



Notice of Proposed Amendment 2015-09

Rescue and Firefighting Services (RFFS) at aerodromes

RMT.0589 — 9.7.2015

EXECUTIVE SUMMARY

This Notice of Proposed Amendment (NPA) addresses safety and proportionality issues related to the provision of rescue and firefighting services (RFFS) at aerodromes.

The specific objective of this NPA is to establish and maintain a high uniform level of civil aviation safety in the field of aerodrome operations, by clarifying and offering adequate guidance on the provision of RFFS. The proposal also introduces new requirements included in ICAO Annex 14 (sixth edition), as well as Guidance Material from ICAO Doc 9137, Part 1, (fourth edition), thereby fulfilling the European Union's commitment to support Member States (MSs) to meet their obligations towards ICAO.

This NPA proposes changes to the existing Acceptable Means of Compliance (AMC) and Guidance Material (GM) annexed to ED Decision 2014/012/R. More specifically, it introduces a new method of determining the RFFS level of protection required for all-cargo, mail, ferry, training, test and end-of-life aeroplane operations. It also clarifies the role and responsibilities of RFFS and the calculation of the required quantities of extinguishing agents, and ensures a consistent application of a method for reducing the RFFS level of protection, the so-called 'remission factor'. Finally, it strengthens the requirement for rescue and firefighting (RFF) vehicles and equipment maintenance, by including them into the aerodrome maintenance program.

The proposed changes are expected to establish and maintain a high level of safety, increase the requirements' cost-effectiveness in the existing AMC/GM applicable to aerodromes and their operators, strengthen harmonisation across MSs and ensure compliance with ICAO.

Applicability		Process map	
Affected regulations and decisions:	ED Decision 2014/012/R	Concept Paper:	No
Affected stakeholders:	Aerodrome operators	Terms of Reference:	10.4.2014
Driver/origin:	Safety/proportionality and cost-effectiveness	Rulemaking group:	Yes
Reference:	N/A	RIA type:	Light
		Technical consultation during NPA drafting:	Yes
		Duration of NPA consultation:	3 months
		Review group:	Yes
		Focussed consultation:	Yes
		Publication date of the Opinion:	N/A
		Publication date of the Decision:	2015/Q4



Table of contents

1. Procedural information	3
1.1. The rule development procedure.....	3
1.2. The structure of this NPA and related documents	3
1.3. How to comment on this NPA	4
1.4. The next steps in the procedure.....	4
2. Explanatory Note.....	5
2.1. Overview of the issues to be addressed.....	5
2.2. Objectives	6
2.3. Summary of the Regulatory Impact Assessment (RIA).....	6
2.4. Overview of the proposed amendments	6
3. Proposed amendments	7
3.1. Draft Acceptable Means of Compliance and Guidance Material (Draft EASA Decision).....	7
4. Regulatory Impact Assessment (RIA)	17
4.1. Issues to be addressed	17
4.1.1. Who is affected?.....	19
4.1.2. How could the issue/problem evolve?.....	19
4.2. Policy options	20
4.3. Analysis of impacts	20
4.3.1. Safety Impact.....	20
4.3.2. Environmental impact	21
4.3.3. Social impact.....	21
4.3.4. Economic impact	21
4.3.5. General Aviation (GA) and proportionality issues.....	22
4.3.6. Impact on 'Better Regulation' and harmonisation	22
4.4. Comparison and conclusion	23
4.4.1. Comparison of options	23
5. References.....	24
5.1. Affected regulations	24
5.2. Affected CS, AMC and GM.....	24
5.3. Reference documents.....	24



1. Procedural information

1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed this Notice of Proposed Amendment (NPA) on RFFS at aerodromes in line with Regulation (EC) No 216/2008¹ (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure².

This rulemaking activity on RFFS at aerodromes is included in the [4-year Rulemaking Programme](#) under RMT.0589. This NPA is based on the related [Terms of Reference \(ToR\) RMT.0589 Issue 1](#), published on 10 April 2014. The objectives of this rulemaking activity were to propose requirements for the medical fitness of RFF personnel at aerodromes and to elaborate the extended application of the 'remission factor' to all-cargo, mail and other specialised aeroplane operations.

The working method used for the elaboration of the amendments proposed in this NPA was 'rulemaking group'. The rulemaking group included representatives from authorities and aerodrome operators having the relevant expertise to achieve the objectives of the rulemaking task.

Nevertheless, the Agency, following a proposal by the rulemaking group, and considering the fact that medical fitness requirements are very complex, thus further in-depth analysis was required, decided to publish two separate NPAs. This NPA addresses the application of the 'remission factor' to RFFS while another NPA, which will be developed later this year, will address the medical fitness requirements for RFF personnel.

The text of this NPA has been developed by the Agency based on the input of the Rulemaking Group RMT.0589. Prior to the issuance of the NPA, the proposed text had been consulted with the relevant EASA Advisory Bodies (TAG Aerodromes and Sub-SSCC Aerodromes). It is hereby submitted for consultation of all interested parties³.

The process map on the title page contains the major milestones of this rulemaking activity to date and provides an outlook of the timescale of the next steps.

1.2. The structure of this NPA and related documents

Chapter 1 of this NPA contains the procedural information related to this task. Chapter 2 (Explanatory Note) explains the core technical content. Chapter 3 contains the technical content of this NPA. Chapter 4 comprises the Regulatory Impact Assessment (RIA), showing which options were considered and what impacts were identified, thereby providing the justification for this NPA.

¹ Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1).

² The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision concerning the procedure to be applied by the Agency for the issuing of Opinions, Certification Specifications and Guidance Material (Rulemaking Procedure), EASA MB Decision No 01-2012 of 13 March 2012.

