

Update requirements Reg. (EC) 139/2014 Issue 2 - Annex to decision 2016-009-R

Whitepaper

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Editors: Frank Espenhain
Pascal Rohmann

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1 Preface

In this whitepaper, the process organisation for the integration of the "Annex to Decision A 2016/009/R" (taking effect on 25.05.2016) is introduced.

It shall be traceable for which version of a requirement the related tasks and evidence have been provided.

As far as possible, the manual effort of the changeover shall be minimized. Furthermore it shall be possible to select those requirements, which are affected by the "Annex to Decision 2016/009/R" to ensure a systematic processing and monitoring.

In the considered change "Annex to Decision 2016/009/R" existing requirements will be updated, new requirements will be added and "N/A" requirements will be marked suitable.

2 (Semi-) Automatic changeover

The changes related to the requirements of the EU (VO) 139/2014 specified in this whitepaper are available in scripted format and can be rolled out in the course of the general operating, including the version information.

3.1 Need for change

The process organisation is explained as per example "GM1 ADR.OPS.B.010(a)(1)"

From 25.04.2016 on, the text of "GM1 ADR.OPS.B.010(a)(1) Rescue and firefighting services" changes as shown below.

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 principal objective of 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 rescue and firefighting service is provided 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. The rescue may require the use of equipment and personnel other than those assessed primarily for rescue and firefighting purposes. Ambulance and medical services are out of the scope of rescue and firefighting services as described in ADR.OPS.B.010. The role and responsibilities of ambulance and medical services during an emergency situation should be included in the aerodrome emergency plan (AEP), according to GM3 ADR.OPS.B.005(a).

3.2 Updated Requirement data

The updated text of the requirement “GM1 ADR.OPS.B.010(a)(1)” is shown in the tabulator “master data”

The version is automatically incremented to “2.0 [Annex to Decision 2016/009/R]”

The changes are documented in the history of the requirement.

The screenshot displays the 'Process management' interface for requirement GM1 ADR.OPS.B.010(a)(1). The interface includes a top navigation bar with tabs for 'Process', 'Attributes', 'Versions', 'Documents', 'Measures', 'History', 'ObjectExplorer', and 'Rights'. The main content area shows the following details:

- ID:** 9901984
- Proc.-Nr.:** GM1 ADR.OPS.B.010(a)(1)
- Valid from/to:** 01/01/1900 / 31/12/2999
- External:**
- Active:**
- Process title:** AVAILABILITY AND SCOPE OF RESCUE AND FIREFIGHTING SERVICES
- Note:** 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 principal objective of 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 rescue and firefighting service is provided 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. The rescue may require the use of equipment and personnel other than those assessed primarily for rescue and firefighting purposes. Ambulance and medical services are out of the scope of rescue and firefighting services as described in ADR.OPS.B.010. The role and responsibilities of ambulance and medical services during an emergency situation should be included in the aerodrome emergency plan (AEP), according to GM3 ADR.OPS.B.005(a).
- Parent element:** ADR.OPS.B.010 / (a) (1). Rescue and firefighting servic
- Order:** GM1 ADR.OPS.B.010(a)(1)
- Type:** Process
- Status:** Unknown
- Test interval:** Undetermined
- Version:** 2.0 [Annex to Decision 2016/009/R] (highlighted in pink)
- Latest test at:** [Empty field]
- Due:** [Empty field]
- Org.-Unit:** [Empty dropdown]
- Department:** [Empty dropdown]
- Owner:** [Empty dropdown]
- Owner VM:** [Empty dropdown]
- Responsible:** [Empty dropdown]
- Respons. VM:** [Empty dropdown]
- Respons. info:** [Empty field]

3.3 Version overview

The version overview shows up detail information on version "2.0 [Annex to Decision 2016/009/R]"

Version "2.0 [Annex to Decision 2016/009/R]" automatically becomes the current version of the requirement.

If the initial version "1.0 INIT" has been incremented by the customer, it has to be tested and coordinated with the technical support of eControl before rolling out the scripts.

In the example below it is visible that both verification documents "1135 release 1" and "1136 release 2" were available **before** the change in version "1.0 INIT". **After** the version change to "2.0 [Annex to Decision 2016/009/R]", the document 1135 was revised and uploaded again. It now has the release number 2.

The document 1137 was added after updating to version "2.0 [Annex to Decision 2016/009/R]".

