing and suppressing in-flight fire or any conditions that leads to such fire;
 - (b) Aeroplane cabin designed with consideration toward unimpeded passenger flow during emergency evacuation;
 - (c) Crew proficiency in evacuation procedures as well as in post evacuation management of passengers;
 - (d) Policy on minimum crew complement and crew experience;
 - (e) MEL dispatch policy on aeroplane exits and evacuation slides; and
 - (f) Awareness programme on hazards such as runway incursion and excursion during aerodrome surface movements, especially under conditions of restrictive visibility.

- 3 To assist preparation of the risk assessment, the AOC holder may find the information contained in the following publications useful: -
 - (a) Airport Cooperative Research Program (ACRP) Web-Only Document 12: Risk Assessment of Proposed Aircraft Rescue and Fire Fighting (ARFF) Standards.
 - (b) Initial and Recurrent Training for ARFF Highlight of International Differences. ARFF Solution.
 - (c) National Transportation Safety Board (NTSB) PB2000-917002 NTSB/SS-00/01 Safety Study Emergency Evacuation of Commercial Airplane.
 - (d) Flight Safety Foundation Reducing the Risk of Runway Excursions.
 - (e) International Federation Air Line Pilots' Associations (IFALPA) Runway Safety Manual.