³ In accordance with Article 52 of the Basic Regulation and Articles 5(3) and 6 of the Rulemaking Procedure.



1.3. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/>⁴.

The deadline for submission of comments is **9 October 2015**.

1.4. The next steps in the procedure

Following the closing of the NPA public consultation, the Agency will review all comments. The Agency will convene review groups and conduct focussed consultation to address the comments and coordinate the final text.

The outcome of the NPA public consultation as well as of the focussed consultation will be reflected in the respective Comment-Response Document (CRD).

The Agency will strive to publish the CRD together with the Decision containing Acceptable Means of Compliance (AMC) and Guidance Material (GM) within 3 months after the end of the NPA consultation period.

⁴ In case of technical problems, please contact the CRT webmaster (crt@easa.europa.eu).



2. Explanatory Note

Background

From 2010 until 2014, the Agency developed, consulted and finally proposed under ADR.002(a) and ADR.002(b) Implementing Rules (IRs), Acceptable Means of Compliance (AMC) and Guidance Material (GM) for the provision of operational services at aerodromes, including RFFS. The proposed IRs were included in Regulation (EU) 139/2014⁵, and the relevant AMC and GM in ED Decision 2014/012/R.

During the preparation of the aforementioned IRs and the related AMC and GM, the rulemaking group highlighted that the Agency should take also into account all-cargo aeroplane operations (Note 1 to Standard 9.2.6 of ICAO Annex 14, Vol I (fifth edition)) when establishing the required RFF level of protection at an aerodrome.

At that time, ICAO guidance on this issue was not available for transposition into the European Rules. Therefore, the rulemaking group that was working on the initial aerodrome operations rules decided to develop only GM given the time constraints and the complex issues that had to be addressed. The group recommended that the Agency should address the area of RFFS separately with the support of a new rulemaking group composed of experts in RFFS.

The approach taken by the Agency towards achieving RMT.0589

For the above-mentioned reasons, the Agency drafted the ToR RMT.0589, and shortly thereafter a rulemaking group composed of experts both from National Aviation Authorities (NAAs) and the aerodrome industry was established to assist the Agency in preparing this NPA. The rulemaking group met four times to discuss the issues and develop proposals.

The group reviewed all the existing provisions on RFFS of Regulation (EU) No 139/2014 and concluded that revision was only necessary for AMC/GM. Furthermore, the rulemaking group proposed:

- to extend the existing provisions applicable to all-cargo and mail aeroplane operations to ferry, training, test and end-of-life aeroplane operations since they have similar characteristics in terms of crew and passengers on-board the aeroplane;
- to provide detailed GM concerning the determination of the RFF level of protection;
- to amend the existing AMC/GM, where necessary, in order to provide clarity on their application; and
- to address ICAO Annex 14 Standards and Recommended Practices (SARPS) that had not been transposed into the initial AMC.

2.1. Overview of the issues to be addressed

The proposals contained in this NPA address issues related to the provision of RFFS at aerodromes. They clarify the conditions under which the RFF level of protection at aerodromes may be reduced ('remission factor'), the role and the scope of RFFS, the calculation of the required extinguishing agents when the RFF level of protection is reduced, the meaning of the response time, and they clarify

⁵ Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council Text with EEA relevance (OJ L 44, 14.2.2014, p. 1).



which RFF vehicles should be included in the minimum number of RFF vehicles required. Finally, they strengthen the requirement for the RFF vehicles and equipment to be part of the aerodrome maintenance programme.

For a more detailed analysis of the issues addressed by this proposal, please refer to the Regulatory Impact Assessment (RIA), Chapter 4.1. **'Error! Reference source not found.'**

2.2. Objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. The principal objective of the Basic Regulation is to establish and maintain a high uniform level of safety while additional objectives are to promote efficiency in the regulatory process, assist the MSs in fulfilling their obligations under the Chicago Convention, and provide a level playing field in the internal aviation market. This proposal will contribute to the achievement of those objectives by addressing the issues outlined in Chapter 2.1 of this NPA.

The specific objectives of this proposal are:

- to ensure that the RFF level of protection at aerodromes serving all-cargo, mail, training, test, ferry, and end-of-life aeroplane operations is proportionate to these types of traffic and their particular requirements; and
- to ensure a more transparent implementation of the option to reduce the RFFS level of protection at aerodromes under certain circumstances ('remission factor').

2.3. Summary of the Regulatory Impact Assessment (RIA)

Please refer to Chapter 4 for the detailed RIA.

2.4. Overview of the proposed amendments

Please refer to Chapter 4.1 of this NPA 'Issues to be addressed'.



3. Proposed amendments

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

- (a) deleted text is marked with ~~strike through~~;
- (b) new or amended text is highlighted in grey;
- (c) an ellipsis (...) indicates that the remaining text is unchanged in front of or following the reflected amendment.

3.1. Draft Acceptable Means of Compliance and Guidance Material (Draft EASA Decision)

GM1 ADR.OPS.B.010(a)(1) Rescue and firefighting services

AVAILABILITY AND SCOPE OF RESCUE AND FIREFIGHTING SERVICES

Public or private organisations, suitably located and equipped, could be designated to provide the rescue and firefighting service. The fire station housing these organisations should normally be located on the aerodrome, although an off-aerodrome location is not precluded, provided that the response time can be met. The scope of the rescue and firefighting services is to save lives in the event of an aircraft accident or incident occurring at, or in the immediate surroundings of, the aerodrome. The operational objective is to create and maintain survivable conditions, to provide egress routes for occupants, and to initiate the rescue of those occupants unable to make their escape without direct aid. Ambulance/Medical services are out of the scope of ADR.OPS.B.010, however, relevant provisions concerning their role during an emergency situation should be in place in the Aerodrome Emergency Plan (AEP).