The screenshot displays the 'Process management' interface for the process '09901984 • AVAILABILITY AND SCOPE OF RESCUE AND FIREFIGHTING SERVICES • Order GM1 ADR.OPS.B.010(a)(1)'. The 'Versions' tab is active, showing a tree view of document versions. The current version, '2.0 [Annex to Decision 2016/009/R]', is highlighted. The details for this version are shown in a right-hand pane, including the Version ID (7753), Version (2.0 [Annex to Decision 2016/009/R]), Effective from date (25.05.2016), and Version title (Annex to Decision 2016/009/R). A detailed note is provided, explaining the decision's purpose and the changes it introduces. The interface also shows fields for 'Created at/by', 'Checked by/at', and 'Approved at/by', along with a footer containing copyright information and the system name 'eControl aviation - Arconda Airport'.

4 New Requirements

New requirements are hooked automatically into the tree structure of the requirement in accordance with the structuring system and the sorting order.

The following tasks have to be taken into consideration:

- **Additional allocation of external IDs for new requirements, so that these new requirements also can be clearly identified for future updates**
- **Automatic assignment of standard compliance categories**
- **Automatic initialising of the compliance attributes**
- **Automatic assignment of standard permissions**

5 Deleted Requirements

Deleted requirements are critical from the perspective of the compliance management, because process attributes and related documents will be closed when deleting or deactivating requirements.

In order to avoid a loss of information, the titles of these requirements are marked with the prefix **“***N/A***”**

These requirements have to be verified by an admin. Possibly stored information and documents have to be transferred to the desired requirements (manually if necessary).

Once this is done the requirements may be deactivated, whereby this process requires the submit of version information.

6 Editing and verification of the changes

For editing and verification of the relevant incidents regarding to this change, it is recommended to define a global request.

The screenshot displays the 'Process management' interface. On the left, a tree view shows the hierarchy of EASA regulations, including 'ADR COMMISSION REGULATION (EU) No 139/2014 AM/GM', 'ADR-AR ANNEX II - AM / GM', 'ADR-OPS ANNEX IV ACCEPTABLE MEANS OF COMPLIANCE AND...', 'ADR.OPS.B SUBPART B — AERODROME OPERATIONAL SERVICE...', 'ADR.OPS.B.010 Rescue and firefighting services', and various sub-items like 'AMC2 ADR.OPS.B.010(a)(2) RFFS LEVEL OF PROTEC...', 'AMC3 ADR.OPS.B.010(a)(2) / (a) (1) NUMBER OF RF...', 'AMC4 ADR.OPS.B.010(a)(2) EXTINGUISHING AGENT...', 'AMC5 ADR.OPS.B.010(a)(2) RESPONSE TIME', and 'GM4 ADR.OPS.B.010(a)(2) REDUCTION OF RFFS...'. The right panel is titled 'Selection criteria' and 'Pool'. It features a 'Process:' dropdown set to '- All -', a 'Show inactive processes' checkbox, and a 'Conditions' section with a 'SQL' tab. A condition is defined as '(P) Version = 2.0 [Annex to Decision 2]'. Below this, there are buttons for 'Add', 'Remove', 'AND', 'OR', and '(', along with up/down arrows and an 'SQL syntax' checkbox. The 'Save condition' section includes a 'Global' checkbox, a 'Name' field with the value 'Changes 2.0 [Annex to Decision 2016/009/R]', an 'Info' field with the text 'Selects all requirements that are affected by the changes of "Annex to Decision 2016/009/R". Both active and inactive processes are considered.', and fields for 'Category:', 'Subcategory:', and 'Title:' (containing 'A.16/9/R'). At the bottom, there is a copyright notice 'Copyright © Arconda Systems AG, 2007 - 2016' and 'eControl aviation - Arconda Airpor'.

7 Change details

7.1 AMC2 ADR.OPS.B.010(a)(2) RFFS LEVEL OF PROTECTION [9901994]

Status: "Changed"

No change in the text -> reference is made on downstream structure levels, but a version renewing will take place for this requirement.

Status 19.07.2016: "Validated"

7.2 AMC2 ADR.OPS.B.010(a)(2) / (a) (2) RFFS LEVEL OF PROTECTION / (a) (2) [9901996]

Status: "Changed"

(a) The aerodrome operator should ensure that:

(2) the aerodrome category for rescue and firefighting is determined according to Table 1, based on the longest aeroplanes normally using 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.

Status 19.07.2016: "Validated"

7.3 AMC2 ADR.OPS.B.010(a)(2) / (a) (3) RFFS LEVEL OF PROTECTION / (a) (3)

Status: "New"

(a) The aerodrome operator should ensure that:

(3) the rescue and firefighting level of protection provided is appropriate to the aerodrome category determined using the principles in (2) above except that where the number of movements (landing or take-off) of the aeroplanes performing passenger transportation in the highest category, normally using the aerodrome, is less than 700 in the busiest consecutive three months, the level of protection provided in accordance with (2) above may be reduced by no more than one category below the determined one.