AMC2 ADR.OPS.B.010(a)(2) Rescue and firefighting services

RFFS LEVEL OF PROTECTION

- (a) The aerodrome operator should ensure that:
 - ~~(1) the level of protection normally available at an aerodrome is determined and expressed in terms of the category of the rescue and firefighting services (RFF aerodrome category) as described below and in accordance with the types, amounts, and discharge rates of extinguishing agents normally available at the aerodrome; and~~
 - (1) the RFF aerodrome category for rescue and firefighting is determined according to the Table 1, based on the longest aeroplanes normally expected to use the aerodrome and their fuselage width. If, after selecting the category appropriate to the longest aeroplane's overall length, that aeroplane's fuselage width is greater than the maximum width in Table 1, column 3, for that category, then the category for that aeroplane should actually be one category higher.
 - (2) the rescue and firefighting services level of protection provided is appropriate to the aerodrome category determined using the principles in (1), except that, where the number of movements (landing or take-off) of the aeroplanes performing passenger transportation in the highest category expected to use the aerodrome is less than 700 in



the busiest consecutive three months, the level of protection provided in accordance with (1) above may be reduced by no more than one category below the determined one.

(...)

(b) Notwithstanding (a), The the aerodrome operator may, should ensure that during anticipated periods of reduced activity (e.g. specific periods of the year or day), reduce the rescue and firefighting level of protection available at the aerodrome. In this case:

(1) the level of protection is should be no less than that needed for the highest category of aeroplane planned to use the aerodrome during that time, irrespective of the number of movements; and

(2) the periods of aerodrome operation with reduced rescue and firefighting level of protection should be published in the Aeronautical Information Publication (AIP) or through Notice to Airmen (NOTAM).

(c) ~~Reduction of the level of protection for rescue and fire fighting as determined in accordance with Table 1, may be accepted by the Competent Authority.~~ The level of protection required for all-cargo, mail, ferry, training, test, and end-of-life aeroplane operations, including those carrying dangerous goods, irrespective of the number of movements, may be reduced in accordance with Table 2 as follows:

Aerodrome category	Reclassification of aerodrome category required for all-cargo and mail aeroplanes
1	1
2	2
3	3
4	4
5	5
6	5
7	6
8	6
9	7
10	7

(d) The aerodrome operator, in order to assess the rescue and firefighting services level of protection to be provided at the aerodrome is appropriate to the aerodrome rescue and firefighting category, should, at least once every six months, forecast the aeroplane traffic



expected to operate at the aerodrome for the next twelve month period. In doing so, the aerodrome operator may use all information available from aeroplane operators as well as statistics of aeroplane movements during the year preceding the day of review.

- (e) Unforeseen circumstances leading to temporary reduction of the level of protection of the aerodrome rescue and firefighting services are considered as unplanned events that lead to unavailability of facilities, equipment and resources.
- (f) Exceptionally, the aerodrome operator may accept aeroplanes, whose required category is higher than the level of protection provided by the aerodrome, when declaring an emergency situation or when the pilot-in-command considers that diversion to another aerodrome might adversely affect flight safety.

AMC3 ADR.OPS.B.010(a)(2) Rescue and firefighting services

NUMBER OF RFFS VEHICLES AND RESCUE EQUIPMENT

- (a) The aerodrome operator should ensure that:
 - (1) the minimum number of rescue and firefighting vehicles at the aerodrome to effectively deliver and deploy the agents specified for the aerodrome category will be in accordance with the following table; and

(...)

AMC4 ADR.OPS.B.010(a)(2) Rescue and firefighting services

EXTINGUISHING AGENTS

The aerodrome operator should ensure that:

(...)

- (da) the quantity of foam concentrates separately provided on vehicles for foam production is in proportion to the quantity of water provided and the foam concentrate selected;

(...)

- (k) a reserve supply of complementary agent equivalent to 100% of the quantity identified in Table 1 is maintained on the aerodrome for vehicle replenishment purposes and sufficient propellant gas is included to utilize this reserve complementary agent; Complementary agent(s) carried on fire vehicles in excess of the quantity identified in Table 1, can contribute to the reserve;

(...)

- (o) quantities of water and foam concentrate are recalculated and the amount of water and foam concentrate for foam production and the discharge rates for foam solution are increased accordingly, where operations by aeroplanes larger than the average size in a given category are planned; and



(oa) Where the level of protection is reduced in accordance with AMC2 ADR.OPS.B.010 (a)(2), a recalculation of quantities of extinguishing agents should be computed based on the largest aeroplane in the downgraded category;

(ob) For all-cargo, mail, training, test, and end-of-life aeroplane operations, including those carrying dangerous goods, the recalculation of quantities of extinguishing agents should be computed based on the largest aeroplane in the category specified in Table 2 of AMC2 ADR.OPS.B.010(a)(2);and

(...)

AMC5 ADR.OPS.B.010(a)(2) Rescue and firefighting services

RESPONSE TIME

The aerodrome operator should ensure that:

(a) rescue and firefighting service achieves a response time not exceeding three minutes with an operational objective of not exceeding two minutes from the initial call to the rescue and firefighting services, to any point of each operational runway, in optimum visibility and surface conditions, and be in a position to apply foam at a rate of, at least, 50 % of the discharge rate specified in AMC4 ADR.OPS.B.010 Table 1;

(...)

GM4 ADR.OPS.B.010(a)(2) Rescue and firefighting services

UNFORESEEN REDUCTION OF RFFS AERODROME CATEGORY LEVEL OF PROTECTION

~~(a) The level of protection could be one category below the determined category if the number of movements of the aeroplanes in the highest RFF aerodrome category normally using the aerodrome is less than 700 in the busiest consecutive three months.~~

~~(b) The level of protection should be equal to the determined category if the number of movements of the aeroplanes in the highest RFF aerodrome category normally using the aerodrome is equal or above 700 in the busiest consecutive three months.~~

~~(c) For aerodromes serving exclusively all cargo aircraft operations, the RFF aerodrome category could be adjusted to a category lower than the one for passenger aircraft operations, provided that the principal objective, to save lives in the event of an aircraft accident or incident, is met.~~

Contingency plan to limit the need for changes to the promulgated rescue and firefighting level of protection should be developed. This may involve for example, a maintenance plan to ensure the mechanical efficiency of equipment and vehicles, and arrangements to cover unplanned absence of the minimum level of personnel including supervisory levels.

~~(d) The following could be considered as unforeseen circumstances leading to temporary reduction of the level of protection of the aerodrome rescue and fire fighting services—any unplanned events that lead to unavailability of facilities, equipment, and resources, such as:~~

~~(1)(a) breakdown of RFFS vehicles;~~

~~(2)(b) staff shortage;~~



(3)(c) unavailability of extinguishing agents;

(4)(d) RFFS response to an accident;

(5)(e) Etc.

Such changes, including estimated time of the reduction, should be notified without delay to the appropriate Air Traffic Services (ATS) units and Aeronautical Information Services (AIS) units (see GM1 ADR.OPS.A.005 Aerodrome Data) to enable those units to provide the necessary information to arriving and departing aircraft.

A temporary reduction should be expressed in terms of the new category of the rescue and firefighting service available at the aerodrome. Where the temporary reduction involves resources not used to calculate the aerodrome RFF category (e.g. specialist rescue equipment for difficult environs), details should be notified in the same way. When such a temporary reduction no longer applies, the above units should be advised accordingly.

GM5 ADR.OPS.B.010(a)(2) Rescue and firefighting services

RESCUE AND FIREFIGHTING LEVEL OF PROTECTION

The following examples are intended to illustrate the way in which the various factors to be taken into account when calculating levels of protection should be applied:

Example 1 — Wider aeroplane fuselage

If an aeroplane had a fuselage length of 47.5 metres, column 2 of Table 1 in AMC2 ADR.OPS.B.010(a)(2) would indicate RFF category 7. However, the example aeroplane has a fuselage width of 5.5 metres, therefore, paragraph (a)(2) in AMC2 ADR.OPS.B.010(a)(2) means that the appropriate level of protection would be RFF category 8.

Example 2 — Longer than average aeroplane length

Where operations by aeroplanes larger than the average size in a given category are planned, the quantities of water should be recalculated, and the amount of water for foam production and the discharge rates for foam solution should be increased accordingly. The example below is based on an aeroplane with an overall length of 48 metres and a maximum fuselage width of 5 metres. The quantity of water and the discharge rate of foam solution have been calculated using the ICAO Critical Area Concept, and increased to reflect the greater practical critical area.

Minimum useable amounts of extinguishing agents (based on the provision of foam meeting performance level B)			
Aerodrome Category (1)	Water (lt) (2)	Discharge rate of foam solution (lt/min) (3)	Dry chemical powder(kg) (4)
Category 7 minimum requirement	12 100	5 300	225
Requirement following	14 113	6 163	225



recalculation			
---------------	--	--	--

Example 3 — Less than 700 movements (remission)

The following examples illustrate the method for the determination of the aerodrome rescue and firefighting services level of protection when considering the number of movements:

Aeroplane	Overall length	Fuselage width	Category	Movements
Airbus A320	37.6 m	4.0 m	6	600
Bombardier CRJ 900	36.4 m	2.7 m	6	300
Embraer 190	36.2 m	3.0 m	6	500
ATR 72	27.2 m	2.8 m	5	200

The longest aeroplanes are categorised by evaluating, based on Table 1 in AMC2 ADR.OPS.B.010(a)(2), first their overall length and second their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals more than 700. The aerodrome, in this case, would be category 6.

Aeroplane	Overall length	Fuselage width	Category	Movements
Airbus A350-900	66.8 m	6.0 m	9	300
Boeing 747-8	76.3 m	6.5 m	10	400
Airbus A380	72.7 m	7.1 m	10	400

The longest aeroplanes are categorised by evaluating, based on Table 1 in AMC2 ADR.OPS.B.010(a)(2), first their overall length and second their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals more than 700. It may also be noted that when evaluating the category appropriate to the overall length of Airbus A380, e.g. category 9, the category selected is actually one level higher as the aeroplane's fuselage width is greater than the maximum fuselage width for category 9. The aerodrome, in this case, would be category 10.

Aeroplane	Overall length	Fuselage width	Category	Movements
Boeing 737-900ER	42.1 m	3.8 m	7	300
Bombardier CRJ 900	36.4 m	2.7 m	6	500
Airbus A319	33.8 m	4.0 m	6	300



The longest aeroplanes are categorised by evaluating, based on Table 1 in AMC2 ADR.OPS.B.010(a)(2), first their overall length and second their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals only 300. The minimum category for the aerodrome, in this case, would be category 6, which is one category level below that of the longest aeroplane.