Status 19.07.2016: "Validated"

7.4 AMC2 ADR.OPS.B.010(a)(2) / (b) RFFS LEVEL OF PROTECTION / (b) [9901997]

Status: "Changed"

Notwithstanding (a), the aerodrome operator may, 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).

Status 19.07.2016: "Validated"

7.5 AMC2 ADR.OPS.B.010(a)(2) / (c) RFFS LEVEL OF PROTECTION / (c) [9901998]

Status: "Changed"

The level of protection required for all-cargo, mail, ferry, training, test, positioning 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:

7.6 AMC2 ADR.OPS.B.010(a)(2) / (d) RFFS LEVEL OF PROTECTION / (d)

Status: "New"

(c) The level of protection required for all-cargo, mail, ferry, training, test, positioning 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:

7.7 AMC2 ADR.OPS.B.010(a)(2) / (e) RFFS LEVEL OF PROTECTION / (e)

Status: "New"

(e) Unforeseen circumstances leading to temporary reduction of the aerodrome rescue and firefighting level of protection are considered as unplanned events that result in unavailability of facilities, equipment and resources.

7.8 AMC2 ADR.OPS.B.010(a)(2) / (f) RFFS LEVEL OF PROTECTION / (f)

Status: "New"

(f) For emergency landings and occasions when in the pilot's-in-command opinion, a diversion or hold may create a more significant hazard, operation of aeroplanes whose required category is higher than the level of protection provided by the aerodrome should be permitted regardless of the rescue and firefighting level of protection available.

7.9 AMC3 ADR.OPS.B.010(a)(2) / (a) (1) NUMBER OF RFFS VEHICLES AND RESCUE EQUIPMENT / (a) (1) [9902000]

Status: "Changed"

(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

7.10 AMC4 ADR.OPS.B.010(a)(2) EXTINGUISHING AGENTS [9902004]

Status: "Changed"

The aerodrome operator should ensure that:

(a) both principal and complementary extinguishing agents are provided at the aerodrome;

(b) principal extinguishing agent includes:

- (1) a foam meeting the minimum performance level A; or
- (2) a foam meeting the minimum performance level B; or
- (3) a foam meeting the minimum performance level C; or
- (4) a combination of these agents;

except for aerodromes in categories 1 to 3, where it should preferably meet a performance level B or C foam;

(c) the complementary extinguishing agent is a dry chemical powder suitable for extinguishing hydrocarbon fires, or any other alternate agent having equivalent fire-fighting capability;

(d) the amounts of water for foam production, and of the complementary agents provided on the rescue and firefighting vehicles are in accordance with the determined aerodrome category and Table 1, except that for aerodrome categories 1 and 2, up to 100 % of the water may be substituted with complementary agent.

For the purpose of agent substitution, 1 kg of complementary agent is equivalent to 1 L of water for production of a foam meeting performance level A.

Note 1: The amounts of water specified for foam production are predicated on an application rate of 8.2 L/min/m² for a foam meeting performance level A, 5.5 L/min/m² for a foam meeting performance level B and 3.75 L/min/m² for a foam meeting performance level C.

Note 2: When any other complementary agent is used, the substitution ratios need to

be checked.

(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;

(e) the amount of foam concentrate provided on a vehicle should be sufficient to produce, at least, two loads of foam solution;

(f) when a combination of different performance level foams are provided at the aerodrome, the total amount of water to be provided for foam production should be calculated for each foam type and the distribution of these quantities should be documented for each vehicle and applied to the overall rescue and firefighting requirement;

(g) the discharge rate of the foam solution is not less than the rates shown in Table 1;

(h) the complementary agents comply with the appropriate specifications of the International Organisation for Standardisation (ISO);

(i) the discharge rate of complementary agents is not less than the values shown in Table 1;

(j) a reserve supply of foam concentrate equivalent to 200 % of the quantities identified in Table 1 is maintained on the aerodrome for vehicle replenishment purposes. Foam concentrate carried on fire vehicles in excess of the quantity identified in Table 1 can contribute to the reserve;

(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;

(l) for Category 1 and 2 aerodromes that have replaced up to 100% of the water with complementary agent a reserve supply of complementary agent of 200% is maintained. Complementary agent(s) carried on fire vehicles in excess of the quantity identified in Table 1 may contribute to the reserve;

(m) where a major delay in the replenishment of the supplies is anticipated, the amount of reserve supply is increased as determined by a risk assessment;

(n) a water need analysis is conducted to determine the availability of sufficient quantities of water for fire fighting;

(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;

(oa) Where the level of ...