Aeroplane	Overall length	Fuselage width	Category	Movements
Airbus A380	73.0 m	7.1 m	10	300
Boeing 747-8	76.3 m	6.5 m	10	200
Boeing 747-400	70.7 m	6.5 m	9	300

The longest aeroplanes are categorised by evaluating, based on Table 1 in AMC2 ADR.OPS.B.010(a)(2), first their overall length and second their fuselage width until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals only 500. It may also be noted that when evaluating the category appropriate to the overall length of Airbus A380, e.g. category 9, the category selected is actually one level higher as the aeroplane's fuselage width is greater than the maximum fuselage width for category 9. The minimum category for the aerodrome, in this case, would be category 9, which is one category level below that of the longest aeroplane.

Aeroplane	Overall length	Fuselage width	Category	Movements
Airbus A321	44.5 m	4.0 m	7	100
Boeing 737-900ER	42.1 m	3.8 m	7	300
ATR 42	22.7 m	2.9 m	4	500

The longest aeroplanes are categorised by evaluating, based on Table 1 in AMC2 ADR.OPS.B.010(a)(2), first their overall length and second their fuselage width, until 700 movements are reached. It may be seen that the number of movements of the longest aeroplanes in the highest category totals only 400. The minimum category for the aerodrome would be category 6. However, even if there is a relatively wide range of difference between the length of the longest aeroplane (Airbus A321) and the aeroplane for which the 700th movement is reached (ATR 42), the minimum category for the aerodrome may only be downgraded to category 6.

Example 4 — Anticipated periods of reduced activity

The level of protection should be no less than that needed for the highest category of aeroplanes planned to use the aerodrome during that period. If the aerodrome is promulgating RFFS category 7, but, between 23:00 p.m. and 6:00 a.m., the largest aeroplane operating has an overall length of 27.5 meters and a maximum fuselage width of 3.9 metres, the promulgated category could be downgraded to category 5 for that time frame.



Example 5 — All-cargo and mail aeroplane operations including dangerous goods

An all-cargo aeroplane is an aeroplane operated for the transportation of cargo including dangerous goods. If an all-cargo aeroplane has an overall length of 47.5 metres and a maximum fuselage width of 4.2 metres, according to Table 1, category 7 would be indicated. As the aeroplane is an all-cargo one, according to Table 2, a reclassification to category 6 may be applied.

GM6 ADR.OPS.B.010(a)(2) Rescue and firefighting services**CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER**

- (a) The Critical Area Concept is applied for rescuing the occupants of an aeroplane. It seeks to control only that area of fire adjacent to the fuselage. The objective is to safeguard the integrity of the fuselage and maintain tolerable conditions for the occupants of the aeroplane. The size of the controlled area required to achieve this for a specific aeroplane has been determined by experimental means.
- (b) There is a need to distinguish between the theoretical critical area, within which it may be necessary to control the fire, and the practical critical area which is representative of actual aeroplane accident conditions. The theoretical critical area serves only as a means of categorising aeroplanes in terms of the magnitude of the potential fire hazard in which they may become involved. It is not intended to represent the average, maximum, or minimum spill fire size associated with a particular aeroplane. The theoretical critical area is a rectangle having as one dimension the overall length of the aeroplane and as the other dimension a length which varies with the fuselage's length and width.
- (c) From experiments performed, it has been established that for an aeroplane with a fuselage length equal to or greater than 24 m, in wind conditions of 16-19 km/h and at right angles to the fuselage, the theoretical critical area extends from the fuselage to a distance of 24 m upwind and 6 m downwind. For smaller aeroplanes, a distance of 6 m on either side is adequate. To provide for a progressive increase in the theoretical critical area, however, a transition is used when the fuselage length is between 12 and 24 m.
- (d) The overall length of the aeroplane is considered appropriate for the theoretical critical area as the entire length of the aeroplane must be protected from burning. If not, the fire could burn through the skin and enter the fuselage. Moreover, other aeroplanes, such as T-tail ones, often have engines or exit points in their extended portion.
- (e) The formula for the theoretical critical area A_T should be the following:

Overall length	Theoretical critical area A_T
$L < 12 \text{ m}$	$L \times (12 \text{ m} + W)$
$12 \text{ m} \leq L < 18 \text{ m}$	$L \times (14 \text{ m} + W)$
$18 \text{ m} \leq L < 24 \text{ m}$	$L \times (17 \text{ m} + W)$
$L \geq 24 \text{ m}$	$L \times (30 \text{ m} + W)$



where L = overall length of the aeroplane, and W = the maximum width of the aeroplane fuselage

- (f) In practice, it is seldom that the entire theoretical critical area is subject to fire; thus a smaller area for which it is proposed to have firefighting capacity is referred to as the practical critical area. As a result of a statistical analysis of actual aeroplane accidents, the practical critical area A_p has been found to be approximately two thirds of the theoretical critical area, or

$$AP = 0.667 \times AT$$

- (g) The quantity of water for foam production can be calculated with the following formula:

$$Q = Q1 + Q2$$

where:

Q = the total water required;

$Q1$ = the water used to control the fire in the practical critical area; and

$Q2$ = the water required after control of the fire has been established, and is needed for maintaining this control and/or extinguishing the remaining fire.

- (h) The water required for control in the practical critical area ($Q1$), may be expressed by the following formula:

$$Q1 = A \times R \times T$$

where:

A = the practical critical area;

R = the rate of application; and

T = the time of application.

- (i) The amount of water required for $Q2$ cannot be exactly calculated as it depends on a number of variables. The factors considered of primary importance are:

- (1) the maximum gross mass of the aeroplane;
- (2) the maximum passenger capacity of the aeroplane;
- (3) the maximum fuel load of the aeroplane; and
- (4) previous experience (analysis of aeroplane RFF operations).

These factors, when plotted on a graph, are used to calculate the total amount of water required for each airport category. The volume of water for $Q2$, as a percentage of $Q1$, varies from about 0 % for category 1 airports to about 190 % for a category 10 airport.

- (j) The relation between $Q1$ and $Q2$ for aeroplanes representative of each airport category is according to the following table:

Aerodrome category	$Q_2 = \text{percentage of } Q_1$
1	0
2	27



3	30
4	58
5	75
6	100
7	129
8	152
9	170
10	190

AMC1 ADR.OPS.C.005 General

MAINTENANCE PROGRAMME

(...)

- (e) equipment and vehicles, including those used by rescue and firefighting services, which are necessary for the safety of aerodrome operations; and

(...)



4. Regulatory Impact Assessment (RIA)

4.1. Issues to be addressed

Availability and scope of RFFS at aerodromes

According to ICAO Annex 14 (sixth edition), the scope of RFFS at aerodromes is to save lives in the event of an aircraft accident or incident occurring at, or in the immediate vicinity of, an aerodrome. RFFS are provided to create and maintain survivable conditions, make egress routes available for occupants, and to initiate the rescue of those occupants unable to make their escape without direct aid. During an aircraft accident, RFFS are normally supported by ambulance and medical services, however, their role is limited to assisting the occupants after the evacuation and transport them to hospitals, if necessary. It is also necessary to consider that ambulance and medical services are normally beyond the control of the aerodrome operator, and their involvement depends on mutual agreements between them and the aerodrome operator. Therefore, it is neither legally possible nor reasonable to extend the requirements for RFFS to the ambulance and medical services. The proposed revision aims to clarify this issue.

RFFS level of protection

ICAO Annex 14 establishes the required level of protection based on the aeroplane dimensions (overall length and fuselage width) and on the number of movements of aeroplanes 'normally' using the aerodrome during the three busiest consecutive months. ED Decision 2014/012/R contains AMC/GM to establish the RFFS level of protection covering aeroplanes that 'normally' use the aerodrome. The current AMC allow a reduction of the level of protection established at an aerodrome upon acceptance of the Competent Authority (CA). The Agency has issued GM to support a decision on whether a reduction of the level of protection could be allowed. Nevertheless, the use of such criteria is at the discretion of the CA, and the current GM does not ensure a uniform application in the MSs. Additionally, the RFF level of protection required for all-cargo, mail, etc. aeroplane operations was determined without sufficient guidance from ICAO and was based on not adequately justified practices. The proposal in this NPA provides sufficient explanation and guidance to the CAs and the aerodrome operators concerning the calculation of the aeroplane movements in order to determine the level of protection required at an aerodrome. Since ICAO does not provide further explanation on the phrase 'normally using', which results in different interpretations by the MSs, the rulemaking group concluded that it is reasonable to use the phrase 'expected to use' instead since the RFF level of protection should be adequate to cover the planned and known traffic at the aerodrome. This will allow the aerodrome operator to plan in advance the required resources (equipment, extinguishing agents, personnel) to ensure that requirements are met.

The Agency also provides in this NPA additional GM to support the CAs and the aerodrome operators to determine the required RFFS level of protection, based on ICAO Doc 9137, Part 1, (fourth edition).

Finally, the proposal allows aeroplanes declaring emergency to use an aerodrome even when its RFFS level of protection is not adequate for this type of aeroplane. This proposal meets the objectives of Part D — Others of Annex Va to the Basic Regulation, which allows aircraft to use an aerodrome in an emergency event even if the aerodrome's design and operating procedures are not adequate for this type of aircraft.



Number of RFFS vehicles

The minimum number of RFF vehicles at an aerodrome is currently described in AMC3 ADR.OPS.B.010(a)(2). This AMC implements ICAO Annex 14 Recommendation 9.2.41, however, it is not clear that it refers to those vehicles capable of effectively delivering and deploying the extinguishing agents specified for the RFF aerodrome category as in AMC2 ADR.OPS.B.010(a)(2). This may lead to a misinterpretation of the AMC, thus including other vehicles responding to an emergency, e.g. the incident commander's vehicle, into the minimum number of RFF vehicles. Such a misinterpretation would result in an effectively reduced application and/or quantities of the extinguishing agents, consequently impairing the overall capabilities of RFFS at that aerodrome. For this reason, the NPA seeks to prevent the potential misinterpretation by clarifying the purpose of RFF vehicles.

Extinguishing agents

ICAO Annex 14, Standard 9.2.14 on the quantity of foam concentrates to be carried by RFF vehicles in relation to the water carried has not been yet transposed into the current European rules on aerodrome safety. Apart from the general obligation imposed on the MSs to comply with ICAO Standards, from an operational point of view, it is essential to ensure that the extinguishing agents produced in firefighting vehicles have the proper quality level to maximise efficiency.

The proposal in this NPA also addresses, as an Acceptable Means of Compliance, the ICAO recommendation on reserve supplies of complementary agents. ICAO already considers any quantities of extinguishing agents in excess of the minimum required to be part of the reserve supplies. The rulemaking group proposed to take the same approach with regard to the complementary agents, considering also the fact that these agents have expiration dates and specific storage requirements, thus resulting in an unnecessary financial burden on the aerodrome operators.