(ob) For all-cargo, ...

(p) arrangements ...

7.11 AMC4 ADR.OPS.B.010(a)(2) / (da) EXTINGUISHING AGENTS / (da)

Status: "New"

(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;

7.12 AMC4 ADR.OPS.B.010(a)(2) / (k) EXTINGUISHING AGENTS / (k) [9902018]

Status: "Changed"

The aerodrome operator should ensure that: (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 may contribute to the reserve;

7.13 AMC4 ADR.OPS.B.010(a)(2) / (o) EXTINGUISHING AGENTS / (o) [9902022]

Status: "Changed"

The aerodrome operator should ensure that: (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

7.14 AMC4 ADR.OPS.B.010(a)(2) / (oa) EXTINGUISHING AGENTS / (oa)

Status: "New"

(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 reduced category;

7.15 AMC4 ADR.OPS.B.010(a)(2) / (ob) EXTINGUISHING AGENTS / (ob)

Status: "New"

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

7.16 AMC5 ADR.OPS.B.010(a)(2) RESPONSE TIME [9902033]

Status: "Changed"

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 time of 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;

(b) response times to any other part of the movement area, in optimum visibility and surface conditions, are calculated and included in the Aerodrome Emergency Plan;

(c) any vehicle, other than the first responding vehicle(s), required to achieve continuous agent application of the amount of extinguishing agents specified in Table 1 of AMC4 ADR.OPS.B.010 arrives no more than one minute after the first responding vehicle(s); and

(d) suitable guidance, equipment and/or procedures for rescue and firefighting services are provided, to meet the operational objective, as nearly as possible, in less than optimum conditions of visibility, especially during low visibility operations.

7.17 AMC5 ADR.OPS.B.010(a)(2) / (a) RESPONSE TIME / (a) [9902034]

Status: "Changed"

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 time of 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;

7.18 GM4 ADR.OPS.B.010(a)(2) REDUCTION OF RFFS [9902024]

Status: significantly changed, structure levels are dropped

Contingency arrangements 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 for rescue and firefighting, and arrangements to cover unplanned absence of the minimum level of personnel including supervisory levels.

The following may be considered as unforeseen circumstances leading to temporary reduction of the level of protection of the aerodrome rescue and fire fighting.

- (a) breakdown of RFFS vehicles;
- (b) staff shortage;
- (c) unavailability of extinguishing agents; and
- (d) RFFS response to an accident.

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 services 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. When such a temporary reduction no longer applies, the above units should be advised accordingly.

7.19 GM4 ADR.OPS.B.010(a)(2) / (a) REDUCTION OF RFFS AERODROME CATEGORY / (a) [9902025]

Status: "Dropped"

The text "***N/A***" is added to the title

7.20 GM4 ADR.OPS.B.010(a)(2) / (b) REDUCTION OF RFFS AERODROME CATEGORY / (b) [9902026]

Status: "Dropped"

The text "***N/A***" is added to the title

7.21 GM4 ADR.OPS.B.010(a)(2) / (c) REDUCTION OF RFFS AERODROME CATEGORY / (c) [9902027]

Status: "Dropped"

The text "***N/A***" is added to the title

7.22 GM4 ADR.OPS.B.010(a)(2) / (d) (1) -> GM4 ADR.OPS.B.010(a)(2) / (a) [9902028]

Status: "Changed", renamed subitems

Note: Sorting order remains unchanged to separate the subitems "(a) old" and "(a) new" textually.

The following may be considered as unforeseen circumstances leading to temporary reduction of the level of protection of the aerodrome rescue and fire fighting

(a) breakdown of RFFS vehicles;

7.23 GM4 ADR.OPS.B.010(a)(2) / (d) (2) -> GM4 ADR.OPS.B.010(a)(2) / (b) [9902029]

Status: "Changed"

Note: Sorting order remains unchanged to separate the subitems "(b) old" and "(b) new" textually.

The following may be considered as unforeseen circumstances leading to temporary reduction of the level of protection of the aerodrome rescue and fire fighting

(b) staff shortage;

7.24 GM4 ADR.OPS.B.010(a)(2) / (d) (4) -> GM4 ADR.OPS.B.010(a)(3) / (c) [9902030]

Status: "Changed", renamed subitems

Note: Sorting order remains unchanged to separate the subitems "(c) old" and "(c) new" textually.