The reduction of the RFF level of protection ('remission factor') requires also the recalculation of the required amounts of extinguishing agents. Currently, the calculation of the required quantities for a given RFF aerodrome category is based on the average size of the aeroplane in this specific category, properly adjusted when the largest aeroplane using the aerodrome is larger than the average aeroplane. Furthermore, ICAO Doc 9137, Part 1 (fourth Edition 2014), recommends that, when the application of the 'remission factor' is permitted, the required quantities of extinguishing agents should be equal to the largest quantity in the downgraded RFF aerodrome category. The rationale behind this proposal is to ensure that, when the application of the 'remission factor' is permitted, the aerodrome capabilities should be as close as possible to the requirements for aeroplanes in the higher category. The same principles apply also when calculating the amount of extinguishing agents required for all-cargo, mail, ferry, etc. aeroplane operations.

Therefore, the proposal in this NPA provides guidance concerning the calculation of the required quantities of extinguishing agents, based on the Critical Area Concept.

Response time

The response time of RFFS is established in AMC5 ADR.OPS.B.010(a)(2) annexed to ED Decision 2014/012/R. Nevertheless, the current wording does not specify if the response time starts from the initial call to RFFS. From an operational point of view, this clarification is very important for the aerodrome operator in order to adjust the response plan, as well as for the CA in order to have a



common denominator for calculating the response time. Additionally, the current wording in the AMC cited above does not reflect Note 1 to ICAO Annex 14, Vol I (fifth Edition), Standard 9.2.27 and Recommendations 9.2.28 and 9.2.29.

This NPA specifies the start of the response time, thus harmonising the related AMC for all MSs.

Inclusion of RFF vehicles into the aerodrome maintenance programme

One of the factors that play an important role in the capabilities, efficiency and readiness of RFFS is the condition of the RFF vehicles. A maintenance programme for these vehicles is required to ensure their continuous availability and maximum performance in providing extinguishing agents in emergency situations. The current AMC/GM in ED Decision 2014/012/R state that a maintenance programme should exist for vehicles and equipment which are necessary for the safety of aerodrome operations. Considering the importance of RFFS, it is essential that specific reference is made to the RFF vehicles in the maintenance programme in order to draw the attention of the aerodrome operators and CAs on this issue.

This NPA proposes, therefore, that a reference is made to the RFF vehicles in AMC1 ADR.OPS.C.005 on the maintenance programme.

Unforeseen downgrade of the RFFS aerodrome category

This NPA proposes to update the current GM4 ADR.OPS.B.010(a)(2) to ED Decision 2014/012/R because all the guidance related to the application of the 'remission factor' is proposed as a separate AMC. The intention is to emphasise the need for the aerodrome operator to have contingency plans in place in order to deal with unforeseen downgrades of the RFF aerodrome category.

Furthermore, this NPA points out the importance of providing accurate and up-to-date information to aeroplane operators through the Aeronautical Information Services (AIS) and/or Air Traffic Services (ATS) when the aerodrome RFF category is downgraded.

4.1.1. Who is affected?

The proposals in this NPA are mainly addressed to aerodrome operators, as the ones mostly affected by the changes. The proposed changes provide clarifications on issues related to the provision of RFFS. The impact is considered to be positive since they allow aerodrome operators to efficiently manage their resources based on the anticipated number of movements and type of operations without impairing safety.

4.1.2. How could the issue/problem evolve?

The implementation of Regulation (EU) No 139/2014 in Europe has already started. A transition period to fully comply with the Regulation until the end of 2017 has been granted to the MSs and the aerodrome operators. ED Decision 2014/012/R contains the necessary AMC and GM to support the implementation of the Regulation. If no clarifications were to be provided and new AMC/GM to be issued, the issues described in Chapter 4.1. would lead to different implementation practices across MSs, impose unnecessary and unjustifiable financial and administrative burden to both aerodrome operators and CAs, and, in some cases, impact the efficiency and response of the rescue and firefighting services.



4.2. Policy options

Option 0

The 'Baseline' option 0 is to be considered as the reference scenario where no new and clarifying AMC/GM and details are provided regarding the provision of RFFS at aerodromes.

With this option, RFFS will continue to be provided according to the current AMC/GM annexed to ED Decision 2014/012/R, but, as already explained in Chapter 4.1, if no action is taken, the issues addressed there will create, administrative and financial burden to the aerodrome operators and may impair the efficiency and responsiveness of RFFS.

Option 1

The amendment of AMC/GM related to the provision of RFFS will ensure a harmonised application of the 'remission factor' for RFFS based on clear and concise criteria guaranteeing a level playing field and a uniform safety level in Europe. Furthermore, it will ensure that the role and scope of RFF is clearly understood and, finally, that the required amounts of extinguishing agents are appropriate to the type of aeroplane operations and commensurate with the number of movements at each aerodrome.

Table 1: Selected policy options

<i>Option No</i>	<i>Short title</i>	<i>Description</i>
0	Do nothing	Baseline option (no change in AMC/GM; risks remain as outlined in the issue analysis).
1	Implement changes to the AMC/GM related to RFFS	Propose changes to ED Decision 2014/012/R with respect to certain AMC/GM related to the provision of RFFS

4.3. Analysis of impacts

The proposal covers different issues related to the provision of RFFS at aerodromes. For this reason, the impact of both proposed options is assessed with regard to each of those issues.

4.3.1. Safety Impact

Characteristics of RFF vehicles

Option 0

The purpose of the RFF vehicles is to effectively deliver and deploy the extinguishing agents specified for the aerodrome RFF category. The current AMC refer to the required number of vehicles for each aerodrome RFFS category but they do not explicitly refer to the characteristics of the vehicles. Option 0 may have a negative effect on safety because vehicles not meeting the requirements could be considered as RFF vehicles.

Option 1



Option 1 mitigates the identified safety risks by ensuring that the RFF vehicles required in each aerodrome category will have the sufficient characteristics to protect crew and passengers on board an aeroplane.