The following may be considered as unforeseen circumstances leading to temporary reduction of the level of protection of the aerodrome rescue and fire fighting

(c) unavailability of extinguishing agents;

7.25 GM4 ADR.OPS.B.010(a)(2) / (d) (4) -> GM4 ADR.OPS.B.010(a)(3) / (d) [9902031]

Status: "Changed", renamed subitems

Note: Sorting order remains unchanged to separate the subitems "(c) old" and "(c) new" textually.

The following may be considered as unforeseen circumstances leading to temporary reduction of the level of protection of the aerodrome rescue and fire fighting

(d) RFFS response to an accident;

7.26 GM4 ADR.OPS.B.010(a)(2) / (d) (5) REDUCTION OF RFFS AERODROME CATEGORY / (d) (5) [9902032]

Status: "Dropped"

Titel wird um dem Text "****N/A****" ergänzt.

7.27 GM5 ADR.OPS.B.010(a)(2) RESCUE AND FIREFIGHTING LEVEL OF PROTECTION

Status: "New"

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 ...

7.28 GM6 ADR.OPS.B.010(a)(2) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER

Status: "New"

a) The ICAO 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 might 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...

- (f)...
- (g)...
- (h)...
- (i)...
- (j)...

7.29 ADR.OPS.B.010(a)(2) / (a) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (a)

Status: "New"

a) The ICAO 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.

7.30 ADR.OPS.B.010(a)(2) / (b) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (b)

Status: "New"

(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.

7.31 GM6 ADR.OPS.B.010(a)(2) / (c) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (c)

Status: "New"

(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.

7.32 ADR.OPS.B.010(a)(2) / (d) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (d)

Status: "New"

(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 might 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.

7.33 GM6 ADR.OPS.B.010(a)(2) / (e) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (e)

Status: "New"

(e) The formula for the theoretical critical area A_T should be the following: ...

7.34 GM6 ADR.OPS.B.010(a)(2) / (f) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (f)

Status: "New"

(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 A_T , or $A_P = 0.667 \times A_T$

7.35 GM6 ADR.OPS.B.010(a)(2) / (g) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (g)

Status: "New"

g) The quantity of water for foam production should be calculated with the following formula: $Q = Q_1 + Q_2$, where:

- 'Q' is the total water required;
- 'Q₁' is the water used to control the fire in the practical critical area; and
- 'Q₂' is the water required after control of the fire has been established,

7.36 GM6 ADR.OPS.B.010(a)(2) / (h) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (h)

Status: "New"

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

$Q1 = A_p \times R \times T$, where:

- 'A_p' is the practical critical area;
- 'R' is the rate of application; and
- 'T' is the time of application.

7.37 ADR.OPS.B.010(a)(2) / (i) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (i)

Status: "New"

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

(i) The amount of water required for Q2 may not be exactly calculated as it depends on a number of variables. The factors considered to be 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 aerodromes to about 190 % for a category 10 aerodrome.

7.38 GM6 ADR.OPS.B.010(a)(2) / (j) CRITICAL AREA FOR CALCULATING QUANTITIES OF WATER / (j)

Status: "New"

(j) The relation between Q1 and Q2 for aeroplanes representative of each airport category is shown in the following table: ...

7.39 AMC1 ADR.OPS.C.005 MAINTENANCE PROGRAMME [9902528]

Status: "Changed"

The aerodrome operator should ensure that a maintenance programme is established and implemented, including preventive maintenance where appropriate, to maintain aerodrome facilities in a condition which does not impair the safety of aeronautical operations. The scope of the maintenance programme should include, but may not be limited to, the following items:

- (a) visual aids and other lighting systems required for the safety of aerodrome operations;
- (b) power supply and other electrical systems;
- (c) pavements, other ground surfaces, and drainage systems;
- (d) fencing and other access control devices;
- (e) equipment and vehicles, including those used by rescue and firefighting services, which are necessary for the safety of aerodrome operations; and
- (f) buildings which are necessary for the safety of aerodrome operations.

7.40 AMC1 ADR.OPS.C.005 / (e) MAINTENANCE PROGRAMME / (e) [9902533]

Status: "Changed"

The aerodrome operator should ensure that a maintenance programme is established and implemented, including preventive maintenance where appropriate, to maintain aerodrome facilities in a condition which does not impair the safety of aeronautical operations. The scope of the maintenance programme should include, but may not be limited to, the following items: (e) equipment and vehicles, including those used by rescue and firefighting services, which are necessary for the safety of aerodrome operations; and ...

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