Extinguishing agents

Option 0

The application of the 'remission factor', being a reduction of the RFFS level of protection, leads inevitably to a reduction of the extinguishing agents' amount available at the aerodrome. The current AMC in ED Decision 2014/012/R do not provide clear information to what extent the amounts should be reduced. This could lead to different interpretations in different MSs and might result in insufficient amounts of extinguishing agents and firefighting personnel at aerodromes. Option 0 may adversely impact safety when the amounts of extinguishing agents and the number of firefighting personnel available are insufficient.

Option 1

By providing the required clarification, Option 1 mitigates the safety risks which could emerge from a lack of clarity in the AMC.

Both options have a neutral safety impact on the following issues:

- availability and scope of RFFS,
- RFF level of protection,
- response time, and
- maintenance programme.

<i>Type of impacts</i>	<i>Option 0</i>	<i>Option 1</i>
Safety impact	-/0	+

4.3.2. Environmental impact

N/A.

4.3.3. Social impact

N/A.

4.3.4. Economic impact

— Availability and scope of RFFS

If Option 0 is followed, the uncertainty of the role and scope of RFFS will remain. Normally, Ambulance and Medical Services are not under the direct control of the aerodrome operator and do not fall under the scope of RFFS. A possible inclusion of Ambulance and Medical Services in the role and scope of RFFS would firstly go beyond ICAO requirements, and secondly create excessive financial burden on the MSs and aerodrome operators, who will be obliged to meet



these new non-aviation requirements (e.g. medical equipment, personnel competences and training, etc.).

Option 1 will remove any uncertainty concerning the role of RFFS and the Ambulance and Medical Services and prevent excessive financial burden on the MSs and aerodrome operators by specifying AMC/GM related only to the aviation sector.

<i>Type of impacts</i>	<i>Option 0</i>	<i>Option 1</i>
Economic impact	–	+

— Extinguishing agents

Option 0 has no economic impact.

Option 1 may have a cost impact on those aerodrome operators who have reduced the RFF level of protection and calculated the required amounts of extinguishing agents based on the average aeroplane at the reduced level of protection instead of the largest aeroplane in the aerodrome RFF category. However, for those aerodrome operators, the cost created due to the AMC clarification under Option 1 is minor.

<i>Type of impacts</i>	<i>Option 0</i>	<i>Option 1</i>
Economic impact	0	–(short term)/0 (long term)

Both options have a neutral economic impact on the following issues:

- RFF level of protection,
- number of RFF vehicles,
- response time, and
- maintenance programme.

Question to stakeholders — Economic impacts

Stakeholders are invited to provide quantified justification elements on the possible economic impacts of the options proposed, or, alternatively, propose another justified solution to the issue.

4.3.5. General Aviation (GA) and proportionality issues

- N/A.

4.3.6. Impact on ‘Better Regulation’ and harmonisation

— Availability and scope of RFFS

With Option 0, some ambiguities concerning the role and scope of RFFS would be maintained while, under Option 1, these would be removed.

— RFF level of protection



Option 0 will not ensure a harmonised method of reducing the RFFS level of protection while Option 1 provides more clear AMC/GM. Furthermore, concerning the level of protection required for all-cargo, mail, etc. aeroplane operations, Option 0 is not in accordance with the ICAO guidance while Option 1 introduces the ICAO proposals included in ICAO Doc 9137, Part 1.

— **Extinguishing agents**

Option 1 ensures harmonisation with the latest ICAO Annex 14 SARPS and related ICAO documents while Option 0 would not constitute a sufficient solution to the issue.

<i>Type of impacts</i>	<i>Option 0</i>	<i>Option 1</i>
Better regulation and harmonisation	–	+

Both options have a neutral impact on the following issues:

- number of RFF vehicles,
- response time, and
- maintenance programme.

4.4. Comparison and conclusion

4.4.1. Comparison of options

<i>Type of impacts</i>	<i>Option 0</i>	<i>Option 1</i>
Safety impact	–/0	+
Economic impact	0	–(short term)/0 (long term)
Better regulation and harmonisation	–	+

By following Option 0, existing ambiguities in the current ED Decision 2014/012/R would remain. Identified safety risks concerning characteristics of RFF vehicles and required quantities of extinguishing agents would also be maintained. Additionally, an excessive cost burden would remain for those aerodrome operators who are obliged to apply non-aviation rules regarding the provision of Ambulance and Medical Services.

Option 1 will mitigate the identified safety risks by establishing an adequate level of safety characteristics for RFFS vehicles and required quantities of extinguishing agents. A minor cost impact is also foreseen for those aerodrome operators who do not currently comply with AMC under Option 1 regarding the provision of the required quantities of extinguishing agents. Finally, for those aerodrome operator who are currently obliged to follow non-aviation rules on Ambulance and Medical Services, a decrease in the financial and administrative burden is envisaged.



5. References

5.1. Affected regulations

N/A.

5.2. Affected CS, AMC and GM

Decision 2014/012/R of the Executive Director of the Agency of 27 February 2014 adopting Acceptable Means of Compliance and Guidance Material to Regulation (EU) No 139/2014 'AMC/GM for Aerodromes — Initial Issue'.

5.3. Reference documents

- ICAO (International Civil Aviation Organization) Annex 14 —Volume I — Aerodrome Design and Operations, sixth edition, July 2013.
- ICAO (International Civil Aviation Organization) Doc 9137 — AN/898, AIRPORT SERVICES MANUAL, Part 1, RESCUE AND FIREFIGHTING, fourth edition, 2014.

